

# *SmartCS*

Console server  
**NS-2250**



Before using this console server, carefully read this command reference so you can use the console server correctly.

After reading this command reference, store it in a safe place so that it can be accessed easily when necessary.

|              |          |
|--------------|----------|
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When you dispose of the NS-2250, observe the regulations of local government. For details, contact your local government.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

VCCI-A

# Introduction

Thank you for purchasing the SmartCS NS-2250 console server (hereinafter referred to as the NS-2250). This document is the command reference manual for the NS-2250. It explains the command functions and formats, and the meaning of parameters. It also gives usage and execution examples, commentaries and cautionary notes.

The number of serial ports of the NS-2250 depends on the model you are using. The examples in this manual may state that the serial port specification is 1-48. Change this value to 1-16, or 1-32 as appropriate for the model you are using.

|         | Power          | Model       | Number of serial ports |
|---------|----------------|-------------|------------------------|
| SmartCS | AC power model | NS-2250-16  | 16 ports               |
|         |                | NS-2250-32  | 32 ports               |
|         |                | NS-2250-48  | 48 ports               |
|         | DC power model | NS-2250-16D | 16 ports               |
|         |                | NS-2250-32D | 32 ports               |
|         |                | NS-2250-48D | 48 ports               |

For the installation and cable connections of the NS-2250, see the NS-2250 SmartCS console server installation manual (hereinafter referred to as the Installation manual).

For details about the NS-2250 usage and specifications, see the NS-2250 Console server instruction manual (hereinafter referred to as the Instruction Manual).

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|          | 3 (start tty connection) . . . . .                   | 450        |
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|          | 6 (display & erase Port Log) . . . . .               | 453        |
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|          | 8 (send Port Log) . . . . .                          | 455        |
|          | 9 (show Port Log configuration) . . . . .            | 456        |
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# Chapter1

## Command overview

---

Chapter 1 describes the command types, and gives an overview of objects and commands.

## 1.1 Objects and commands

The built-in system software of the NS-2250 manages the physical and virtual components making up the NS-2250 as objects. They are dynamically created, deleted, merged, and combined to operate the NS-2250. The command is used for setting to an object, status display and maintenance of this equipment.

## 1.2 Object commands overview

This section gives a list of commands to operate the objects used to configure or display the status of the NS-2250.

Table 1-1: Object command list

| Command name | Command description                               |
|--------------|---|
| create       | Create a new object or profile.                   |
| add to       | Add an object to another object.                  |
| set          | Set attributes to an object.                      |
| unset        | Remove an attribute set to an object.             |
| enable       | Enable an object (make it usable).                |
| disable      | Disable an object (make it unusable).             |
| remove from  | Remove an object from another object.             |
| delete       | Delete an existing object.                        |
| show         | Display the status of an object.                  |
| show stats   | Display the statistical information of an object. |

### 1.3 Object setting sequence

The correlation between the object commands can be defined as shown in the setting sequence in Figure 1-1.

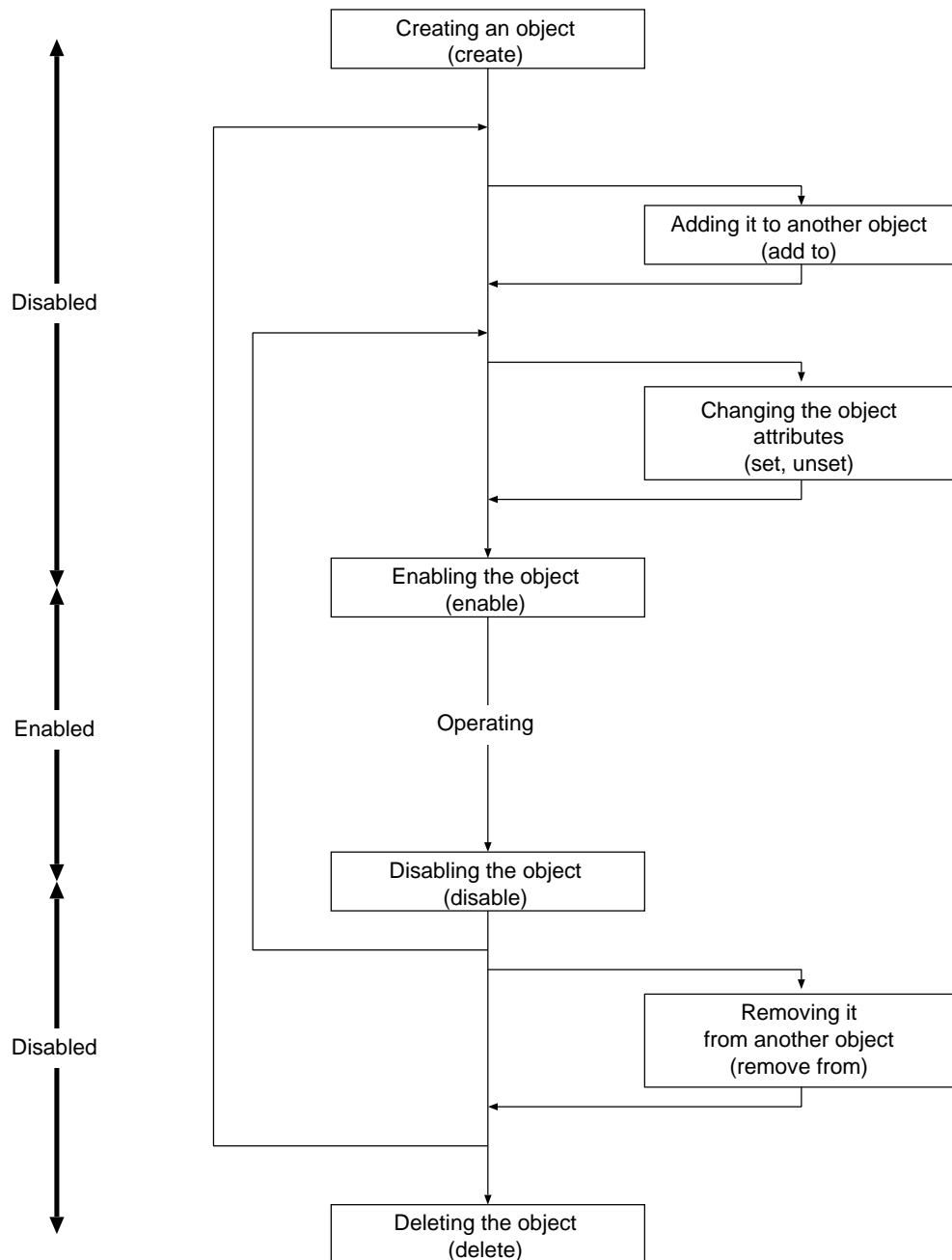


Figure 1-1: Object setting sequence

## 1.4 List specification

An object and the value are listed by a parameter of the command, it's possible to specify it. Use method is as follows.

”\_”

Specify the value which continued.

Usage example : tty 2-4

”, ”

Specify the value which doesn't continued and the name of the plural.

Usage example : tty 1,3



## Chapter2

### Command list

---

Chapter 2 describes overview of the command.

## 2.1 Setting command overview

This section gives a list of setting commands that can be used on the NS-2250.

Table 2-1: Setting command list

| Class                        | Command                   | Description   |
|------------------------------|---------------------------|---|
| System setting commands      | set hostname              | Configure the NS-2250 host name.  |
|                              | set ipaddr                | Set the NS-2250 IP address.   |
|                              | unset ipaddr              | Unset the NS-2250 IP address.   |
|                              | set tcpkeepalive          | Set the TCP keepalive time for the NS-2250.   |
| bonding setting commands     | set bonding up_delay      | configure the wait timer which is the delay period enabling slave interface after the detection of physical linkup. |
|                              | enable bonding            | Enable the bonding function.  |
|                              | disable bonding           | Disable the bonding function.   |
| ipinterface setting commands | set ipinterface mtu       | Set the MTU of each interface.  |
| IPv6 setting commands        | create ip6                | Enable the IPv6 communication function.   |
|                              | set ip6addr               | Set the NS-2250 IPv6 address.   |
|                              | unset ip6addr             | Unset the NS-2250 IPv6 address.   |
|                              | delete ip6                | Disable the IPv6 communication function.  |
| IP host setting commands     | create ip host            | Register a pair of a host name and an IP address (host entry).  |
|                              | delete ip host            | Delete the host entry.  |
| IP route setting commands    | create ip route           | Create a static route to an IP address.   |
|                              | delete ip route           | Delete the static route.  |
| IPv6 route setting commands  | create ip6route           | Create static routes for IPv6.  |
|                              | delete ip6route           | Delete the static route.  |
| ipfilter setting commands    | create ipfilter           | Register the filter conditions.   |
|                              | delete ipfilter           | Delete the registered filter conditions.  |
|                              | delete ipfilter line      | Delete the registered filter condition by specifying a line number.   |
|                              | delete ipfilter allentry  | Delete all filter conditions.   |
|                              | enable ipfilter           | Enable the filter function.   |
|                              | disable ipfilter          | Disable the filter function.  |
| ip6filter setting commands   | create ip6filter          | Register the IPv6 filter conditions.  |
|                              | delete ip6filter          | Delete the registered IPv6 filter conditions.   |
|                              | delete ip6filter line     | Delete the registered IPv6 filter condition by specifying a line number.  |
|                              | delete ip6filter allentry | Delete all IPv6 filter conditions.  |
|                              | enable ip6filter          | Enable the IPv6 filter function.  |
|                              | disable ip6filter         | Disable the IPv6 filter function.   |
| ipsec setting commands       | create ipsec secret psk   | Register a pre-shared key used in the IKE.  |
|                              | delete ipsec secret psk   | Delete a pre-shared key used in the IKE.  |

Continued on next page

Table 2-1: Setting command list(continued)

| Class | Command                                    | Description   |
|-------|--|---|
|       | <code>set ipsec conn auto</code>           | Set initiator or responder of key exchange.   |
|       | <code>set ipsec conn leftid</code>         | Set the ID of the security gateway of own side.   |
|       | <code>set ipsec conn left</code>           | Set the IP address of the security gateway of own side.   |
|       | <code>set ipsec conn leftsubnet</code>     | Set the network address of own side which communicates under encrypted by using IPsec.          |
|       | <code>set ipsec conn leftsourceip</code>   | Set the source IP address of own side which communicates in the IPsec tunnel.                   |
|       | <code>set ipsec conn rightid</code>        | Set the ID of the security gateway of the opposite side.  |
|       | <code>set ipsec conn right</code>          | Set the IP address of the security gateway of the opposite side.                                |
|       | <code>set ipsec conn rightsubnet</code>    | Set the network address of the opposite side which communicates under encrypted by using IPsec. |
|       | <code>set ipsec conn rightsourceip</code>  | Set the source IP address of the opposite side which communicates in the IPsec tunnel.          |
|       | <code>set ipsec conn keyexchange</code>    | Set the version of the IKE protocol.  |
|       | <code>set ipsec conn ike</code>            | Set the encryption algorithm of the ISAKMP-SA(Phase1).  |
|       | <code>set ipsec conn esp</code>            | Set the encryption algorithm of the IPSEC-SA(Phase2).   |
|       | <code>set ipsec conn ikelifetime</code>    | Set the lifetime of the ISAKMP-SA.  |
|       | <code>set ipsec conn lifetime</code>       | Set the lifetime of the IPSEC-SA.   |
|       | <code>set ipsec conn forceencaps</code>    | Set whether to encapsulate the ESP protocol communication of the IPSEC-SA by UDP always or not. |
|       | <code>set ipsec conn dpdaction</code>      | Set whether to execute DPD(Dead Peer Detection) or not.   |
|       | <code>unset ipsec conn</code>              | Delete all settings of the specified connection.  |
|       | <code>unset ipsec conn leftid</code>       | Delete the ID setting of the security gateway of own side.                                      |
|       | <code>unset ipsec conn left</code>         | Delete the IP address of the security gateway of own side.                                      |
|       | <code>unset ipsec conn leftsubnet</code>   | Delete the network address of own side which communicates under encrypted by using IPsec.       |
|       | <code>unset ipsec conn leftsourceip</code> | Delete the source IP address of own side which communicates in the IPsec tunnel.                |
|       | <code>unset ipsec conn rightid</code>      | Delete the ID setting of the security gateway of the opposite side.                             |
|       | <code>unset ipsec conn right</code>        | Delete the IP address of the security gateway of the opposite side.                             |

Continued on next page

Table 2-1: Setting command list(continued)

| Class   | Command   | Description  |
|---|---|--|
|   | <a href="#">unset ipsec conn right-subnet</a>   | Delete the network address of the opposite side which communicates under encrypted by using IPsec. |
|   | <a href="#">unset ipsec conn right-sourceip</a> | Delete the source IP address of the opposite side which communicates in the IPsec tunnel.          |
|   | <a href="#">unset ipsec conn ike</a>            | Delete the encryption algorithm setting of the ISAKMP-SA(Phase1).                                  |
|   | <a href="#">unset ipsec conn esp</a>            | Delete the encryption algorithm of the IPSEC-SA(Phase2).   |
|   | <a href="#">enable ipsec conn</a>               | Enable the IPsec function.   |
|   | <a href="#">disable ipsec conn</a>              | Disable the IPsec function.  |
| DNS setting command                                 | <a href="#">set dns</a>                         | Register the DNS server used for name resolution.  |
|   | <a href="#">set dns localdomain</a>             | Configure the local domain to which the NS-2250 belongs.   |
|   | <a href="#">unset dns</a>                       | Delete the information of a registered DNS server.   |
|   | <a href="#">unset dns localdomain</a>           | Delete the settings of the local domain to which the NS-2250 belongs.                              |
| LAN setting commands                                | <a href="#">set ether nego</a>                  | Configure the auto-negotiation operation for the LAN port.   |
| User management and authentication setting commands | <a href="#">create user</a>                     | Create a user.   |
|   | <a href="#">set user password</a>               | Change the user password for login.  |
|   | <a href="#">set user port</a>                   | Configure the port users access privileges for the serial ports.                                   |
|   | <a href="#">set user permission</a>             | Set the command execution authority of the extended user.  |
|   | <a href="#">set user sshkey</a>                 | Configure the public key for user SSH authentication.  |
|   | <a href="#">unset user port</a>                 | Remove the port user access privileges for the serial ports.                                       |
|   | <a href="#">unset user sshkey</a>               | Delete user settings for SSH authentication public key.  |
|   | <a href="#">delete user</a>                     | Delete a user.   |
| SNMP agent setting commands                         | <a href="#">set snmp location</a>               | Set sysLocation (system location).   |
|   | <a href="#">set snmp contact</a>                | Set sysContact (contact information).  |
|   | <a href="#">set snmp engineid</a>               | Set the snmpEngineID.  |
|   | <a href="#">set snmp authentrap</a>             | Set whether or not to send a trap when SNMP authentication failed.                                 |
|   | <a href="#">set snmp linktrap</a>               | Set whether or not to send link traps.   |
|   | <a href="#">set snmp dsrtrap</a>                | Set whether or not to send DSR traps.  |
|   | <a href="#">set snmp coldstarttrap</a>          | Set whether or not to send cold start traps.   |
|   | <a href="#">set snmp powertrap</a>              | Set whether or not to send power traps.  |

Continued on next page

Table 2-1: Setting command list(continued)

| Class  | Command                    | Description   |
|--|----------------------------|---|
|  | set snmp bondin-gactswtrap | Set whether or not to send the active port switched traps.  |
|  | unset snmp location        | Remove sysLocation settings.  |
|  | unset snmp contact         | Remove sysContact settings.   |
|  | unset snmp engineid        | Remove snmpEngineID settings.   |
|  | enable snmp                | Enable the SNMP agent function.   |
|  | disable snmp               | Disable the SNMP agent function.  |
| SNMP user management and authentication setting commands | set snmpuser name          | Set the user to be used with SNMPv3.  |
|  | unset snmpuser name        | Delete the user for SNMPv3.   |
| SNMP trap setting commands                               | set trap manager           | Set the address of the SNMP server to send the traps to and the community name used when sending the traps. |
|  | unset trap manager         | Remove the settings of the destination SNMP server.   |
| SNMP community setting commands                          | set community              | Set the community name and SNMP server that can use it to access the NS-2250.                               |
|  | unset community            | Remove the settings of the community name and SNMP server that can use it to access the NS-2250.            |
| Syslog setting commands                                  | set syslog host            | Set the facility and syslog server where to send the syslog messages.                                       |
|  | unset syslog host          | Remove the settings of the syslog server where to send the syslog messages.                                 |
|  | enable syslog              | Enable the syslog client.   |
|  | disable syslog             | Disable the syslog client.  |
| NFS setting commands                                     | set nfs server addr        | Set the NFS server where to save the port logs.   |
|  | set nfs server proto       | Set the NFS protocol.   |
|  | set nfs rotate             | Set the rotation interval of the port logs.   |
|  | unset nfs server addr      | Remove the NFS server settings.   |
|  | enable nfs                 | Enable the NFS client function.   |
|  | disable nfs                | Disable the NFS client function.  |
| SNTP setting commands                                    | set sntp server            | Set NTP servers to which you want to synchronize.   |
|  | set sntp polltime          | Set polling interval to the NTP servers.  |
|  | unset sntp server          | Remove settings of NTP servers.   |
|  | enable sntp                | Enable the SNTP client function.  |
|  | disable sntp               | Disable the SNTP client function.   |
| TTY setting commands                                     | set tty baud               | Set the operation conditions and operation of the serial ports.   |
|  | set tty bitchar            | Set the data bit length.  |
|  | set tty parity             | Set the parity.   |
|  | set tty stop               | Set the stop bit length.  |
|  | set tty flow               | Set the flow control.   |

Continued on next page

Table 2-1: Setting command list(continued)

| Class                  | Command                   | Description  |
|------------------------|---------------------------|--|
| logd setting commands  | set tty detect_dsr        | Set the DSR signal transition detection function.  |
|                        | add logd tty mail         | Register a destination email address and email server to send the port logs.                         |
|                        | add logd tty ftp          | Register a destination FTP server for port logs.   |
|                        | set logd output           | Set the port log save destination.   |
|                        | set logd tstamp           | Set port log time stamps.  |
|                        | set logd tty log          | Set the port log save space for each serial port.  |
|                        | set logd tty lstamp       | Set the login stamp function for port logs.  |
|                        | set logd tty syslog       | Set whether to send port logs to a syslog server.  |
|                        | set logd tty nfs          | Set whether to save port logs to a NFS server.   |
|                        | set logd tty sendlog      | Set the conditions to send the port logs to an email or an FTP server.                               |
|                        | set logd tty mail port    | Set SMTP port for the port log emails.   |
|                        | set logd tty mail type    | Set how the port logs are sent by email (sending method).  |
|                        | set logd tty mail subject | Set the email subject for port logs.   |
|                        | set logd tty mail sender  | Set the email address of the sender for port logs.   |
|                        | set logd tty mail auth    | Set SMTP authentication for the port log emails.   |
|                        | unset logd tty mail auth  | Remove settings of SMTP authentication for port log emails.  |
|                        | remove logd tty mail      | Remove the settings for the destination email address and email server used to send port logs.       |
|                        | remove logd tty ftp       | Remove settings of a destination FTP server for port logs.   |
| portd setting commands | set portd connect         | Set the connection mode of the port server.  |
|                        | set portd menu            | Set the display method of the port server menu.  |
|                        | set portd auth            | Set whether or not to use port user authentication when connecting from a Telnet client.             |
|                        | set portd telrw           | Specify the service port start number for Telnet Normal mode.  |
|                        | set portd telro           | Specify the service port start number for Telnet Monitoring mode.                                    |
|                        | set portd sshrw           | Specify the service port start number for SSH Normal mode.   |
|                        | set portd sshro           | Specify the service port start number for SSH Monitoring mode.                                       |
|                        | set portd idle.timeout    | Set a value for the idle timer for the select menu, port server menu, and Normal mode (rw) sessions. |

Continued on next page

Table 2-1: Setting command list(continued)

| Class                           | Command                  | Description   |
|---------------------------------|--------------------------|---|
|                                 | set portd ro_timeout     | Set a value for the session timer of Monitoring mode (ro) sessions.   |
|                                 | set portd tty session    | Set the authorized protocols and modes for connection to the serial ports.  |
|                                 | set portd tty limit      | Set a number of sessions for a serial port.   |
|                                 | set portd tty brk_char   | Set the NVT break character.  |
|                                 | set portd tty nl         | Set the conversion method for the line feed format received from the network.   |
|                                 | set portd tty cmdchar    | Set a substitute character code to go to the port server menu.  |
|                                 | set portd tty label      | Set serial port labels.   |
|                                 | set portd tty timeout    | Set the timeout function on and off for the port server menu, Normal mode (rw) sessions, and Monitoring mode (ro) sessions. |
|                                 | set portd tty connted    | Set the line feed code when starting the transparent connection.  |
|                                 | set portd sshxpt         | Specify the service port start number for SSH transparent connection (sshxpt).  |
|                                 | set portd service        | Set a behavior related to multiple services to connect serial ports of NS-2250.   |
|                                 | unset portd tty label    | Remove serial port label settings.  |
| Tty manage setting commands     | enable ttymanage         | Enable the TTY manage function.   |
|                                 | disable ttymanage        | Disable the TTY manage function.  |
| Console setting commands        | set console              | Set the console.  |
| Telnet command setting commands | set telnet cmdchar       | Set the character code to transit to the command mode while executing the telnet command.                                   |
| Telnetd setting commands        | set telnetd port         | Set the Telnet server port number.  |
|                                 | enable telnetd           | Enable the Telnet server.   |
|                                 | disable telnetd          | Disable the Telnet server.  |
| sshd setting commands           | set sshd auth            | Set the user authentication type for the SSH server.  |
|                                 | set sshd port            | Set the SSH server port number.   |
|                                 | set sshd host_key        | Set the SSH server host_key.  |
|                                 | enable sshd              | Enable the SSH server.  |
|                                 | disable sshd             | Disable the SSH server.   |
| ftpd setting commands           | enable ftpd              | Enable the FTP server.  |
|                                 | disable ftpd             | Disable the FTP server.   |
| Security setting commands       | create allowhost         | Create a list of hosts and services authorized for connection.  |
|                                 | delete allowhost         | Delete a list of hosts and services authorized for connection.  |
| Authentication setting commands | create auth access_group | Create access groups and serial port access privileges.   |

Continued on next page

Table 2-1: Setting command list(continued)

| Class | Command                                       | Description  |
|-------|---|--|
|       | <code>set auth mode</code>                    | Set the user authentication method.  |
|       | <code>set auth su_cmd user-name</code>        | In the RADIUS authentication or TACACS+ authentication/approval function, set the user name used when executing the "su" command with external authentication. |
|       | <code>set auth radius retry</code>            | Set the number of times the authentication request packet is resent to the RADIUS authentication server.   |
|       | <code>set auth radius server addr</code>      | Set the IP address of the RADIUS authentication server.  |
|       | <code>set auth radius server port</code>      | Set the authentication port number of the RADIUS authentication server.  |
|       | <code>set auth radius server key</code>       | Set the secret key of the RADIUS authentication server.  |
|       | <code>set auth radius server timeout</code>   | Set the timeout time for the response packet sent back from the RADIUS authentication server.  |
|       | <code>set auth radius server portusr</code>   | Set the port user identifier used with RADIUS authentication.  |
|       | <code>set auth radius server normal</code>    | Set the normal user identifier used with RADIUS authentication.  |
|       | <code>set auth radius server root</code>      | Set the device management user identifier used with RADIUS authentication.   |
|       | <code>set auth radius server nas_id</code>    | Register the NAS-ID attribute notified to the RADIUS authentication server.  |
|       | <code>set auth radius server def_user</code>  | Configure access methods for users for which a user group cannot be identified.  |
|       | <code>set auth tacacs server addr</code>      | Set the IP address of the TACACS+ server (authentication/approval).  |
|       | <code>set auth tacacs server key</code>       | Set the secret key of the TACACS+ server (authentication/approval).  |
|       | <code>set auth tacacs server timeout</code>   | Set the timeout time for the response packet sent back from the TACACS+ server (authentication/approval).  |
|       | <code>set auth tacacs def_user</code>         | Configure access methods for users for which a user group cannot be identified when using TACACS+ authentication and approval.                                 |
|       | <code>unset auth radius server addr</code>    | Remove the IP address of the RADIUS authentication server.   |
|       | <code>unset auth radius server portusr</code> | To remove the port user identifier when using RADIUS authentication.   |
|       | <code>unset auth radius server normal</code>  | To remove the normal user identifier when using RADIUS authentication.   |
|       | <code>unset auth radius server root</code>    | To remove the device management user identifier when using RADIUS authentication.  |
|       | <code>unset auth radius server nas_id</code>  | Remove the NAS-ID attribute notified to the RADIUS authentication server.  |

Continued on next page



Table 2-1: Setting command list(continued)

| Class                                    | Command                                      | Description   |
|--|--|---|
|  | <code>unset auth tacacs server addr</code>   | Remove the IP address of the TACACS+ server (authentication/approval).                                |
|  | <code>delete auth access_group</code>        | Delete access groups and serial port access privileges.   |
| Accounting setting commands              | <code>set acct mode</code>                   | Set the saving mode for accounting logs.  |
|  | <code>set acct radius retry</code>           | Set the number of times accounting packets are resent to the RADIUS accounting server.                |
|  | <code>set acct radius auth_deny_stop</code>  | Set the sending method of accounting STOP packets when user authentication has failed.                |
|  | <code>set acct radius server addr</code>     | Set the IP address of the RADIUS accounting server.   |
|  | <code>set acct radius server port</code>     | Set the accounting port number of the RADIUS accounting server.                                       |
|  | <code>set acct radius server key</code>      | Set the secret key of the RADIUS accounting server.   |
|  | <code>set acct radius server timeout</code>  | Set the timeout time for the response packet sent back from the RADIUS accounting server.             |
|  | <code>set acct radius server nas_id</code>   | Register the NAS-ID attribute notified to the RADIUS accounting server.                               |
|  | <code>set acct tacacs auth_deny_stop</code>  | Set the sending method of accounting STOP packets when TACACS+ authentication or approval has failed. |
|  | <code>set acct tacacs server addr</code>     | Set the IP address of the TACACS+ server (accounting).  |
|  | <code>set acct tacacs server key</code>      | Set the secret key of the TACACS+ server (accounting).  |
|  | <code>set acct tacacs server timeout</code>  | Set the timeout time for the response packet sent back from the TACACS+ server (accounting).          |
|  | <code>unset acct radius server addr</code>   | Remove the IP address of the RADIUS accounting server.  |
|  | <code>unset acct radius server nas_id</code> | Remove the NAS-ID attribute notified to the RADIUS accounting server.                                 |
|  | <code>unset acct tacacs server addr</code>   | Remove the IP address of the TACACS+ server (accounting).   |
| terminal output control setting commands | <code>set terminal default editing</code>    | Set the default setting for enabling or disabling terminal line editing.                              |
|  | <code>set terminal default height</code>     | Set the default setting for the number of lines on one page of the terminal.                          |
|  | <code>set terminal default width</code>      | Set the default setting for the number of characters on one line of the terminal.                     |
|  | <code>set terminal default page</code>       | Set the default setting for enabling or disabling the terminal paging function.                       |
|  | <code>set terminal default prompt</code>     | Set the default setting for the display format of the terminal prompt.                                |

Continued on next page

Table 2-1: Setting command list(continued)

| Class                               | Command                                   | Description  |
|-------------------------------------|---|--|
|                                     | <code>set terminal default re-disp</code> | Set whether or not to redisplay by default the previously entered command string on the next prompt screen after a command input error has occurred. |
|                                     | <code>set terminal default timeout</code> | Set the default value for the terminal automatic logout time.  |
| Time zone setting commands          | <code>set timezone</code>                 | Set the time zone.   |
| Temperature sensor setting commands | <code>set temperature adjust</code>       | Set the temperature correction value of the temperature sensor.  |

## 2.2 Display commands overview

This section gives a list of display commands that can be used on the NS-2250.

Table 2-2: Display command list

| Class                                | Command            | Description  |
|--------------------------------------|--------------------|--|
| System status display commands       | show version       | Display the system hardware configuration, system software version, boot information, etc. |
|                                      | show environment   | Display the information of power and Temperature.  |
|                                      | show slot          | Display the USB port information.  |
|                                      | show cpu           | Display the CPU utilization rate.  |
|                                      | show memory        | Display the memory usage rate.   |
|                                      | show log           | Display the console log or the command execution log.                                      |
|                                      | show log ttymanage | Display the command log sent to the serial port of NS-2250 by tty manage function.         |
|                                      | show support       | Command used to display support information.   |
| Bonding display commands             | show bonding       | Display the bonding information.   |
| Network information display commands | show ether         | Display information about the NS-2250 LAN port.  |
|                                      | show stats ether   | Display statistical information about the NS-2250 LAN port.                                |
|                                      | show ipinterface   | Display information about the NS-2250 IP interface.  |
|                                      | show ip            | Display the NS-2250 host name and IP address, and the TCP keepalive time.                  |
|                                      | show ipv6          | Display the NS-2250 IPv6 address.  |
|                                      | show ip host       | Display a list of the host names and IP addresses registered to the NS-2250.               |
|                                      | show ip route      | Display the static routes registered to the NS-2250.                                       |
|                                      | show ipv6route     | Display static routes of IPv6 registered in NS-2250.                                       |
|                                      | show tcp           | Display the status of the TCP session.   |
|                                      | show udp           | Display the status of UDP.   |
|                                      | show stats ip      | Display the IP statistical information.  |
|                                      | show stats ipv6    | Display the IPv6 statistical information.  |
|                                      | show stats icmp6   | Display the ICMPv6 statistical information.  |
|                                      | show arp           | Display the content of ARP entries.  |
|                                      | show ndp           | Display the contents the address mapping table used in Neighbor Discovery Protocol(NDP).   |
|                                      | show stats tcp     | Display TCP statistical information.   |
|                                      | show stats udp     | Display UDP statistical information.   |
|                                      | show dns           | Display the settings of the NS-2250 DNS client function.                                   |

Continued on next page

Table 2-2: Display command list(continued)

| Class  | Command                 | Description  |
|--|-------------------------|--|
| Ipfilter status display commands                   | show ipfilter           | Display the registration status of the ipfilter.                     |
|  | show stats ipfilter     | Display the statistics information of the ipfilter.                  |
| Ip6filter status display commands                  | show ip6filter          | Display the registration status of the ipfilter.                     |
|  | show stats ip6filter    | Display the statistics information of the ip6filter.                 |
| Ipssec status display commands                     | show ipsec secret       | Display the registration list of apre-shared key used in the IKE.    |
|  | show ipsec conn         | Display the information of the connection setting.                   |
|  | show ipsec status       | Display the information of ISAKMP-SA/IPSEC-SA.                       |
|  | show ipsec spd          | Display the information of the security policy database.             |
|  | show ipsec sad          | Display the information of the security association database.        |
| User status display commands                       | show user               | Display a list of created users.                                     |
|  | show user login         | Display a list of currently logged in users.                         |
| SNMP status display command                        | show snmp               | Display the status of the SNMP agent.                                |
| SNTP status display command                        | show sntp               | Display the status of the SNTP client.                               |
| Syslog status display command                      | show syslog             | Display the status of the syslog client.                             |
| NFS status display command                         | show nfs                | Display the status of the NFS client function.                       |
| Port server status display commands                | show portd              | Display the port server status.                                      |
|  | show portd tty          | Display the port server setting for each serial port.                |
|  | show portd session      | Display the status of port server sessions.                          |
|  | show tty                | Displays the status of the serial ports.                             |
|  | show stats tty          | Displays the serial ports statistical information.                   |
|  | show logd               | Display the port log status of each serial port.                     |
|  | show stats logd tty     | Display the port log statistical information of each serial port.    |
| Tty manage status display commands                 | show ttymanage          | Display information on tty managed functions and session status.     |
| Tty manage terminal configuration display commands | show terminal ttymanage | Display terminal configuration information on tty managed functions. |
| CONSOLE port status display command                | show console            | Display the CONSOLE port status.                                     |

Continued on next page

Table 2-2: Display command list(continued)

| Class  | Command                                | Description   |
|--|--|---|
|  | <a href="#">show stats console</a>     | Display the CONSOLE port statistical information.                           |
| <a href="#">Display command for the internal management servers</a>                          | <a href="#">show service</a>           | Display status of internal management servers.                              |
| <a href="#">Display command for the list of hosts and services authorized for connection</a> | <a href="#">show allowhost</a>         | Display a list of hosts and services authorized for connection.             |
| <a href="#">Setting file display commands</a>  | <a href="#">show config</a>            | Display the NS-2250 current settings.                                       |
|  | <a href="#">show config startup</a>    | Display the content of the startup files.                                   |
|  | <a href="#">show config info</a>       | Display information related to the startup files.                           |
| <a href="#">Terminal setting information display command</a>                                 | <a href="#">show terminal</a>          | Display the settings of the used terminal.                                  |
| <a href="#">Authentication/accounting function display commands</a>                          | <a href="#">show auth</a>              | Display the user authentication method.                                     |
|  | <a href="#">show auth radius</a>       | Display the RADIUS authentication client settings.                          |
|  | <a href="#">show auth tacacs</a>       | Display the settings for TACACS+ authentication and approval.               |
|  | <a href="#">show auth access_group</a> | Display the access group setting information.                               |
|  | <a href="#">show stats auth radius</a> | Display the statistical information of RADIUS authentication client.        |
|  | <a href="#">show stats auth tacacs</a> | Displays TACACS+ statistical information.                                   |
|  | <a href="#">show acct</a>              | Display the account saving method.  |
|  | <a href="#">show acct radius</a>       | Display the RADIUS accounting client settings.                              |
|  | <a href="#">show acct tacacs</a>       | Display the settings for TACACS+ accounting.                                |
|  | <a href="#">show stats acct radius</a> | Display statistical information of the RADIUS accounting client.            |
|  | <a href="#">show stats acct tacacs</a> | Display statistical information of TACACS+ accounting.                      |
| <a href="#">Time zone display command</a>  | <a href="#">show timezone</a>          | Display the NS-2250 time zone and a list of the time zones that can be set. |

## 2.3 Maintenance command overview

This section gives a list of maintenance commands that can be used on the NS-2250.

Table 2-3: Maintenance command list

| Class                                  | Command                     | Description  |
|--|-----------------------------|--|
| Basic maintenance commands             | <code>date</code>           | Set and display the NS-2250 date and time.   |
|  | <code>engineering</code>    | Switch the NS-2250 operating mode to engineering mode.                                 |
|  | <code>exit</code>           | This command is alias of <code>logout</code>   |
|  | <code>logout</code>         | Log out from the NS-2250.  |
|  | <code>ping</code>           | Confirm the communication with the connected host on an IP network.                    |
|  | <code>ping6</code>          | Confirm IPv6 communication with the connected host on the IP network.                  |
|  | <code>reboot</code>         | Reboot the NS-2250.  |
|  | <code>shutdown</code>       | Shut down the NS-2250.   |
|  | <code>su</code>             | Log in as a device management user.  |
|  | <code>telnet</code>         | Log in to a connected host via a Telnet client.  |
|  | <code>tracert</code>        | Examine the information of the route to the specified host.                            |
|  | <code>tracert6</code>       | Examine the information of the route to the specified host                             |
|  | <code>switch bonding</code> | Switch the active port.  |
|  | <code>hangup</code>         | Reset the service of a specific serial port.   |
|  | <code>history</code>        | Display the command execution history.   |
|  | <code>logsave</code>        | Save the port logs of serial ports.  |
|  | <code>loginfo</code>        | Display a list of port log files saved in a FLASH memory, and the used and free space. |
|  | <code>clear arp</code>      | Delete all dynamic ARP entries registered in the NS-2250.                              |
|  | <code>trace</code>          | Perform tracing of the packets sent and received by the NS-2250 for each protocol.     |
|  | <code>disconnect</code>     | Disconnect the TCP session connected to the specified service.                         |
|  | <code>msleep</code>         | Wait for specified time.   |
|  | <code>tftp setup</code>     | Send and receive the startup files by TFTP.  |
|  | <code>tftp verup</code>     | Send and receive the upgrade files for system by TFTP.                                 |
|  | <code>tftp log</code>       | Send the log files by TFTP.  |
|  | <code>tftp support</code>   | Send the supportlog files by TFTP.   |
|  | <code>ftp</code>            | Various files is sent and received between the FTP server.                             |
| Management commands for settings files | <code>write</code>          | Save the NS-2250 current settings in the specified startup file.                       |
|  | <code>clear startup</code>  | Return the specified startup file to the default settings.                             |

Continued on next page

Table 2-3: Maintenance command list(continued)

| Class                                      | Command                           | Description   |
|--|-----------------------------------|---|
| Management command for the system software | <code>default startup</code>      | Specify the startup file to be imported at startup.   |
|  | <code>copy startup</code>         | Copy a startup file.  |
|  | <code>echo</code>                 | Display the specified character string.   |
|  | <code>copy system</code>          | Copy the system software image.   |
|  | <code>verup execute</code>        | Upgrade or downgrade the system software using a file sent via FTP or SFTP.   |
|  | <code>verup cleanup</code>        | Delete the system software upgrade or downgrade file sent via FTP or SFTP.  |
|  | <code>backup system-image</code>  | Made the backup of system software.   |
|  | <code>restore system-image</code> | Restore the backup of system software.  |
| Console output control commands            | <code>clear system-image</code>   | Delete the backup file of system software.  |
|  | <code>show system-image</code>    | Displays the backup file and restore file of system software.   |
| Terminal output control commands           | <code>console</code>              | The output destination of a console message is controlled.  |
|  | <code>loglevel</code>             | Change the output level of the console messages.  |
|  | <code>terminal timeout</code>     | Set the terminal automatic logout time.   |
|  | <code>terminal editing</code>     | Enable or disable the terminal line editing function.   |
|  | <code>terminal page</code>        | Enable or disable the terminal paging function.   |
|  | <code>terminal height</code>      | Specify the number of lines per page of the terminal.   |
|  | <code>terminal width</code>       | Specify the number of characters per line of the terminal.  |
|  | <code>terminal prompt</code>      | Specify the display format of the terminal prompt.  |
| Tty manage commands                        | <code>terminal redispatch</code>  | Specify whether or not to redisplay the previously entered command string on the next prompt screen after a command input error has occurred. |
|  | <code>terminal ttymanage</code>   | Set each parameter of tty manage object command in advance.   |
|  | <code>ttysend</code>              | Sends a string to the serial port.  |
|  | <code>ttysendwait</code>          | Sends a string to the serial port and listens for the string specified in the argument.   |
|  | <code>ttysendwaitset</code>       | Sends a string to the serial port and listens for a pre-specified string.   |
|  | <code>ttyread</code>              | Displays characters received from the serial port.  |
|  | <code>ttwait</code>               | Listens for the specified string from the serial port.  |

Continued on next page

Table 2-3: Maintenance command list(continued)

| Class | Command                    | Description   |
|-------|----------------------------|---|
|       | <a href="#">ttywaitset</a> | Listens for the string specified in advance from the serial port. |
|       | <a href="#">ttylog</a>     | Handle the port logs of the specific serial port.                 |



## 2.4 Other commands overview

This section gives a list of port server menu and port selection menu commands that can be used on the NS-2250.

Table 2-4: List of port server menu commands

| Class                        | Command                         | Description   |
|------------------------------|---------------------------------|---|
| Port server menu commands    | 0 (return Port Select Menu)     | Return to port selection menu.  |
|                              | 1 (display Port Log)            | Display the port log of the currently connected serial port.  |
|                              | 2 (display Port Log (LAST))     | Display the most recent part of the ports log of the currently connected serial port.   |
|                              | 3 (start tty connection)        | Access the monitored equipment.   |
|                              | 4 (close telnet/ssh session)    | Close the session of the currently connected serial port.   |
|                              | 5 (show all commands)           | Display a list of port server menu commands.  |
|                              | 6 (display & erase Port Log)    | Display and delete the port log of the currently connected serial port.   |
|                              | 7 (erase Port Log)              | Delete the port log of the currently connected serial port.   |
|                              | 8 (send Port Log)               | Forcibly send the port log of the currently connected serial port to the external FTP/email server that has been set.   |
|                              | 9 (show Port Log configuration) | Display setting information, such as the save space, transfer interval, and transfer destination server of the port log of the currently connected serial port. |
|                              | 10 (send break to tty)          | Send a break signal to the currently connected serial port.   |
| Port selection menu commands | <i>ttyno</i>                    | Connect to the specified serial ports in Normal mode.   |
|                              | <i>ttynor</i>                   | Connect to the specified serial ports in Normal mode.   |
|                              | <i>l</i>                        | Refresh the list of ports to which connection is possible.  |
|                              | <i>l ttyno-ttyno</i>            | Refresh the specified range of ports from list of ports to which connection is possible.  |
|                              | <i>d</i>                        | Refresh detailed information of the user connected to the serial port (port number, user name, and IP address of Telnet/SSH client).                            |
|                              | <i>d ttyno-ttyno</i>            | Refresh detailed information of the users connected to a range serial ports (port number, user name, and IP address of Telnet/SSH client).                      |
|                              | <i>h</i>                        | Display a list of port selection menu commands.   |
|                              | <i>e</i>                        | Close the port selection menu and disconnect the Telnet/SSH session.  |

## Chapter3

# Command reference format

---

Chapter 3 describes the format used in this command reference.

The commands in this reference manual are explained by class and by object following the format described below.

---

**Command name** **[Command execution authority]**

---

**Function** The command function is explained here.

**Format** The command input format is described here.

**command param1 param2 { param3a | param3b } [ param4 param5 ]**

The strings in bold are the command or parameter strings to be entered as they are.

The strings in italic are parameters that can be replaced by a string of your choosing.

{ } enclose multiple parameters separated by the character | from which one must be chosen.

[ ] enclose parameters that can be omitted.

**Parameters** The types and functions of the parameters are explained here.

**Note** Cautionary notes on using the command are given here.

**Usage example** A usage example of the command is given here.

**Execution example**

An example of the command execution is given here.

**Explanation** An explanation such as the contents of the message that is displayed result of executing the command is given here.

**Error message** The meaning and content of the message that is displayed when an error occurs is given here.

[Command execution authority] indicates the authority to execute this command. Authorization and user modes that can be executed are as follows.

| Notation        | Command execution authority                      | Modes that can be executed  |
|-----------------|--|---|
| [Normal user]   | Normal user command execution authority          | Normal user mode<br>Administrator mode<br>Extended user mode                              |
| [Administrator] | Administrator command execution authority        | Administrator mode  |
| [TTY manage]    | Command execution authority of TTY manage object | Extended user mode<br>(When command execution authority is set for the TTY manage object) |

[Required version] shows the system software version in which the command has been added.

# Chapter4

## Setting commands

---

Chapter 4 describes the setting commands that can be used on the NS-2250.

## 4.1 System setting commands

Commands used to configure the host name, IP address, netmask, and other objects defining the NS-2250.

**set hostname**

**[Administrator]**

---

**Function**      Configure the NS-2250 host name.

**Format**        **set hostname** *name*

**Parameters**    *name*

Specify the host name of the NS-2250.

In the host name, you can use half-width alphanumeric characters, underbars "\_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters.

Furthermore, a hyphen, period, or underbar cannot be used before or after a period.

The maximum number of characters that can be set for a host name is 64.

The default setting for this parameter in the startup file is "NS-2250".

**Usage example**    To set "SmartCS" as the NS-2250 host name.

**set hostname SmartCS**

**set ipaddr****[Administrator]**

**Function** Set the NS-2250 IP address.

**Format** **set ipaddr** [{ **eth1** | **eth2** | **bond1**}] *ipaddr/mask*

**Parameters** [{ **eth1** | **eth2** | **bond1** }]  
 Specify the interface of the NS-2250.  
 The default setting for this parameter is eth1.

*ipaddr/mask*  
 Specify the network address of the NS-2250 as IP address/prefix size.  
 The IP address must be specified in the dot-decimal notation  
 (xxx.xxx.xxx.xxx).  
 If the prefix size is omitted, the setting is made according to the class.  
 The default setting for this parameter in the startup file is  
 "192.168.0.1/24".

- Note**
- The registered static routes are deleted if you change the IP address of the NS-2250.
  - It is recommend to operate from the console terminal or from a terminal on the same segment as the NS-2250 to change the IP address of the NS-2250.
  - When the bonding function is enabled, eth1 and eth2 interface designation is error.
  - When the bonding function is disabled, bond1 interface designation is error.
  - When the bonding function is disabled, the default setting for this parameter is eth1.
  - When the bonding function is enabled, the default setting for this parameter is bond1.
  - When the bonding function is enabled, SNMPv1 trap of agent-address field and the RADIUS NAS-IP-address is set to the IP address of bond1 interface.
  - If you disable the bonding function, it is set to the IP address of the eth1 interface.
  - This command can not be executed when the IPsec function is enabled.

**Usage example** To set the 192.168.1.1 as the NS-2250 IP address with a prefix size of 24.

**set ipaddr eth1 192.168.1.1/24**

**unset ipaddr****[Administrator]**


---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Unset the NS-2250 IP address.   |
| <b>Format</b>        | <b>unset ipaddr { eth1   eth2   bond1 }</b>   |
| <b>Parameters</b>    | <b>{ eth1   eth2   bond1 }</b><br>Specify the interface of the NS-2250.<br>The default setting for this parameter is eth1.  |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• The registered static routes are deleted if you change the IP address of the NS-2250.</li> <li>• It is recommend to operate from the console terminal or from a terminal on the same segment as the NS-2250 to change the IP address of the NS-2250.</li> <li>• When the bonding function is enabled, eth1 and eth2 interface designation is error.</li> <li>• When the bonding function is disabled, bond1 interface designation is error.</li> <li>• When the bonding function is disabled, the default setting for this parameter is eth1.</li> <li>• When the bonding function is enabled, the default setting for this parameter is bond1.</li> <li>• When the bonding function is enabled, SNMPv1 trap of agent-address field and the RADIUS NAS-IP-address is set to the IP address of bond1 interface.</li> <li>• If you disable the bonding function, it is set to the IP address of the eth1 interface.</li> <li>• This command can not be executed when the IPsec function is enabled.</li> </ul> |
| <b>Usage example</b> | Unset the 192.168.1.1 as the NS-2250 IP address<br><br><b>unset ipaddr eth1</b>   |

**set tcpkeepalive****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the TCP keepalive time for the NS-2250.  |
| <b>Format</b>        | <b>set tcpkeepalive</b> <i>time</i>  |
| <b>Parameters</b>    | <i>time</i><br>Specify the TCP keepalive time for the NS-2250 (the time until a keepalive probe is sent in idle condition in TCP connection) in seconds in the range of 60 to 7200. The default setting for this parameter in the startup file is 180 seconds. |
| <b>Note</b>          | <ul style="list-style-type: none"><li>• If there is no response to the keepalive probe packet, the packet is sent at 5 second intervals thereafter. If there is no response six times consecutively, reset the connection.</li></ul>                           |
| <b>Usage example</b> | To set the TCP keepalive time for the NS-2250 to 10 minutes.<br><br><b>set tcpkeepalive 600</b>  |
| <b>Explanation</b>   | The changed value is applied from the next session.  |



## 4.2 bonding setting commands

**set bonding up\_delay**

**[Administrator]**

**Function** configure the wait timer which is the delay period enabling slave interface after the detection of physical linkup.

**Format** **set bonding up\_delay { on delay\_time | off }**

**Parameters** **{ on delay\_time | off }**

configure the wait timer which is the delay period enabling slave interface after the detection of physical linkup.

This parameter is "off" by default.

**on delay\_time**

Specify the period by a second to wait before enabling a slave interface.

The setting range is from 1 through 60 seconds.

**off**

No wait.

The slave interface is in an available condition immediately when detect a physical linkup.

**Note**

- When bonding master interface is down, the slave interface is in an available condition immediately with or without this setting.
- If this parameter is "on", the condition of slave interface is going back during waiting period.
- When detect physical link down during a going back state, the slave interface becomes the state to down.

**Usage example** To set a period for 30 seconds.

**set bonding up\_delay on 30**

**enable bonding****[Administrator]****Function** Enable the bonding function.**Format** **enable bonding****Parameters** None

**Note**

- The bonding function is disabled by default.
- When the bonding function is enabled, the setting of IP address/routing at eth1 is automatically inherited to bond1, and the configuration of IP address/routing at eth1/eth2 are deleted.
- When the bonding function is enabled, the setting information by the "set ip-interface mtu" command is canceled.
- This command can not be executed when the IPsec function is enabled.

**Usage example** **enable bonding**

**disable bonding****[Administrator]****Function**      Disable the bonding function.**Format**        **disable bonding****Parameters**    None

**Note**

- When the bonding function is disabled, the setting of IP address/routing at bond1 is automatically inherited to eth1.
- When the bonding function is disabled, routing information set by the "create ip route" command is inherited.
- When the bonding function is disabled, the setting information by the "set ipinterface mtu" command is canceled.

**Usage example**      **disable bonding**

## 4.3 ipinterface setting commands

**set ipinterface mtu**

**[Administrator]**

**Function** Set the MTU of each interface.

**Format** **set ipinterface { eth1 | eth2 | bond1 } mtu *mtu\_size***

**Parameters** **{ eth1 | eth2 | bond1 }**

Specify the interface to set the MTU.

*mtu\_size*

Specify the MTU in the range from 1000 to 1500 in an integer. (The unit : Byte)  
The default value is "1500".

**Note**

- If you enable / disable the bonding function, the information of the MTU setting by this command is deleted.
- If the bonding function is enabled, specifying the interface eth1 and eth2 occurs an error. If the bonding function is disabled, specifying the interface bond1 occurs an error.
- If you set the MTU to less than 1280, IPv6 communication function can not be enabled.
- When the IPv6 communication function is enabled, MTU can not be set to less than 1280.

**Usage example** The case of setting the MTU of eth1 as 1280(bytes).

**set ipinterface eth1 mtu 1280**

## 4.4 IPv6 setting commands

**create ip6**

**[Administrator]**

**Function** Enable the IPv6 communication function.

**Format** **create ip6**

**Parameters** None

**Note**

- The IPv6 communication function is disabled by default.
- When IPv6 communication function is enabled, the following commands can be executed.
  - set ip6addr
  - unset ip6addr
  - create ip6route
  - delete ip6route
  - create ip6filter
  - delete ip6filter
  - enable ip6filter
  - disable ip6filter
  - ping6
- If you set the MTU to less than 1280, IPv6 communication function can not be enabled. (set ipinterface)
- When the IPv6 communication function is enabled, MTU can not be set to less than 1280.

**Usage example** The case of enabling the IPv6 communication function.

**create ip6**

**set ip6addr****[Administrator]**

**Function** Set the NS-2250 IPv6 address.

**Format** **set ip6addr { eth1 | eth2 | bond1 } ip6addr/mask**

**Parameters** **{ eth1 | eth2 | bond1 }**

Specify the interface of the NS-2250.

*ip6addr/mask*

Specify the IPv6 address of this device with "IPv6 address/mask length".

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

Specify the length of mask in the range of 3 to 128.

**Note**

- When setting this command, you need to enable the IPv6 communication function.(create ip6)
- When IPv6 communication function is disabled, the setting by this command is canceled.
- If you change the IPv6 address of this device, the corresponding IPv6 static route will be deleted.
- It is recommend to operate from the console terminal or from a terminal on the same segment as the NS-2250 to change the IPv6 address of the NS-2250.
- When the bonding function is enabled, eth1 and eth2 interface designation is error.
- When the bonding function is disabled, bond1 interface designation is error.
- The range of the IPv6 address that can be set with this command is the global unicast address (2000 :: / 3).
- When the IPv6 communication function is enabled, the link local address is automatically generated from the MAC address at the time of the linking-up of a target port, and it becomes available regardless of the setting.
- The IP address of the NS-2250 used for the RADIUS NAS-IPv6-address attribute is the address of the bond1 interface when the bonding function is enabled. If the bonding function is disabled, the address of the eth1 interface is used preferentially.

**Usage example** To set the 2001::200c:417a as the NS-2250 IPv6 address with a prefix size of 64.

**set ip6addr eth1 2001::200c:417a/64**

**unset ip6addr****[Administrator]****Function** Unset the NS-2250 IPv6 address.**Format** **unset ip6addr { eth1 | eth2 | bond1 }****Parameters** **{ eth1 | eth2 | bond1 }**  
Specify the interface of the NS-2250.**Note**

- If you delete the IPv6 address of this device, the corresponding IPv6 static route is deleted.
- It is recommend to operate from the console terminal or from a terminal on the same segment as the NS-2250 to change the IPv6 address of the NS-2250.
- When the bonding function is enabled, eth1 and eth2 interface designation is error.
- When the bonding function is disabled, bond1 interface designation is error.

**Usage example** Unset the IPv6 address of eth1 on the NS-2250.**unset ip6addr eth1**

**delete ip6****[Administrator]****Function** Disable the IPv6 communication function.**Format** **delete ip6****Parameters** None

- Note**
- The IPv6 communication function is disabled by default.
  - When IPv6 communication function is disabled, the following commands cannot be executed.
    - set ip6addr
    - unset ip6addr
    - create ip6route
    - delete ip6route
    - create ip6filter
    - delete ip6filter
    - enable ip6filter
    - disable ip6filter
    - ping6
    - traceroute6
  - When IPv6 communication function is disabled, the setting by the following command will be deleted.
    - set ip6addr
    - create ip6route
    - create ip6filter

**Usage example** The case of disabling the IPv6 communication function.

**delete ip6**



## 4.5 IP host setting commands

These are objects managing the handling of host names and IP addresses.  
Pairs of these objects are registered as host entries.

### create ip host

[Administrator]

|                      |   |
|----------------------|---|
| <b>Function</b>      | Register a pair of a host name and an IP address (host entry).  |
| <b>Format</b>        | <b>create ip host</b> <i>hostname</i> { <i>ipaddr</i>   <i>ip6addr</i> } [ <b>port</b> <i>port_num</i> ]  |
| <b>Parameters</b>    | <p><i>hostname</i></p> <p>Specify the host name to be registered.<br/>In the host name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters.<br/>Furthermore, a hyphen, period, or underbar cannot be used before or after a period.<br/>The maximum number of characters that can be set for a host name is 64.</p> <p>{ <i>ipaddr</i>   <i>ip6addr</i> }</p> <p>Specify an IP address for the host name.</p> <p><i>ipaddr</i></p> <p>Specify the IPv4 address.<br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i></p> <p>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> <p>[ <b>port</b> <i>port_num</i> ]</p> <p>Specify the TCP port number of the device to which you want to connect with Telnet commands.<br/>You can specify a number from 0 through 65535 for the port number.<br/>This port number is valid only for Telnet clients of the NS-2250. It is not used by other clients (ping or Sntp, syslog, FTP, SNMP, etc.).</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• A host with the name "localhost" cannot be registered.</li> <li>• If IPv6 address is specified, port option can not be specified.</li> <li>• Do not set multiple IPv4 addresses with the same host name or multiple IPv6 addresses with the same host name.</li> </ul>   |
| <b>Usage example</b> | To register a host with "host10" as the host name, and "192.168.1.10" as the IP address.<br><br><b>create ip host host10 192.168.1.10</b>   |
| <b>Explanation</b>   | You can create up to 99 host entries.   |

**delete ip host****[Administrator]****Function** Delete the host entry.**Format** **delete ip host** *hostname* { *ipaddr* | *ip6addr* }**Parameters** *hostname*

Specify the host name to delete.

{ *ipaddr* | *ip6addr* }

Specify an IP address for the host name.

*ipaddr*

Specify the IPv4 address.

The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).

*ip6addr*

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

**Usage example** To delete the host entry with the host name "host10(IP address 192.168.0.100)".**delete ip host host10 192.168.0.100**

## 4.6 IP route setting commands

These are objects managing the static routing settings for the NS-2250.  
Set the destination network address and the gateway address.

### **create ip route**

[Administrator]

|                      |   |
|----------------------|---|
| <b>Function</b>      | Create a static route to an IP address.   |
| <b>Format</b>        | <b>create ip route { <i>ipaddr/mask</i>   default } gateway <i>gwaddr</i> [ metric <i>metric</i> ]</b>  |
| <b>Parameters</b>    | <p><b>{ <i>ipaddr/mask</i>   default }</b></p> <p>Set the host address or the network address of the destination in the "IP address/prefix size" format.</p> <p><i>ipaddr/mask</i></p> <p>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).<br/>If the prefix size is omitted, the setting is made according to the class.</p> <p><b>default</b></p> <p>This represents the default gateway.<br/>The parameter is set to the default gateway also if you specify "0.0.0.0/0".</p> <p><b>gateway <i>gwaddr</i></b></p> <p>Specify the IP address of the gateway used to forward the IP packets.</p> <p><b>[ metric <i>metric</i> ]</b></p> <p>Specify the value of metric in the 0 to 100 range. The parameter is set to the default value 0 if omitted.</p> |
| <b>Usage example</b> | <p>To set 192.168.1.1 as the NS-2250 default gateway.</p> <p><b>create ip route default gateway 192.168.1.1</b></p>   |
| <b>Explanation</b>   | <p>You can create up to 99 static routes.</p> <p>To modify a static route, first delete it with the "delete ip route" command, and then add a new one with the "create ip route" command.</p>   |

**delete ip route****[Administrator]**


---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Delete the static route.  |
| <b>Format</b>        | <b>delete ip route { <i>ipaddr/mask</i>   <b>default</b> } gateway <i>gwaddr</i></b>  |
| <b>Parameters</b>    | <p><b>{ <i>ipaddr/mask</i>   <b>default</b> }</b></p> <p>Specify the destination host address or network address to be deleted in the "IP address/prefix size" format.</p> <p><i>ipaddr/mask</i></p> <p>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).<br/>If the prefix size is omitted, the setting is made according to the class.</p> <p><b>default</b></p> <p>This represents the default gateway.<br/>The parameter is set to the default gateway also if you specify "0.0.0.0/0".</p> <p><b>gateway <i>gwaddr</i></b></p> <p>Specify the IP address of the gateway to delete.</p> |
| <b>Usage example</b> | <b>delete ip route default gateway 192.168.1.1</b>  |
| <b>Explanation</b>   | To modify a static route, first delete it with the "delete ip route" command, and then add a new one with the "create ip route" command.  |

## 4.7 IPv6 route setting commands

**create ip6route**

[Administrator]

**Function** Create static routes for IPv6.

**Format** **create ip6route** { *ip6addr/mask* | **default** } **gateway** *gw6addr* [ **metric** *metric* ]

**Parameters** { *ip6addr/mask* | **default** }

Specify the host address or network address of the destination.

*ip6addr/mask*

Specify the host address or network address of the destination in "IPv6 address/length of mask" format.

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

Specify the length of mask in the range of 0 to 128.

**default**

This represents the default gateway.

The parameter is set to the default gateway also if you specify "::/0".

**gateway** *gw6addr*

Specify the IPv6 gateway address where the IP packet is forwarded.

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

**Note**

- You can create up to 99 static routes.
- To modify a static route, first delete it with the "delete ip6route" command, and then add a new one with the "create ip6route" command.
- If IPv6 communication function is disabled with "delete ip 6" command, the setting by this command will be deleted.

**Usage example** To set 2001:db8::100 as the NS-2250 default gateway.

```
create ip6route default gateway 2001:db8::100
```

**delete ip6route****[Administrator]****Function** Delete the static route.**Format** **delete ip6route { ip6addr/mask | default } gateway gw6addr****Parameters** **{ip6addr/mask | default}**

Specify the host address or network address of the static route to delete.

*ip6addr/mask*

Specify the host address or network address of the static route to delete in "IPv6 address/length of mask" format.

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

Specify the length of mask in the range of 0 to 128.

**default**

This represents the default gateway.

The parameter is set to the default gateway also if you specify "::/0".

**gateway gw6addr**

Specify the IPv6 gateway address where the IP packet is forwarded.

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

**Usage example** Delete the default route whose gateway is 2001:db8::100.**delete ip6route default gateway 2001:db8::100**

## 4.8 ipfilter setting commands

These are objects managing the ipfilter function of the NS-2250.

### create ipfilter

[Administrator]

|                   |  |
|-------------------|--|
| <b>Function</b>   | Register the filter conditions.  |
| <b>Format</b>     | <pre>create ipfilter input [line line] { accept   drop } { eth1   eth2   bond1   any }     { dstaddr/mask   any } { srcaddr/mask   any }     { esp   icmp [{ type   any }]   tcp [{ dport   any }]   udp [{ dport   any }]   any }</pre>   |
| <b>Parameters</b> | <p><b>input</b> [ <b>line</b> <i>line</i> ]</p> <p>Register the filter condition for the received packet.</p> <p><b>line</b> <i>line</i></p> <p>It specifies the line number to register the filter conditions (1 to 64).<br/>If you omit this setting, it will be registered on the bottom line.<br/>In filter processing, the condition judgment is performed in order from the filter condition with the smallest line number.</p> <p><i>line</i></p> <p>Insert the filter condition in the line.</p> <p><b>{ accept   drop }</b></p> <p>It specifies the behavior of the matched packets to filter conditions.</p> <p><b>accept</b></p> <p>If it matches the condition, the packet is transparent.</p> <p><b>drop</b></p> <p>If it matches the condition, discard the packet.</p> <p><b>{ eth1   eth2   bond1   any }</b></p> <p>It specifies the interface that has passed through as a filter condition.</p> <p><b>eth1</b></p> <p>A packet that has passed through the eth1 specified as a filter condition.</p> <p><b>eth2</b></p> <p>A packet that has passed through the eth2 specified as a filter condition.</p> <p><b>bond1</b></p> <p>A packet that has passed through the bond1 specified as a filter condition.</p> <p><b>any</b></p> <p>Interface is not specified as a filter condition.</p> <p><b>{ dstaddr/mask   any }</b></p> <p>Specify the destination IP address of the packet as a filter condition.</p> <p><i>dstaddr/mask</i></p> <p>The destination IP address of the packet specified in the "IP address/mask length". If you omit the mask length assumes that the 32bit mask.</p> <p><b>any</b></p> <p>The destination IP address of the packet does not specify as a filter condition.</p> <p><b>{ srcaddr/mask   any }</b></p> <p>Specify the source IP address of the packet as a filter condition.</p> <p><i>srcaddr/mask</i></p> <p>The source IP address of the packet specified in the "IP address / mask length". If you omit the mask length assumes that the 32bit mask.</p> |

**any**

The source IP address of the packet does not specify as a filter condition.

```
{ esp | icmp [{ type | any }] | tcp [{ dport | any }] | udp [{ dport | any }]
| any }
```

Specify the IP-level protocol as a filter condition.

**esp**

To IP-level protocol to specify the esp (protocol number = 50) as a filter condition.

```
icmp [{ type | any }]
```

To IP-level protocol to specify the ICMP (protocol number = 1) as a filter condition.

**type**

The type of ICMP protocol Specify a value in the range of 0 to 255.

**any**

Type of ICMP protocol does not specify as a filter condition.

```
tcp [{ dport | any }]
```

To IP-level protocol to specify the TCP (protocol number = 6) as a filter condition.

**dport**

The TCP destination port number you specified in the range of value of from 1 to 65535.

**any**

The TCP destination port number is not specified as a filter condition.

```
udp [{ dport | any }]
```

To IP-level protocol to specify the UDP (protocol number = 17) as a filter condition.

**dport**

The UDP destination port number you specified in the range of value of from 1 to 65535.

**any**

The UDP destination port number is not specified as a filter condition.

**any**

The IP-level protocol does not specify as a filter condition.

**Note**

- If you specify a line number in-line parameters, there is a case where the registration line or registration line of a new filter condition setting of the existing filter condition setting is automatically changed as follows.
- If a filter condition is already registered in specified line, existing filters conditions are moved back by one line number and new filter condition is registered in specified line.
- If any filter conditions are not registered in the line of smaller number, the line number will be automatically pre-filled.

**Usage example** Register the following conditions in the second line of the filter.

```
receive interface : eth1
source IP address : 172.31.0.0/16
port number : TCP23
filter behavior : accept
```

```
create ipfilter input line 2 accept eth1 any 172.31.0.0/16 tcp 23
```

**Explanation**

A maximum of 64 filter conditions can be registered for the entire device.  
If all the registered filter conditions are not matched, the packet will be passed.



**delete ipfilter****[Administrator]**

**Function** Delete the registered filter conditions.

**Format** **delete ipfilter input { accept | drop } { eth1 | eth2 | bond1 | any }  
                   { dstaddr/mask | any } { srcaddr/mask | any }  
                   { esp | icmp [{ type | any }] | tcp [{ dport | any }] | udp [{ dport | any }] | any }}**

**Parameters** **input**  
 Deletes the filter condition registered for the received packet.

**{ accept | drop }**  
 Specify the delete filter conditions.

**accept**  
 Specify the filter conditions which transmits the packet.

**drop**  
 Specify the filter conditions which discards the packet.

**{ eth1 | eth2 | bond1 | any }**  
 It specifies the interface that has passed through as a filter condition.

**eth1**  
 A packet that has passed through the eth1 specified as a filter condition.

**eth2**  
 A packet that has passed through the eth2 specified as a filter condition.

**bond1**  
 A packet that has passed through the bond1 specified as a filter condition.

**any**  
 Interface is not specified as a filter condition.

**{ dstaddr/mask | any }**  
 Specify the destination IP address of the packet as a filter condition.

**dstaddr/mask**  
 The destination IP address of the packet specified in the "IP address/mask length". If you omit the mask length assumes that the 32bit mask.

**any**  
 The destination IP address of the packet does not specify as a filter condition.

**{ srcaddr/mask | any }**  
 Specify the source IP address of the packet as a filter condition.

**srcaddr/mask**  
 The source IP address of the packet specified in the "IP address/mask length". If you omit the mask length assumes that the 32bit mask.

**any**  
 The source IP address of the packet does not specify as a filter condition.

**{ esp | icmp [{ type | any }] | tcp [{ dport | any }] | udp [{ dport | any }] | any }**  
 Specify the IP-level protocol as a filter condition.

**esp**  
 To IP-level protocol to specify esp the (protocol number = 50) as a filter condition.

**icmp [{ type | any }]**  
 To IP-level protocol to specify the ICMP (protocol number = 1) as a filter condition.

**tcp** [{ *dport* | **any** }]

To IP-level protocol to specify the TCP (protocol number = 6) as a filter condition.

**udp** [{ *dport* | **any** }]

To IP-level protocol to specify the UDP (protocol number = 17) as a filter condition.

**any**

The IP-level protocol does not specify as a filter condition.

**Note**

After specifying the line number by the parameter "line", if the filter condition is deleted the line number of the filter condition registered to the behind line is moved forward one by one.

**Usage example**

Delete the following conditions in the second line of the filter.

receive interface : eth1

source IP address : 172.31.0.0/16

port number : TCP23

filter behavior : accept

**delete ipfilter input accept eth1 any 172.31.0.0/16 tcp 23**

**delete ipfilter line****[Administrator]**

**Function** Delete the registered filter condition by specifying a line number.

**Format** **delete ipfilter input line** *line*

**Parameters** **input**

Delete the registered filter condition for received packets.

**line** *line*

Delete the filter condition by specifying the line number.

*line*

Specify the line number(1 to 64) to delete.

**Note**

- Execute the command "show ipfilter" to confirm the filter condition and line number to delete.
- After specifying the line number by the parameter "line", if the filter condition is deleted the line number of the filter condition registered to the behind line is moved forward one by one.

**Usage example** The case of deleting the third line of the filter condition for received packets.

**delete ipfilter input line 3**

**delete ipfilter allentry****[Administrator]****Function** Delete all filter conditions.**Format** **delete ipfilter input allentry****Parameters** **input**

Delete a registered filter condition for received packets.

**allentry**

Delete all registered filter conditions.

**Usage example** The case of deleting all registered filter conditions for received packets.**delete ipfilter input allentry**

**enable ipfilter****[Administrator]****Function** Enable the filter function.**Format** **enable ipfilter****Parameters** None**Note**

- The filter function is disabled by default.
- The target of this command is an IPv4 packet transmitted and received by the NS-2250.

**Usage example** The case of enabling the filter function.**enable ipfilter**

**disable ipfilter****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Disable the filter function.  |
| <b>Format</b>        | <b>disable ipfilter</b>   |
| <b>Parameters</b>    | None  |
| <b>Usage example</b> | The case of disabling the filter function.<br><br><b>disable ipfilter</b> |

## 4.9 ip6filter setting commands

create ip6filter

[Administrator]

|                   |   |
|-------------------|---|
| <b>Function</b>   | Register the IPv6 filter conditions.  |
| <b>Format</b>     | <pre>create ip6filter input [line line] { accept   drop } { eth1   eth2   bond1   any }     { dstaddr/mask   any } { srcaddr/mask   any }     { icmp [{ type   any }]   tcp [{ dport   any }]   udp [{ dport   any }]   any }</pre>   |
| <b>Parameters</b> | <p><b>input [ line line ]</b><br/> Register the filter condition for the received packet.</p> <p><b>line line</b><br/> It specifies the line number to register the filter conditions (1 to 64).<br/> If you omit this setting, it will be registered on the bottom line.<br/> In filter processing, the condition judgment is performed in order from the filter condition with the smallest line number.</p> <p><b>line</b><br/> Insert the filter condition in the line.</p> <p><b>{ accept   drop }</b><br/> It specifies the behavior of the matched packets to filter conditions.</p> <p><b>accept</b><br/> If it matches the condition, the packet is transparent.</p> <p><b>drop</b><br/> If it matches the condition, discard the packet.</p> <p><b>{ eth1   eth2   bond1   any }</b><br/> It specifies the interface that has passed through as a filter condition.</p> <p><b>eth1</b><br/> A packet that has passed through the eth1 specified as a filter condition.</p> <p><b>eth2</b><br/> A packet that has passed through the eth2 specified as a filter condition.</p> <p><b>bond1</b><br/> A packet that has passed through the bond1 specified as a filter condition.</p> <p><b>any</b><br/> Interface is not specified as a filter condition.</p> <p><b>{ dstaddr/mask   any }</b><br/> Specify the destination IP address of the packet as a filter condition.</p> <p><b>dstaddr/mask</b><br/> The destination IPv6 address of the packet specified in the "IPv6 address/length of mask" format.<br/> Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/> The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/> If there are consecutive 0 in the front of the field they can be omitted.<br/> The field composed of only 0 can also be omitted only once by specifying as "::" in the address.<br/> Specify the length of mask in the range of 0 to 128.</p> <p><b>any</b><br/> The destination IP address of the packet does not specify as a filter condition.</p> |

**{ srcaddr/mask | any }**

Specify the source IP address of the packet as a filter condition.

*srcaddr/mask*

The source IP address of the packet specified in the "IPv6 address/length of mask" format.

Specify the IPv6 address in x:x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

Specify the length of mask in the range of 0 to 128.

**any**

The source IP address of the packet does not specify as a filter condition.

**{ icmp [{ type | any }] | tcp [{ dport | any }] | udp [{ dport | any }] | any }**

Specify the IP-level protocol as a filter condition.

**icmp [{ type | any }]**

To IP-level protocol to specify the ICMPv6 (protocol number = 58) as a filter condition.

*type*

The type of ICMPv6 protocol Specify a value in the range of 0 to 255.

**any**

Type of ICMPv6 protocol does not specify as a filter condition.

**tcp [{ dport | any }]**

To IP-level protocol to specify the TCP (protocol number = 6) as a filter condition.

*dport*

The TCP destination port number you specified in the range of value of from 1 to 65535.

**any**

The TCP destination port number is not specified as a filter condition.

**udp [{ dport | any }]**

To IP-level protocol to specify the UDP (protocol number = 17) as a filter condition.

*dport*

The UDP destination port number you specified in the range of value of from 1 to 65535.

**any**

The UDP destination port number is not specified as a filter condition.

**any**

The IP-level protocol does not specify as a filter condition.

#### Note

- If you specify a line number in-line parameters, there is a case where the registration line or registration line of a new filter condition setting of the existing filter condition setting is automatically changed as follows.
- If a filter condition is already registered in specified line, existing filters conditions are moved back by one line number and new filter condition is registered in specified line.
- If any filter conditions are not registered in the line of smaller number, the line number will be automatically pre-filled.



**Usage example** Register the following conditions in the second line of the filter.

receive interface : eth1

source IPv6 address : 2001:db8::100/64

port number : TCP23

filter behavior : accept

**create ip6filter input line 2 accept eth1 any 2001:db8::/64 tcp 23**

**Explanation** A maximum of 64 filter conditions can be registered for the entire device.  
If all the registered filter conditions are not matched, the packet will be passed.

**delete ip6filter****[Administrator]**

**Function** Delete the registered IPv6 filter conditions.

**Format** **delete ip6filter input { accept | drop } { eth1 | eth2 | bond1 | any } { dstaddr/mask | any } { srcaddr/mask | any } { icmp [{ type | any }] | tcp [{ dport | any }] | udp [{ dport | any }] | any }}**

**Parameters** **input**

Deletes the filter condition registered for the received packet.

**{ accept | drop }**

Specify the delete filter conditions.

**accept**

Specify the filter conditions which transmits the packet.

**drop**

Specify the filter conditions which discards the packet.

**{ eth1 | eth2 | bond1 | any }**

It specifies the interface that has passed through as a filter condition.

**eth1**

A packet that has passed through the eth1 specified as a filter condition.

**eth2**

A packet that has passed through the eth2 specified as a filter condition.

**bond1**

A packet that has passed through the bond1 specified as a filter condition.

**any**

Interface is not specified as a filter condition.

**{ dstaddr/mask | any }**

Specify the destination IPv6 address of the packet as a filter condition.

**dstaddr/mask**

The destination IPv6 address of the packet specified in the "IPv6 address/length of mask" format.

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

Specify the length of mask in the range of 0 to 128.

**any**

The destination IP address of the packet does not specify as a filter condition.

**{ srcaddr/mask | any }**

Specify the source IPv6 address of the packet as a filter condition.

**srcaddr/mask**

The source IP address of the packet specified in the "IPv6 address/length of mask" format.

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

Specify the length of mask in the range of 0 to 128.

**any**

The source IP address of the packet does not specify as a filter condition.

```
{ icmp [{ type | any }] | tcp [{ dport | any }] | udp [{ dport | any }] | any
}
```

Specify the IP-level protocol as a filter condition.

**icmp** [{ type | any }]

To IP-level protocol to specify the ICMPv6 (protocol number = 58) as a filter condition. ◦

**tcp** [{ dport | any }]

To IP-level protocol to specify the TCP (protocol number = 6) as a filter condition.

**udp** [{ dport | any }]

To IP-level protocol to specify the UDP (protocol number = 17) as a filter condition.

**any**

The IP-level protocol does not specify as a filter condition.

**Note**

After specifying the line number by the parameter "line", if the filter condition is deleted the line number of the filter condition registered to the behind line is moved forward one by one.

**Usage example** Delete the following conditions in the second line of the filter.

receive interface : eth1

source IPv6 address : 2001:db8::100/64

port number : TCP23

filter behavior : accept

```
delete ip6filter input accept eth1 any 2001:db8::/64 tcp 23
```

**delete ip6filter line****[Administrator]**

**Function** Delete the registered IPv6 filter condition by specifying a line number.

**Format** **delete ip6filter input line** *line*

**Parameters** **input**

Delete the registered filter condition for received packets.

**line** *line*

Delete the filter condition by specifying the line number.

*line*

Specify the line number(1 to 64) to delete.

**Note**

- Execute the command "show ip6filter" to confirm the filter condition and line number to delete.
- After specifying the line number by the parameter "line", if the filter condition is deleted the line number of the filter condition registered to the behind line is moved forward one by one.

**Usage example** The case of deleting the third line of the filter condition for received packets.

**delete ip6filter input line 3**

**delete ip6filter allentry****[Administrator]****Function** Delete all IPv6 filter conditions.**Format** **delete ip6filter input allentry****Parameters** **input**

Delete a registered filter condition for received packets.

**allentry**

Delete all registered filter conditions.

**Usage example** The case of deleting all registered filter conditions for received packets.**delete ip6filter input allentry**

**enable ip6filter****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Enable the IPv6 filter function.  |
| <b>Format</b>        | <b>enable ip6filter</b>   |
| <b>Parameters</b>    | None  |
| <b>Note</b>          | <ul style="list-style-type: none"><li>• The filter function is disabled by default.</li><li>• The target of this command is an IPv6 packet transmitted and received by the NS-2250.</li></ul> |
| <b>Usage example</b> | The case of enabling the filter function.<br><br><b>enable ip6filter</b>  |

**disable ip6filter****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Disable the IPv6 filter function.  |
| <b>Format</b>        | <b>disable ip6filter</b>   |
| <b>Parameters</b>    | None   |
| <b>Usage example</b> | The case of disabling the filter function.<br><br><b>disable ip6filter</b> |

## 4.10 ipsec setting commands

These are objects managing the ipsec function of the NS-2250.

### create ipsec secret psk

[Administrator]

|                   |   |
|-------------------|---|
| <b>Function</b>   | Register a pre-shared key used in the IKE.  |
| <b>Format</b>     | <b>create ipsec secret psk</b> { <i>id1</i> [ <i>id2</i> ]   <b>any</b> } { <b>password</b>   <b>encrypt</b> <i>string</i> }  |
| <b>Parameters</b> | <p><b>secret psk</b><br/>Register a pre-shared key used in the IKE.</p> <p>{ <i>id1</i> [<i>id2</i>]   <b>any</b> }<br/>Specify a condition to select a pre-shared key.</p> <p><i>id1</i> [<i>id2</i>]<br/>Specify the ID as a condition.</p> <p><i>id1</i><br/>Specify the first ID as a condition.</p> <p>[<i>id2</i>]<br/>Specify the second ID as a condition.</p> <p><b>any</b><br/>Do not specify the ID as a condition.</p> <p>{ <b>password</b>   <b>encrypt</b> <i>string</i> }<br/>Register a pre-shared key.</p> <p><b>password</b><br/>Register a pre-shared key.<br/>If you specify this parameter to execute the command, the message to input a pre-shared key is displayed. So enter a pre-shared key according to the message.<br/>After inputting a pre-shared key, the re-input message to confirm a pre-shared key is displayed if you push the Enter key. So enter the same pre-shared key.<br/>If you set a pre-shared key by this command, a form of the command recorded in the startup file is replaced the one to specify the encrypt parameter. The set pre-shared key becomes the string after it has been encrypted.<br/>You can confirm a converted pre-shared key by executing the command "show config".</p> <p><b>encrypt</b> <i>string</i><br/>Set a pre-shared key using the encrypted string.<br/>If you specify this parameter to execute the command, the message to input and confirm a pre-shared key is not displayed. Use this parameter in the case of pouring the startup file.</p> |

**Note** A pre-shared key is registered in the order you executed this command.  
SA is created using a registered pre-shared key.  
In the case of registering a pre-shared key, specify two IDs as a selection condition. They are the security gateway ID of the own side(This is the value set by the command "set ipsec conn leftid". If it is not set, this is the value set by the command "set ipsec conn left".) and the security gateway ID of the opposite side(This is the value set by the command "set ipsec conn rightid".  
If it is not set, this is the value set by the command "set ipsec conn right".).  
If there are some registered pre-shared keys, one of them chosen according to the following priority is used.



1.A pre-shared key set both the security gateway ID of the own side(This is the value set by the command "set ipsec conn leftid". If it is not set, this is the value set by the command "set ipsec conn left".) and the security gateway ID of the opposite side(This is the value set by the command "set ipsec conn rightid". If it is not set, this is the value set by the command "set ipsec conn right".).

2.A pre-shared key set the security gateway ID of the opposite side(This is the value set by the command "set ipsec conn rightid". If it is not set, this is the value set by the command "set ipsec conn right".).

3.A pre-shared key set the security gateway ID of the own side(This is the value set by the command "set ipsec conn leftid".).

4.A pre-shared key not specified the ID as a selection condition(The setting value is "any".).

5.A pre-shared key set the security gateway ID of the own side(This is the value set by the command "set ipsec conn left".).

If there are some pre-shared key whose priority is same, the lower one is used preferentially.

**Usage example** The case of registering a pre-shared key whose condition is that both the security gateway ID "200.0.0.1" of the own side and the security gateway ID "100.0.0.1" of the opposite side are selected.

```
create ipsec secret psk 200.0.0.1 100.0.0.1 password
```

```
New password : Input a pre-shared key(not displayed)
```

```
Retype new password : Input a pre-shared key(not displayed)
```

**delete ipsec secret psk****[Administrator]**

**Function** Delete a pre-shared key used in the IKE.

**Format** **delete ipsec secret psk { id1 [id2] | any | allentry }**

**Parameters** **secret psk**

Delete a pre-shared key used in the IKE.

**{ id1 [id2] | any | allentry }**

Specify a condition to select a pre-shared key you delete.

**id1 [id2]**

Specify the ID as a condition.

**id1**

Specify the first ID as a condition.

**[id2]**

Specify the second ID as a condition.

**any**

Do not specify the ID as a condition.

**allentry**

Delete all registered pre-shared keys.

**Usage example** The case of deleting a pre-shared key whose condition is that both the security gateway ID "200.0.0.1" of the own side and the security gateway ID "100.0.0.1" of the opposite side are selected.

**delete ipsec secret psk 200.0.0.1 100.0.0.1**

**set ipsec conn auto****[Administrator]**


---

|                   |  |
|-------------------|--|
| <b>Function</b>   | Set initiator or responder of key exchange.  |
| <b>Format</b>     | <b>set ipsec conn <i>connlist</i> auto { start   add }</b>   |
| <b>Parameters</b> | <p><b>conn <i>connlist</i></b><br/>Specify the number of a connection in the range of 1 to 8.<br/>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>auto { start   add }</b><br/>Set initiator or responder of key exchange.<br/>The default value is "start".</p> <p><b>start</b><br/>Set this parameter to the side of initiating a key exchange.</p> <p><b>add</b><br/>Set this parameter to the side of responding.</p> |

**Note**

- In the case of setting this parameter "start" and the SA established after NS-2250 initiating a key exchange, it becomes the initiator of the SA. In the case of the SA established after the opposite side initiates a key exchange, NS-2250 becomes the responder of the SA regardless of the setting by this command.
- In the case of setting this parameter "start" and enabling the target connection, NS-2250 initiates a key exchange. In the case of the IPSEC-SA deleted because of the case IPSEC-SA is not generated, it is judged by DPD that the SA to the opposite side is not established, and a process of rekey failed, NS-2250 initiates a key exchange once again.

**Usage example** The case of setting the connection 1 the side to initiate a key exchange.

**set ipsec conn 1 auto start**

**set ipsec conn leftid****[Administrator]**

**Function** Set the ID of the security gateway of own side.

**Format** **set ipsec conn connlist leftid id**

**Parameters** **conn connlist**

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**leftid id**

Set the ID of the security gateway of own side.

If you do not specify this parameter, an IPv4 address set by the command "set ipsec conn left" is set.

**id**

Set the ID of the security gateway of own side.

If you specify a string in the dot notation format (the format like xxx.xxx.xxx.xxx), in the IKE protocol the ID is used as an IPv4 address type.

If you specify the character "@" except the head of a string, in the IKE protocol the ID is used as USER\_FQDN / RFC822(e-mail address) type.

If you specify the character "@" at the head of a string, in the IKE protocol the ID is used as FQDN(host name) type. In this case, the character "@" at the head of a string is removed.

If you specify the characters "@@" at the head of a string, in the IKE protocol the ID is used as RFC822 type. In this case, the characters "@@" at the head of a string is removed.

If you specify a string except the above, in the IKE protocol the ID is used as FQDN type.

**Usage example** The case of setting the ID of the security gateway of own side in the connection 1 "alice@example.net".

**set ipsec conn 1 leftid alice@example.net**

**set ipsec conn left****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the IP address of the security gateway of own side.   |
| <b>Format</b>        | <b>set ipsec conn <i>connlist</i> left <i>ipaddr</i></b>  |
| <b>Parameters</b>    | <p><b>conn <i>connlist</i></b><br/>Specify the number of a connection in the range of 1 to 8.<br/>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>left <i>ipaddr</i></b><br/>Set the IP address(The IP address of own side executing a key exchange in the IKE protocol) of the security gateway of own side.</p> <p><b><i>ipaddr</i></b><br/>Specify the IP address of the security gateway of own side in the dot notation format (the format like xxx.xxx.xxx.xxx).</p> |
| <b>Note</b>          | Specify the IP address set by the command "set ip addr".  |
| <b>Usage example</b> | The case of setting the IP address of the security gateway of own side in the connection 1 "100.0.0.1".<br><br><b>set ipsec conn 1 left 100.0.0.1</b>   |

**set ipsec conn leftsubnet****[Administrator]**

**Function** Set the network address of own side which communicates under encrypted by using IPsec.

**Format** **set ipsec conn *connlist* leftsubnet *ipaddr/mask***

**Parameters** **conn *connlist***

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**leftsubnet *ipaddr/mask***

Set the network address of own side which communicates under encrypted by using IPsec in the "IP address / mask length" format.

Specify the IP address in the dot notation format (the format like xxx.xxx.xxx.xxx).

If you omit the length of mask, the length of mask is set corresponding to the class.

**Usage example** The case of setting the network address of own side which communicates under encrypted by using IPsec in the connection 1 "192.168.100.0/24".

**set ipsec conn 1 leftsubnet 192.168.100.0/24**

**set ipsec conn leftsourceip****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the source IP address of own side which communicates in the IPsec tunnel.  |
| <b>Format</b>        | <b>set ipsec conn <i>connlist</i> leftsourceip <i>ipaddr</i></b>   |
| <b>Parameters</b>    | <p><b>conn <i>connlist</i></b><br/>Specify the number of a connection in the range of 1 to 8.<br/>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>leftsourceip <i>ipaddr</i></b><br/>Set the source IP address of own side which communicates in the IPsec tunnel.</p> <p><b><i>ipaddr</i></b><br/>Specify the source IP address of own side which communicates in the IPsec tunnel in the dot notation format (the format like xxx.xxx.xxx.xxx).</p> |
| <b>Note</b>          | This setting is required depending on the security gateway of the opposite device which communicates using IPsec or the version of the IKE.  |
| <b>Usage example</b> | The case of setting the source IP address of own side which communicates in the IPsec tunnel of the connection 1 "192.168.100.1".<br><br><b>set ipsec conn 1 leftsourceip 192.168.100.1</b>  |

**set ipsec conn rightid****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the ID of the security gateway of the opposite side.  |
| <b>Format</b>        | <b>set ipsec conn <i>connlist</i> rightid <i>id</i></b>   |
| <b>Parameters</b>    | <p><b>conn <i>connlist</i></b><br/>Specify the number of a connection in the range of 1 to 8.<br/>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>rightid <i>id</i></b><br/>Set the ID of the security gateway of the opposite side.<br/>If you do not specify this parameter, an IPv4 address set by the command "set ipsec conn right" is set.</p> <p><b><i>id</i></b><br/>Set the ID of the security gateway of the opposite side.<br/>If you specify a string in the dot notation format (the format like xxx.xxx.xxx.xxx), in the IKE protocol the ID is used as an IPv4 address type.<br/>If you specify the character "@" except the head of a string, in the IKE protocol the ID is used as USER_FQDN / RFC822(e-mail address) type.<br/>If you specify the character "@" at the head of a string, in the IKE protocol the ID is used as FQDN(host name) type. In this case, the character "@" at the head of a string is removed.<br/>If you specify the characters "@@" at the head of a string, in the IKE protocol the ID is used as RFC822 type. In this case, the characters "@@" at the head of a string is removed.<br/>If you specify a string except the above, in the IKE protocol the ID is used as FQDN type.</p> |
| <b>Usage example</b> | The case of setting the ID of the security gateway of the opposite side in the connection 1 "bob@example.net".  |

```
set ipsec conn 1 rightid bob@example.net
```



**set ipsec conn right****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the IP address of the security gateway of the opposite side.   |
| <b>Format</b>        | <b>set ipsec conn <i>connlist</i> right <i>ipaddr</i></b>  |
| <b>Parameters</b>    | <p><b>conn <i>connlist</i></b><br/>Specify the number of a connection in the range of 1 to 8.<br/>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>right <i>ipaddr</i></b><br/>Set the IP address(The IP address of own side executing a key exchange in the IKE protocol) of the security gateway of the opposite side.</p> <p><b><i>ipaddr</i></b><br/>Specify the IP address of the security gateway of the opposite side in the dot notation format (the format like xxx.xxx.xxx.xxx).</p> |
| <b>Usage example</b> | The case of setting the IP address of the security gateway of the opposite side in the connection 1 "200.0.0.1".<br><br><b>set ipsec conn 1 right 200.0.0.1</b>  |

**set ipsec conn rightsubnet****[Administrator]**


---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the network address of the opposite side which communicates under encrypted by using IPsec.  |
| <b>Format</b>        | <b>set ipsec conn</b> <i>connlist</i> <b>rightsubnet</b> <i>ipaddr/mask</i>  |
| <b>Parameters</b>    | <p><b>conn</b> <i>connlist</i></p> <p>Specify the number of a connection in the range of 1 to 8.</p> <p>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>rightsubnet</b> <i>ipaddr/mask</i></p> <p>Set the network address of the opposite side which communicates under encrypted by using IPsec in the "IP address / mask length" format.</p> <p>Specify the IP address in the dot notation format (the format like xxx.xxx.xxx.xxx).</p> <p>If you omit the length of mask, the length of mask is set corresponding to the class.</p> |
| <b>Usage example</b> | <p>The case of setting the network address of the opposite side which communicates under encrypted by using IPsec in the connection 1 "10.0.0.0/24".</p> <p><b>set ipsec conn 1 rightsubnet 10.0.0.0/24</b></p>  |

**set ipsec conn rightsourceip****[Administrator]**


---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the source IP address of the opposite side which communicates in the IPsec tunnel.  |
| <b>Format</b>        | <b>set ipsec conn <i>connlist</i> rightsourceip <i>ipaddr</i></b>   |
| <b>Parameters</b>    | <p><b>conn <i>connlist</i></b><br/>Specify the number of a connection in the range of 1 to 8.<br/>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>rightsourceip <i>ipaddr</i></b><br/>Set the source IP address of the opposite side which communicates in the IPsec tunnel.<br/><i>ipaddr</i><br/>Specify the source IP address of the opposite side which communicates in the IPsec tunnel in the dot notation format (the format like xxx.xxx.xxx.xxx).</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• This setting is necessary depending on the security gateway facing IPsec and the version of IKE.</li> </ul>  |
| <b>Usage example</b> | <p>The case of setting the source IP address of the opposite side which communicates in the IPsec tunnel of the connection 1 "192.168.200.1".</p> <p><b>set ipsec conn 1 rightsourceip 192.168.200.1</b></p>  |

**set ipsec conn keyexchange****[Administrator]****Function** Set the version of the IKE protocol.**Format** **set ipsec conn *connlist* keyexchange { ike | ikev1 | ikev2 }****Parameters** **conn *connlist***

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**keyexchange { ike | ikev1 | ikev2 }**

Set the version of the IKE protocol.

The default value is "ike".

**ike**

Specify the version of the IKE protocol as "IKEv1/IKEv2". In this case, NS-2250 responds to both IKEv1 and IKEv2. In the case of initiating a key exchange, NS-2250 initiates a key exchange using the IKEv2 protocol.

**ikev1**

Specify the version of the IKE protocol as "IKEv1". In this case, NS-2250 responds to only IKEv1. In the case of initiating a key exchange, NS-2250 initiates a key exchange using the IKEv1 protocol.

**ikev2**

Specify the version of the IKE protocol as "IKEv2". In this case, NS-2250 responds to only IKEv2. In the case of initiating a key exchange, NS-2250 initiates a key exchange using the IKEv2 protocol.

**Usage example** The case of specifying the version of the IKE protocol in the connection 1 as "IKEv2".**set ipsec conn 1 keyexchange ikev2**

**set ipsec conn ike****[Administrator]**

**Function** Set the encryption algorithm of the ISAKMP-SA(Phase1).

**Format** **set ipsec conn connlist ike cipher-suites [strict]**

**Parameters** **conn connlist**

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**ike cipher-suites [strict]**

Set the encryption algorithm of the ISAKMP-SA(Phase1).

**cipher-suites**

Specify the cipher algorithm, the authentication algorithm and the Diffie-Hellman group separately with a hyphen.

There are following cipher-suites you can specify using the NS-2250.

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| 3des-md5-modp1024       | 3des-md5-modp1536       | 3des-md5-modp2048       |
| 3des-sha1-modp1024      | 3des-sha1-modp1536      | 3des-sha1-modp2048      |
| aes128-md5-modp1024     | aes128-md5-modp1536     | aes128-md5-modp2048     |
| aes128-sha1-modp1024    | aes128-sha1-modp1536    | aes128-sha1-modp2048    |
| aes128ctr-md5-modp1024  | aes128ctr-md5-modp1536  | aes128ctr-md5-modp2048  |
| aes128ctr-sha1-modp1024 | aes128ctr-sha1-modp1536 | aes128ctr-sha1-modp2048 |
| aes256-md5-modp1024     | aes256-md5-modp1536     | aes256-md5-modp2048     |
| aes256-sha1-modp1024    | aes256-sha1-modp1536    | aes256-sha1-modp2048    |

If you do not specify this parameter, "aes128-sha1-modp2048" and "3des-sha1-modp2048" are used in the negotiation.

**[strict]**

Only specified encryption parameter is used in the negotiation. If it is used except the specified one, ISAKMP-SA is not established.

**Note** The encryption algorithm whose cipher algorithm is "aes128ctr" can not be used in the IKEv1. Use it in the IKEv2.

**Usage example** Regarding the encryption algorithm of the ISAKMP-SA (Phase1) of the connection 1, in the case of setting the cipher algorithm as "AES128" the authentication algorithm as "SHA1" and the Diffie-Hellman group as "Group14(modp2048)".

**set ipsec conn 1 ike aes128-sha1-modp2048**

**set ipsec conn esp****[Administrator]****Function** Set the encryption algorithm of the IPSEC-SA(Phase2).**Format** **set ipsec conn connlist esp cipher-suites [strict]****Parameters** **conn connlist**

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**esp cipher-suites [strict]**

Set the encryption algorithm of the IPSEC-SA(Phase2).

**cipher-suites**

Specify the cipher algorithm and the authentication algorithm separately with a hyphen. If the PFS(Perfect Forward Secrecy) is executed, the Diffie-Hellman group is also.

There are following cipher-suites you can specify using the NS-2250.

(In the case the PFS is not executed.)

|                |
|----------------|
| 3des-md5       |
| 3des-sha1      |
| aes128-md5     |
| aes128-sha1    |
| aes128ctr-md5  |
| aes128ctr-sha1 |
| aes256-md5     |
| aes256-sha1    |

(In the case the PFS is executed.)

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| 3des-md5-modp1024       | 3des-md5-modp1536       | 3des-md5-modp2048       |
| 3des-sha1-modp1024      | 3des-sha1-modp1536      | 3des-sha1-modp2048      |
| aes128-md5-modp1024     | aes128-md5-modp1536     | aes128-md5-modp2048     |
| aes128-sha1-modp1024    | aes128-sha1-modp1536    | aes128-sha1-modp2048    |
| aes128ctr-md5-modp1024  | aes128ctr-md5-modp1536  | aes128ctr-md5-modp2048  |
| aes128ctr-sha1-modp1024 | aes128ctr-sha1-modp1536 | aes128ctr-sha1-modp2048 |
| aes256-md5-modp1024     | aes256-md5-modp1536     | aes256-md5-modp2048     |
| aes256-sha1-modp1024    | aes256-sha1-modp1536    | aes256-sha1-modp2048    |

If you do not specify this parameter, NS-2250 operates as follows.

In the case of using IKEv1, all specifiable encryption algorithms are used in the negotiation when NS-2250 responds. When it initiates a key exchange "aes128-sha1-modp2048" and "3des-sha1-modp2048" are used.

In the case of using IKEv2, all specifiable encryption algorithms are used in the negotiation when NS-2250 responds. When it initiates a key exchange "aes128-sha1-modp 2048", "3des-sha1-modp 2048" and other specifiable encryption algorithms are used in order in the negotiation.

**[strict]**

Only specified encryption parameter is used in the negotiation. If it is used except the specified one, IPSEC-SA is not established.

**Usage example** Regarding the encryption algorithm of the IPSEC-SA(Phase2) of the connection 1, in the case of setting the cipher algorithm as "AES128" and the authentication algorithm as "SHA1" (The PFS is not executed.).**set ipsec conn 1 esp aes128-sha1**

**set ipsec conn ikelifetime****[Administrator]**

**Function** Set the lifetime of the ISAKMP-SA.

**Format** **set ipsec conn** *connlist* **ikelifetime** *lifetime*

**Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**ikelifetime** *lifetime*

Specify the lifetime(seconds) of the ISAKMP-SA(Phase1) in the range of 3600 to 86400.

The default value is "10800".

**Usage example** The case of setting the lifetime of the ISAKMP-SA of the connection 1 as 24 hours(86400 seconds).

**set ipsec conn 1 ikelifetime 86400**

**set ipsec conn lifetime****[Administrator]**

**Function** Set the lifetime of the IPSEC-SA.

**Format** **set ipsec conn** *connlist* **lifetime** *lifetime*

**Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

The range of ports that you can specify varies depending on the model.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**lifetime** *lifetime*

Specify the lifetime(seconds) of the IPSEC-SA in the range of 3600 to 86400.

The default value is "3600".

**Usage example** The case of setting the lifetime of the IPSEC-SA of the connection 1 as 3 hours(10800 seconds).

**set ipsec conn 1 lifetime 10800**



**set ipsec conn forceencaps****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set whether to encapsulate the ESP protocol communication of the IPSEC-SA by UDP always or not.  |
| <b>Format</b>        | <b>set ipsec conn <i>connlist</i> forceencaps { yes   no }</b>   |
| <b>Parameters</b>    | <p><b>conn <i>connlist</i></b><br/>Specify the number of a connection in the range of 1 to 8.<br/>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>forceencaps { yes   no }</b><br/>Set whether the ESP protocol communication of the IPSEC-SA is always encapsulated by UDP or not.<br/>The default value is "no".</p> <p><b>yes</b><br/>Always encapsulate the ESP protocol communication of the IPSEC-SA by UDP(port 4500).</p> <p><b>no</b><br/>In the Phase1 of the IPSEC-SA if it is confirmed that NAT is executed in the middle of the communication path, the encapsulating by UDP is executed.</p> |
| <b>Note</b>          | In the case the version of the IKE protocol is version 2, this parameter is enabled.   |
| <b>Usage example</b> | The case the ESP protocol communication of the IPSEC-SA of the connection 1 is always encapsulated by UDP.   |

```
set ipsec conn 1 forceencaps yes
```

**set ipsec conn dpdaction****[Administrator]**


---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set whether to execute DPD(Dead Peer Detection) or not.   |
| <b>Format</b>        | <b>set ipsec conn <i>connlist</i> dpdaction { none   clear }</b>  |
| <b>Parameters</b>    | <p><b>conn <i>connlist</i></b><br/> Specify the number of a connection in the range of 1 to 8.<br/> You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".</p> <p><b>dpdaction { none   clear }</b><br/> Set whether to execute DPD(Dead Peer Detection) or not.<br/> The default value is "clear".</p> <p><b>none</b><br/> The DPD is not executed.</p> <p><b>clear</b><br/> Confirm whether SA with the opposite device is established by the regular communication using DPD. If it is judged that SA with the opposite device is not established, the information of the ISAKMP-SA and IPSEC-SA is cleared.<br/> If you set the command "set ipsec conn auto start", start a key exchange of the ISAKMP-SA(Phase1) within one minute.</p> |
| <b>Usage example</b> | The case of executing DPD of the connection 1.  |

**set ipsec conn 1 dpdaction clear**

**unset ipsec conn****[Administrator]****Function** Delete all settings of the specified connection.**Format** **unset ipsec conn** *connlist***Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**Usage example** The case of deleting all settings of the connection 1.**unset ipsec conn 1**

**unset ipsec conn leftid****[Administrator]**

---

**Function** Delete the ID setting of the security gateway of own side.**Format** **unset ipsec conn *connlist* leftid****Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**leftid**

Delete the ID setting of the security gateway of own side.

**Usage example** The case of deleting the ID setting of the security gateway of own side of the connection 1.**unset ipsec conn 1 leftid**

**unset ipsec conn left****[Administrator]**

---

**Function** Delete the IP address of the security gateway of own side.**Format** **unset ipsec conn *connlist* left****Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**left**

Delete the IP address of the security gateway of own side.

**Usage example** The case of deleting the IP address of the security gateway of own side of the connection 1.**unset ipsec conn 1 left**

**unset ipsec conn leftsubnet****[Administrator]**

**Function** Delete the network address of own side which communicates under encrypted by using IPsec.

**Format** **unset ipsec conn *connlist* leftsubnet *ipaddr/mask***

**Parameters** **conn *connlist***

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**leftsubnet**

Delete the network address of own side which communicates under encrypted by using IPsec.

**Usage example** The case of deleting the network address of own side which communicates under encrypted by using IPsec in the connection 1.

**unset ipsec conn 1 leftsubnet**

---

**unset ipsec conn leftsourceip****[Administrator]**

---

**Function** Delete the source IP address of own side which communicates in the IPsec tunnel.

**Format** **unset ipsec conn *connlist* leftsourceip**

**Parameters** **conn *connlist***

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**leftsourceip**

Delete the source IP address of own side which communicates in the IPsec tunnel.

**Usage example** The case of deleting the source IP address of own side which communicates in the IPsec tunnel of the connection 1.

**unset ipsec conn 1 leftsourceip**

**unset ipsec conn rightid****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Delete the ID setting of the security gateway of the opposite side.  |
| <b>Format</b>        | <b>unset ipsec conn <i>connlist</i> rightid</b>  |
| <b>Parameters</b>    | <b>conn <i>connlist</i></b><br>Specify the number of a connection in the range of 1 to 8.<br>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".<br><b>rightid <i>ipaddr</i></b><br>Delete the ID setting of the security gateway of the opposite side. |
| <b>Usage example</b> | The case of deleting the ID setting of the security gateway of the opposite side of the connection 1.<br><br><b>unset ipsec conn 1 rightid</b>   |



**unset ipsec conn right****[Administrator]**

---

**Function** Delete the IP address of the security gateway of the opposite side.**Format** **unset ipsec conn *connlist* right****Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**right** *ipaddr*

Delete the IP address of the security gateway of the opposite side.

**Usage example** The case of deleting the IP address of the security gateway of the opposite side of the connection 1.**unset ipsec conn 1 right**

**unset ipsec conn rightsubnet****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Delete the network address of the opposite side which communicates under encrypted by using IPsec.  |
| <b>Format</b>        | <b>unset ipsec conn <i>connlist</i> rightsubnet</b>   |
| <b>Parameters</b>    | <b>conn <i>connlist</i></b><br>Specify the number of a connection in the range of 1 to 8.<br>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".<br><b>rightsubnet</b><br>Delete the network address of the opposite side which communicates under encrypted by using IPsec. |
| <b>Usage example</b> | The case of deleting the network address of the opposite side which communicates under encrypted by using IPsec in the connection 1.<br><br><b>unset ipsec conn 1 rightsubnet</b>   |

**unset ipsec conn rightsourceip****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Delete the source IP address of the opposite side which communicates in the IPsec tunnel.   |
| <b>Format</b>        | <b>unset ipsec conn <i>connlist</i> rightsourceip</b>   |
| <b>Parameters</b>    | <b>conn <i>connlist</i></b><br>Specify the number of a connection in the range of 1 to 8.<br>You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".<br><b>rightsourcemip</b><br>Delete the source IP address of the opposite side which communicates in the IPsec tunnel. |
| <b>Usage example</b> | The case of deleting the source IP address of the opposite side which communicates in the IPsec tunnel of the connection 1.<br><br><b>unset ipsec conn 1 rightsourcemip</b>   |

**unset ipsec conn ike****[Administrator]**

**Function** Delete the encryption algorithm setting of the ISAKMP-SA(Phase1).

**Format** **unset ipsec conn *connlist* ike**

**Parameters** **conn *connlist***

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**ike**

Delete the encryption algorithm setting of the ISAKMP-SA(Phase1).

**Usage example** The case of deleting the encryption algorithm of the ISAKMP-SA(Phase1) of the connection 1.

**unset ipsec conn 1 ike**

**unset ipsec conn esp****[Administrator]****Function** Delete the encryption algorithm of the IPSEC-SA(Phase2).**Format** **unset ipsec conn *connlist* esp****Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**esp**

Delete the encryption algorithm of the IPSEC-SA(Phase2).

**Usage example** The case of deleting the encryption algorithm of IPSEC-SA(Phase2) of the connection 1.**unset ipsec conn 1 esp**

**enable ipsec conn****[Administrator]****Function** Enable the IPsec function.**Format** **enable ipsec conn** *connlist***Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**Note**

- In the case you specify several connections at the same time, the error message is not displayed even if the IPsec function is not enabled because of the connection error. In the case you specify several connections at the same time, after that confirm using the command "show".
- Regarding the connection unset following commands, this command results in an error.
  - set ipsec conn left
  - set ipsec conn leftsubnet
  - set ipsec conn right
  - set ipsec conn rightsubnet
- If the bonding function is enabled, this command results in an error.
- If the IPsec function is enabled, the following settings result in an error.
  - set ipaddr / unset ipaddr
  - set ipsec conn / unset ipsec conn
- If the parameters set in the command "set ipsec conn left" is different from set in the command "set ipaddr", an error occurs.

**Usage example** The case of enabling the IPsec function of the connection 1.**enable ipsec conn 1**

**disable ipsec conn****[Administrator]****Function** Disable the IPsec function.**Format** **disable ipsec conn** *connlist***Parameters** **conn** *connlist*

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

**Note** In the case you specify several connections at the same time, the error message is not displayed even if the IPsec function is not disabled because of the connection error. In the case you specify several connections at the same time, after that confirm using the command "show".**Usage example** The case of disabling the IPsec function of the connection 1.**disable ipsec conn 1**

## 4.11 DNS setting command

These are objects managing the operating conditions of the NS-2250 DNS client function.  
Up to two DNS servers can be register to the NS-2250.

**set dns****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Register the DNS server used for name resolution.   |
| <b>Format</b>        | <b>set dns { 1   2 } { <i>ipaddr</i>   <i>ip6addr</i> }</b>   |
| <b>Parameters</b>    | <p><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the DNS server to register.</p> <p><b>{ <i>ipaddr</i>   <i>ip6addr</i> }</b><br/>Specify the IP address of the DNS server.</p> <p><i>ipaddr</i><br/>Specify the IPv4 address.<br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i><br/>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• When you register a DNS server, the server program storing the port logs restarts. Therefore, the session of the Telnet/SSH client accessing the serial ports is disconnected.</li> <li>• If the DNS client is configured, performance may drop depending on the status of the DNS server. In environments in which port log transfers are frequent, we recommend specifying and configuring the IP addresses, and not using the DNS server for name resolution of the servers (email, FTP, and syslog).</li> </ul>  |
| <b>Usage example</b> | To set the DNS server with the address 192.168.1.100 as the DNS server No. 1.<br><br><b>set dns 1 192.168.1.100</b>   |
| <b>Explanation</b>   | <p>(1) You can make the settings for two DNS servers.</p> <p>(2) The DNS server No. 1 is the primary server.<br/>The DNS server No. 2 is the secondary server.</p>  |



**set dns localdomain****[Administrator]**

- 
- Function** Configure the local domain to which the NS-2250 belongs.
- Format** **set dns localdomain** *domain\_name*
- Parameters** *domain\_name*  
Specify the name of the local domain to which the NS-2250 belongs.  
In the local domain name, you can use half-width alphanumeric characters, underbars "\_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters. Furthermore, a hyphen, period, or underbar cannot be used before or after a period.  
The maximum number of characters that can be specified for a domain name is 64.
- Note** When you set the local domain, the server program storing the port logs restarts. Therefore, the session of the Telnet/SSH client accessing the serial ports is disconnected.
- Usage example** To specify "example.co.jp" as the NS-2250 local domain.
- set dns localdomain example.co.jp**

**unset dns****[Administrator]**

---

**Function** Delete the information of a registered DNS server.**Format** **unset dns { 1 | 2 }****Parameters** **{ 1 | 2 }**

Specify the identification number (1 or 2) of the DNS server whose information you want to delete.

**Note** When you delete the information of a DNS server, the server program storing the port logs restarts. Therefore, the session of the Telnet/SSH client accessing the serial ports is disconnected.**Usage example** To delete the information of the DNS server No. 1.**unset dns 1**

**unset dns localdomain****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Delete the settings of the local domain to which the NS-2250 belongs.   |
| <b>Format</b>        | <b>unset dns localdomain</b>  |
| <b>Parameters</b>    | None  |
| <b>Note</b>          | When you delete the local domain settings, the server program storing the port logs restarts. Therefore, the session of the Telnet/SSH client accessing the serial ports is disconnected. |
| <b>Usage example</b> | <b>unset dns localdomain</b>  |

## 4.12 LAN setting commands

These are objects managing the NS-2250 physical LAN port.

**set ether nego**

[Administrator]

|                      |   |
|----------------------|---|
| <b>Function</b>      | Configure the auto-negotiation operation for the LAN port.  |
| <b>Format</b>        | <pre>set ether [{ eth1   eth2 }]           nego { enable   disable { full-100   full-10   half-100   half-10 } }           [ { mdi   mdix   mdi-auto } ]</pre>  |
| <b>Parameters</b>    | <p><b>[{ eth1   eth2 }]</b><br/>Specify the interface of the NS-2250.<br/>The default setting for this parameter is eth1.</p> <p><b>nego { enable   disable { full-100   full-10   half-100   half-10 } }</b><br/>Enable or disable auto-negotiation.<br/>This parameter is enabled by default.</p> <p><b>enable</b><br/>Specify "enable" to use auto-negotiation. The speed and the full duplex/half duplex settings are configured automatically.</p> <p><b>disable { full-100   full-10   half-100   half-10 }</b><br/>Set "disable" to not use auto-negotiation. In this case, you have to specify the speed and full duplex/half duplex settings.</p> <p><b>full-100</b><br/>Specify "full-100" to set the speed to 100 Mbps in full duplex.</p> <p><b>full-10</b><br/>Specify "full-10" to set the speed to 10 Mbps in full duplex.</p> <p><b>half-100</b><br/>Specify "half-100" to set the speed to 100 Mbps in half duplex.</p> <p><b>half-10</b><br/>Specify "half-10" to set the speed to 10 Mbps in half duplex.</p> <p><b>[ { mdi   mdix   mdi-auto } ]</b><br/>Specify the connection mode.<br/>The default of parameter is mdi-auto with the "nego enable" and mdi with the "nego disable".</p> <p><b>mdi</b><br/>Specify "mdi" to set the mdi mode.</p> <p><b>mdix</b><br/>Specify "mdix" to set the mdix mode.</p> <p><b>mdi-auto</b><br/>Specify "mdi-auto" to set the mdi-auto mode.</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• The link may be down for several seconds when this command is executed.</li> <li>• When "nego disable" is specified, mdi - auto can not be specified.</li> </ul>   |
| <b>Usage example</b> | To disable auto-negotiation for the LAN1 port and set a speed of 10 Mbps in full duplex.  |
|                      | <pre>set ether eth1 nego disable full-10</pre>  |

## 4.13 User management and authentication setting commands

Commands used to configure settings such as users and passwords with NS-2250 user management objects.

**create user**

[Administrator]

|                   |  |
|-------------------|--|
| <b>Function</b>   | Create a user.   |
| <b>Format</b>     | <pre>create user <i>username</i> group { setup   verup   log   normal   extusr   portusr }     [ uid <i>userid</i> ] [ port <i>enable_port_list</i> ]     [ { password   encrypt <i>string</i> } ]</pre>   |
| <b>Parameters</b> | <p><b>username</b><br/>Specify the name of the user to create.<br/>In the user name, you can use half-width alphanumeric characters, underbars "_", and hyphens "-".<br/>The maximum number of characters is 16 (64 if you use RADIUS authentication function).</p> <p><b>group { setup   verup   log   normal   extusr   portusr }</b><br/>Specify the group of the user you want to create.</p> <p><b>setup</b><br/>Setup user group</p> <p><b>verup</b><br/>Upgrade user group</p> <p><b>log</b><br/>Port log acquisition user group</p> <p><b>normal</b><br/>Normal user group</p> <p><b>extusr</b><br/>Extended user group</p> <p><b>portusr</b><br/>Port user group</p> <p>[ <b>uid</b> <i>userid</i> ]<br/>Specify the ID number of the user to create.<br/>If you do not specify this parameter, user ID numbers are assigned from available user IDs in the same group, starting from the smallest number.</p> <p>[ <b>port</b> <i>enable_port_list</i> ]<br/>Specify the ports that can be used by port users in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.<br/>This parameter is enabled only when you have specified the port user group (group portusr) or the extended user group (group extusr).</p> <p>[ { <b>password</b>   <b>encrypt</b> <i>string</i> } ]</p> <p><b>password</b><br/>Specify the password of the user to create.<br/>When the command is executed with this parameter specified, a message prompting you to enter a password is displayed. Enter a password.<br/>When you press the Enter key after entering the password, a message prompting you to confirm the password is displayed. Enter the same password again.</p> |

If you do not specify this parameter and the encrypt parameter, no passwords are allocated to created users.

Setting a password using this command changes the format of the commands written in the startup file to the format specified with the encrypt parameter. The set password becomes a character string that has been converted using a hash function.

You can check the converted password with the "show config" command.

**encrypt string**

Set the passwords of users to create using the character string after the conversion with the hash function.

When the command is executed with this parameter specified, no password entry or confirmation messages are displayed. This parameter is convenient to embed a startup file containing login user settings with passwords.

If you do not specify this parameter and the password parameter, no passwords are allocated to created users.

**Note**

- (1) The following users are registered by default in the NS-2250 without password. "root" and "portusr" users cannot be deleted.

| user     | uid |
|----------|-----|
| root     | 0   |
| somebody | 100 |
| setup    | 198 |
| verup    | 199 |
| log      | 200 |
| portusr  | 500 |

- (2) When registering a port user or extened user, if you have not configured with the "port" parameter the serial ports to which this user can access, configure them using the "set user port" command.

- (3) When registering a extened user, if you are using a tty management function, configure them using the "set user permission" command to enable the tty management function command execution permission.

- (4) For users using the SSH public key authentication method, it is necessary to register the SSH public key using the "set user sshkey" command after executing this command.

- (5) To send a setup file to the NS-2250 or download it from the NS-2250 via FTP/SFTP, you must be logged in as a setup user (setup).

- (6) To send an upgrade file to the NS-2250 via FTP/SFTP, you must be logged in as an upgrade user (verup).

- (7) To acquire a port log file via FTP/SFTP, you must be logged in as a port log acquisition user (log).

- (8) User such as "adm" and "operator" are reserved in advance in the system and cannot be created.

- (9) The number of users that can be created in the NS-2250 is as follows.

**Normal users:**

Up to 91 users can be registered with IDs from 100 to 190.

**Extened users:**

Up to 10 users can be resistered with IDs from 401 to 410.

**Port users:**

Up to 99 users can be registered with IDs from 501 to 599.

For details on user privileges of each user category, see Appendix B, "User privileges" in the Instruction Manual.

**Usage example** To create a normal user named "user1" with the ID "101" and a password.

```
create user user1 group normal uid 101 password
```

```
New password : Password entry (not displayed)
```

```
Retype new password : Password entry (not displayed)
```

**set user password****[Administrator]****Function** Change the user password for login.**Format** **set user** *username* { **password** | **encrypt** *string* }**Parameters** *username*

Specify the name of the user whose password you want to change.

In the user name, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-".

The maximum number of characters is 16.

{ **password** | **encrypt** *string* }

Specify the password setting method.

**password**

When the command is executed with the "password" parameter specified, a message prompting you to enter a new password is displayed. Enter a password. When you press the Enter key after entering the password, a message prompting you to confirm the password is displayed. Enter the same password again.

**encrypt** *string*

When the command is executed with the "encrypt" parameter specified, the subsequent character string is handled as the password string converted using a hash function. Set the password as this converted character string.

Changing a password using this command changes the format of the commands written in the startup file to the format specified with the encrypt parameter used with the "create user" command. The changed password becomes a character string that has been converted using a hash function.

You can check the converted password with the "show config" command.

**Usage example** To change the password of user1**set user user1 password****Changing password for user user1****New password : Password entry (not displayed)****Retype new password : Password entry (not displayed)****Password for user1 changed****Explanation** To delete the password, execute the "set user password" command and press the Enter key twice.



**set user port****[Administrator]**

**Function** Configure the port users access privileges for the serial ports.

**Format** **set user** *username* **port** *enable\_port\_list*

**Parameters** *username*

Specify the name of the port user who will access the serial ports.

In the user name, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-".

The maximum number of characters is 16.

*enable\_port\_list*

Specify the ports that can be used in the 1 to 48 range. The range of ports that you can specify varies depending on the model.

You can specify multiple serial ports by separating their numbers with commas ", ".

You can also specify a range of ports using an hyphen "-" between two numbers.

**Usage example** To authorize port user "user1" to access the ports 1, 2, 3, 16, and 32.

**set user user1 port 1-3,16,32**

**Explanation** (1) Users cannot access serial ports for which they do not have access privileges.

(2) Only users registered as port users or extened users can be specified with this command.

(3) If you want to enable the command execution authority of tty manage as an extended user, you need to set with the "set user permission" command as well.

**set user permission****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the command execution authority of the extended user.  |
| <b>Format</b>        | <b>set user <i>username</i> permission ttymanage { on   off }</b>  |
| <b>Parameters</b>    | <p><i>username</i><br/>Specify the user name for setting the command execution authority.</p> <p><b>permission ttymanage { on   off }</b><br/>Set the command execution authority.</p> <p><b>ttymanage { on   off }</b><br/>Set the command execution authority of tty managed object.<br/>The default value for this parameter is set to off.</p> <p><b>on</b><br/>Enable command execution authority of tty managed object.</p> <p><b>off</b><br/>Disable command execution authority of tty managed object.</p> |
| <b>Usage example</b> | <p>To enable the command execution authority of the tty managed object to the extended user (ext1)</p> <p><b>set user ext1 permission ttymanage on</b></p>   |
| <b>Explanation</b>   | <p>(1)The user specified in this command must be registered as an extended user.</p> <p>(2)If you want to enable command execution authority of tty managed object, it is necessary to set the serial ports accessible by "set user port" command.</p>   |

**set user sshkey****[Administrator]**

**Function** Configure the public key for user SSH authentication.

**Format** **set user** *username* **sshkey** [ **public** ] *method* *public-key* [ *comment* ]

**Parameters** *username*

Specify the name of the user who will use SSH.

In the user name, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-".

The maximum number of characters is 16.

**sshkey** [ **public** ] *method* *public-key* [ *comment* ]

Specify the public key for SSH authentication using the character strings string. The SSH authentication public key (string1string2string3) is created on the client machine.

*method*

Specify the encryption method for the SSH authentication public key.

**ssh-rsa**

RSA encryption

**ssh-dss**

DSA encryption

**ecdsa-sha2-nistp128**

ECDSA encryption 128bit

**ecdsa-sha2-nistp256**

ECDSA encryption 256bit

**ecdsa-sha2-nistp521**

ECDSA encryption 521bit

*public-key*

Specify the public key for SSH authentication.

[ *comment* ]

Specify a comment for the SSH authentication public key.

**Usage example** To set a SSH authentication public key for user "user1" using RSA encryption method.

```
set user user1 sshkey
ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAIEAyHYtUWDRB
OxfBx8Nk0PAPcOO9z07Rurqijd8CUXx6dp7w2tFanDnRdY
KGkQkchZMUWkAKYl+bI9jDbePBzaK9xR0wxlv0mQ1bP6A
PVAP3vqdkRxz6YFNi6pszEEdWskKe7RXmz0S+MP4Mjpvx
TkWzK8FyJJy1htLTVv/sBTaudc=
```

(Line breaks should not be included in the actual command.)

**Explanation**

- (1) The RSA and DSA encryption methods of the version 2 of the SSH protocol can be used for the public key.
- (2) If you set a SSH authentication public key using this command, it is necessary to send the public key created on the client machine to the NS-2250 device management user in advance.
- (3) The SSH authentication public key must be registered using this command to port users and users who log in to the NS-2250 from a SSH or SFTP client.
- (4) Only users registered as NS-2250 users can be specified with this command.
- (5) The maximum key length is 2048 bits with the RSA method and 1024 bits with the DSA method and 521 bits with the ECDSA .

**Note**

- (1) Always add a comment to the public key.
- (2) Half-width and full-width space characters cannot be used in the public key strings.

**unset user port****[Administrator]**

---

**Function** Remove the port user access privileges for the serial ports.**Format** **unset user** *username* **port****Parameters** *username*

Specify the name of the port user whose access privileges you want to remove.

In the user name, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-".

The maximum number of characters is 16.

**Usage example** To remove the serial ports access privileges of port user "user1".**unset user user1 port****Explanation** If the user whose access privileges are removed is currently connected, the new setting will be applied from the next session.

**unset user sshkey****[Administrator]**

---

**Function** Delete user settings for SSH authentication public key.**Format** **unset user** *username* **sshkey** [ **public** ]**Parameters** *username*

Specify the name of the user whose public key settings you want to delete.

In the user name, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-".

The maximum number of characters is 16.

**sshkey** [ **public** ]

Specify "public" to delete the public key settings.

**Usage example** To delete the settings for SSH authentication public key of user "user1".**unset user user1 sshkey**

**delete user****[Administrator]****Function** Delete a user.**Format** **delete user** *username***Parameters** *username*

Specify the name of the user to delete.

In the user name, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-".

The maximum number of characters is 16.

**Note** The device management user (root) and port user (portusr) cannot be deleted.**Usage example** To delete the user "user1"**delete user user1**

## 4.14 SNMP agent setting commands

These are objects managing the operating conditions of the NS-2250 SNMP agent function.

---

**set snmp location****[Administrator]**

---

**Function** Set sysLocation (system location).

**Format** **set snmp location** "location"

**Parameters** **location** "location"

Specify the location of the system within double quotation marks. You can use alphanumeric and space characters. The maximum number of characters is 128.

**Note** The SNMP agent restarts if it is enabled when you make this setting.

**Usage example** To specify "Server Room in TOKYO" for sysLocation.

**set snmp location "Server Room in TOKYO"**



**set snmp contact****[Administrator]****Function** Set sysContact (contact information).**Format** **set snmp contact "syscontact"****Parameters** **contact "syscontact"**

Specify information such as the name, position, and phone number of the NS-2250 administrator within double quotation marks. You can use alphanumeric and space characters. The maximum number of characters is 128.

**Note** The SNMP agent restarts if it is enabled when you make this setting.**Usage example** To specify "Administrator 03-1234-7777" for sysContact.**set snmp contact "Administrator 03-1234-7777"**

**set snmp engineid****[Administrator]****Function** Set the snmpEngineID.**Format** **set snmp engineid** "engineid"**Parameters** **engineid** "engineid"

The snmpEngineID notified in SNMPv3 communication is specified within 27 characters.

The characters that can be specified are half-width alphanumeric characters and symbols including spaces.

In the case of a string containing spaces, the string must be enclosed by double quotation marks.

When setting snmpEngineID by this command, the format notified to the manager is as follows.

「8000010704」 + ASCII string of set values

**Note** This setting cannot be configured when the SNMP agent function is enabled.

If this setting is omitted, the snmpEngineID is specified as the MAC address of eth1.

「8000010703」 + MAC address of eth1

**Usage example** To specify "SmartCS 001" as snmpEngineID

**set snmp engineid "SmartCS 001"**

**set snmp authentrap****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | <p>Set whether or not to send a trap when SNMP authentication failed.</p> <p>SNMP authentication failure traps are sent if one of the following cases occurs.</p> <ul style="list-style-type: none"><li>• The community name of the SNMP request packet does not match the setting.</li><li>• The community name of the SNMP request packet matches the settings, but not the IP address of the manager.</li></ul> |
| <b>Format</b>        | <b>set snmp authentrap { on   off }</b>  |
| <b>Parameters</b>    | <p><b>authentrap { on   off }</b></p> <p>Specify whether or not to send a trap when SNMP authentication failed.<br/>This parameter is "on" by default.</p> <p><b>on</b></p> <p>Set "on" to send SNMP authentication failure traps.</p> <p><b>off</b></p> <p>Set "off" not to send SNMP authentication failure traps.</p>   |
| <b>Note</b>          | <ul style="list-style-type: none"><li>• These traps are not sent if the SNMP agent is disabled.</li><li>• The SNMP agent restarts if it is enabled when you make this setting.</li></ul>   |
| <b>Usage example</b> | <p>To send SNMP authentication failure traps.</p> <p><b>set snmp authentrap on</b></p>   |

**set snmp linktrap****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set whether or not to send link traps.<br>Send the link up trap when a link is detected on a LAN port, and send the link down trap when the link is not detected anymore.  |
| <b>Format</b>        | <b>set snmp linktrap { on   off }</b>  |
| <b>Parameters</b>    | <b>linktrap { on   off }</b><br>Specify whether or not to send link traps.<br>This parameter is "on" by default.<br><b>on</b><br>Set "on" to send link traps.<br><b>off</b><br>Set "off" not to send link traps. |
| <b>Note</b>          | The SNMP agent restarts if it is enabled when you make this setting.   |
| <b>Usage example</b> | To send link up and down traps.<br><br><b>set snmp linktrap on</b>   |
| <b>Explanation</b>   | (1) These traps are not sent if the SNMP agent is disabled.<br>(2) link down trap are not sent if the only one LAN port is used.   |

**set snmp dsrtrap****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | <p>Set whether or not to send DSR traps.</p> <p>Send the "nsRs232DsrUp" trap when a DSR signal is detected on a serial port, and send the "nsRs232DsrDown" trap when the DSR signal is not detected anymore.</p>  |
| <b>Format</b>        | <b>set snmp tty <i>ttylist</i> dsrtrap { on   off }</b>   |
| <b>Parameters</b>    | <p><b>tty <i>ttylist</i></b><br/> Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/> The range of ports that you can specify varies depending on the model.<br/> Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>dsrtrap { on   off }</b><br/> Specify whether or not to send DSR traps.<br/> This parameter is "off" by default.</p> <p><b>on</b><br/> Set "on" to send DSR traps.</p> <p><b>off</b><br/> Set "off" not to send DSR traps.</p> |
| <b>Note</b>          | The SNMP agent restarts if it is enabled when you make this setting.  |
| <b>Usage example</b> | To send DSR traps with the serial port 1.   |
|                      | <b>set snmp tty 1 dsrtrap on</b>  |
| <b>Explanation</b>   | These traps are not sent if the SNMP agent is disabled.   |

**set snmp coldstarttrap****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set whether or not to send cold start traps.<br>Send a cold start trap when starting the NS-2250.   |
| <b>Format</b>        | <b>set snmp coldstarttrap { on   off }</b>  |
| <b>Parameters</b>    | <b>coldstarttrap { on   off }</b><br>Specify whether or not to send cold start traps.<br>This parameter is "on" by default.<br><b>on</b><br>Set "on" to send cold start traps.<br><b>off</b><br>Set "off" not to send cold start traps. |
| <b>Note</b>          | The SNMP agent restarts if it is enabled when you make this setting.  |
| <b>Usage example</b> | To send cold start traps.<br><br><b>set snmp coldstarttrap on</b>   |
| <b>Explanation</b>   | (1) These traps are not sent if the SNMP agent is disabled.<br>(2) A cold start trap is sent when the SNMP agent, which must be enabled, starts after the NS-2250 has been powered on.  |

**set snmp powertrap****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set whether or not to send power traps.<br>Send the "PowerSupplyUp" trap when a power is detected on a power supply, and send the "PowerSupplyDown" trap when the power is not detected anymore.                     |
| <b>Format</b>        | <b>set snmp powertrap { on   off }</b>   |
| <b>Parameters</b>    | <b>powertrap { on   off }</b><br>Specify whether or not to send power traps.<br>This parameter is "on" by default.<br><b>on</b><br>Set "on" to send power traps.<br><b>off</b><br>Set "off" not to send power traps. |
| <b>Note</b>          | The SNMP agent restarts if it is enabled when you make this setting.   |
| <b>Usage example</b> | To send power traps.<br><br><b>set snmp powertrap on</b>   |
| <b>Explanation</b>   | (1) These traps are not sent if the SNMP agent is disabled.<br>(2) A power trap is sent when the SNMP agent, which must be enabled, starts after the NS-2250 has been powered on.                                    |

**set snmp bondingactswtrap****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | <p>Set whether or not to send the active port switched traps.</p> <p>When detecting the switching of the active port in bonding function, send the active port switched trap(nsBondingActiveSwitch trap).</p>   |
| <b>Format</b>        | <b>set snmp bondingactswtrap { on   off }</b>   |
| <b>Parameters</b>    | <p><b>bondingactswtrap { on   off }</b></p> <p>Specify whether or not to send bonding active switch traps when active slave interface switched.</p> <p>This parameter is "on" by default.</p> <p><b>on</b></p> <p>Set "on" to send the active port switched traps.</p> <p><b>off</b></p> <p>Set "off" not to send the active port switched traps.</p> |
| <b>Usage example</b> | <p>To send the active port switched traps when detecting the switching of the active port in bonding function.</p> <p><b>set snmp bondingactswtrap off</b></p>  |
| <b>Explanation</b>   | <p>(1) These traps are not sent if the SNMP agent is disabled.</p> <p>(2) The SNMP agent restarts if it is enabled when you make this setting.</p>  |



**unset snmp location****[Administrator]**

---

**Function** Remove sysLocation settings.**Format** **unset snmp location****Parameters** None**Note** The SNMP agent restarts if it is enabled when you make this setting.**Usage example** **unset snmp location**

**unset snmp contact****[Administrator]****Function** Remove sysContact settings.**Format** **unset snmp contact****Parameters** None**Note** The SNMP agent restarts if it is enabled when you make this setting.**Usage example** **unset snmp contact**

**unset snmp engineid****[Administrator]****Function** Remove snmpEngineID settings.**Format** **unset snmp engineid****Parameters** None

**Note** This setting cannot be configured when the SNMP agent function is enabled.  
When this command is executed, the MAC address of eth1 will be specified as snmpEngineID.  
「8000010703」 + MAC address of eth1

**Usage example** To remove the snmpEngineID setting**unset snmp engineid**

**enable snmp****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Enable the SNMP agent function.                 |
| <b>Format</b>        | <b>enable snmp</b>                              |
| <b>Parameters</b>    | None  |
| <b>Usage example</b> | <b>enable snmp</b>                              |
| <b>Explanation</b>   | The SNMP agent function is disabled by default. |

**disable snmp****[Administrator]****Function**            Disable the SNMP agent function.**Format**             **disable snmp****Parameters**        None**Usage example**      **disable snmp**

## 4.15 SNMP user management and authentication setting commands

set snmpuser name

[Administrator]

|                   |   |
|-------------------|---|
| <b>Function</b>   | Set the user to be used with SNMPv3.  |
| <b>Format</b>     | <b>set snmpuser { 1   2   3   4 } name username auth { md5   sha } [priv { des   aes } ]</b><br><b>{ password   encrypt auth_password [ priv_password ] }</b>   |
| <b>Parameters</b> | <p><b>{ 1   2   3   4 }</b><br/>Specify the user to be set by numbers 1 to 4.</p> <p><b>name username</b><br/>Set the user name.<br/>The user name can be any half-width alphanumeric character, "_" (underscore) or "-" (hyphen).<br/>However, the first character of the string must be an alphabetic character.<br/>The maximum number of characters is 32.</p> <p><b>auth { md5   sha }</b><br/>Specify the authentication algorithm.<br/>md5 is HMAC-MD5-96.<br/>sha is HMAC-SHA-96.</p> <p><b>[priv { des   aes }]</b><br/>Specify the encryption algorithm.<br/>If this option is omitted, encryption function does not work but only authentication does.<br/>des is DES-CBC.<br/>aes is AES128-CFB.</p> <p><b>{ password   encrypt auth_password [priv_password]}</b></p> <p><b>password</b><br/>Set a password for the new user.<br/>The password must be set 8 to 32 characters.<br/>When the command is executed with this parameter, it is required after a message to enter the password.<br/>After entering the password and pressing the Enter key, since a message will appear to confirm the password enter the password again.<br/>If a password is configured by this command, the format of the command recorded in the startup file will be replaced by the format specified by the encrypt parameter. It will be the encrypted string which a password is converted to by the hash function.<br/>The converted password can be confirmed by "show config" command.<br/>If an encryption algorithm is specified, enter the password for encryption after entering the password for authentication.</p> <p><b>encrypt auth_password [priv_password]</b><br/>This parameter sets the password of the new user as a string which has been converted by the hash function.<br/>If the command is executed with this parameter, it is not required to enter the password. This parameter is used for configuration by pasting a startup file.<br/>If an encryption algorithm is specified, enter the password for encryption after entering the password for authentication.</p> |

**Note** This setting cannot be configured when the SNMP agent function is enabled.

**Usage example** To create user 1 with username user1, authentication algorithm sha and cipher algorithm aes

```
set snmpuser 1 name user1 auth sha priv aes password
authentication password : Password entry (not displayed)
Retype authentication password : Password entry (not displayed)
privacy password : Password entry (not displayed)
Retype privacy password : Password entry (not displayed)
```

**unset snmpuser name****[Administrator]**

---

**Function** Delete the user for SNMPv3.**Format** **unset snmpuser { 1 | 2 | 3 | 4 } name****Parameters** **{ 1 | 2 | 3 | 4 }**  
Specify the user number to be deleted from 1 to 4.**Usage example** To delete the user setting of user 1**unset snmpuser 1 name**



## 4.16 SNMP trap setting commands

These are objects managing the notification destinations of the SNMP trap function of the NS-2250.

### set trap manager

[Administrator]

|                   |  |
|-------------------|--|
| <b>Function</b>   | Set the address of the SNMP server to send the traps to and the community name used when sending the traps.  |
| <b>Format</b>     | <b>set trap { 1   2   3   4 } manager { ipaddr   ip6addr   hostname }</b><br><b>[ name community_name ] [ version { v1   v2   v3 {snmpuser number} } ]</b>   |
| <b>Parameters</b> | <b>{ 1   2   3   4 }</b><br>Specify the number from 1 through 4 of the trap destination.<br><b>manager { ipaddr   hostname }</b><br>Specify the IP address or the host name of the destination SNMP server.<br><i>ipaddr</i><br>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).<br><i>ip6addr</i><br>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br>If there are consecutive 0 in the front of the field they can be omitted.<br>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.<br><i>hostname</i><br>In the host name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters.<br>Furthermore, a hyphen, period, or underbar cannot be used before or after a period.<br>The maximum number of characters that can be set for a host name is 64.<br><b>[ name community_name ]</b><br>Specify the community name used when sending the traps.<br>In the community name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", pluses "+", commas ",", at marks "@", periods ".", carets "^", and tildes "~".<br>The maximum number of characters that can be set for a community name is 64.<br>The community name "public" is set if this parameter is omitted.<br><b>[ version { v1   v2   v3 } ]</b><br>Specify the format (version 1 or version 2) of the traps. The parameter is set to the default value "v1" if omitted.<br><b>v1</b><br>Set "v1" to send traps in the SNMP version 1 format.<br><b>v2</b><br>Set "v2" to send traps in the SNMP version 2 format.<br><b>v3</b><br>Set "v3" to send traps in the SNMP version 3 format.<br><b>snmpuser number</b><br>Specify the user for sending traps. Register the user by the "set snmpuser" command and specify the user number with this option. |

**Usage example** To set the IP address 192.168.0.50 to the trap destination 1 and "public1" as the community name.

```
set trap 1 manager 192.168.0.50 name public1
```

**unset trap manager****[Administrator]****Function** Remove the settings of the destination SNMP server.**Format** **unset trap { 1 | 2 | 3 | 4 } manager****Parameters** **{ 1 | 2 | 3 | 4 }**  
Specify the number from 1 through 4 of the trap destination whose settings you want to remove.**Usage example** To remove the settings of trap destination 1.**unset trap 1 manager**

## 4.17 SNMP community setting commands

These are objects managing the community of the NS-2250 SNMP agent function.

You can create up to four of these objects within the NS-2250. They will be identified using the community numbers set by the user.

### set community

[Administrator]

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the community name and SNMP server that can use it to access the NS-2250.   |
| <b>Format</b>        | <b>set community { 1   2   3   4 } name <i>community_name</i></b><br><b>[ view { ro   rw } ] [ manager { <i>ipaddr</i>   <i>ip6addr</i>   <i>hostname</i> } ]</b>   |
| <b>Parameters</b>    | <b>{ 1   2   3   4 }</b><br>Specify the number from 1 through 4 of the community to set.<br><br><i>name community_name</i><br>Specify the name of the community.<br>In the community name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", pluses "+", commas ",", at marks "@", periods ".", carets "^", and tildes "~".<br>The maximum number of characters that can be set for a community name is 20.<br><br><b>[ view { ro   rw } ]</b><br>Specify "ro" in "view" to authorize read only.<br>Specify "rw" in "view" to authorize both read and write.<br><br><b>[manager { <i>ipaddr</i>   <i>ip6addr</i>   <i>hostname</i> }]</b><br>Specify the IP address or the host name of the SNMP server that can access the NS-2250 with this community name.<br>If this parameter is omitted, the NS-2250 will be accessible from any SNMP server.<br><br><i>ipaddr</i><br>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).<br><br><i>ip6addr</i><br>Specify the IPv6 address in x:x:x:x:x:x:x format.<br>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br>If there are consecutive 0 in the front of the field they can be omitted.<br>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.<br><br><i>hostname</i><br>In the host name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters.<br>Furthermore, a hyphen, period, or underbar cannot be used before or after a period.<br>The maximum number of characters that can be set for a host name is 64. |
| <b>Note</b>          | The SNMP agent restarts if it is enabled when you execute this command.   |
| <b>Usage example</b> | To set "public" as the name of community 1 and authorize access from the SNMP server 192.168.0.50.  |

```
set community 1 name public manager 192.168.0.50
```

**Explanation**

(1) You can specify only one SNMP server for one community object. To specify multiple SNMP servers to the same community name, create a community object for each SNMP server.

(2) SNMP version 1 and version 2c "Get" requests are supported when the SNMP agent is enabled. When the agent receives a "Get" request in the version 1 format from an SNMP server, it responds using version 1, and when it receives a "Get" request in the version 2c format, it responds using version 2c.

**unset community****[Administrator]**

**Function** Remove the settings of the community name and SNMP server that can use it to access the NS-2250.

**Format** **unset community { 1 | 2 | 3 | 4 } name**

**Parameters** **{ 1 | 2 | 3 | 4 }**  
Specify the number from 1 through 4 of the community whose settings you want to remove.

**Note** The SNMP agent restarts if it is enabled when you execute this command.

**Usage example** To remove the name of community 1 and the settings of the corresponding SNMP server.

**unset community 1 name**

## 4.18 Syslog setting commands

Commands used to transfer syslog messages from the NS-2250 to external syslog servers.

**set syslog host**

**[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the facility and syslog server where to send the syslog messages.   |
| <b>Format</b>        | <pre>set syslog host { 1   2 } { ipaddr   ip6addr   host }     [ portlog_facility { local0   local1   local2   local3   local4                           local5   local6   local7 } ]     [ syslog_facility { local0   local1   local2   local3   local4                          local5   local6   local7 } ]</pre>  |
| <b>Parameters</b>    | <p><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the syslog server you want to register.</p> <p><b>{ ipaddr   host }</b></p> <p><i>ipaddr</i><br/>Specify the IP address of the syslog server.<br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i><br/>Specify the IPv6 address of the syslog server.<br/>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> <p><i>host</i><br/>Specify the host name of the syslog server.<br/>In the host name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters.<br/>Furthermore, a hyphen, period, or underbar cannot be used before or after a period.<br/>The maximum number of characters that can be set for a host name is 64.</p> <p><b>portlog_facility { local0   local1   local2   local3   local4   local5   local6   local7 }</b><br/>Specify the facility of the port log to send to the syslog server.<br/>The current settings are applied if this parameter is omitted.<br/>This parameter is set to "local0" by default.</p> <p><b>syslog_facility { local0   local1   local2   local3   local4   local5   local6   local7 }</b><br/>Specify the facility of syslog messages to send to the syslog server. The current settings are applied if this parameter is omitted.<br/>This parameter is set to "local1" by default.</p> |
| <b>Note</b>          | It is necessary to set the target serial ports with the "set logd tty syslog" command to transfer port logs to a syslog server.   |
| <b>Usage example</b> | To register the syslog server 192.168.1.105 with the identification No. 1, set the port log facility to "local0", and set syslog messages facility to "local1".   |

```
set syslog host 1 192.168.1.105 portlog_facility local0 syslog_facility local1
```

**Explanation**      You can make the settings for two syslog servers.



**unset syslog host****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Remove the settings of the syslog server where to send the syslog messages.  |
| <b>Format</b>        | <b>unset syslog host { 1   2 }</b>   |
| <b>Parameters</b>    | <b>{ 1   2 }</b><br>Specify the identification number (1 or 2) of the syslog server whose settings you want to remove. |
| <b>Usage example</b> | To remove the settings of syslog server No. 1.<br><br><b>unset syslog host 1</b>                                       |

**enable syslog****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Enable the syslog client.                          |
| <b>Format</b>        | <b>enable syslog</b>                               |
| <b>Parameters</b>    | None   |
| <b>Usage example</b> | <b>enable syslog</b>                               |
| <b>Explanation</b>   | The syslog client function is disabled by default. |

**disable syslog****[Administrator]**

---

|                      |                            |
|----------------------|----------------------------|
| <b>Function</b>      | Disable the syslog client. |
| <b>Format</b>        | <b>disable syslog</b>      |
| <b>Parameters</b>    | None                       |
| <b>Usage example</b> | <b>disable syslog</b>      |

## 4.19 NFS setting commands

These are objects managing the operating conditions of the NFS client function.

**set nfs server addr**

[Administrator]

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the NFS server where to save the port logs.   |
| <b>Format</b>        | <b>set nfs server { 1   2 } addr { ipaddr   ip6addr } path path-dir</b>   |
| <b>Parameters</b>    | <p><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the NFS server to register.</p> <p><b>addr { ipaddr   ip6addr }</b></p> <p><i>ipaddr</i><br/>Specify the IP address of the NFS server.<br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i><br/>Specify the IPv6 address of the NFS server.<br/>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> <p><b>path path-dir</b><br/>Specify the path of the NFS server where to save the port logs.<br/>In the path name, you can use half-width alphanumeric characters, slashes "/", hyphens "-", underbars "_", periods ".", and commas ",".<br/>The maximum number of characters that can be set for the path name is 128.</p> |
| <b>Usage example</b> | <p>To set the address "192.168.1.105" and the path "/mnt/nfslog" for the NFS server 1.</p> <p><b>set nfs server 1 addr 192.168.1.105 path /mnt/nfslog</b></p>   |
| <b>Explanation</b>   | <p>(1) The NS-2250 supports NFS version 3.</p> <p>(2) To save port logs to an NFS server, make NFS settings for the target serial ports with the "set logd tty nfs" command.</p> <p>(3) The settings cannot be made when the NFS client function is enabled.</p>  |

**set nfs server proto****[Administrator]**

**Function** Set the NFS protocol.

**Format** **set nfs server { 1 | 2 } proto { tcp | udp }**

**Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the NFS server to register.

**proto { tcp | udp }**

Specify the NFS protocol.

This parameter is set to "udp" by default.

**tcp**

Communicate with the NFS server using TCP.

**udp**

Communicate with the NFS server using UDP.

**Usage example** To communicate using TCP with the NFS server No 1.

**set nfs server 1 proto tcp**

**Explanation** (1) The NS-2250 supports NFS version 3.

(2) To save port logs to an NFS server, make NFS settings for the target serial ports with the "set logd tty nfs" command.

(3) The settings cannot be made when the NFS client function is enabled.

**set nfs rotate****[Administrator]**

**Function** Set the rotation interval of the port logs.

**Format** **set nfs rotate { off | on minite hour day month day\_of\_week }**

**Parameters** Set the port log rotation on or off.

**off**

Port logs are not rotated.

**on minite hour day month day\_of\_week**

Port logs are rotated.

*minite***0-59**

Operate at the specified minutes.

You can specify a list of minutes using hyphens "-" and commas ",".

*hour***0-23**

Operate at the specified hours.

You can specify a list of hours using hyphens "-" and commas ",".

**\***

Operate every hour.

*day***1-31**

Operate at the specified days.

You can specify a list of days using hyphens "-" and commas ",".

**\***

Operate every day.

*month***1-12**

Operate at the specified months.

You can specify a list of months using hyphens "-" and commas ",".

**\***

Operate every month.

*day\_of\_week***0-7**

Operate at the specified days of the week. Sunday is 0 or 7, Monday is 1, Tuesday is 2, Wednesday is 3, Thursday is 4, Friday is 5, and Saturday is 6.

You can specify a list of days using hyphens "-" and commas ",".

**\***

Operate every day of the week.

**Usage example** To set the port logs to be rotated the first of every month at 00:00.

```
set nfs rotate on 0 0 1 * *
```

**Explanation** (1) The "or" condition is applied is both the days and the days of the week are specified. If one of these parameter is set to "\*", rotation operates following the parameter for which a numeric value is registered.  
(2) The settings cannot be made when the NFS client function is enabled.

**unset nfs server addr****[Administrator]**

---

**Function** Remove the NFS server settings.**Format** **unset nfs server { 1 | 2 } addr****Parameters** **{ 1 | 2 }**

Specify identification number (1 or 2) of the NFS server whose settings you want to remove.

**Usage example** To remove the settings of the NFS server No. 1.**unset nfs server 1 addr****Explanation** (1) The settings cannot be made when the NFS client function is enabled.

**enable nfs****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Enable the NFS client function.                 |
| <b>Format</b>        | <b>enable nfs</b>                               |
| <b>Parameters</b>    | None  |
| <b>Usage example</b> | <b>enable nfs</b>                               |
| <b>Explanation</b>   | The NFS client function is disabled by default. |



**disable nfs****[Administrator]****Function**            Disable the NFS client function.**Format**             **disable nfs****Parameters**        None**Usage example**      **disable nfs**

## 4.20 SNTP setting commands

These are objects managing the operating conditions of the NS-2250 SNTP client function.

**set sntp server**

**[Administrator]**

**Function** Set NTP servers to which you want to synchronize.

**Format** **set sntp server { ipaddr | ip6addr| host }**

**Parameters** **{ ipaddr | ip6addr| host }**

Specify the IP address or the host name of the NTP server to which you want to send time requests.

*ipaddr*

The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).

*ip6addr*

Specify the IPv6 address in x:x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

*host*

In the host name, you can use half-width alphanumeric characters, underbars "\_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters.

Furthermore, a hyphen, period, or underbar cannot be used before or after a period.

The maximum number of characters that can be set for a host name is 64.

**Usage example** To set the NTP servers 192.168.1.106 and 10.1.1.1.

**set sntp server 192.168.1.106**

**set sntp server 10.1.1.1**

**Explanation** (1) You can register up to two NTP servers.

(2) The primary and secondary NTP servers are set following the registration order. The NTP server you registered first is the primary server, and the server you registered next is the secondary server.

(3) The settings cannot be made when the SNTP client function is enabled.

**set sntp polltime****[Administrator]****Function** Set polling interval to the NTP servers.**Format** **set sntp polltime** *time***Parameters** *time*

Set polling interval to the NTP servers.

The setting range for the polling interval is from 60 through 1800 seconds.

The unit is one second.

This parameter is set to "600" by default.

**Usage example** To set the polling interval to the NTP server to 300 seconds.**set sntp polltime 300****Explanation**  
(1) The settings cannot be made when the SNTP client function is enabled.  
(2) The NS-2250 time is synchronized to the time from the NTP server response.

**unset sntp server****[Administrator]**

**Function** Remove settings of NTP servers.

**Format** **unset sntp server** [ { *ipaddr* | *host* } ]

**Parameters** [ { *ipaddr* | *host* } ]

The setting of the NTP server corresponding to the IP address or host name (*ipaddr*/*host*) specified with this command is deleted.

If no IP address or host name is specified, the settings of both NTP servers are deleted.

*ipaddr*

Specify the IP address of the NTP server used.

The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).

*host*

Specify the host name of the NTP server used.

In the host name, you can use half-width alphanumeric characters, underbars "\_", hyphens "-", and periods ".". Note that the first and last characters of the character string must be alphanumeric characters.

Furthermore, a hyphen, period, or underbar cannot be used before or after a period.

The maximum number of characters that can be set for a host name is 64.

**Usage example** **unset sntp server**

**Explanation** (1) The settings cannot be removed when the SNTP client function is enabled.  
 (2) If you delete the setting of the primary NTP server (registered first), the secondary NTP server (registered next) automatically becomes the primary server.

**enable sntp****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Enable the SNTP client function.                 |
| <b>Format</b>        | <b>enable sntp</b>                               |
| <b>Parameters</b>    | None   |
| <b>Usage example</b> | <b>enable sntp</b>                               |
| <b>Explanation</b>   | The SNTP client function is disabled by default. |

**disable sntp****[Administrator]****Function**            Disable the SNTP client function.**Format**             **disable sntp****Parameters**        None**Usage example**      **disable sntp**

## 4.21 TTY setting commands

These are objects managing the serial ports.

The tty No. 1 corresponds to serial port No. 1, the tty 2 to serial port 2, and so on.

The following operations can be carried out for these objects.

**set tty baud**

**[Administrator]**

**Function** Set the operation conditions and operation of the serial ports.

**Format** **set tty *tylist* baud { 2400 | 4800 | 9600 | 19200 | 38400 | 57600 | 115200 }**

**Parameters** **tty *tylist***

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**baud { 2400 | 4800 | 9600 | 19200 | 38400 | 57600 | 115200 }**

Set the transmission rate.

This parameter is set to "9600" by default.

**Usage example** To set a transmission rate of 19200 bps for serial ports 1 to 32.

**set tty 1-32 baud 19200**

**set tty bitchar****[Administrator]****Function** Set the data bit length.**Format** **set tty *tylist* bitchar { 7 | 8 }****Parameters** **tty *tylist***

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**bitchar { 7 | 8 }**

Set the data bit length.

This parameter is set to "8" by default.

**7**

7-bit

**8**

8-bit

Set this parameter to "8" when transferring 8-bit code (binary or characters).

**Usage example** Set the data bit length to 7 for serial port 1.**set tty 1 bitchar 7**



**set tty parity****[Administrator]****Function** Set the parity.**Format** **set tty *tylist* parity { even | odd | none }****Parameters** **tty *tylist***

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**parity { even | odd | none }**

Set the parity.

This parameter is set to "none" by default.

**even**

Even parity

**odd**

Odd parity

**none**

No parity

**Usage example** Set parity to odd parity for serial port 1.**set tty 1 parity odd**

**set tty stop****[Administrator]****Function** Set the stop bit length.**Format** **set tty *ttylist* stop { 1 | 2 }****Parameters** **tty** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**stop { 1 | 2 }**

Set the stop bit length. The stop bit length applies to the data signal output from the NS-2250. The stop bit is always 1 bit for data signals received by the NS-2250.

This parameter is set to "1" by default.

**1**

1-bit

**2**

2-bit

**Usage example** Set the stop bit length to 2 for serial port 1.**set tty 1 stop 2**

**set tty flow****[Administrator]****Function** Set the flow control.**Format** **set tty *tylist* flow { xon | rs | none }****Parameters** **tty *tylist***

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**flow { xon | rs | none }**

Set the flow control.

This parameter is set to "none" by default.

**xon**

Control uses xon and xoff codes.

**rs**

Control the flow using RTS/CTS signals

**none**

Flow control is not used in both the transmitting and receiving directions.

**Note**

- Do not use xon when bidirectionally transferring 8-bit code (binary, kanji etc.).

**Usage example** Set flow control using RTS / CTS signal line for serial port 1.**set tty 1 flow rs**

**set tty detect\_dsr****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the DSR signal transition detection function.  |
| <b>Format</b>        | <b>set tty <i>tylist</i> detect_dsr { on [{ edge   polling }]   off }</b>  |
| <b>Parameters</b>    | <p><b>tty <i>tylist</i></b><br/>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>detect_dsr { on [{ edge   polling }]   off }</b><br/>This parameter is "off" by default.</p> <p><b>on [{ edge   polling }]</b><br/>Enables the DSR signal transition detection function. When change is detected in the DSR signal status (OFF-&gt;ON or ON-&gt;OFF), it is displayed and exported as console and syslog messages.<br/>Use it in combination with the "set snmp tty dsrtrap on" command to send serial DSR signal traps to the SNMP server.</p> <p><b>{ edge   polling }</b><br/>This parameter is "edge" by default.</p> <p><b>edge</b><br/>DSR signal status is detected strictly.</p> <p><b>polling</b><br/>DSR signal status is detected gently.<br/>When a change in a DSR signal continued for more than 10 msec, it's detected.</p> <p><b>off</b><br/>Disables the DSR signal transition detection function. DSR signal transitions are not detected even if they occur on the set port.<br/>If set to off, status transition messages are not exported to the console and syslog servers, serial DSR signal traps are not sent.</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• In the following cases, an answer is obtained about the DSR signal status regardless of the settings made with this command.</li> <li>• When the DSR signal status is obtained with the "show stats tty" command When the DSR signal status is obtained via SNMP MIB access ("nsRs232PortDsrState" object in NS-RS232-MIB)</li> </ul>   |
| <b>Usage example</b> | To disable the DSR signal transition detection function for serial ports 1 to 32.<br><br><b>set tty 1-32 detect_dsr off</b>  |

## 4.22 logd setting commands

These are objects managing port log operation and sending methods.

### add logd tty mail

[Administrator]

|                      |  |
|----------------------|--|
| <b>Function</b>      | Register a destination email address and email server to send the port logs.   |
| <b>Format</b>        | <b>add logd tty</b> <i>ttylist</i> <b>mail</b> { <b>1</b>   <b>2</b> } <i>Mail-Address</i> { <i>ipaddr</i>   <i>ip6addr</i>   <i>host</i> }  |
| <b>Parameters</b>    | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>mail</b> { <b>1</b>   <b>2</b> }</p> <p>Specify 1 or 2 for the identification number of the email server to register.</p> <p><i>Mail-Address</i></p> <p>Specify the destination email address.</p> <p>{ <i>ipaddr</i>   <i>ip6addr</i>   <i>host</i> }</p> <p><i>ipaddr</i></p> <p>Specify the IP address of the email server.<br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i></p> <p>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> <p><i>host</i></p> <p>Specify the host name of the email server.<br/>In the host name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", and periods ".".<br/>Note that the first and last characters of the character string must be alphanumeric characters. Furthermore, a hyphen, period, or underbar cannot be used before or after a period.<br/>The maximum number of characters that can be set for a host name is 64.<br/>In environments in which port log transfers are frequent, we recommend specifying and configuring the IP address, and not using the DNS server for name resolution of the email server.</p> |
| <b>Usage example</b> | <p>To send the port logs of serial port 1 to the "portlog_mgr@example.co.jp" email address via the email server 192.168.1.1.</p> <p><b>add logd tty 1 mail 1 portlog_mgr@example.co.jp 192.168.1.1</b></p>   |
| <b>Explanation</b>   | A maximum of two email servers and destination email addresses can be registered for a single serial port.   |

**add logd tty ftp****[Administrator]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Register a destination FTP server for port logs.  |
| <b>Format</b>     | <b>add logd tty</b> <i>ttylist</i> <b>ftp</b> { <b>1</b>   <b>2</b> } <i>FTP-Account</i> { <i>ipaddr</i>   <i>ip6addr</i>   <i>host</i> }<br>[ { <b>password</b>   <b>encrypt</b> <i>string</i> } ]   |
| <b>Parameters</b> | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>ftp</b> { <b>1</b>   <b>2</b> }</p> <p>Specify 1 or 2 for the identification number of the FTP server to register.</p> <p><i>FTP-Account</i></p> <p>Set the FTP account.</p> <p>{ <i>ipaddr</i>   <i>ip6addr</i>   <i>host</i> }</p> <p><i>ipaddr</i></p> <p>Specify the IP address of the FTP server.<br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i></p> <p>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> <p><i>host</i></p> <p>Specify the host name of the FTP server.<br/>In the host name, you can use half-width alphanumeric characters, underbars "_", hyphens "-", and periods ".".<br/>Note that the first and last characters of the character string must be alphanumeric characters. Furthermore, a hyphen, period, or underbar cannot be used before or after a period.<br/>The maximum number of characters that can be set for a host name is 64.<br/>In environments in which port log transfers are frequent, we recommend specifying and configuring the IP address, and not using the DNS server for name resolution of the FTP server.</p> <p>[ { <b>password</b>   <b>encrypt</b> <i>string</i> } ]</p> <p><b>password</b></p> <p>Set the account password.<br/>When the command is executed with this parameter specified, a message prompting you to enter a password is displayed. Enter a password.<br/>When you press the Enter key after entering the password, a message prompting you to confirm the password is displayed. Enter the same password again.<br/>If you do not specify this parameter and the encrypt parameter, no passwords are allocated to created users.<br/>Setting a password using this command changes the format of the commands written in the startup file to the format specified with the encrypt parameter. The set password becomes an encrypted character string.</p> |

**encrypt** *string*

Set the account password as an encrypted character string.

When the command is executed with this parameter specified, no password entry or confirmation messages are displayed. This parameter is convenient to embed a startup file containing settings of FTP accounts with passwords.

**Usage example** To send the port logs of serial ports 1 to 32 with the "portlog\_mgr" account to the FTP server 192.168.1.1.

```
add logd tty 1-32 ftp 1 portlog_mgr 192.168.1.1
```

```
FTP password Password entry (not displayed)
```

```
Retype FTP password Password entry (not displayed)
```

**Explanation** A maximum of two FTP servers and FTP accounts can be registered for a single serial port.

**set logd output****[Administrator]**

**Function** Set the port log save destination.

**Format** **set logd output { flash | ram | off | cf }**

**Parameters** **{ flash | ram | off | cf }**

Set the port log save destination.

This parameter is set to "ram" by default.

**flash**

Set FLASH memory for the port log save destination.

**ram**

Set the RAM for the port log save destination.

**off**

Do not save port logs.

**cf**

This parameter is alias of flash.

**Usage example** To save the ports logs to an FLASH memory.

**set logd output flash**

**Note**

(1) When the port log save destination is changed from RAM to FLASH memory, the port logs saved in the RAM are not copied to the FLASH memory. The port log save space is also set to 3MBytes.

(2) When the port log save destination is changed from FLASH memory to RAM, the port logs saved in the FLASH memory are not copied to the RAM. The port log save space is also set to the default value of 500KBytes.

(3) When log saving is set to on (set logd tty log on) in the serial port settings, the logs are not saved anymore for all serial ports if the "set logd output off" command is executed.

(4) When log saving is set to off (set logd tty log off) in the serial port settings, log saving is enabled for all serial ports if the "set logd output ram" or the "set logd output flash" command is executed.



**set logd tstamp****[Administrator]**

**Function** Set port log time stamps.

**Format** **set logd tstamp { on [ interval *interval\_time* ] | off }**

**Parameters** **{ on [ interval *interval\_time* ] | off }**

Set the time stamps on or off for all serial ports.

This parameter is "off" by default.

**on [interval *interval\_time*]**

When set to "on", specify the time stamp interval in seconds for all serial ports .

The setting range is from 3 through 65535 seconds.

This parameter is set to "60" by default.

If no data is received for a time longer than the interval, the time stamp is added at the time the next data is received data and this time is set as the start of the timing interval.

**off**

Disable the time stamp function.

**Usage example** To set an interval of 30 seconds for the time stamp of port logs.

**set logd tstamp on interval 30**

**Explanation** If this function is enabled, the free space to save port logs is reduced by the amount of data of the added time stamps. Note also that the actual time stamp interval may differ slightly from the set value.

**set logd tty log****[Administrator]**

**Function** Set the port log save space for each serial port.

**Format** **set logd tty *ttylist* log { on [ size *log\_size* ] | off }**

**Parameters** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**log { on [ size *log\_size* ] | off }**

This parameter is "on" by default.

**on [ size *log\_size* ]**

Save the log to the port logs.

Specify the log size of each port within the following range. The unit is KByte.

- In the RAM : 100 to 2000 KBytes
- In FLASH memory : 100 to 8000 KBytes The limits for the total log size that can be specified are as follows.
- In the RAM : 24000Kbyte
- In FLASH memory : 144000KByte The default values for this parameter are as follows.
- In the RAM : 500KByte
- In FLASH memory : 3000KByte

**off**

Do not save the log to the port logs.

**Usage example** To set 512 KBytes for the port log save space of serial ports 1 to 8.

**set logd tty 1-8 log on size 512**

**set logd tty lstamp****[Administrator]**

**Function** Set the login stamp function for port logs.

**Format** **set logd tty *ttylist* lstamp { off | on }**

**Parameters** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**lstamp { off | on }**

This parameter is "off" by default.

**off**

Disable the login stamp function.

**on**

Enable the login stamp function.

**Usage example** To add a login stamp in the port log of serial ports 1 to 8.

**set logd tty 1-8 lstamp on**

**Explanation** (1) When this function is enabled, a login stamp containing the port user name, the login or logout information, and the login/logout time is added to the port log when a port user starts or ends access to a serial port. Note that the free space to save port logs is reduced by the amount of data of the added login stamps.

**set logd tty syslog****[Administrator]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Set whether to send port logs to a syslog server.   |
| <b>Format</b>     | <b>set logd tty <i>ttylist</i> syslog { off   on   format { hostname { off   on }   label { off   on }   tstamp { off   on } } }</b>  |
| <b>Parameters</b> | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range. The range of ports that you can specify varies depending on the model.</p> <p>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>syslog { off   on   format { hostname { off   on }   label { off   on }   tstamp { off   on } } }</b></p> <p>This parameter is "off" by default.</p> <p><b>off</b></p> <p>Do not send port logs to the syslog server.</p> <p><b>on</b></p> <p>Send port logs to the syslog server.</p> <p><b>format { hostname { off   on }   label { off   on }   tstamp { off   on } }</b></p> <p>Change the format of the port logs and sent them to the syslog server. You can also combine multiple parameters when configuring this setting to on.</p> <p><b>hostname { off   on }</b></p> <p>This parameter is "off" by default.</p> <p><b>off</b></p> <p>Do not add the NS-2250 host name to the port logs.</p> <p><b>on</b></p> <p>Add the NS-2250 host name to the port logs.</p> <p><b>label { off   on }</b></p> <p>This parameter is "off" by default.</p> <p><b>off</b></p> <p>Do not change <i>TTY No.</i> in the port logs to <i>label name</i>.</p> <p><b>on</b></p> <p>Change <i>TTY No.</i> in the port logs to <i>label name</i>. Label names are enclosed in " ". If no label name is set, <i>TTY No.</i> is used as when this parameter is set to off.</p> <p><b>tstamp { off   on }</b></p> <p>This parameter is "off" by default.</p> <p><b>off</b></p> <p>Do not add the NS-2250 time stamp to the port logs.</p> <p><b>on</b></p> <p>Add the NS-2250 time stamp to the port logs. Time stamps show the following information: month, day, time. Example: Jan 22 10:45:35</p> |

**Usage example** To send the port logs of serial ports 1 to 32 to the syslog server.

**set logd tty 1-32 syslog on**

**set logd tty nfs****[Administrator]**

**Function** Set whether to save port logs to a NFS server.

**Format** **set logd tty *ttylist* nfs { off | on }**

**Parameters** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**syslog { off | on }**

This parameter is "off" by default.

**off**

Do not save port logs to the NFS server.

**on**

Save port logs to the NFS server.

**Usage example** To save the port logs of serial ports 1 to 32 to the NFS server.

**set logd tty 1-32 nfs on**

**set logd tty sendlog****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the conditions to send the port logs to an email or an FTP server.  |
| <b>Format</b>        | <b>set logd tty <i>ttylist</i> sendlog</b><br><b>{ { mail   ftp } [ interval <i>interval.time</i> ] [ ratio <i>percent</i> ]   off }</b>  |
| <b>Parameters</b>    | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/> The range of ports that you can specify varies depending on the model.<br/> Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>{ { mail   ftp } [ interval <i>interval.time</i> ] [ ratio <i>percent</i> ]   off }</b></p> <p>Set the conditions to send the port logs to an email server and an FTP server.<br/> This parameter is "off" by default.</p> <p><b>{ mail   ftp } [ interval <i>interval.time</i> ] [ ratio <i>percent</i> ]</b></p> <p><b>mail</b></p> <p>Send the port logs to an email server.</p> <p><b>ftp</b></p> <p>Send the port logs to an FTP server.</p> <p><b>[ interval <i>interval.time</i> ]</b></p> <p>Set the interval to send the port logs to the email server or the FTP server.<br/> The setting unit is one minute.<br/> The setting range is from 0 through 65535 minutes.<br/> Specify "0" to disable the interval time and send the port logs according to the port log usage rate setting.<br/> This parameter is set to "60" by default.</p> <p><b>[ ratio <i>percent</i> ]</b></p> <p>Set the threshold for the port log usage rate used to send the port logs to the email or FTP server. The logs are sent when the usage rate reaches this value.<br/> The setting unit is a percentage.<br/> Set a value between 10% and 80% in units of 1%.<br/> This parameter is set to "80" by default.</p> <p><b>off</b></p> <p>Do not send the port logs.</p> |
| <b>Usage example</b> | To send the port logs of serial ports 1 to 32 to the email server.  |
|                      | <b>set logd tty 1-32 sendlog mail</b>   |
| <b>Explanation</b>   | Specify "0" for the interval time to disable it and use only the usage rate to send the port logs.  |

**set logd tty mail port****[Administrator]**

**Function** Set SMTP port for the port log emails.

**Format** **set logd tty *ttylist* mail { 1 | 2 } port *smtp-port***

**Parameters** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**mail { 1 | 2 }**

Specify the identification number (1 or 2) of the email server.

**port *smtp-port***

Specify SMTP port for the port log emails.

The setting range is from 1 through 65535.

This parameter is set to "25" by default.

**Usage example** To send the port logs of serial ports 1 to 32 at port 10025

**set logd tty 1-32 mail 1 port 10025**

**Explanation** This setting is also deleted if the email server registration settings are removed.

**set logd tty mail type****[Administrator]**


---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set how the port logs are sent by email (sending method).  |
| <b>Format</b>        | <b>set logd tty <i>ttylist</i> mail { 1   2 } type { body   attachment }</b>   |
| <b>Parameters</b>    | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>mail { 1   2 }</b></p> <p>Specify the identification number (1 or 2) of the email server.</p> <p><b>type { body   attachment }</b></p> <p>Specify how the port logs are sent to the email server.<br/>This parameter is set to "attachment" by default.</p> <p><b>body</b></p> <p>The port logs are inserted in the message body and sent.</p> <p><b>attachment</b></p> <p>The port logs are sent as an attachment file.</p> |
| <b>Usage example</b> | To send the port logs of serial ports 1 to 32 as message body of emails.   |
|                      | <b>set logd tty 1-32 mail 1 type body</b>  |
| <b>Explanation</b>   | This setting is also deleted if the email server registration settings are removed.  |



**set logd tty mail subject****[Administrator]**


---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the email subject for port logs.   |
| <b>Format</b>        | <b>set logd tty <i>ttylist</i> mail { 1   2 } subject "<i>string</i>"</b>  |
| <b>Parameters</b>    | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>mail { 1   2 }</b></p> <p>Specify the identification number (1 or 2) of the email server.</p> <p><b>subject "<i>string</i>"</b></p> <p>Specify the subject of emails to send to the server in a maximum of 64 characters.<br/>This parameter is set to "portlog TTY No." by default.</p> |
| <b>Usage example</b> | <p>To specify "this is a portlog" for the subject of email of serial port 1 sent to the email destination No. 1.</p> <p><b>set logd tty 1 mail 1 subject "this is a portlog."</b></p>  |
| <b>Explanation</b>   | This setting is also deleted if the email server registration settings are removed.  |

**set logd tty mail sender****[Administrator]**


---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the email address of the sender for port logs.   |
| <b>Format</b>        | <b>set logd tty <i>ttylist</i> mail { 1   2 } sender <i>fromaddr</i></b>   |
| <b>Parameters</b>    | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.</p> <p>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>mail { 1   2 }</b></p> <p>Specify the identification number (1 or 2) of the email server.</p> <p><b>sender <i>fromaddr</i></b></p> <p>Specify the email address of the sender.<br/>This parameter is set to the following format by default: portusr@NS-2250 host name.NS-2250 local domain</p> |
| <b>Usage example</b> | <p>To specify "portlog1@example.co.jp" for the sender address of emails of serial port 1 sent to the email destination No. 1.</p> <p><b>set logd tty 1 mail 1 sender portlog1@example.co.jp</b></p>  |
| <b>Explanation</b>   | This setting is also deleted if the email server registration settings are removed.  |

**set logd tty mail auth****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set SMTP authentication for the port log emails.  |
| <b>Format</b>        | <b>set logd tty <i>ttylist</i> mail { 1   2 } auth <i>auth-Account</i></b><br><b>[ { password   encrypt <i>string</i> } ]</b>   |
| <b>Parameters</b>    | <p><b><i>ttylist</i></b><br/>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>mail { 1   2 }</b><br/>Specify the identification number (1 or 2) of the email server.</p> <p><b>auth <i>auth-Account</i></b><br/>Specify the account and password for SMTP authentication.<br/>The SMTP authentication is enabled for the corresponding email destination when this setting is configured.</p> <p><b>[ { password   encrypt <i>string</i> } ]</b></p> <p><b>password</b><br/>Set the password of the account used to access the email server.<br/>This setting is required when the email server uses SMTP authentication.<br/>When the command is executed with this parameter specified, a message prompting you to enter a password is displayed. Enter a password.<br/>When you press the Enter key after entering the password, a message prompting you to confirm the password is displayed. Enter the same password again.<br/>If you do not specify this parameter and the encrypt string parameter, no password will be used for the created users.<br/>Setting a password using this command changes the format of this command written in the startup file to a character string corresponding to the encrypted password.</p> <p><b>encrypt <i>string</i></b><br/>Set the account password as an encrypted character string.<br/>When the command is executed with this parameter specified, no password entry or confirmation messages are displayed. This parameter is convenient to embed a startup file containing settings of SMTP authentication accounts with passwords.</p> |
| <b>Usage example</b> | <p>To set a password to "portlog2" account used with SMTP authentication.</p> <pre>set logd tty 1 mail 1 auth portlog2 password SNMP-Auth password Password entry (not displayed) Retype SNMP-Auth password Password entry (not displayed)</pre>  |
| <b>Explanation</b>   | This setting is also deleted if the email server registration settings are removed.   |

**unset logd tty mail auth****[Administrator]**

---

**Function** Remove settings of SMTP authentication for port log emails.**Format** **unset logd tty *ttylist* mail { 1 | 2 } auth****Parameters** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**mail { 1 | 2 }**

Specify the identification number (1 or 2) of the email server.

**Usage example** To remove the SMTP authentication settings for port logs of serial ports 1 to 32.**unset logd tty 1-32 mail 1 auth**

**remove logd tty mail****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Remove the settings for the destination email address and email server used to send port logs.   |
| <b>Format</b>        | <b>remove logd tty <i>ttylist</i> mail { 1   2 }</b>   |
| <b>Parameters</b>    | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.</p> <p>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>mail { 1   2 }</b></p> <p>Specify the identification number (1 or 2) of the email server.</p> |
| <b>Usage example</b> | <p>To remove the settings of the email address and email server No. 2 used for the serial ports 1 to 32.</p> <p><b>remove logd tty 1-32 mail 2</b></p>   |
| <b>Explanation</b>   | The email settings (sending method, subject, and destination email address) with the ID number for which the settings have been removed return to their default values.  |

**remove logd tty ftp****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Remove settings of a destination FTP server for port logs.  |
| <b>Format</b>        | <b>remove logd tty <i>ttylist</i> ftp { 1   2 }</b>   |
| <b>Parameters</b>    | <p><i>ttylist</i></p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.<br/>Specify identification number (1 or 2) of the FTP server whose settings you want to remove.</p> |
| <b>Usage example</b> | <p>To remove the settings of FTP destination No. 2 to send port logs of serial ports 1 to 32.</p> <p><b>remove logd tty 1-32 ftp 2</b></p>  |

## 4.23 portd setting commands

These are objects managing NS-2250 port server function.

**set portd connect**

**[Administrator]**

**Function** Set the connection mode of the port server.

**Format** **set portd connect { direct | select }**

**Parameters** **{ direct | select }**

When you specify "direct", the port server uses the direct mode available since the first version for the access method. Direct mode is an access method in which you specify the TCP port number corresponding to the serial port to access the monitored device directly.

(Example) To access the serial port 1 of the NS-2250 in Direct mode, specify the TCP port No. 8101 of the connection destination from a Telnet client.  
telnet SmartCS 8101

When you specify "select", the port server operates in Select mode (port selection function). Select mode is an access method in which you log in to the NS-2250 (TCP: 23/22) from a Telnet/SSH client, and select a serial port number from the port selection menu to access a monitored device.

(Example) To access the serial port 1 of the NS-2250 in Select mode, connect to the normal TCP port (23) from a Telnet client and select the serial port No. 1 from the port selection menu.

telnet SmartCS

This parameter is set to "direct" by default.

**Usage example** To set Select mode.

**set portd connect select**

**Explanation** (1) In Select mode, the user whether log in to the NS-2250 or access to a monitored device depending on its login user name. Therefore, set also "set portd auth basic" when using Select mode.

(2) When using Select mode, set "set tty drhup off" to prevent automatic hang up caused by DSR signals.

**set portd menu****[Administrator]**

**Function** Set the display method of the port server menu.

**Format** **set portd menu { auto | on | off }**

**Parameters** **{ auto | on | off }**

This parameter is set to "auto" by default.

**auto**

Specify "auto" to use the same display method as the Direct mode.

When the port log save function is on in an RW session: The port server menu is displayed.

When the port log save function is off: The port server menu is not displayed.

**on**

Specify "on" to always display the port server menu.

**off**

Specify "off" to always hide the port server menu.

**Usage example** To hide the port server menu.

**set portd menu off**



**set portd auth****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set whether or not to use port user authentication when connecting from a Telnet client.  |
| <b>Format</b>        | <b>set portd auth { none   basic }</b>  |
| <b>Parameters</b>    | <b>auth { none   basic }</b><br>This parameter is set to "none" by default.<br><b>none</b><br>Specify "none" not to use the port user authentication when accessing NS-2250 serial ports from a Telnet client.<br><b>basic</b><br>Specify "basic" to use the port user authentication when accessing NS-2250 serial ports from a Telnet client. |
| <b>Usage example</b> | To use port user authentication.<br><br><b>set portd auth basic</b>   |
| <b>Explanation</b>   | Port user authentication is possible when accessing NS-2250 serial ports from both Telnet and SSH clients. When accessing NS-2250 serial ports from an SSH client, user authentication is used regardless of this setting.  |

**set portd telrw****[Administrator]**

**Function** Specify the service port start number for Telnet Normal mode.

**Format** **set portd telrw** *port\_num*

**Parameters** *port\_num*  
Specify a decimal value for the port number.  
(Port number setting range: 1025 - 65000)  
This parameter is set to "8101" by default.

**Usage example** To set "10001" as the service port start number for Telnet Normal mode.

**set portd telrw 10001**

**Explanation** (1) Normal mode enables bidirectional communication with monitored equipment connected the serial port.  
(2) The service port numbers are allocated to each serial port starting from the service port start number specified with this command. Service port numbers are allocated only for the ports equipped on the model used (16/32/48).

**set portd telro****[Administrator]**

**Function** Specify the service port start number for Telnet Monitoring mode.

**Format** **set portd telro** *port\_num*

**Parameters** *port\_num*  
Specify a decimal value for the port number.  
(Port number setting range: 1025 - 65000)  
This parameter is set to "8201" by default.

**Usage example** To set "11001" as the service port start number for Telnet Monitoring mode.

**set portd telro 11001**

**Explanation** (1) Monitoring mode enables monitoring of the data exported by monitored equipment connected to a serial port.  
(2) The service port numbers are allocated to each serial port starting from the service port start number specified with this command. Service port numbers are allocated only for the ports equipped on the model used (16/32/48).

**set portd sshrw****[Administrator]**

**Function** Specify the service port start number for SSH Normal mode.

**Format** **set portd sshrw** *port\_num*

**Parameters** *port\_num*  
Specify a decimal value for the port number.  
(Port number setting range: 1025 - 65000)  
This parameter is set to "8301" by default.

**Usage example** To set "12001" as the service port start number for SSH Normal mode.

**set portd sshrw 12001**

**Explanation** (1) Normal mode enables bidirectional communication with monitored equipment connected to a serial port.  
(2) The service port numbers are allocated to each serial port starting from the service port start number specified with this command. Service port numbers are allocated only for the ports equipped on the model used (16/32/48).

**set portd sshro****[Administrator]**

**Function** Specify the service port start number for SSH Monitoring mode.

**Format** **set portd sshro** *port\_num*

**Parameters** *port\_num*  
Specify a decimal value for the port number.  
(Port number setting range: 1025 - 65000)  
This parameter is set to "8401" by default.

**Usage example** To set "13001" as the service port start number for SSH Monitoring mode.

**set portd sshro 13001**

**Explanation** (1) Monitoring mode enables monitoring of the data exported by monitored equipment connected to a serial port.  
(2) The service port numbers are allocated to each serial port starting from the service port start number specified with this command. Service port numbers are allocated only for the ports equipped on the model used (16/32/48).

**set portd idle\_timeout****[Administrator]**

**Function** Set a value for the idle timer for the select menu, port server menu, and Normal mode (rw) sessions.

**Format** **set portd idle\_timeout { on [ *interval\_time* ] | off }**

**Parameters** **idle\_timeout { on [ *interval\_time* ] | off }**  
Specify "on" or "off" for the idle timer for the select menu, port server menu, and Normal mode (rw) sessions.

This parameter is "off" by default.

*interval\_time*

When set to "on", specify the idle timer value in minutes. This timer is used when connected to the select menu, port server menu, and Normal mode (rw) sessions.

The setting range is from 1 through 60 minutes. This parameter is set to "10" by default.

**Usage example** To set 20 minutes for the timeout value used when connected to the select menu, port server menu, and Normal mode (rw) sessions.

**set portd idle\_timeout on 20**

**Explanation** (1) When you enable this function, the select menu idle timer is also enabled.  
(2) When you enable the idle timer for select menu, port server menu, and Normal mode (rw) session connection, set also "set portd tty timeout on".

(3) The following occurs when the set time has elapsed.

- In select menu, the session is disconnected.
- In port server menu, the session is disconnected when in Direct mode, or the selection menu is displayed in Select mode.
- In Normal mode (rw) sessions, an operation similar to when you enter "cmdchar" is performed. (4) In Normal mode (rw) sessions, the timer monitors the input from the Telnet/SSH terminal. The timer is reset when something is entered from the Telnet/SSH terminal. The timer is not reset when data is received from the monitored equipment.

**set portd ro\_timeout****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set a value for the session timer of Monitoring mode (ro) sessions.  |
| <b>Format</b>        | <b>set portd ro_timeout { on [ interval_time ]   off }</b>   |
| <b>Parameters</b>    | <b>{ on [ interval_time ]   off }</b><br>Specify "on" or "off" for the session timer of Monitoring mode (ro) sessions. This parameter is "off" by default.<br><br><i>interval_time</i><br>When set to "on", specify a value in minutes for the session timer of Monitoring mode (ro) sessions. The setting range is from 1 through 1440 minutes. This parameter is set to "10" by default. |
| <b>Usage example</b> | To set 60 minutes for the timeout value used when connected to Monitoring mode (ro) sessions.<br><br><b>set portd ro_timeout on 60</b>   |
| <b>Explanation</b>   | (1) When you enable the session timer, set also "set portd tty timeout on" for the target port.<br>(2) The Monitoring mode (ro) session is disconnected when the set time has elapsed.<br>(3) The timer is not reset even if data is sent or received from the Telnet/SSH terminal or the monitored equipment.   |

**set portd tty session****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the authorized protocols and modes for connection to the serial ports.   |
| <b>Format</b>        | <b>set portd tty <i>ttylist</i> session { { telnet   ssh   both   none } { ro   rw   both } } [sshxpt]</b>   |
| <b>Parameters</b>    | <p><b>tty <i>ttylist</i></b><br/>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>{ telnet   ssh   both   none } { ro   rw   both } [sshxpt]</b><br/>This parameter is set to "both rw" by default.</p> <p><b>{ telnet   ssh   both   none }</b></p> <p><b>telnet</b><br/>Authorize only Telnet connection.</p> <p><b>ssh</b><br/>Authorize only SSH connection.</p> <p><b>both</b><br/>Authorize both Telnet and SSH connections.</p> <p><b>none</b><br/>Refuse Telnet and SSH connections. Use this command to close TCP ports with a service port number for which no protocols and connection modes have been authorized.</p> <p><b>{ ro   rw   both }</b></p> <p><b>ro</b><br/>Authorize connection in Monitoring mode only</p> <p><b>rw</b><br/>Authorize connection in Normal mode only</p> <p><b>both</b><br/>Authorize connection in both Monitoring and Normal modes</p> <p><b>[sshxpt]</b><br/>Authorize SSH transparent connection (sshxpt).<br/>This parameter can be specified when "ssh" or "both" is specified as the protocol and "rw" or "both" is specified as the connection mode.</p> |
| <b>Usage example</b> | To set Telnet Normal mode for the connection protocol of serial port 1.  |
|                      | <b>set portd tty 1 session telnet rw</b>   |



**set portd tty limit****[Administrator]**

**Function** Set a number of sessions for a serial port.

**Format** **set portd tty *ttylist* limit rw *number* ro *number***

**Parameters** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**limit rw *number* ro *number***

Specify the authorized number of sessions for connection.

**rw *number***

Number of sessions in Normal mode. You can specify a number from 0 through 2. The default setting is 1.

**ro *number***

Number of sessions in Monitoring mode. You can specify a number from 0 through 3. The default setting is 1.

**Usage example** To authorize 2 sessions in Normal mode and 3 sessions in Monitoring mode for the serial port 1.

**set portd tty 1 limit rw 2 ro 3**

**set portd tty brk\_char****[Administrator]**

---

**Function** Set the NVT break character.**Format** **set portd tty *ttylist* brk\_char { none | brk }****Parameters** **tty *ttylist***

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**brk\_char { none | brk }**

This parameter is set to "none" by default.

**none**

none

**brk**

Set the NVT break character.

**Usage example** To set the NVT break character for serial port 1.**set portd tty 1 brk\_char brk**

**set portd tty nl****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the conversion method for the line feed format received from the network.   |
| <b>Format</b>        | <b>set portd tty <i>tylist</i> nl { none   cr   lf }</b>  |
| <b>Parameters</b>    | <p><b>tty <i>tylist</i></b><br/>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>nl { none   cr   lf }</b><br/>This parameter is set to "cr" by default.</p> <p><b>none</b><br/>No conversion</p> <p><b>cr</b><br/>Convert CR/LF to CR.</p> <p><b>lf</b><br/>Convert CR/LF to LF.</p> |
| <b>Usage example</b> | To convert to LF the line feed format received from the network for the serial port 1.<br><br><b>set portd tty 1 nl lf</b>  |
| <b>Explanation</b>   | This command is valid only with Telnet clients.   |

**set portd tty cmdchar****[Administrator]**

**Function** Set a substitute character code to go to the port server menu.

**Format** **set portd tty *ttylist* cmdchar { none | *char\_number* }**

**Parameters** **tty *ttylist***

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**cmdchar { none | *char\_number* }**

This parameter is set to "none" by default.

**none**

No character

***char\_number***

Set a substitute character (keyboard key) to go to the port server menu in hexadecimal code (00 to 1F).

| Code | Substitute character | Code | Substitute character | Code | Substitute character |
|------|----------------------|------|----------------------|------|----------------------|
| 00   | [Ctrl-@]             | 0b   | [Ctrl-K]             | 16   | [Ctrl-V]             |
| 01   | [Ctrl-A]             | 0c   | [Ctrl-L]             | 17   | [Ctrl-W]             |
| 02   | [Ctrl-B]             | 0d   | [Ctrl-M]             | 18   | [Ctrl-X]             |
| 03   | [Ctrl-C]             | 0e   | [Ctrl-N]             | 19   | [Ctrl-Y]             |
| 04   | [Ctrl-D]             | 0f   | [Ctrl-O]             | 1a   | [Ctrl-Z]             |
| 05   | [Ctrl-E]             | 10   | [Ctrl-P]             | 1b   | [Ctrl-[]]            |
| 06   | [Ctrl-F]             | 11   | [Ctrl-Q]             | 1c   | [Ctrl-\]             |
| 07   | [Ctrl-G]             | 12   | [Ctrl-R]             | 1d   | [Ctrl-]]             |
| 08   | [Ctrl-H]             | 13   | [Ctrl-S]             | 1e   | [Ctrl-^]             |
| 09   | [Ctrl-I]             | 14   | [Ctrl-T]             | 1f   | [Ctrl-_]             |
| 0a   | [Ctrl-J]             | 15   | [Ctrl-U]             |      |                      |

**Usage example** To set "01" (Ctrl-A) for the substitute character code for the port server menu of the serial port 1.

After making this setting, the "Press "CTRL-A" to return this menu" is displayed when accessing the monitored equipment.

**set portd tty 1 cmdchar 01**

**Explanation**

(1) The substitute character code is processed by the NS-2250 when registered. Therefore, the registered code is not sent to the device connected to the serial port.

(2) Enter the substitute character code when the port server menu is enabled to return to the port server menu. Enter the substitute character code when the port server menu is disabled to disconnect the session.

(3) The substitute character assigned to the code may differ from the character in the table above depending on the terminal software you use.

**set portd tty label****[Administrator]****Function** Set serial port labels.**Format** **set portd tty *ttylist* label "*string*"****Parameters** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**label "*string*"**

Specify a label for a serial port within 32 characters.

In the label, you can use half-width alphanumeric characters, underbars "\_", hyphens "-", periods ".", and at marks "@", and spaces " ".

Specify the label within double quotation marks if space characters " " are included.

**Usage example** To set the label "Tokyo L3SW" to the serial port 1.**set portd tty 1 label "Tokyo L3SW"**

**set portd tty timeout****[Administrator]**


---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the timeout function on and off for the port server menu, Normal mode (rw) sessions, and Monitoring mode (ro) sessions.  |
| <b>Format</b>        | <b>set portd tty <i>ttylist</i> timeout { on   off }</b>   |
| <b>Parameters</b>    | <p><b>tty <i>ttylist</i></b><br/> Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/> The range of ports that you can specify varies depending on the model.<br/> Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>timeout { on   off }</b><br/> Specify "on" or "off" for the timeout function for the port server menu, Normal mode (rw) sessions, and Monitoring mode (ro) sessions.<br/> This parameter is "off" by default.</p> |
| <b>Usage example</b> | To set the timeout function for the port server menu, Normal mode (rw) sessions, and Monitoring mode (ro) sessions for serial port 1.  |
|                      | <b>set portd tty 1 timeout on</b>  |
| <b>Explanation</b>   | (1) When you enable the timeout function, set also "set portd idle_timeout on" and "set portd ro_timeout on".  |

**set portd tty connted****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the line feed code when starting the transparent connection.  |
| <b>Format</b>        | <b>set portd tty <i>tylist</i> connted send_nl { none   cr   lf   crlf }</b>  |
| <b>Parameters</b>    | <p><b>tty <i>tylist</i></b><br/>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.</p> <p><b>connted send_nl { none   cr   lf   crlf }</b><br/>Set the line feed code when starting the transparent connection.<br/>This parameter is set to "none" by default.</p> <p><b>nl { none   cr   lf }</b><br/>This parameter is set to "cr" by default.</p> <p><b>none</b><br/>The line feed code is not sent to the serial port of NS-2250.</p> <p><b>cr</b><br/>CR(0x0d) is sent to the serial port of NS-2250 as the line feed code.</p> <p><b>lf</b><br/>LF(0x0a) is sent to the serial port of NS-2250 as the line feed code.</p> <p><b>crlf</b><br/>CR/LF(0x0d 0x0a) is sent to the serial port of NS-2250 as the line feed code.</p> |
| <b>Usage example</b> | <p>To send CR to the serial port of NS-2250 when starting the transparent connection to the serial port 1.</p> <p><b>set portd tty 1 connted send_nl cr</b></p>   |
| <b>Explanation</b>   | <p>(1) This setting is valid only when starting the transparent connection.</p> <p>(2) The specified line feed code is sent to the serial port of NS-2250 after starting the transparent connection.</p>  |

**set portd sshxpt****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Specify the service port start number for SSH transparent connection (sshxpt).   |
| <b>Format</b>        | <b>set portd sshxpt</b> <i>port_num</i>  |
| <b>Parameters</b>    | <i>port_num</i><br>Specify a decimal value for the port number.<br>(Port number setting range: 1025 - 65000)<br>This parameter is set to "9301" by default.  |
| <b>Usage example</b> | To set "14001" as the service port start number for SSH transparent connection (sshxpt).<br><br><b>set portd sshxpt 14001</b>  |
| <b>Explanation</b>   | (1) SSH transparent connection (sshxpt) is for a transparent communication to target devices connected to each serial port of NS-2250.<br>(2) The service port numbers are allocated to each serial port starting from the service port start number specified with this command. Service port numbers are allocated only for the ports equipped on the model used (16/32/48). |



**set portd service****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set a behavior related to multiple services to connect serial ports of NS-2250.  |
| <b>Format</b>        | <b>set portd service exclusive { on   off }</b>  |
| <b>Parameters</b>    | <p><b>service</b><br/>Set a behavior related to multiple services to connect serial ports of NS-2250.</p> <p><b>exclusive { on   off }</b><br/>Set an exclusion for multiple services to connect serial ports of NS-2250.<br/>The default value of this parameter is "on".</p> <p><b>on</b><br/>An exclusion between port server function and tty manage function is enabled.<br/>If one function is already used for a certain serial port of NS-2250, the other function is not available for the same serial port.</p> <p><b>off</b><br/>An exclusion between port server function and tty manage function is disabled.</p> |
| <b>Usage example</b> | <p>To disable an exclusion between port server function and tty manage function.</p> <p><b>set portd service exclusive off</b></p>   |
| <b>Explanation</b>   | <p>(1) When an exclusion is disabled, simultaneous connection to a same serial port of NS-2250 using port server function and tty manage function is allowed.</p> <p>(2) When an exclusion is enabled, simultaneous connection to a same serial port of NS-2250 using port server function and tty manage function is denied. If one function is already used for a certain serial port of NS-2250, the other function is not available for the same serial port.</p>  |

**unset portd tty label****[Administrator]**

---

**Function** Remove serial port label settings.**Format** **unset portd tty *ttylist* label****Parameters** **tty *ttylist***

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**Usage example** To remove the label set to the serial port 1.**unset portd tty 1 label**

## 4.24 Tty manage setting commands

**enable ttymanage**

**[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Enable the TTY manage function.                                   |
| <b>Format</b>        | <b>enable ttymanage</b>   |
| <b>Parameters</b>    | None  |
| <b>Note</b>          | The TTY manage function is disabled by default.                   |
| <b>Usage example</b> | When enabling the TTY manage function.<br><b>enable ttymanage</b> |

**disable ttymanage****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Disable the TTY manage function.  |
| <b>Format</b>        | <b>disable ttymanage</b>  |
| <b>Parameters</b>    | None  |
| <b>Usage example</b> | When disabling the TTY manage function.<br><br><b>disable ttymanage</b> |

## 4.25 Console setting commands

Objects managing the operating conditions of the NS-2250 console function.

**set console**

**[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the console.  |
| <b>Format</b>        | <b>set console</b><br>{ baud { 2400   4800   9600   19200   38400   57600   115200 }<br>  bichar { 7   8 }   parity { even   odd   none }<br>  stop { 1   2 }<br>  flow { xon   rs   none } }   |
| <b>Parameters</b>    | <b>baud { 2400   4800   9600   19200   38400   57600   115200 }</b><br>Set the transmission rate.<br>This parameter is set to "9600" by default.<br><b>bichar { 7   8 }</b><br>Set the data bit length.<br>This parameter is set to "8" by default.<br><b>parity { even   odd   none }</b><br>Set the parity.<br>This parameter is set to "none" by default.<br><b>even</b><br>Even parity<br><b>odd</b><br>Odd parity<br><b>none</b><br>No parity<br><b>stop { 1   2 }</b><br>Set the stop bit length.<br>This parameter is set to "1" by default.<br><b>flow { xon   rs   none }</b><br>Set the flow control.<br>This parameter is set to "xon" by default.<br><b>xon</b><br>Control uses xon and xoff codes.<br><b>rs</b><br>Control the flow using RTS/CTS signals.<br><b>none</b><br>Flow control is not used. |
| <b>Usage example</b> | To set a transmission rate of 19200 bps for the CONSOLE port.<br><br><b>set console baud 19200</b>  |
| <b>Explanation</b>   | This command applies only to the CONSOLE port. Refer to the "set tty" command for the serial port settings.   |

## 4.26 Telnet command setting commands

**set telnet cmdchar**

**[Administrator]**

**Function** Set the character code to transit to the command mode while executing the telnet command.

**Format** **set telnet cmdchar { none | char\_number }**

**Parameters** **cmdchar { none | char\_number }**

Set the character code to transit to the command mode.

The default value is "1d".

**none**

Not set the character code to transit to the command mode.

**char\_number**

Set the character code(the key of the keyboard) to transit to the command mode in the code of the hexadecimal number(from 00 to 1f).

| Code | Substitute character | Code | Substitute character | Code | Substitute character |
|------|----------------------|------|----------------------|------|----------------------|
| 00   | [Ctrl-@]             | 0b   | [Ctrl-K]             | 16   | [Ctrl-V]             |
| 01   | [Ctrl-A]             | 0c   | [Ctrl-L]             | 17   | [Ctrl-W]             |
| 02   | [Ctrl-B]             | 0d   | [Ctrl-M]             | 18   | [Ctrl-X]             |
| 03   | [Ctrl-C]             | 0e   | [Ctrl-N]             | 19   | [Ctrl-Y]             |
| 04   | [Ctrl-D]             | 0f   | [Ctrl-O]             | 1a   | [Ctrl-Z]             |
| 05   | [Ctrl-E]             | 10   | [Ctrl-P]             | 1b   | [Ctrl-[]]            |
| 06   | [Ctrl-F]             | 11   | [Ctrl-Q]             | 1c   | [Ctrl-\]             |
| 07   | [Ctrl-G]             | 12   | [Ctrl-R]             | 1d   | [Ctrl-]]             |
| 08   | [Ctrl-H]             | 13   | [Ctrl-S]             | 1e   | [Ctrl-^]             |
| 09   | [Ctrl-I]             | 14   | [Ctrl-T]             | 1f   | [Ctrl-_]             |
| 0a   | [Ctrl-J]             | 15   | [Ctrl-U]             |      |                      |

**Usage example** The case of setting the character code to transit to the command mode as "01(Ctrl-A)".

**set telnet cmdchar 01**

**Explanation** Depending on a using terminal software, the substitute character assigned the code may be different from the above table.

In the case of setting this command, this setting become enabled since the next telnet command.

## 4.27 Telnetd setting commands

These are objects managing NS-2250 Telnet server function.

**set telnetd port**

**[Administrator]**

**Function** Set the Telnet server port number.

**Format** **set telnetd port { *port\_number* | default }**

**Parameters** **port { *port\_number* | default }**

*port\_number*

Specify a port number.

You can specify a number from 1025 through 65000 for the port number.

**default**

Specify the Telnet server default port 23 for the port number.

**Note** If the port number set here is the same as one specified with "set portd telrw", "set portd telro", "set portd sshrw", "set portd sshro", or "set sshd port", this command generates an error.

**Usage example** To specify 10023 for the Telnet server port number.

**set telnetd port 10023**

**enable telnetd****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Enable the Telnet server.                |
| <b>Format</b>        | <b>enable telnetd</b>                    |
| <b>Parameters</b>    | None                                     |
| <b>Note</b>          | The Telnet server is enabled by default. |
| <b>Usage example</b> | <b>enable telnetd</b>                    |



**disable telnetd****[Administrator]****Function**            Disable the Telnet server.**Format**             **disable telnetd****Parameters**        None**Usage example**      **disable telnetd**

## 4.28 sshd setting commands

These are objects managing NS-2250 SSH server function.

**set sshd auth**

**[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the user authentication type for the SSH server.  |
| <b>Format</b>        | <b>set sshd auth { basic   public }</b>   |
| <b>Parameters</b>    | <b>auth { basic   public }</b><br>This parameter is set to "public" by default.<br><b>basic</b><br>Specify "basic" to use password authentication with the SSH server.<br><b>public</b><br>Specify "public" to use public key authentication. |
| <b>Usage example</b> | To set password authentication for SSH server authentication.<br><br><b>set sshd auth basic</b>   |

**set sshd port****[Administrator]****Function** Set the SSH server port number.**Format** **set sshd port { port\_number | default }****Parameters** *port\_number*

Specify a port number.

You can specify a number from 1025 through 65000 for the port number.

**default**

Specify the SSH server default port 22 for the port number.

**Usage example** To specify 20022 for the SSH server port number.**set sshd port 20022****Explanation** (1) If the port number set here is the same as one specified with "set portd telrw", "set portd telro", "set portd sshrw", "set portd sshro", or "set telnetd port", this command generates an error.

**set sshd host\_key****[Administrator]****Function** Set the SSH server host\_key.**Format** **set sshd host\_key { *number* | device\_depend }****Parameters** **host\_key { *number* | device\_depend }***number*

Specify the seed of server host\_key.

You can specify a number from 0 through 4294967295 for the number.

**device\_depend**

Set the original value as a server host\_key.

**Usage example** To specify 256 for the SSH server host\_key.**set sshd host\_key 256****Note** (1) When designating the seed value of this parameter, a server host key of the identical SSH server is made.

When exchanging NS-2250, please set it as the same seed value.

**enable sshd****[Administrator]**

---

**Function**            Enable the SSH server.**Format**             **enable sshd****Parameters**        None**Note**                (1) Both SSH access and SFTP access to the NS-2250 are made possible.  
                          (2) The SSH server is disabled by default.**Usage example**       **enable sshd**

**disable sshd****[Administrator]****Function**            Disable the SSH server.**Format**             **disable sshd****Parameters**        None**Usage example**      **disable sshd**

## 4.29 ftpd setting commands

These are objects managing NS-2250 FTP server function.

**enable ftpd**

**[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Enable the FTP server.                 |
| <b>Format</b>        | <b>enable ftpd</b>                     |
| <b>Parameters</b>    | None                                   |
| <b>Note</b>          | The FTP server is disabled by default. |
| <b>Usage example</b> | <b>enable ftpd</b>                     |

**disable ftpd****[Administrator]**

---

**Function**            Disable the FTP server.**Format**             **disable ftpd****Parameters**        None**Usage example**      **disable ftpd**



## 4.30 Security setting commands

These are objects managing authorizations for host and service connection via the network.

**create allowhost**

[Administrator]

**Function** Create a list of hosts and services authorized for connection.

**Format** **create allowhost** { **all** | *ipaddr/mask* | *ip6addr/mask* }  
**service** { **all** | **telnetd** | **sshd** | **ftpd** |  
**portd** { **telrw** | **telro** | **sshrw** | **sshro** } { **all** | *ttylist* } }

**Parameters** { *ipaddr/mask* | *ip6addr/mask* | **all** }  
Specify the IP address of the host authorized for connection as IP address/prefix size.

*ipaddr/mask*

A 32-bit prefix is used if the prefix size is omitted.

To allow connections from all IPv4 hosts, specify 0.0.0.0/0.

*ip6addr/mask*

Specify the IPv6 address in x:x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

Specify the length of mask in the range of 0 to 128.

To allow connections from all IPv6 hosts, specify ::/0.

**all**

When "all" is specified, the connection is authorized from all hosts.

The default setting for this parameter in the startup file is "all".

**service** { **all** | **telnetd** | **sshd** | **ftpd** | **portd** { **telrw** | **telro** | **sshrw** | **sshro**  
} { **all** | *ttylist* } }

Specify the services authorized for connection.

The default settings for this parameter are "create allowhost all telnetd" and "create allowhost all portd telrw all".

**all**

Specify "all" to authorize connection with all services.

**telnetd**

Specify "telnetd" to authorize connection using Telnet.

**sshd**

Specify "sshd" to authorize connection using SSH and SFTP.

**ftpd**

Specify "ftpd" to authorize connection using FTP.

**portd** { **telrw** | **telro** | **sshrw** | **sshro** } { **all** | *ttylist* }

When you specify "portd" specify also one of the following options.

**telrw**

Specify "telrw" to authorize connection in Telnet Normal mode to the specified serial ports.

**telro**

Specify "telro" to authorize connection in Telnet Monitoring mode to the specified serial ports.

**sshrw**

Specify "sshrw" to authorize connection in SSH Normal mode to the specified serial ports.

**sshro**

Specify "sshro" to authorize connection in SSH Monitoring mode to the specified serial ports.

**all**

Specify "all" to authorize connection with all serial ports.

**ttylist**

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model. Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**Note**

- You can make the settings for a maximum of 99 "allowhost" parameters.

**Usage example** To authorize Telnet connection to the NS-2250 from 192.168.1.0/24.

```
create allowhost 192.168.1.0/24 service telnetd
```

**delete allowhost****[Administrator]**

**Function** Delete a list of hosts and services authorized for connection.

**Format** **delete allowhost** {  
     { **all** | *ipaddr/mask* | *ip6addr/mask* } **service** { **all** | **telnetd** | **sshd** | **ftpd** |  
         **portd** { **telrw** | **telro** | **sshrw** | **sshro** } { *ttylist* | **all** } } |  
     **allentry** }

**Parameters** { **all** | *ipaddr/mask* | *ip6addr/mask* } **service** { **all** | **telnetd** | **sshd** | **ftpd** |  
**portd** { **telrw** | **telro** | **sshrw** | **sshro** } { *ttylist* | **all** } }

    { **all** | *ipaddr/mask* | *ip6addr/mask* }

Specify the IP address of the host whose connection authorization you want to remove as IP address/prefix size. When "all" is specified, the connection authorization is removed for all hosts.

**service** { **all** | **telnetd** | **sshd** | **ftpd** | **portd** { **telrw** | **telro** | **sshrw** |  
**sshro** } { *ttylist* | **all** } }

Specify the services whose connection authorization you want to remove.

**telnetd**

Specify "telnetd" to remove authorization for Telnet connection.

**sshd**

Specify "sshd" to remove authorization for SSH and SFTP connections.

**ftpd**

Specify "ftpd" to remove authorization for FTP connection.

**portd** { **telrw** | **telro** | **sshrw** | **sshro** } { *ttylist* | **all** }

Specify "portd" to remove authorization for portd connections.

**allentry**

Delete a list authorizing connection for all hosts.

**Usage example** To remove authorization for Telnet connection to the NS-2250 from 192.168.1.0/24.

**delete allowhost 192.168.1.0/24 service telnetd**

## 4.31 Authentication setting commands

These are objects managing the operating conditions of user authentication and authentication using RADIUS/TACACS+ clients.

**create auth access\_group**

**[Administrator]**

### Function

Create access groups and serial port access privileges.

You can set roles and access privileges for each group you have created.

The following functions have been enhanced in this command compared to the "set auth radius server { root | normal | portusr } filter\_id\_head" command.

- You can register multiple identifiers (access groups) for device management users, normal users, and port users.
- You can define the access groups to which users belong only in the RADIUS server, and set the group definitions and port user access privileges on the NS-2250. Therefore, you can define different serial port access privileges for the same access group on multiple NS-2250.

### Format

```
create auth access_group { root | normal | portusr port enable_port_list }
{ radius filter_id string | tacacs attr string val string }
```

### Parameters

```
{ root | normal | portusr port enable_port_list }
```

#### **root**

Specify "root" to set the access group of device management users who log in to the NS-2250. Users in this group who log in to the NS-2250 are handled as device management users.

#### **normal**

Specify "normal" to set the access group of normal users who log in to the NS-2250. Users in this group who log in to the NS-2250 are handled as normal users.

#### **portusr**

Specify "portusr" to set the access group of port users who access the serial ports of the NS-2250. Users in this group are handled as port users. Configure the serial port access privileges using the option below.

#### **port enable\_port\_list**

Specify the ports that can be used in the 1 to 48 range. The range of ports that you can specify varies depending on the model. Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

If different serial ports are already registered to the same group through multiple commands, the serial ports are added to the command line already registered. The commands are gathered together in one line.

```
{ radius filter_id string | tacacs attr string val string }
```

#### **radius filter\_id string**

Set the character string string of the RADIUS Filter-Id attribute that will be used for the access group name. You can specify from 1 through 64 characters for string. You can use half-width alphanumeric characters, underbars "\_", hyphens "-", at marks "@", and periods ".".

**tacacs attr string val string**

Set the character strings of the TACACS+ server attribute (attr) and value (val) pair that will be used for the access group name. You can specify from 1 through 32 characters for string. You can use half-width alphanumeric characters, underbars "\_", hyphens "-", at marks "@", and periods ".".

**Usage example** (1) To set the group identifier "admin" for the access group of device management users (RADIUS).

```
create auth access_group root radius filter_id admin
```

(2) To set the group identifier "general" for the normal user access group (RADIUS).

```
create auth access_group normal radius filter_id general
```

(3) To set the group identifier "grp1" for the access group of port users with access privileges for the serial ports 1 to 5 (RADIUS).

```
create auth access_group portusr port 1-5 radius filter_id grp1
```

(4) To set the user definition attribute and value pair "grp1=root" for the access group of device management users (TACACS+).

```
create auth access_group root tacacs attr grp1 val root
```

(5) To set the user definition attribute and value pair "grp2=tech1" for the access group of port users with access privileges for the serial ports 1 to 5 (TACACS+).

```
create auth access_group portusr port 1-5 tacacs attr grp2 val tech1
```

**Explanation**

(1) You can register up to 100 lines of access groups (number of lines of the "create auth access\_group" command). When multiple "create auth access\_group" commands are executed for the same access group identifier, they are registered as one line. Examples of registration line calculation are given below.

- When you register the access group "admin" for device management users: 1 line
- When you register the same access group "grp1" for port users to the serial ports 1 to 32: 1 line
- When you register different access groups (grp1 to grp32) for port users to the serial ports 1 to 32: 32 lines (2) Access group priority during login is as follows: (1)device management user (root), (2)normal user (normal), and (3)port user (portusr).

When you log in to the NS-2250 in Select mode, log in as the user with the highest priority of access privileges of (1),(2),and (3).

For example, with the settings below log in to the NS-2250 as a device management user.

When you log in to the NS-2250 in Direct mode, log in as the user with the higher priority of access privileges (1) and (2). You can access the port server only when you have access privileges of (3).

When using RADIUS authentication with the settings below, log in to the NS-2250 as a device management user. Access the port server as a port user.

(Settings of the NS-2250)

```
# create auth access_group root radius filter_id admin
# create auth access_group normal radius filter_id general
# create auth access_group portusr port 1-5 radius filter_id grp1
```

(Setting example for RADIUS authentication server)

```

user1 Password = "user1"
      Filter-Id = "admin"
      Filter-Id = "general"
      Filter-Id = "grp1"

```

(3) If you use this command together with the "set auth radius server { root | normal | portusr } filter\_id\_head" command, with which you can specify roles and access privileges for RADIUS users individually, all the settings are handled with the "or" condition.

For example, with the NS-2250 configured as follows and the two following Filter-Id attributes registered to the RADIUS authentication server, the port user "port1" has access to the serial ports 1 to 5, authorized for the access group "grp1", as well as the serial ports 6 to 10, authorized with "NS2240\_PORT6-10".

(Settings of the NS-2250)

```

# create auth access_group portusr port 1-5 radius filter_id grp1
# set auth radius server 1 portusr filter_id_head NS2250_PORT

```

(RADIUS authentication server settings)

```

port1 Password = "port1"
      Filter-Id = "grp1"
      Filter-Id = "NS2250_PORT6-10"

```

(4) When using the TACACS+ function, set the attribute as the attribute value pair. Although you can set the character strings of your choosing for both, the attribute value pair must match between the NS-2250 and the TACACS+ server.

(Settings of the NS-2250)

```

# create auth access_group root tacacs attr grp1 val root
# create auth access_group portusr port 1-5 tacacs attr grp2 val tech1

```

(TACACS+ server settings)

```

user = user1 {
    service = smartcs {
        grp1 = root
        grp2 = tech1
    }
}

```

(5) With users for which the user group cannot be identified, user authentication is performed according to "set auth radius def\_user" or "set auth tacacs def\_user" settings.

The user group cannot be identified in following cases.

- If this command or the "set auth radius server { portusr | normal | root } filter\_id\_head" command has not been set when using RADIUS authentication
- If this command has not been set when using TACACS+ function
- If attributes for the RADIUS authentication server or the TACACS+ server have not been set
- If the format of all attributes received by the NS-2250 cannot be recognized (do not match the settings of this command or the "filter\_id\_head" command)

#### Note

RADIUS authentication and TACACS+ authentication/approval function cannot be used at the same time. After specifying the mode using the "set auth mode" command, set the corresponding attributes.

You cannot set the same access group identifier to multiple user groups.

**set auth mode****[Administrator]****Function** Set the user authentication method.**Format** **set auth mode { local | radius | tacacs }****Parameters** **{ local | radius | tacacs }**

This parameter is set to "local" by default.

**local**

Specify "local" to use only NS-2250 local authentication for user authentication. Local authentication checks that the name and password of the user accessing the NS-2250 match the settings registered in the NS-2250.

**radius**

Specify "radius" to perform user authentication in the following order: local authentication within the NS-2250 -> RADIUS authentication. When the name and password of the user accessing the NS-2250 match the settings registered in the NS-2250, local authentication is successful. If the accessing user is not registered in the NS-2250, or if the password mismatches the setting, the NS-2250 sends an authentication request to the RADIUS authentication server to perform RADIUS authentication.

**tacacs**

Specify "tacacs" to perform user authentication in the following order: local authentication within the NS-2250 -> TACACS+ authentication and approval. The flow of authentication operations is the same as with the "radius" parameter.

**Usage example** To use RADIUS authentication.**set auth mode radius**

**Explanation** (1) To authenticate an NS-2250 normal user with the RADIUS authentication server or TACACS+ server, make the settings so that the user local authentication within the NS-2250 fails. You can either delete the user from the NS-2250 or set a password for that user different from the RADIUS or TACACS+ server settings. Be aware that when no password is registered for normal users, simply pressing the Return key for the password makes it possible to pass local authentication of the NS-2250 and login.

It is the same when logging in as a device management user or executing the "su" command. Set a password different from the password registered to the RADIUS or TACACS+ server for device management users. Note that, unlike normal users, device management users (root) cannot be deleted.

**Note** Even if "radius" or "tacacs" has been specified with this command, only local authentication is used with the following types of access.

- FTP/SFTP access to the NS-2250
- SSH access to the NS-2250 or the NS-2250 serial ports when a public key is set for SSH server user authentication (set sshd auth public)

**set auth su\_cmd username****[Administrator]**


---

|                      |   |
|----------------------|---|
| <b>Function</b>      | In the RADIUS authentication or TACACS+ authentication/approval function, set the user name used when executing the "su" command with external authentication.  |
| <b>Format</b>        | <b>set auth su_cmd username</b> <i>user</i>   |
| <b>Parameters</b>    | <p><b>username</b> <i>user</i></p> <p>In the RADIUS authentication or TACACS+ authentication/approval function, set the user name used for authentication and approval when executing the "su" command. The "su" command is used to change NS-2250 normal users to users with administrator privileges.</p> <p>For user, you can use half-width alphanumeric characters, underbars "_", and hyphens "-". Note that the first character of the character string must be an alphanumeric character. The 1 to 64 characters can be set for user.</p> <p>This parameter is set to "root" by default.</p>  |
| <b>Usage example</b> | <p>To set the user name used when executing the "su" command to "admin".</p> <p><b>set auth su_cmd username admin</b></p>   |
| <b>Explanation</b>   | <p>(1) When executing the "su" command, the user name used for local authentication is "root" even if you set this command. Local authentication is always performed first even if you made the settings for RADIUS authentication or TACACS+ authentication. Therefore, if the "root" user password set in the NS-2250 matches the password set in the RADIUS authentication server or TACACS+ server for the user specified with this command, local authentication is successful. To fail the local authentication, you can change the "root" user password for local authentication.</p> <p>(2) The user specified with this command must be set as an attribute in the RADIUS authentication server or TACACS+ server, and this attribute must be set as an NS-2250 device management user with the "set auth radius server { portusr   normal   root } filter_id_head" command or the "create auth access_group" command.</p> |



**set auth radius retry****[Administrator]**

**Function** Set the number of times the authentication request packet is resent to the RADIUS authentication server.

**Format** **set auth radius retry** *number*

**Parameters** **retry** *number*

Set the number of times the authentication request packet is resent to the RADIUS authentication server. You can specify a number from 0 through 5.

Specify "0" to not resend the authentication request packet.

This parameter is set to "3" by default.

**Usage example** To set to 5 the number of times the authentication request packet is resent.

**set auth radius retry 5**

**set auth radius server addr****[Administrator]****Function** Set the IP address of the RADIUS authentication server.**Format** **set auth radius server { 1 | 2 } addr { ipaddr | ip6addr }****Parameters** **server { 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**addr { ipaddr | ip6addr }**

Specify the IP address of the RADIUS authentication server.

*ipaddr*

The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).

*ip6addr*

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

**Usage example** To set the RADIUS authentication server 192.168.1.1 as the RADIUS server 1.**set auth radius server 1 addr 192.168.1.1**

**set auth radius server port****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the authentication port number of the RADIUS authentication server.   |
| <b>Format</b>        | <b>set auth radius server { 1   2 } port { 1812   1645 }</b>  |
| <b>Parameters</b>    | <b>server { 1   2 }</b><br>Specify 1 or 2 for the identification number of the RADIUS authentication server.<br><b>port { 1812   1645 }</b><br>Specify the authentication port number of the RADIUS authentication server.<br>This parameter is set to "1812" by default.<br><b>1812</b><br>Set the authentication port number to UDP: 1812.<br><b>1645</b><br>Set the authentication port number to UDP: 1645. |
| <b>Usage example</b> | To set "1645" for the authentication port number of RADIUS server 1.<br><br><b>set auth radius server 1 port 1645</b>   |

**set auth radius server key****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the secret key of the RADIUS authentication server.   |
| <b>Format</b>        | <b>set auth radius server { 1   2 } key { password   encrypt string }</b>   |
| <b>Parameters</b>    | <p><b>server { 1   2 }</b><br/>Specify 1 or 2 for the identification number of the RADIUS authentication server.</p> <p><b>key { password   encrypt string }</b><br/>Set the secret key of the RADIUS authentication server.<br/>The maximum number of characters that can be set for the secret key is 64.</p> <p><b>password</b><br/>When the command is executed with the "password" parameter specified, a message prompting you to enter the new secret key is displayed.<br/>Enter the new secret key. When you press the Enter key after entering the secret key, a message prompting you to confirm the secret key is displayed.<br/>Enter the same secret key again.<br/>The secret key is deleted if you only press the Enter key when registering the secret key.</p> <p><b>encrypt string</b><br/>Specify the secret key to set using the character string after conversion with the hash function.</p> |
| <b>Usage example</b> | <p>To set the secret key "ABCDEF" to the RADIUS authentication server 1.</p> <pre>set auth radius server 1 key password</pre> <p>Radius Server's password : Enter the secret key "ABCDEF".<br/> Retry Radius Server's password : Enter the secret key "ABCDEF". (The entered secret key is not displayed.)</p>  |
| <b>Explanation</b>   | Register the same secret key to the NS-2250 as the one registered to the RADIUS authentication server.  |

**set auth radius server timeout****[Administrator]**

**Function** Set the timeout time for the response packet sent back from the RADIUS authentication server.

**Format** **set auth radius server { 1 | 2 } timeout *time***

**Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**timeout *time***

Specify the timeout time for the response packet sent back from the RADIUS authentication server. You can specify from 1 through 30 seconds.

This parameter is set to "5" by default.

**Usage example** To set 10 seconds for the timeout time.

**set auth radius server 1 timeout 10**

**set auth radius server portusr****[Administrator]**

**Function** Set the port user identifier used with RADIUS authentication.

**Format** `set auth radius server { 1 | 2 } portusr filter_id_head string`

**Parameters** `{ 1 | 2 }`

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**filter\_id\_head string**

When the Filter\_Id attribute of the received RADIUS authentication packet contains a character string starting with string, the user is identified as a port user.

For string, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-". Note that the first character of the character string must be an alphanumeric character. The maximum number of characters that can be set for the string is 64.

For details on the setting method of Filter\_Id attributes for a RADIUS authentication server, see Appendix D, "Examples of attributes and RADIUS authentication/accounting server settings".

**Usage example** To set the port user identifier used with RADIUS authentication.

```
set auth radius server 1 portusr filter_id_head NS2250_PORT
```

When the following Filter-Id attribute is received from the RADIUS authentication server, the user is identified as a port user by the NS-2250 and is authorized to access the serial ports 8 to 16, and 24.

```
Filter-Id = "NS2250_PORT8-16,24"
```

**Explanation**

(1) You can register only one port user identifier.

(2) With users for which the user group cannot be identified, user authentication is performed according to "set auth radius def\_user" setting

The user group cannot be identified in following cases.

- If the "set auth radius server { portusr | normal | root } filter\_id\_head" command or "create auth access\_group" command has not been set on the NS-2250
- If attributes for the RADIUS authentication server have not been set
- If the format of all Filter-Id attributes received by the NS-2250 cannot be recognized (3) All Filter-Id recognized by the NS-2250 are evaluated. Priority during login is as follows: (1) device management users (root), (2) normal users (normal), and (3) port users (portusr).

When you log in to the NS-2250 in Select mode, log in as the user with the highest priority of access privileges of (1), (2), and (3).

For example, with the settings below log in to the NS-2250 as a device management user.

When you log in to the NS-2250 in Direct mode, log in as the user with the higher priority of access privileges (1) and (2). You can access the port server only when you have access privileges of (3).

For example, with the settings below, log in to the NS-2250 as a device management user. Access the port server as a port user.

(Settings of the NS-2250)

```
# set auth radius server 1 root filter_id_head NS2250_ROOT
# set auth radius server 1 normal filter_id_head NS2250_NORMAL
# set auth radius server 1 portusr filter_id_head NS2250_PORT
```

(RADIUS authentication server settings)

```
user1 Password = "user1"
      Filter-Id = "NS2250_ROOT"
      Filter-Id = "NS2250_NORMAL"
      Filter-Id = "NS2250_PORT1-24"
```

(4) If you use the "set auth radius server { root | normal | portusr } filter\_id\_head" command together with the "create auth access\_group" command, all the settings are handled with the "or" condition.

For example, with the NS-2250 configured as follows and the two following Filter-Id attributes registered to the RADIUS authentication server, the port user "port1" has access to the serial ports 1 to 5, authorized for the access group "grp1", as well as the serial ports 6 to 10, authorized with "NS2240\_PORT6-10".

(Settings of the NS-2250)

```
# create auth access_group portusr port 1-5 radius filter_id grp1
# set auth radius server 1 portusr filter_id_head NS2250_PORT
```

(RADIUS authentication server settings)

```
port1 Password = "port1"
      Filter-Id = "grp1"
      Filter-Id = "NS2250_PORT6-10"
```

**set auth radius server normal****[Administrator]**

**Function** Set the normal user identifier used with RADIUS authentication.

**Format** **set auth radius server { 1 | 2 } normal filter\_id\_head string**

**Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**filter\_id\_head string**

When the Filter\_Id attribute of the received RADIUS authentication packet contains a character string starting with string, the user is identified as a normal user.

For string, you can use half-width alphanumeric characters, underbars "\_", and hyphens "-". Note that the first character of the character string must be an alphanumeric character. The maximum number of characters that can be set for the string is 64.

For details on the setting method of Filter\_Id attributes for a RADIUS authentication server, see Appendix D, "Examples of attributes and RADIUS authentication/accounting server settings".

**Usage example** To set the normal user identifier.

```
set auth radius server 1 normal filter_id_head NS2250_NORMAL
```

When the following Filter-Id attribute is received from the RADIUS authentication server, the user is identified as a normal user by the NS-2250.

```
Filter-Id = "NS2250_NORMAL"
```

**Explanation**

(1) You can register only one normal user identifier.

(2) With users for which the user group cannot be identified, user authentication is performed according to "set auth radiusdef\_user" setting. The user group cannot be identified in following cases.

- If the "set auth radius server { portusr | normal | root } filter\_id\_head" command or "create auth access\_group" command has not been set on the NS-2250
- If attributes for the RADIUS authentication server have not been set
- If the format of all Filter-Id attributes received by the NS-2250 cannot be recognized (3) All Filter-Id recognized by the NS-2250 are evaluated. Priority during login is as follows: (1) device management users (root), (2) normal users (normal), and (3) port users (portusr).

When you log in to the NS-2250 in Select mode, log in as the user with the highest priority of access privileges of (1), (2), and (3).

For example, with the settings below log in to the NS-2250 as a device management user.

When you log in to the NS-2250 in Direct mode, log in as the user with the higher priority of access privileges (1) and (2). You can access the port server only when you have access privileges of (3).

For example, with the settings below, log in to the NS-2250 as a device management user. Access the port server as a port user.

(Settings of the NS-2250)

```
# set auth radius server 1 root filter_id_head NS2250_ROOT
# set auth radius server 1 normal filter_id_head NS2250_NORMAL
# set auth radius server 1 portusr filter_id_head NS2250_PORT
```



(RADIUS authentication server settings)

```
user1 Password = "user1"  
      Filter-Id = "NS2250_ROOT"  
      Filter-Id = "NS2250_NORMAL"  
      Filter-Id = "NS2250_PORT1-24"
```

(4) If you use the "set auth radius server { root | normal | portusr } filter\_id\_head" command together with the "create auth access\_group" command, all the settings are handled with the "or" condition.

**set auth radius server root****[Administrator]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Set the device management user identifier used with RADIUS authentication.  |
| <b>Format</b>     | <b>set auth radius server { 1   2 } root filter_id_head string</b>  |
| <b>Parameters</b> | <b>{ 1   2 }</b><br>Specify 1 or 2 for the identification number of the RADIUS authentication server.<br><b>filter_id_head string</b><br>When the Filter_Id attribute of the received RADIUS authentication packet contains a character string starting with string, the user is identified as a device management user.<br>For string, you can use half-width alphanumeric characters, underbars "_", and hyphens "-". Note that the first character of the character string must be an alphanumeric character. The maximum number of characters that can be set for the string is 64.<br>For details on the setting method of Filter_Id attributes for a RADIUS authentication server, see Appendix D, "Examples of attributes and RADIUS authentication/accounting server settings". |

**Usage example** To set the device management user identifier.

```
set auth radius server 1 root filter_id_head NS2250_ROOT
```

When the following Filter-Id attribute is received from the RADIUS authentication server, the user is identified as a device management user by the NS-2250.

```
Filter-Id = "NS2250_ROOT"
```

**Explanation** (1) You can register only one device management user identifier.  
(2) With users for which the user group cannot be identified, user authentication is performed according to "set auth radius def\_user" setting

The user group cannot be identified in following cases.

- If the "set auth radius server { portusr | normal | root } filter\_id\_head" command or "create auth access\_group" command has not been set on the NS-2250
- If attributes for the RADIUS authentication server have not been set
- If the format of all Filter-Id attributes received by the NS-2250 cannot be recognized (3) All Filter-Id recognized by the NS-2250 are evaluated. Priority during login is as follows: (1) device management users (root), (2) normal users (normal), and (3) port users (portusr).

When you log in to the NS-2250 in Select mode, log in as the user with the highest priority of access privileges of (1), (2), and (3).

For example, with the settings below log in to the NS-2250 as a device management user.

When you log in to the NS-2250 in Direct mode, log in as the user with the higher priority of access privileges (1) and (2). You can access the port server only when you have access privileges of (3).

For example, with the settings below, log in to the NS-2250 as a device management user. Access the port server as a port user.

(Settings of the NS-2250)

```
# set auth radius server 1 root filter_id_head NS2250_ROOT
# set auth radius server 1 normal filter_id_head NS2250_NORMAL
# set auth radius server 1 portusr filter_id_head NS2250_PORT
```

(RADIUS authentication server settings)

```
user1 Password = "user1"  
      Filter-Id = "NS2250_ROOT"  
      Filter-Id = "NS2250_NORMAL"  
      Filter-Id = "NS2250_PORT1-24"
```

(4) If you use the "set auth radius server { root | normal | portusr } filter\_id\_head" command together with the "create auth access\_group" command, all the settings are handled with the "or" condition.

**set auth radius server nas\_id****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Register the NAS-ID attribute notified to the RADIUS authentication server.   |
| <b>Format</b>        | <b>set auth radius server { 1   2 } nas_id string</b>   |
| <b>Parameters</b>    | <b>{ 1   2 }</b><br>Specify 1 or 2 for the identification number of the RADIUS authentication server.<br><b>nas_id string</b><br>Specify the character string to save in the NAS-ID attribute.<br>You can specify from 1 through 64 characters for string. You can use half-width alphanumeric characters, underbars "_", hyphens "-", at marks "@", and periods ".".<br>The host name is saved in the NAS-ID attribute if this parameter is omitted. |
| <b>Usage example</b> | To set "SmartCS" in the NAS-ID attribute.<br><br><b>set auth radius server 1 nas_id SmartCS</b>   |

**set auth radius server def\_user****[Administrator]****Function** Configure access methods for users for which a user group cannot be identified.**Format** **set auth radius def\_user { portusr | none }****Parameters** **{ portusr | none }**

This parameter is set to "portusr" by default.

**portusr**

Specify "portusr" to handle the users for which a user group cannot be identified (users with the access group or "filter\_id\_head" setting that does not match) as port users, and authorize access to all serial ports.

**none**

Specify "none " to refuse access to the users for which a user group cannot be identified (users with the access group or "filter\_id\_head" setting that does not match).

**Usage example** To refuse access to users for which a user group cannot be identified.**set auth radius def\_user none**

**set auth tacacs server addr****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the IP address of the TACACS+ server (authentication/approval).  |
| <b>Format</b>        | <b>set auth tacacs server { 1   2 } addr { ipaddr   ip6addr }</b>  |
| <b>Parameters</b>    | <div><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the TACACS+ server.</div> <div><b>addr { ipaddr   ip6addr }</b><br/>Specify the IP address of the TACACS+ server.</div> <div><i>ipaddr</i><br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</div> <div><i>ip6addr</i><br/>Specify the IPv6 address in x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</div> |
| <b>Usage example</b> | To set the TACACS+ server 192.168.1.1 to server 1.<br><br><b>set auth tacacs server 1 addr 192.168.1.1</b>   |

**set auth tacacs server key****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the secret key of the TACACS+ server (authentication/approval).  |
| <b>Format</b>        | <b>set auth tacacs server { 1   2 } key { password   encrypt string }</b>  |
| <b>Parameters</b>    | <p><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the TACACS+ server.</p> <p><b>key { password   encrypt string }</b><br/>Specify the secret key of the TACACS+ server.<br/>The maximum number of characters that can be set for the secret key is 64.</p> <p><b>password</b><br/>When the command is executed with the "password" parameter specified, a message prompting you to enter the new secret key is displayed.<br/>Enter the new secret key. When you press the Enter key after entering the secret key, a message prompting you to confirm the secret key is displayed.<br/>Enter the same secret key again.<br/>The secret key is deleted if you only press the Enter key when registering the secret key.</p> <p><b>encrypt string</b><br/>Specify the secret key to set using the character string after conversion with the hash function.</p> |
| <b>Usage example</b> | <p>To set the secret key "ABCDEF" to the TACACS+ server 1.</p> <pre>set auth tacacs server 1 key password</pre> <p>Tacacs+ Server's password : Enter the secret key "ABCDEF".<br/> Retry Tacacs+ Server's password : Enter the secret key "ABCDEF". (The entered secret key is not displayed.)</p>   |
| <b>Explanation</b>   | (1) Register the same secret key to the NS-2250 as the one registered to the TACACS+ server.   |

**set auth tacacs server timeout****[Administrator]**

**Function** Set the timeout time for the response packet sent back from the TACACS+ server (authentication/approval).

**Format** **set auth tacacs server { 1 | 2 } timeout *time***

**Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the TACACS+ server.

**timeout *time***

Specify the timeout time for the response packet sent back from the TACACS+ server. You can specify from 1 through 30 seconds.

This parameter is set to "5" by default.

**Usage example** To set 10 seconds for the timeout time.

**set auth tacacs server 1 timeout 10**



**set auth tacacs def\_user****[Administrator]**

**Function** Configure access methods for users for which a user group cannot be identified when using TACACS+ authentication and approval.

**Format** **set auth tacacs def\_user { portusr | normal | none }**

**Parameters** **{ portusr | normal | none }**

This parameter is set to "portusr" by default.

**portusr**

Specify "portusr" to handle the users for which a user group cannot be identified (users with the access group that does not match) as port users, and authorize access to all serial ports.

**normal**

Specify "normal" to handle the users for which a user group cannot be identified (users with the access group that does not match) as normal users.

**none**

Specify "none" to refuse access to the users for which a user group cannot be identified (users with the access group that does not match).

**Usage example** To refuse access to users for which a user group cannot be identified.

**set auth tacacs def\_user none**

**unset auth radius server addr****[Administrator]**

---

**Function** Remove the IP address of the RADIUS authentication server.**Format** **unset auth radius server { 1 | 2 } addr****Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**Usage example** To remove the setting of RADIUS authentication server 1.**unset auth radius server 1 addr**

**unset auth radius server portusr****[Administrator]**

---

**Function** To remove the port user identifier when using RADIUS authentication.**Format** **unset auth radius server { 1 | 2 } portusr****Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**Usage example** To remove the identifier for port users.**unset auth radius server 1 portusr**

**unset auth radius server normal****[Administrator]**

---

**Function** To remove the normal user identifier when using RADIUS authentication.**Format** **unset auth radius server { 1 | 2 } normal****Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**Usage example** To remove the identifier for normal users.**unset auth radius server 1 normal**

**unset auth radius server root****[Administrator]****Function** To remove the device management user identifier when using RADIUS authentication.**Format** **unset auth radius server { 1 | 2 } root****Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS authentication server.

**Usage example** To remove the identifier for device management users.**unset auth radius server 1 root**

**unset auth radius server nas\_id****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Remove the NAS-ID attribute notified to the RADIUS authentication server.  |
| <b>Format</b>        | <b>unset auth radius server { 1   2 } nas_id</b>   |
| <b>Parameters</b>    | <b>{ 1   2 }</b><br>Specify 1 or 2 for the identification number of the RADIUS authentication server.                  |
| <b>Usage example</b> | To remove the NAS-ID attribute for the RADIUS authentication server 1.<br><br><b>unset auth radius server 1 nas_id</b> |
| <b>Explanation</b>   | (1) The host name is saved in the NAS-ID attribute when this command is executed.                                      |

**unset auth tacacs server addr****[Administrator]**

---

**Function** Remove the IP address of the TACACS+ server (authentication/approval).**Format** **unset auth tacacs server { 1 | 2 } addr****Parameters** **{ 1 | 2 }**  
Specify 1 or 2 for the identification number of the TACACS+ server.**Usage example** To remove the setting of TACACS+ server 1.**unset auth tacacs server 1 addr**

**delete auth access\_group****[Administrator]****Function** Delete access groups and serial port access privileges.**Format** **delete auth access\_group { root | normal | portusr port disable\_port\_list }  
{ all | radius filter\_id string | tacacs attr string val value }****Parameters** **{ root | normal | portusr port disable\_port\_list }****root**

Specify "root" to delete the access group of device management users who log in to the NS-2250.

**normal**

Specify "normal" to delete the access group of normal users who log in to the NS-2250.

**portusr port disable\_port\_list**

Specify "portusr" to remove the access privileges for the specified serial ports from the access group of port users who access the serial ports of the NS-2250. When access privileges for all serial ports have been removed from an access group, this access group is deleted.

**port disable\_port\_list**

Specify the ports for which the access privileges will be removed in the 1 to 48 range. The range of ports that you can specify varies depending on the model. Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

The target access group is deleted if you specify all the serial ports.

**{ all | radius filter\_id string | tacacs attr string val string }****all**

Specify "all" to delete all specified access groups.

**radius filter\_id string**

Specify "radius filter\_id string" to delete the specified access groups containing the character string string.

You can specify from 1 through 64 characters for string. You can use half-width alphanumeric characters, underbars "\_", hyphens "-", at marks "@", and periods ".".

**tacacs attr string val value**

Specify "tacacs attr string val string" to delete the access groups containing the specified attribute character string (attr) and the specified value character string (val) pair.

You can specify from 1 through 32 characters for both the "attr" and "val" strings. You can use half-width alphanumeric characters, underbars "\_", hyphens "-", at marks "@", and periods ".".

**Usage example** (1) To delete the access group "admin" of device management users (RADIUS).**delete auth access\_group root radius filter\_id admin**

(2) To delete the access group "grp1" of port users (RADIUS).

**delete auth access\_group portusr port 1-32 radius filter\_id grp1**

(3) To delete only the access privilege for serial port 5 from the port user access group "grp1" (RADIUS).

**delete auth access\_group portusr port 5 radius filter\_id grp1**



(4) To delete all port user access groups with access privileges for serial ports 1 to 32 (RADIUS).

**delete auth access\_group portusr port 1-32 all**

(5) To delete the user definition attribute and value pair "grp2=tech1" registered for the access group of port users with access to serial ports 1 to 5 (TACACS+).

**delete auth access\_group portusr port 1-5 tacacs attr grp2 val tech1**

**Explanation**

(1) When you remove some of the access privileges from a port user group, the valid access privileges are gathered in one command line (there is still one line registered for "create auth access\_group").

```
create auth access_group portusr port 1-10 radius filter_id grp1
```

```
delete auth access_group portusr port 5-6 radius filter_id grp1
```

```
->
```

```
create auth access_group portusr port 1-4,7-10 radius filter_id grp1
```

## 4.32 Accounting setting commands

These are objects managing the operating conditions related to the accounting modes and RADIUS/TACACS+ client accounting.

**set acct mode**

**[Administrator]**

**Function** Set the saving mode for accounting logs.

**Format** **set acct mode { local | radius | tacacs }**

**Parameters** **{ local | radius | tacacs }**

This parameter is set to "local" by default.

**local**

Specify "local" to not save the accounting logs.

**radius**

Specify "radius" to save the accounting logs in the RADIUS accounting server.

**tacacs**

Specify "tacacs" to save the accounting logs in the TACACS+ server.

**Usage example** To save the accounting logs to the RADIUS accounting server.

**set acct mode radius**

**set acct radius retry****[Administrator]**

**Function** Set the number of times accounting packets are resent to the RADIUS accounting server.

**Format** **set acct radius retry** *number*

**Parameters** **retry** *number*

Specify the number of times accounting packets are resent to the RADIUS accounting server. You can specify a number from 0 through 5. Specify "0" to not resend the accounting packets.

This parameter is set to "3" by default.

**Usage example** To set to 5 the number of times the accounting packets are resent.

**set acct radius retry 5**

**set acct radius auth\_deny\_stop****[Administrator]**

**Function** Set the sending method of accounting STOP packets when user authentication has failed.

**Format** **set acct radius auth\_deny\_stop { off | remote | local | all }**

**Parameters** **{ off | remote | local | all }**

This parameter is set to "remote" by default.

**off**

Do not send accounting STOP packet to the RADIUS accounting server even when user local or external authentication has failed.

**remote**

Send an accounting STOP packet to the RADIUS accounting server when user external authentication has failed.

**local**

Send an accounting STOP packet to the RADIUS accounting server when user local authentication has failed.

**all**

Send an accounting STOP packet to the RADIUS accounting server when user local or external authentication has failed. When both local and external authentication failed, the accounting STOP packet is sent twice.

**Usage example** To send an accounting STOP packet to the RADIUS accounting server when the user local or external authentication fails.

**set acct radius auth\_deny\_stop all**

**set acct radius server addr****[Administrator]****Function** Set the IP address of the RADIUS accounting server.**Format** **set acct radius server { 1 | 2 } addr { ipaddr | ip6addr }****Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS accounting server.

**addr { ipaddr | ip6addr }**

Specify the IP address of the RADIUS accounting server.

*ipaddr*

The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).

*ip6addr*

Specify the IPv6 address in x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

**Usage example** To set the RADIUS accounting server 192.168.1.1 as the RADIUS server 1.**set acct radius server 1 addr 192.168.1.1**

**set acct radius server port****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the accounting port number of the RADIUS accounting server.   |
| <b>Format</b>        | <b>set acct radius server { 1   2 } port { 1813   1646 }</b>  |
| <b>Parameters</b>    | <b>{ 1   2 }</b><br>Specify 1 or 2 for the identification number of the RADIUS accounting server.<br><b>port { 1813   1646 }</b><br>This parameter is set to "1813" by default.<br><b>1813</b><br>Set the accounting port number to UDP: 1813.<br><b>1646</b><br>Set the accounting port number to UDP: 1646. |
| <b>Usage example</b> | To set "1646" for the accounting port number of RADIUS server 1.<br><br><b>set acct radius server 1 port 1646</b>   |

**set acct radius server key****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the secret key of the RADIUS accounting server.  |
| <b>Format</b>        | <b>set acct radius server { 1   2 } key { password   encrypt string }</b>  |
| <b>Parameters</b>    | <p><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the RADIUS accounting server.</p> <p><b>key { password   encrypt string }</b><br/>Set the secret key of the RADIUS accounting server.<br/>The maximum number of characters that can be set for the secret key is 64.</p> <p><b>password</b><br/>When the command is executed with the "password" parameter specified, a message prompting you to enter the new secret key is displayed.<br/>Enter the new secret key. When you press the Enter key after entering the secret key, a message prompting you to confirm the secret key is displayed.<br/>Enter the same secret key again.<br/>The secret key is deleted if you only press the Enter key when registering the secret key.</p> <p><b>encrypt string</b><br/>Specify the secret key to set using the character string after conversion with the hash function.</p> |
| <b>Usage example</b> | <p>To set the secret key "ABCDEF" to the RADIUS accounting server 1.</p> <pre>set auth radius server 1 key password</pre> <p><b>Radius Server's password : Enter the secret key "ABCDEF".</b><br/> <b>Retry Radius Server's password : Enter the secret key "ABCDEF".</b> (The entered secret key is not displayed.)</p>   |
| <b>Explanation</b>   | Register the same secret key to the NS-2250 as the one registered to the RADIUS accounting server.   |

**set acct radius server timeout****[Administrator]**

**Function** Set the timeout time for the response packet sent back from the RADIUS accounting server.

**Format** **set acct radius server { 1 | 2 } timeout *time***

**Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS accounting server.

**timeout *time***

Set the timeout time for the response packet sent back from the RADIUS accounting server. You can specify from 1 through 30 seconds.

This parameter is set to "5" by default.

**Usage example** To set 10 seconds for the timeout time.

**set acct radius server 1 timeout 10**



**set acct radius server nas\_id****[Administrator]**

**Function** Register the NAS-ID attribute notified to the RADIUS accounting server.

**Format** **set acct radius server { 1 | 2 } nas\_id string**

**Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the RADIUS accounting server.

**nas\_id string**

Specify the character string to save in the NAS-ID attribute.

You can specify from 1 through 64 characters for string. You can use half-width alphanumeric characters, underbars "\_", hyphens "-", at marks "@", and periods ".".

The host name is saved in the NAS-ID attribute if this parameter is omitted.

**Usage example** To set "SmartCS" in the NAS-ID attribute.

**set acct radius server 1 nas\_id SmartCS**

**set acct tacacs auth\_deny\_stop****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the sending method of accounting STOP packets when TACACS+ authentication or approval has failed.   |
| <b>Format</b>        | <b>set acct tacacs auth_deny_stop { off   remote   local   all }</b>  |
| <b>Parameters</b>    | <b>{ off   remote   local   all }</b><br>This parameter is set to "remote" by default.<br><b>off</b><br>Do not send accounting STOP packet to the TACACS+ server even when user local or external authentication has failed.<br><b>remote</b><br>Send an accounting STOP packet to the TACACS+ server when user external authentication has failed.<br><b>local</b><br>Send an accounting STOP packet to the TACACS+ server when user local authentication has failed.<br><b>all</b><br>Send an accounting STOP packet to the TACACS+ server when user local or external authentication has failed. When both local and external authentication failed, the accounting STOP packet is sent twice. |
| <b>Usage example</b> | To send an accounting STOP packet to the TACACS+ server when the user local or external authentication fails.   |

**set acct tacacs auth\_deny\_stop all**

**set acct tacacs server addr****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the IP address of the TACACS+ server (accounting).   |
| <b>Format</b>        | <b>set acct tacacs server { 1   2 } addr { ipaddr   ip6addr }</b>  |
| <b>Parameters</b>    | <p><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the TACACS+ server.</p> <p><b>addr { ipaddr   ip6addr }</b><br/>Specify the IP address of the TACACS+ server.</p> <p><i>ipaddr</i><br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i><br/>Specify the IPv6 address in x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> |
| <b>Usage example</b> | To set the TACACS+ server 192.168.1.1 to server 1.<br><br><b>set acct tacacs server 1 addr 192.168.1.1</b>   |

**set acct tacacs server key****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the secret key of the TACACS+ server (accounting).   |
| <b>Format</b>        | <b>set acct tacacs server { 1   2 } key { password   encrypt <i>string</i> }</b>   |
| <b>Parameters</b>    | <p><b>{ 1   2 }</b><br/>Specify 1 or 2 for the identification number of the TACACS+ server.</p> <p><b>key { password   encrypt <i>string</i> }</b><br/>Specify the secret key of the TACACS+ server.<br/>The maximum number of characters that can be set for the secret key is 64.</p> <p><b>password</b><br/>When the command is executed with the "password" parameter specified, a message prompting you to enter the new secret key is displayed.<br/>Enter the new secret key. When you press the Enter key after entering the secret key, a message prompting you to confirm the secret key is displayed.<br/>Enter the same secret key again.<br/>The secret key is deleted if you only press the Enter key when registering the secret key.</p> <p><b>encrypt <i>string</i></b><br/>Specify the secret key to set using the character string after conversion with the hash function.</p> |
| <b>Usage example</b> | <p>To set the secret key "ABCDEF" to the TACACS+ server 1.</p> <pre>set acct tacacs server 1 key password</pre> <p>Tacacs+ Server's password : Enter the secret key "ABCDEF".<br/> Retry Tacacs+ Server's password : Enter the secret key "ABCDEF". (The entered secret key is not displayed.)</p>   |
| <b>Explanation</b>   | (1) Register the same secret key to the NS-2250 as the one registered to the TACACS+ server.   |

**set acct tacacs server timeout****[Administrator]**

**Function** Set the timeout time for the response packet sent back from the TACACS+ server (accounting).

**Format** **set acct tacacs server { 1 | 2 } timeout *time***

**Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the TACACS+ server.

**timeout *time***

Specify the timeout time for the response packet sent back from the TACACS+ server. You can specify from 1 through 30 seconds.

This parameter is set to "5" by default.

**Usage example** To set 10 seconds for the timeout time.

**set acct tacacs server 1 timeout 10**

**unset acct radius server addr****[Administrator]**

---

**Function** Remove the IP address of the RADIUS accounting server.**Format** **unset acct radius server { 1 | 2 } addr****Parameters** **{ 1 | 2 }**  
Specify 1 or 2 for the identification number of the RADIUS accounting server.**Usage example** To remove the setting of RADIUS accounting server 1.**unset acct radius server 1 addr**

**unset acct radius server nas\_id****[Administrator]****Function** Remove the NAS-ID attribute notified to the RADIUS accounting server.**Format** **unset acct radius server { 1 | 2 } nas\_id****Parameters** **{ 1 | 2 }**  
Specify 1 or 2 for the identification number of the RADIUS accounting server.**Usage example** To remove the NAS-ID attribute for the RADIUS accounting server 1.**unset auth radius server 1 nas\_id****Explanation** (1) The host name is saved in the NAS-ID attribute when this command is executed.

**unset acct tacacs server addr****[Administrator]**

---

**Function** Remove the IP address of the TACACS+ server (accounting).**Format** **unset acct tacacs server { 1 | 2 } addr****Parameters** **{ 1 | 2 }**

Specify 1 or 2 for the identification number of the TACACS+ server (accounting).

**Usage example** To remove the setting of TACACS+ server 1.**unset acct tacacs server 1 addr**



## 4.33 terminal output control setting commands

These are objects used to set terminal output and operation.

### set terminal default editing

[Administrator]

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the default setting for enabling or disabling terminal line editing.   |
| <b>Format</b>        | <b>set terminal default editing { enable   disable }</b>   |
| <b>Parameters</b>    | <b>{ enable   disable }</b><br>Set to enable or disable the editing of command lines using the terminal delete and arrow keys.<br>This parameter is enabled by default.<br><b>enable</b><br>Specify "enable" to enable the line editing function.<br><b>disable</b><br>Specify "disable" to disable the line editing function. |
| <b>Usage example</b> | To disable by default the line editing function.<br><br><b>set terminal default editing disable</b>  |
| <b>Explanation</b>   | The settings made with this command apply to all users.<br>The settings made with this command are enabled from the next login session.  |

**set terminal default height****[Administrator]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Set the default setting for the number of lines on one page of the terminal.  |
| <b>Format</b>        | <b>set terminal default height</b> rows   |
| <b>Parameters</b>    | rows<br>Specify the number of lines on one page. You can specify a number from 10 through 256.<br>This parameter is set to "23" by default. |
| <b>Usage example</b> | To set to 32 the default number of lines on one page.<br><br><b>set terminal default height 32</b>  |
| <b>Explanation</b>   | The settings made with this command apply to all users.<br>The settings made with this command are enabled from the next login session.     |

**set terminal default width****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the default setting for the number of characters on one line of the terminal.  |
| <b>Format</b>        | <b>set terminal default width</b> <i>columns</i>   |
| <b>Parameters</b>    | <i>columns</i><br>Specify the number of characters on one line. You can specify a number from 40 through 256.<br>This parameter is set to "80" by default. |
| <b>Usage example</b> | To set to 60 the default number of characters on one line.<br><br><b>set terminal default width 60</b>   |
| <b>Explanation</b>   | The settings made with this command apply to all users.<br>The settings made with this command are enabled from the next login session.                    |

**set terminal default page****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the default setting for enabling or disabling the terminal paging function.  |
| <b>Format</b>        | <b>set terminal default page { enable   disable }</b>  |
| <b>Parameters</b>    | <b>{ enable   disable }</b><br>With this command you can enable the paging function that separates the output text into a different page when the text exceeds the specified number of lines per page. Disable the paging function to display the output text continuously. This parameter is enabled by default.<br><b>enable</b><br>Specify "enable" to enable the paging function.<br><b>disable</b><br>Specify "disable" to disable the paging function. |
| <b>Usage example</b> | To disable by default the paging function.<br><br><b>set terminal default page disable</b>   |
| <b>Explanation</b>   | The settings made with this command apply to all users.<br>The settings made with this command are enabled from the next login session.  |

**set terminal default prompt****[Administrator]**

|                      |  |
|----------------------|--|
| <b>Function</b>      | Set the default setting for the display format of the terminal prompt.   |
| <b>Format</b>        | <b>set terminal default prompt { device { on   off }   hostname { on   off }   time { on   off } }</b>   |
| <b>Parameters</b>    | <p><b>{ device { on   off }   hostname { on   off }   time { on   off } }</b><br/>Specify the default display format of the terminal prompt.</p> <p><b>device { on   off }</b><br/>This parameter is "on" by default.</p> <p><b>on</b><br/>Specify "on" to display identification information (terminal number, etc.) of the terminal used on the prompt.</p> <p><b>off</b><br/>Specify "off" not to display identification information (terminal number, etc.) of the terminal used on the prompt.</p> <p><b>hostname { on   off }</b><br/>This parameter is "on" by default.</p> <p><b>on</b><br/>Specify "on" to display the NS-2250 host name on the prompt.</p> <p><b>off</b><br/>Specify "off" not to display the NS-2250 host name on the prompt.</p> <p><b>time { on   off }</b><br/>This parameter is "off" by default.</p> <p><b>on</b><br/>Specify "on" to display the current time on the prompt.</p> <p><b>off</b><br/>Specify "off" not to display the current time on the prompt.</p> |
| <b>Usage example</b> | To display the current time on the prompt.   |
|                      | <b>set terminal default prompt time on</b>   |
| <b>Explanation</b>   | <p>The settings made with this command apply to all users.</p> <p>The settings made with this command are enabled from the next login session.</p>   |

**set terminal default redisp****[Administrator]**

**Function** Set whether or not to redisplay by default the previously entered command string on the next prompt screen after a command input error has occurred.

**Format** **set terminal default redisp { on | off }**

**Parameters** **{ on | off }**

Specify "on" to redisplay the command string that caused the error.

Specify "off" not to redisplay the command string that caused the error.

This parameter is "on" by default.

**Usage example** To set not to redisplay by default the command string.

**set terminal default redisp off**

**Explanation** The settings made with this command apply to all users.

The settings made with this command are enabled from the next login session.

**set terminal default timeout****[Administrator]**

**Function** Set the default value for the terminal automatic logout time.

**Format** **set terminal default timeout { on *time* | off }**

**Parameters** **{ on *time* | off }**

Specify the default value for the terminal automatic logout time. This setting applies to normal users and device management users who log in to the NS-2250. The user is automatically log out if no operation, such as entering a command, is performed during the specified time.

Specify the timeout time from 1 through 60 minutes if you have specified "on". The unit is one minute. This function runs independently of the Configuration mode or Operation mode.

Specify "off" to set an infinite timeout time so that the users are not automatically logged out.

This parameter is set to "on" by default with a timeout time of 10 minutes.

**Usage example** To set the default timeout time for automatic logout to 30 minutes.

**set terminal default timeout on 30**

**Explanation** The settings made with this command apply to all users.

The settings made with this command are enabled from the next login session.

## 4.34 Time zone setting commands

**set timezone****[Administrator]****Function** Set the time zone.**Format** **set timezone** *string***Parameters** *string*

Specify the name of the time zone.

You can specify a time zone name from the list displayed using the "show timezone list" command.

This parameter is set to "UTC" by default.

**Note**

- (1) The default setting for this parameter in the startup file is "Tokyo".
- (2) From startup until the settings are imported, the time is displayed using the "UTC" of default.
- (3) It may be necessary to acquire safety standards depending on the country. If you will use the NS-2250 overseas, contact us or your dealer.

**Usage example** To set the time zone to Hong Kong.**set timezone Hongkong**



## 4.35 Temperature sensor setting commands

These are objects managing the temperature sensor.

**set temperature adjust**

**[Administrator]**

**Function** Set the temperature correction value of the temperature sensor.

**Format** **set temperature adjust** *temp*

**Parameters** *temp*

Set the temperature correction value of the temperature sensor.

The temperature used is the sensor temperature from which the correction value has been subtracted.

You can specify a number from 0 through 20 for the correction value.

This parameter is set to "0" by default.

**Usage example** To set a correction value of -10 degree Celsius.

**set temperature adjust 10**

**Explanation** With the "show temperature" command, both the sensor temperature and the temperature after subtracting the correction value are displayed.

The temperature saved in the SNMP MIB is the temperature after the correction value has been subtracted from the sensor temperature.

When the correction value is set to "0", the temperature obtained from the SNMP MIB is the same as the sensor temperature.

## Chapter 5

# Status display commands

---

Chapter 5 describes the status and statistics display commands that can be used on the NS-2250.

## 5.1 System status display commands

**show version**

[Normal user]

**Function** Display the system hardware configuration, system software version, boot information, etc.

**Format** **show version**

**Parameters** None

**Usage example** **show version**

**Execution example**

```
(c)NS-2250> show version
System           : System Software Ver x.x (Build xxxx-xx-xx)
Boot Status      : Power on (xx:xx:xx)
System Up Time   : 20xx/xx/xx xx:xx:xx
Local MAC Address : xx:xx:xx:xx:xx:xx
Number of MAC Address : 2
Model            : NS-2250-xx (xx port)
Serial No.       : xxxxxxxx
BootROM          : Ver x.x
Main Board CPU   : e500v2 (533.333328MHz)
Main Memory      : 1033392 KBytes
Boot System      : main (Ver x.x)
Boot Config      : external startup1
Main System      : Ver x.x
Backup System     : Ver x.x
```

**Explanation** **System**

Displays information about the system.

**Boot Status**

Displays information about the booting method.

**System Up Time**

Displays the time when the system started.

**Local MAC Address**

Displays the Ethernet address of the NS-2250.

**Number of MAC Address**

Displays the number of Ethernet address.

**Model**

Displays the NS-2250 model.

**Serial No.**

Displays the NS-2250 serial number.

**BootROM**

Displays the version of the NS-2250 BootROM.

**Main Board CPU**

Displays the model and the clock rate of the CPU mounted on the main

**Main Memory**

Displays the capacity of the memory mounted on the main board.

**Boot System**

Displays the type of the system that has started.

**Boot Config**

Displays the startup file imported at startup.

**Main System**

Displays the system software version of the main system.

**Backup System**

Displays the system software version of the backup system.

**show environment**

[Normal user]

**Function** Display the information of power and Temperature.**Format** **show environment****Parameters** None**Execution example**

```
(c)NS-2250> show environment
<Environment status>

Power information
  Power unit      : AC
  Power 1         : ON
  Power 2         : OFF
Temperature information
  Current temp    : 31 deg C
  Sensor          : 31 deg C
  Adjust          : 0
```

**Explanation****Power information**

Displays the power information.

**Power unit**

Displays the type of power supply.

**AC**

AC Power supply

**DC**

DC Power supply

**Power**

Displays the status of power supply.

**ON**

Power on

**OFF**

Power off

**Temperature information**

Displays the type of the temperature information.

**Current temp**

Displays the current temperature. The current temperature is the sensor temperature from which the correction value has been subtracted.

**Sensor**

Display the temperature of the temperature sensor.

**Adjust**

Displays the set temperature correction value.

**show slot****[Administrator]****Function**            Display the USB port information.**Format**            **show slot****Parameters**        None**Usage example**      **show slot****Execution example**

```
(c)NS-2250# show slot
external slot information
device : exist
type   : setup
```

**Explanation**      **device**

Displays the device insertion status.

**exist**

device inserted

**not exist**

device not inserted type

**type**

Displays the type of the inserted device.

**setup**

setup USB memory

**show cpu****[Administrator]****Function**            Display the CPU utilization rate.**Format**             **show cpu****Parameters**        None**Execution example**

```
(c)NS-2250# show cpu
Total Info.      : 22 %
  (System       : 12 %)
  (User         : 10 %)
```

**Explanation**      **Total Info.**

Displays the CPU utilization rate for the entire NS-2250.

**System**

Displays the CPU utilization rate in kernel space (system).

**User**

Displays the CPU utilization rate in user space (application).

**show memory****[Administrator]****Function**            Display the memory usage rate.**Format**             **show memory****Parameters**        None**Execution example**

```
(c)NS-2250# show memory
Total memory : 127308 Kbytes
Used memory : 9972 Kbytes ( 7%)
```

**Explanation**       **Total memory**

Displays the capacity of the memory equipped in the NS-2250.

**Used memory**

Displays the amount and percentage (%) of memory currently used.



**show log****[Administrator]**

**Function**            Display the console log or the command execution log.

**Format**            **show log { console | command } [ { lines | detail } ]**

**Parameters**       **log { console | command }**  
                       Specify the log to display.

**console**

Specify "console" to display the console log.

**command**

Specify "command" to display the command execution log.

**[ { lines | detail } ]**

**lines**

Specify the number of lines to display from 1 through 1000.

The specified number of lines of the most recent log are displayed.

**detail**

The entire log recorded in the NS-2250 is displayed if this parameter is omitted.

**Usage example**       **show log console 10**

**Execution example**

```
(c)NS-2250# show log console 10
Jan 23 17:45:42 port_logd: <TTY42> started
Jan 23 17:45:42 port_logd: <TTY43> started
Jan 23 17:45:42 port_logd: <TTY45> started
Jan 23 17:45:42 port_logd: <TTY46> started
Jan 23 17:45:42 port_logd: <TTY47> started
Jan 23 17:45:42 port_logd: <TTY48> started
Jan 23 17:45:43 port_logd: <TTY44> started
Jan 23 17:45:43 ether: port eth1 LINK UP (1000Mbps, FULL-duplex).
Jan 26 10:39:18 port_telnetd: LOGIN BY somebody FROM 172.31.100.67
Jan 26 10:39:18 su: COMMAND(su) invoked by /0
(c)NS-2250#
```

**show log ttymanage****[Administrator]**

- Function** Display the command log sent to the serial port of NS-2250 by tty manage function.
- Format** **show log ttymanage send tty** *tty* [ { *lines* | **detail** } ]
- Parameters**
- log ttymanage**  
Display the command log sent to the serial port of NS-2250 by tty manage function.
  - send**  
Display the command log sent to the serial port of NS-2250.
  - tty** *tty*  
Specify the tty number corresponding to the serial port in the 1 to 48 range.  
The range of ports that you can specify varies depending on the model.
  - [ { *lines* | **detail** } ]  
Specify the number of line to diaplay the log.  
8K bytes of the most recent logs recorded in the NS-2250 are displayed if this parameter is omitted.
  - lines*  
Specify the number of lines to display from 1 through 1000.  
The specified number of lines of the most recent log are displayed.
  - detail**  
The entire log recorded in the NS-2250 is displayed if this parameter is omitted.
- Usage example** To display 10 lines of the command logs sent to the serial port 1 of NS-2250 by tty manage function.

```
show log ttymanage send tty 1 10
```

**Execution example**

```
(c)NS-2250# show log ttymanage send tty 1 10
2019 Sep 06 13:55:43 extusr: <CR>
2019 Sep 06 13:56:09 extusr: show version<CR>
2019 Sep 06 13:56:23 extusr: show service<CR>
2019 Sep 06 13:56:41 extusr: show ip<CR>
2019 Sep 06 14:00:24 extusr: show portd session<CR>
2019 Sep 06 14:13:16 extusr: show stats ip<CR>
2019 Sep 06 14:14:37 extusr: show tcp<CR>
2019 Sep 06 14:14:45 extusr: show arp<CR>
2019 Sep 06 14:16:00 extusr: show ether<CR>
2019 Sep 06 14:36:28 extusr: <CR>
```

**show support****[Administrator]****Function** Command used to display support information.**Format** `show support [ { detail | file { write | info | delete } } ]`**Parameters** `[ { detail | file { write | info | delete } } ]`**detail**

Displays more detailed information than with the "show support" command and all the logs saved in the NS-2250.

**file { write | info | delete }****write**

Support information is saved as a file in RAM. The file which can be saved is one. When a file exists already, it's overwritten.

When NS-2250 is restarted, a support information file is removed.

**info**Display date and time when a support information file was saved.  
This parameter also indicates a file size.**delete**

Delete support information file in RAM.

**Execution example**

```
(c)NS-2250# show support
===== start of show support =====
Fri Sep 25 20:49:55 JST 2015

===== Version information =====
System           : System Software Ver x.x (Build xxxx-xx-xx)
Boot Status      : Power on (xx:xx:xx)
System Up Time   : 20xx/xx/xx xx:xx:xx
Local MAC Address : xx:xx:xx:xx:xx:xx
Number of MAC Address : 2
Model            : NS-2250-xx (xx port)
Serial No.       : xxxxxxxx
BootROM          : Ver x.x
Main Board CPU   : e500v2 (533.333328MHz)
Main Memory      : 1025216 KBytes
Boot System      : main (Ver x.x)
Boot Config      : external startup1
Main System      : Ver x.x
Backup System    : Ver x.x

===== SYSTEM information =====

show timezone
Timezone is "Tokyo"

ls /etc/localtime
lrwxrwxrwx 1 root root 36 Sep 20 19:56 /etc/localtime -> /usr/share/zoneinfo/p
osix/Asia/Tokyo

lrwxrwxrwx 1 root root 36 Sep 20 19:56 /etc_base/localtime -> /usr/share/zonei
nfo/posix/Asia/Tokyo
```

```
==== Host information ====
Hostname      :NS-2250
IPaddress     :192.0.2.1/24
TcpKeepAlive :180

:
:
:

==== end of show support ====
(c)NS-2250#
```

**Explanation**      The following is displayed with this command.

- Version information
- SYSTEM information
- Host information
- External slot information
- CPU information
- Memory information
- Process information
- Ether port information
- Ether port statistics information
- IP6 information
- IP host information
- IP6 route information
- IP route information
- ipfilter information
- ip6filter information
- ipsed information
- IP/IP6 statistics information
- DNS information
- ARP/NDP/TCP/UDP information
- User information
- Login User information
- SNMP information
- Sntp information
- Syslog information
- NFS information
- AUTH Access.Group information
- AUTH information
- ACCT information
- TTY information
- TTY stats information
- Logd information
- Portd information

- Portd session information
- Console information
- Console stats information
- Service information
- Allowhost information
- Startup config information
- Running configuration
- system information
- network information
- i2c information
- system profile
- command log
- console log
- boot log
- system log

**Note**

This command displays the messages displayed at startup, statistical information and other large-volume logs. Therefore, it is more appropriate to execute this command from a Telnet/SSH client connected via a network than via the CONSOLE port, which is configured to a low-speed transmission rate.

Note that the "show support" command can display a maximum of 500 lines for each log. To display the entire logs, execute the "show support detail" command.

The output of this command is used for our support system so we cannot answer inquiries relating to its content.

**Usage example**        **show support file write**

## 5.2 Bonding display commands

**show bonding**

[Normal user]

**Function**            Display the bonding information.

**Format**            **show bonding**

**Parameters**        None

**Execution example**

If the bonding function is disabled.

```
(c)NS-2250> show bonding
<bonding information>
  Status           : disable
  Mode             : active-backup

<master bond1 information>
  Status           : ---
  Up Delay Time(sec) : off
```

If the bonding function is enabled.

```
(c)NS-2250> show bonding
<bonding information>
  Status           : enable
  Mode             : active-backup

<master bond1 information>
  Status           : up
  Up Delay Time(sec) : off
  Last change time  : Thu Mar 10 19:57:17 JST 2016
<slave information>
  interface active status      failure_count
  -----
  eth1      *      up          0
  eth2              down        0
```

**Explanation**      <bonding information>

### **Status**

Displays the status of the bonding function.

#### **enable**

The bonding function is enabled.

#### **disable**

The bonding function is disabled.

### **Mode**

Displays the mode of the bonding function.

#### **active-backup**

Fault tolerant.

### <master bond1 information>

Displays the virtual interface information which is used in bonding function.

### **Status**

Displays the status of master interface.

**Up Delay Time(sec)**

Displays linkup wait timer.

**<slave information>**

Displays the physical interface information which belong to master interface.

**interface**

Name of slave interface.

**active**

Displays the slave interface which is used in transmission and reception.

**status**

status of slave interface.

**up**

The physical link is up,and available.

**going back**

The physical link is up,but not available because waiting period.

**down**

The physical link is up,and not available.

**failure\_count**

The number of times that slave interface status changed in down from up.

## 5.3 Network information display commands

**show ether**

[Normal user]

**Function** Display information about the NS-2250 LAN port.

**Format** **show ether** [ { **eth1** | **eth2** | **bond1** } ]

**Parameters** { **eth1** | **eth2** | **bond1** }  
Specify the interface of the NS-2250.  
The status of all ports is displayed if this parameter is omitted.

### Execution example

| (c)NS-2250> show ether |      |        |          |        |     |
|------------------------|------|--------|----------|--------|-----|
| Eth                    | Link | Nego   | Speed    | Duplex | MDI |
| -----                  |      |        |          |        |     |
| eth1                   | UP   | enable | 1000Mb/s | full   | mdi |
| eth2                   | DOWN | enable | ---      | ---    | --- |
| bond1                  | UP   | ---    | ---      | ---    | --- |

**Explanation**

**Eth**  
Displays the LAN ports.

**Link**  
Displays the link of LAN ports.

**UP**  
The link is up.

**DOWN**  
The link is down.

**Nego**  
Displays the auto-negotiation setting.

**enable**  
Auto-negotiation is enabled.

**disable**  
Auto-negotiation is disabled.

**Speed**  
Displays the transmission speed.

**1000Mb/s**  
Operates at a speed of 1Gbps.

**100Mb/s**  
Operates at a speed of 100 Mbps.

**10Mb/s**  
Operates at a speed of 10 Mbps.

**---**  
The link is down.

**Duplex**  
The full duplex/half duplex setting is displayed when auto-negotiation is disabled.

**full**  
Operates in full duplex.

**half**  
Operates in half duplex.



---  
The link is down.

**MDI**

Displays the connection mode.

**mdi**

Operates in mdi mode.

**mdix**

Operates in mdix mode.

---  
The link is down.

**Execution example**

```
(c)NS-2250> show ether eth1
Link Status      : UP
Negotiation Mode : enable
Speed            : 1000Mb/s
Duplex           : full
MDI Status       : mdix
Hardware Address : 08:00:83:ff:4c:b2
```

**Explanation****Link Status**

Displays the link of LAN ports.

**UP**

The link is up.

**DOWN**

The link is down.

**Negotiation Mode**

Displays the auto-negotiation setting.

**enable**

Auto-negotiation is enabled.

**disable**

Auto-negotiation is disabled.

**Speed**

Displays the transmission speed.

**1000Mb/s**

Operates at a speed of 1Gbps.

**100Mb/s**

Operates at a speed of 100 Mbps.

**10Mb/s**

Operates at a speed of 10 Mbps.

---  
The link is down.

**Duplex**

The full duplex/half duplex setting is displayed when auto-negotiation is disabled.

**full**

Operates in full duplex.

**half**

Operates in half duplex.

---

The link is down.

**MDI Status**

Displays the connection mode.

**mdi**

Operates in mdi mode.

**mdix**

Operates in mdix mode.

---

The link is down.

**Hardware Address**

Displays the hardware address.

**show stats ether****[Normal user]****Function** Display statistical information about the NS-2250 LAN port.**Format** **show stats ether [ { eth1 | eth2 | bond1 } ]****Parameters** **{ eth1 | eth2 | bond1 }**

Specify the interface of the NS-2250.

The statistical information of all ports is displayed if this parameter is omitted.

**Execution example**

```
(c)NS-2250> show stats ether
```

|       | <Receive Statistics> |       | <Transmit Statistics> |       |
|-------|----------------------|-------|-----------------------|-------|
|       | Frames               | Bytes | Frames                | Bytes |
| eth1  | 1032                 | 96405 | 34                    | 1844  |
| eth2  | 0                    | 0     | 0                     | 0     |
| bond1 | 1032                 | 96405 | 34                    | 1844  |

**Explanation** **Receive Statistics**

Statistics of receive data

**Transmit Statistics**

Statistics of transmit data

**Frames**

Number of frames

**Bytes**

Number of bytes

**Execution example**

```
(c)NS-2250> show stats ether eth1
```

Statistics eth1

| <Receive Statistics> |   | <Transmit Statistics> |   |
|----------------------|---|-----------------------|---|
| Frames               | 0 | Frames                | 0 |
| Bytes                | 0 | Bytes                 | 0 |
| Errs                 | 0 | Errs                  | 0 |
| Drop                 | 0 | Drop                  | 0 |
| Fifo                 | 0 | Fifo                  | 0 |
| Frame                | 0 | Colls                 | 0 |
| Compressed           | 0 | Compressed            | 0 |
| Multicast            | 0 | Carrier               | 0 |

**Explanation** **Receive statistics**

Statistics of receive data

**Frames**

Number of received frames

**Bytes**

Quantity of received data

**Errs**

Number of received errors

**Drop**

Number of discarding errors

**Fifo**

Number of fifo errors

**Frame**

Number of framing errors

**Compressed**

Number of compression errors

**Multicast**

Number of multicast and broadcast frames

**Transmit statistics**

Statistics of transmit data

**Frames**

Number of transmission frames

**Bytes**

Quantity of transmission data

**Errs**

Number of transmission errors

**Drop**

Number of discarding errors

**Fifo**

Number of fifo errors

**Colls**

Number of collision errors

**Compressed**

Number of compression errors

**Carrier**

Number of carrier errors

**show ipinterface****[Normal user]**

- Function** Display information about the NS-2250 IP interface.
- Format** **show ipinterface [ { eth1 | eth2 | bond1 } ]**
- Parameters** **{ eth1 | eth2 | bond1 }**  
 Specify the IP interface to be displayed.  
 If this parameter is omitted, all IP interface information is displayed.

**Execution example**

```
(c)NS-2250> show ipinterface
ifname state mtu attr address/mask
-----
lo up 65536 static 127.0.0.1/8
static ::1/128
eth1 up 1500 static 172.31.8.20/16
link fe80::a00:83ff:feff:dede/64
eth2 up 1500 static 2001:db8::100/64
link fe80::a00:83ff:feff:dedf/64
```

- Explanation** **ifname**  
 Displays the name of the logical interface.
- state**  
 Displays the link state of the interface.
- mtu**  
 Displays the MTU value of interface.
- attr**  
 Display attribute of address.
- static**  
 The address which users set by the "set ipaddr" or "set ip6addr" command.
- link**  
 This is the link local address of the IPv6.
- address/mask**  
 Displays the IP address and mask value of the interface.

**show ip**

[Normal user]

**Function**            Display the NS-2250 host name and IP address, and the TCP keepalive time.

**Format**            **show ip**

**Parameters**        None

**Execution example**

If the bonding function is disabled.

```
(c)NS-2250> show ip
Hostname       : NS-2250
TcpKeepAlive   : 180
IPaddress(eth1) : 192.168.0.1/24
IPaddress(eth2) : 10.0.0.2/8
```

If the bonding function is enabled.

```
(c)NS-2250> show ip
Hostname       : NS-2250
TcpKeepAlive   : 180
IPaddress(eth1) : -
IPaddress(eth2) : -
IPaddress(bond1) : 192.168.0.1/24
```

|                    |   |
|--------------------|---|
| <b>Explanation</b> | <p><b>Hostname</b><br/>Displays the NS-2250 host name.</p> <p><b>TcpKeepAlive</b><br/>Displays the current TCP keepalive time.</p> <p><b>IPaddress(eth1)</b><br/>Displays the IP address of LAN1.</p> <p><b>IPaddress(eth2)</b><br/>Displays the IP address of LAN2.</p> <p><b>IPaddress(bond1)</b><br/>Displays the IP address of bond1 interface which is used in bonding function.</p> |
|--------------------|---|

**show ip6**

[Normal user]

**Function**            Display the NS-2250 IPv6 address.**Format**            **show ip6****Parameters**        None**Execution example****If the bonding function is disabled.**

```
(c)NS-2250> show ip6
IPAddress(eth1)   : 2001:db8::100/64
IPAddress(eth2)   : 3fff:ffff:ffff:ffff:ffff:ffff:ffff:100/96
```

**If the bonding function is enabled.**

```
(c)NS-2250> show ip6
IPAddress(eth1)   : ---
IPAddress(eth2)   : ---
IPAddress(bond1)  : 2001:db8::100/64
```

|                    |  |
|--------------------|--|
| <b>Explanation</b> | <b>IPAddress(eth1)</b><br>Displays the IPv6 address of LAN1.   |
|                    | <b>IPAddress(eth2)</b><br>Displays the IPv6 address of LAN2.   |
|                    | <b>IPAddress(bond1)</b><br>Displays the IPv6 address of bond1 interface which is used in bonding function. |

**show ip host**

[Normal user]

**Function** Display a list of the host names and IP addresses registered to the NS-2250.**Format** **show ip host****Parameters** None**Execution example**

| (c)NS-2250> show ip host |               |      |
|--------------------------|---------------|------|
| Hostname                 | IPaddress     | Port |
| -----                    |               |      |
| host1                    | 192.168.0.100 | -    |
| host2                    | 172.16.1.1    | 8101 |
| host3                    | 172.16.1.1    | 8102 |
| host100                  | 2001:db8::100 | -    |

**Explanation** **Hostname**

Displays the host names registered to the NS-2250.

**IPaddress**

Displays the IP addresses of the host names registered to the NS-2250.

**Port**

Displays the port number set when registered.

A hyphen "-" is displayed if the port number has not been set.



**show ip route**

[Normal user]

**Function** Display the static routes registered to the NS-2250.**Format** **show ip route****Parameters** None**Execution example**

```
(c)NS-2250> show ip route
destination      netmask          gateway          met  iface status
-----
192.168.99.0     255.255.255.0   ---              0   eth1  -
192.168.102.0   255.255.255.0   ---              0   eth2  -
0.0.0.0         0.0.0.0         192.168.102.1    0   eth2  inactive
172.31.0.0      255.255.0.0     192.168.102.1    0   eth2  inactive
0.0.0.0         0.0.0.0         192.168.99.1     10  eth1  -
```

**Explanation** **destination**

Displays the destination network or host address.

**netmask**

Displays the destination netmask.

**gateway**

Displays the IP address of the next hop router.

**met**

Displays the metric of the static route.

**iface**

Displays the name of the logical interface.

**status**

Displays the status of the static route.

**inactive**

static route is disable.

-

static route is enable.

**Note**

- When the link state of the logical interface is DOWN, the state of the static route targeted to that logical interface becomes inactive.

**show ip6route**

[Normal user]

**Function** Display static routes of IPv6 registered in NS-2250.**Format** **show ip6route****Parameters** None**Execution example**

```
(c)NS-2250> show ip6route
destination          gateway                met iface status
-----
2001:db8::/64        ---                    0 eth1  -
3fff:ffff:ffff:ffff::/64 ---                    0 eth2  -
2001:db9::/64        2001:db8::ffff        0 eth1  -
::/0                 3fff:ffff:ffff:ffff::1 0 eth2  inact
::/0                 2001:db8::ffff        10 eth1  -
```

**Explanation** **destination**

Displays the destination network or host address.

**gateway**

Displays the IP address of the next hop router.

**met**

Displays the metric of the static route.

**iface**

Displays the name of the logical interface.

**status**

Displays the status of the static route.

**inact**

static route is disable.

**-**

static route is enable.

**Note**

- When the link state of the logical interface is DOWN, the state of the static route targeted to that logical interface becomes inactive.

**show tcp**

[Normal user]

**Function** Display the status of the TCP session.**Format** **show tcp****Parameters** None**Execution example****When setting "delete ip6"**

```
(c)NS-2250> show tcp
State      SQ RQ LocalAddress RemoteAddress
-----
LISTEN     0 0 0.0.0.0:21 0.0.0.0:*
LISTEN     0 0 0.0.0.0:22 0.0.0.0:*
LISTEN     0 0 0.0.0.0:23 0.0.0.0:*
LISTEN     0 0 0.0.0.0:1402 0.0.0.0:*
LISTEN     0 0 0.0.0.0:8101 0.0.0.0:*
LISTEN     0 0 0.0.0.0:8103 0.0.0.0:*
LISTEN     0 0 0.0.0.0:8104 0.0.0.0:*
LISTEN     0 0 0.0.0.0:8105 0.0.0.0:*
LISTEN     0 0 0.0.0.0:8106 0.0.0.0:*
:
:
```

**When setting "create ip6"**

```
(c)NS-2250> show tcp
State      SQ RQ LocalAddress RemoteAddress
-----
LISTEN     0 0 0.0.0.0:21 0.0.0.0:*
LISTEN     0 0 :::22 :::*
LISTEN     0 0 :::23 :::*
LISTEN     0 0 :::8101 :::*
LISTEN     0 0 :::8102 :::*
LISTEN     0 0 :::8103 :::*
LISTEN     0 0 :::8104 :::*
LISTEN     0 0 :::8105 :::*
LISTEN     0 0 :::8106 :::*
:
:
```

**Explanation** **State**

Displays the status of the TCP session.

**SQ**

Displays the number of datagrams saved in the transmission queue.

**RQ**

Displays the number of datagrams saved in the reception queue.

**LocalAddress**

Displays the NS-2250 IP address and TCP port number.

**RemoteAddress**

Displays the destination host IP address and TCP port number.

**show udp**

[Normal user]

**Function** Display the status of UDP.**Format** **show udp****Parameters** None**Execution example**

```
(c)NS-2250> show udp
SQ RQ  LocalAddress          RemoteAddress
-----
0  0    0.0.0.0:161                0.0.0.0:*
0  0    0.0.0.0:65514            0.0.0.0:*
```

**Explanation** **SQ**

Displays the number of datagrams saved in the transmission queue.

**RQ**

Displays the number of datagrams saved in the reception queue.

**LocalAddress**

Displays the NS-2250 IP address and UDP port number.

**RemoteAddress**

Displays the destination host IP address and UDP port number.

**show stats ip****[Normal user]****Function** Display the IP statistical information.**Format** **show stats ip****Parameters** None**Execution example**

```
(c)NS-2250> show stats ip
<IP statistic information>
  Forwarding Datagrams           0
  Input Datagrams                11302
  Input Discards                 0
  Input Unknown Protocol         0
  Output Datagrams               248
  Output Discards                0

<ICMP statistic information>
  message type           input      output
  -----
  Echo                   1         13
  Echo Reply             11         1
  Destination Unreachable 39        12
  Source Quench          0         0
  Redirect               0         0
  Time Exceeded          9         0
  Parameter Problem      0         0
  Timestamp              0         0
  Timestamp Reply        0         0
  Address Mask Request    0         0
  Address Mask Reply      0         0
  Errors                  0         0
  -----
  Total                  60        26
```

**Explanation** **IP statistic information****Forwarding Datagrams**

Displays the number of forwarded IP datagrams via IP.

**Input Datagrams**

Displays the number of received IP datagrams.

**Input Discards**

Displays the number of datagrams discarded at the time of reception.

**Input Unknown Protocol**

Displays the number of frames received in an unsupported protocol.

**Output Datagrams**

Displays the number of sent IP datagrams.

**Output Discards**

Displays the number of IP datagrams discarded at the time of transmission.

**ICMP statistic information****Echo**

Displays the number of sent and received echo request messages.

**Echo Reply**

Displays the number of sent and received echo response messages.

**Destination Unreachable**

Displays the number of sent and received messages that do not reach the destination.

**Source Quench**

Displays the number of sent and received messages that have been suppressed.

**Redirect**

Displays the number of sent and received messages that have been rerouted.

**Time Exceeded**

Displays the number of sent and received messages for which the time has been exceeded.

**Parameter Problem**

Displays the number of sent and received messages with parameter errors.

**Timestamp**

Displays the number of sent and received time stamp request messages.

**Timestamp Reply**

Displays the number of sent and received time stamp response messages.

**Address Mask Request**

Displays the number of sent and received address mask request messages.

**Address Mask Reply**

Displays the number of sent and received address mask response messages.

**Errors**

Displays the number of sent and received error messages.

**Total**

Displays the totals regarding statistical information of received and sent messages.

**show stats ip6****[Normal user]****Function** Display the IPv6 statistical information.**Format** **show stats ip6****Parameters** None**Execution example**

```
(c)NS-2250> show stats ip6
<IPv6 statistics information>
      input      output
-----
Packets          417      214
Multicast Packets 229       63
Delivers          416      ---
Header Errors      0      ---
Too Big Errors     0      ---
No Routes          0         0
Address Errors     0      ---
Unknown Protocol   0      ---
Truncated Packets  0      ---
Reassemble Reqds   2      ---
Reassemble OKs     1      ---
Reassemble Fails   0      ---
Reassemble Timeout 0      ---
Fragment OKs      ---         1
Fragment Fails     ---         0
Fragment Creates   ---         2
Discards           0         0
```

**Explanation** **IPv6 statistic information****Packets**

Displays the number of IPv6 packets sent and received.

It also includes IPv6 packets discarded during transmission / reception.

**Multicast Packets**

Displays the number of IPv6 multicast packets sent and received.

**Delivers**

Displays the number of IPv6 packets delivered to the upper layer.

**Header Errors**

Displays the number of IPv6 packets discarded due to IPv6 header error.

**Too Big Errors**

Displays the number of IPv6 packets discarded due to IPv6 length error.

**No Routes**

Displays the number of IPv6 packets discarded because there is no route to the destination.

**Address Errors**

Displays the number of IPv6 packets discarded because the IP address is invalid.

**Unknown Protocol**

Displays the number of frames received in an unsupported protocol.

**Truncated Packets**

Displays the number of IPv6 packets discarded due to insufficient length.

**Reassemble Reqds**

Displays the number of fragments that require reassembly processing.

**Reassemble OKs**

Displays the number of IPv6 packets successfully reassembled.

**Reassemble Fails**

Displays the number of failed reassembly processes.

**Reassemble Timeout**

Displays the number of times the reassembly process failed due to timeout.

**Fragment OKs**

Displays the number of IPv6 packets successfully fragmented.

**Fragment Fails**

Displays the number of IPv6 packets that the fragment failed.

**Fragment Creates**

Displays the number of IP datagram fragments generated as a result of fragmentation.

**Discards**

Displays the number of IPv6 packets discarded.

Includes IPv6 packets received with the IPv6 communication function disabled.



**show stats icmp6**

[Normal user]

**Function** Display the ICMPv6 statistical information.**Format** **show stats icmp6****Parameters** None**Execution example**

```
(c)NS-2250> show stats icmp6
<ICMPv6 statistics information>
message type                input      output
-----
Messages                    64         100
Destination Unreachables    21         12
Packet Too Bigs             0          0
Time Exceededs              9          0
Parameter Problems         0          0
Echos                       3          6
Echo Replies                6          3
Group Member Queries        0          0
Group Member Responses      0          0
Group Member Reductions     0          0
Router Solicitations        0          0
Router Advertisements       0          0
Neighbor Solicitations      6          24
Neighbor Advertisements     19         15
Redirects                   0          0
MLDv2 Reports               0          40
Errors                      0          0
```

**Explanation** ICMPv6 statistic information**Messages**

Displays the totals regarding statistical information of received and sent messages.

**Destination Unreachables**

Displays the number of sent and received messages that do not reach the destination.

**Packet Too Bigs**

Displays the number of sent and received Too Big messages.

**Time Exceededs**

Displays the number of sent and received messages for which the time has been exceeded.

**Parameter Problems**

Displays the number of sent and received messages with parameter errors.

**Echo**

Displays the number of sent and received echo request messages.

**Echo Reply**

Displays the number of sent and received echo response messages.

**Group Member Queries**

Displays the number of sent and received Group Member Queries messages.

**Group Member Responses**

Displays the number of sent and received Group Member Responses messages.

**Group Member Reductions**

Displays the number of sent and received Group Member Reductions messages.

**Router Solicitations**

Displays the number of sent and received Router Solicitation messages.

**Router Advertisements**

Displays the number of sent and received Router Advertisement messages.

**Neighbor Solicitations**

Displays the number of sent and received Neighbor Solicitation messages.

**Neighbor Advertisements**

Displays the number of sent and received Neighbor Advertisement messages.

**Redirects**

Displays the number of sent and received Redirect messages.

**MLDv2 Reports**

Displays the number of sent and received MLDv2 Report messages.

**Errors**

Displays the number of sent and received error messages.

**show arp**

[Normal user]

**Function** Display the content of ARP entries.**Format** **show arp****Parameters** None**Execution example**

```
(c)NS-2250> show arp
ip-address          mac-address          interface
-----
192.168.1.1         00:11:11:01:22:01    eth1
192.168.1.29        00:11:11:01:22:02    eth1
```

**Explanation** **ip-address**

Displays the IP address of the host.

**mac-address**

Displays the Ethernet address of the host.

**interface**

Displays the name of the corresponding IP interface.

```
show ndp
```

[Normal user]

|                 |  |
|-----------------|--|
| <b>Function</b> | Display the contents the address mapping table used in Neighbor Discovery Protocol(NDP). |
|-----------------|--|

Format show ndp

Parameters None

### Execution example

```
(c)NS-2250> show ndp
```

| ip6address               | mac-address       | iface |
|--------------------------|-------------------|-------|
| 3fff:ffff:ffff:ffff::116 | 52:54:00:48:50:fe | eth1  |
| fe80::5054:ff:fe48:50fe  | 52:54:00:48:50:fe | eth1  |

|             |            |
|-------------|------------|
| Explanation | ip6address |
|-------------|------------|

Displays the IPv6 address of the node.

mac-address

Displays the Ethernet address of the node.

**iface**

Displays the name of the corresponding IP interface.

**show stats tcp****[Normal user]****Function** Display TCP statistical information.**Format** **show stats tcp****Parameters** None**Execution example**

```
(c)NS-2250> show stats tcp
<TCP statistic information>
Active Open                0
Passive Open               96
Input Segments             1107
Input Errors                0
Input CSumErrors           0
Output Segments            1332
Output Reset               0
Retransmit Segments        0
Current Established        48
```

**Explanation**     **Active Open**

Displays the number of connection requests made.

**Passive Open**

Displays the number of connection requests accepted.

**Input Segments**

Displays the number of received TCP segments.

**Input Errors**

Displays the number of TCP segments containing errors such as checksum errors.

**Input CSumErrors**

Displays the number of TCP segments that generated checksum errors at reception.

**Output Segments**

Displays the number of sent TCP segments.

**Output Reset**

Displays the number of sent resets.

**Retransmit Segments**

Displays the number of resent TCP segments.

**Current Established**

Displays the number of currently established TCP connections.

**show stats udp**

[Normal user]

**Function** Display UDP statistical information.**Format** **show stats udp****Parameters** None**Execution example**

```
(c)NS-2250> show stats udp
<UDP statistic information>
  Input Datagrams           3
  Input Errors              0
  Input CSumErrors          0
  Output Datagrams         4
  Port Unreachable         0
```

**Explanation** **Input Datagrams**

Displays the number of received UDP datagrams.

**Input Errors**

Displays the number of UDP datagrams that generated errors at reception.

**Input CSumErrors**

Displays the number of UDP datagrams that generated checksum errors at reception.

**Output Datagrams**

Displays the number of sent UDP datagrams.

**Port Unreachable**

Displays the number of UDP datagrams that do not reach the destination port and were discarded.

**show dns**

[Normal user]

**Function**            Display the settings of the NS-2250 DNS client function.**Format**             **show dns****Parameters**        None**Execution example**

```
(c)NS-2250 > show dns
Local Domain:example.co.jp

No.  DNS Server
-----
1    192.168.0.100
2    3fff:ffff:ffff:ffff::1000
```

**Explanation**      **Local Domain**

Displays the name of the local domain.

**DNS Server**

Displays the IP address of the primary and Secondary DNS server.

## 5.4 Ipfiler status display commands

**show ipfilter**

[Normal user]

**Function** Display the registration status of the ipfilter.

**Format** **show ipfilter input**

**Parameters** **input**  
Display the filter condition registered for received packets.

### Execution example

```
(c)NS-2250> show ipfilter input
status : enable

<ipfilter preset input table>
num target in destination source prot
1 ACCEPT * 0.0.0.0/0 0.0.0.0/0 all REL,EST
2 ACCEPT lo 127.0.0.1 127.0.0.1 all

<ipfilter configurable input table>
num target in destination source prot
1 ACCEPT eth1 0.0.0.0/0 0.0.0.0/0 esp
2 ACCEPT eth1 192.168.0.1 192.168.0.24 icmp
3 DROP eth2 0.0.0.0/0 0.0.0.0/0 icmp 8
4 DROP eth2 0.0.0.0/0 0.0.0.0/0 tcp 8101
5 DROP eth2 0.0.0.0/0 0.0.0.0/0 tcp 8140-8148
6 DROP eth1 0.0.0.0/0 0.0.0.0/0 udp
7 DROP bond1 0.0.0.0/0 0.0.0.0/0 udp 123
8 DROP bond1 192.168.0.0/24 192.168.1.0/24 tcp
9 DROP bond1 192.168.0.0/24 192.168.1.0/24 udp 1000-15000
10 DROP * 0.0.0.0/0 0.0.0.0/0 all
```

**Explanation** **status**

Operating status of the ipfilter object is displayed.

**ipfilter preset input table**

The filter condition registered automatically by the system is displayed.

**ipfilter configurable input table**

The registered filter condition is displayed.

**num**

The line number of the filter condition is displayed.

**target**

The operation of the registered filter condition is displayed.

**ACCEPT**

It means this is the filter condition to accept received packets.

**DROP**

It means this is the filter condition to drop received packets.

**in**

Display the interface of the registered filter condition.

**eth1**

Packets which passed through eth1 is specified as a filter condition.



**eth2**

Packets which passed through eth2 is specified as a filter condition.

**bond1**

Packets which passed through bond1 is specified as a filter condition.

**\***

No interface is specified as a filter condition.

**destination**

Display the registered destination IP address.

**source**

Display the registered source IP address.

**prot**

Display the registered upper protocol than IP.

**esp**

esp(protocol number = 50) is specified to the upper protocol than IP as a filter condition.

**icmp**

ICMP(protocol number = 1) is specified to the upper protocol than IP as a filter condition. In the case the type number of ICMP is specified, it is displayed behind "icmp".

**tcp**

TCP(protocol number = 6) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "tcp".

**udp**

UDP(protocol number = 17) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "udp".

**all**

No upper protocol of IP is specified as a filter condition.

**show stats ipfilter**

[Normal user]

**Function** Display the statistics information of the ipfilter.**Format** **show stats ipfilter input****Parameters** **input**

Display the statistics information of the filter condition registered for received packets.

**Execution example**

```
(c)NS-2250> show stats ipfilter input
<ipfilter preset input statistic>
      pkts target in      destination      source      prot
      499 ACCEPT *       0.0.0.0/0      0.0.0.0/0    all  REL,EST
      0  ACCEPT lo       127.0.0.1      127.0.0.1    all

<ipfilter configurable input statistic>
      pkts target in      destination      source      prot
      0  ACCEPT eth1     0.0.0.0/0      0.0.0.0/0    esp
      0  ACCEPT eth1     192.168.0.1    192.168.0.24 icmp
      0  DROP  eth2     0.0.0.0/0      0.0.0.0/0    icmp 8
      0  DROP  eth2     0.0.0.0/0      0.0.0.0/0    tcp  8101
      0  DROP  eth2     0.0.0.0/0      0.0.0.0/0    tcp  8140-8148
      8  DROP  eth1     0.0.0.0/0      0.0.0.0/0    udp
      0  DROP  bond1    0.0.0.0/0      0.0.0.0/0    udp  123
      0  DROP  bond1    192.168.0.0/24 192.168.1.0/24 tcp
      0  DROP  bond1    192.168.0.0/24 192.168.1.0/24 udp  1000-1500
      2  DROP  *        0.0.0.0/0      0.0.0.0/0    all
```

**Explanation** **ipfilter preset input statistic**

The number of packets which correspond to the filter condition registered automatically by the system is displayed.

**ipfilter configurable input statistic**

The number of packets which correspond to the registered filter condition is displayed.

**pkts**

The number of packets which correspond to the filter condition is displayed.

**target**

The operation the registered filter condition is displayed.

**ACCEPT**

It means this is the filter condition to accept received packets.

**DROP**

It means this is the filter condition to drop received packets.

**in**

Display the interface of the registered filter condition.

**eth1**

Packets which passed through eth1 is specified as a filter condition.

**eth2**

Packets which passed through eth2 is specified as a filter condition.

**bond1**

Packets which passed through bond1 is specified as a filter condition.

**\***

No interface is specified as a filter condition.

**destination**

Display the registered destination IP address.

**source**

Display the registered source IP address.

**prot**

Display the registered upper protocol than IP.

**esp**

esp(protocol number = 50) is specified to the upper protocol than IP as a filter condition.

**icmp**

ICMP(protocol number = 1) is specified to the upper protocol than IP as a filter condition. In the case the type number of ICMP is specified, it is displayed behind "icmp".

**tcp**

TCP(protocol number = 6) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "tcp".

**udp**

UDP(protocol number = 17) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "udp".

**all**

No upper protocol of IP is specified as a filter condition.

## 5.5 Ip6filter status display commands

**show ip6filter**

[Normal user]

**Function** Display the registration status of the ipfilter.

**Format** **show ip6filter input**

**Parameters** **input**  
Display the filter condition registered for received packets.

### 実 行 例

```
(c)NS-2250> show ip6filter input
status : enable

<ip6filter preset input table>
num target in source out prot
1 ACCEPT * ::/0 ::/0 all REL,EST
2 ACCEPT lo ::1 ::1 all

<ip6filter configurable input table>
num target in destination source prot
1 ACCEPT eth1 ::/0 ::/0 icmpv6
2 ACCEPT eth1 2001:db8::100 2001:db8::200 tcp 22
3 DROP eth2 ::/0 ::/0 icmpv6 8
4 DROP eth2 ::/0 ::/0 tcp 8101
5 DROP eth2 ::/0 ::/0 tcp 8140-8148
6 DROP eth1 ::/0 ::/0 udp
7 DROP bond1 ::/0 ::/0 udp 123
8 DROP bond1 2001:db8::/64 2001:db8:1000::/64 tcp
9 DROP bond1 2001:db8::/64 2001:db8:1000::/64 udp 1000-15000
10 DROP * ::/0 ::/0 all
```

**Explanation** **status**

Operating status of the ip6filter object is displayed.

**ip6filter preset input table**

The filter condition registered automatically by the system is displayed.

**ip6filter configurable input table**

The registered filter condition is displayed.

**num**

The line number of the filter condition is displayed.

**target**

The operation of the registered filter condition is displayed.

**ACCEPT**

It means this is the filter condition to accept received packets.

**DROP**

It means this is the filter condition to drop received packets.

**in**

Display the interface of the registered filter condition.

**eth1**

Packets which passed through eth1 is specified as a filter condition.

**eth2**

Packets which passed through eth2 is specified as a filter condition.

**bond1**

Packets which passed through bond1 is specified as a filter condition.

**\***

No interface is specified as a filter condition.

**destination**

Display the registered destination IP address.

**source**

Display the registered source IP address.

**prot**

Display the registered upper protocol than IP.

**icmpv6**

ICMPv6(protocol number = 58) is specified to the upper protocol than IP as a filter condition. In the case the type number of ICMPv6 is specified, it is displayed behind "icmp".

**tcp**

TCP(protocol number = 6) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "tcp".

**udp**

UDP(protocol number = 17) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "udp".

**all**

No upper protocol of IP is specified as a filter condition.

**show stats ip6filter**

[Normal user]

**Function** Display the statistics information of the ip6filter.**Format** **show stats ip6filter input****Parameters** **input**

Display the statistics information of the filter condition registered for received packets.

**Execution example**

```
(c)NS-2250> show stats ip6filter input
<ip6filter preset input table>
      pkts target  in   source          out          prot
      499 ACCEPT *    ::/0          ::/0          all REL,EST
      0  ACCEPT lo   ::1          ::1          all

<ip6filter configurable input table>
      pkts target  in   destination      source          prot
      0  ACCEPT eth1  ::/0          ::/0          icmpv6
      0  ACCEPT eth1  2001:db8::100  2001:db8::200  tcp  22
      0  DROP   eth2  ::/0          ::/0          icmpv6 8
      0  DROP   eth2  ::/0          ::/0          tcp  8101
      0  DROP   eth2  ::/0          ::/0          tcp  8140-8148
      8  DROP   eth1  ::/0          ::/0          udp
      0  DROP   bond1 ::/0          ::/0          udp  123
      0  DROP   bond1 2001:db8::/64  2001:db8:1000::/64 tcp
      0  DROP   bond1 2001:db8::/64  2001:db8:1000::/64 udp  1000-15000
      2  DROP   *    ::/0          ::/0          all
```

**Explanation** **ip6filter preset input statistic**

The number of packets which correspond to the filter condition registered automatically by the system is displayed.

**ip6filter configurable input statistic**

The number of packets which correspond to the registered filter condition is displayed.

**pkts**

The number of packets which correspond to the filter condition is displayed.

**target**

The operation the registered filter condition is displayed.

**ACCEPT**

It means this is the filter condition to accept received packets.

**DROP**

It means this is the filter condition to drop received packets.

**in**

Display the interface of the registered filter condition.

**eth1**

Packets which passed through eth1 is specified as a filter condition.

**eth2**

Packets which passed through eth2 is specified as a filter condition.

**bond1**

Packets which passed through bond1 is specified as a filter condition.

**\***

No interface is specified as a filter condition.

**destination**

Display the registered destination IP address.

**source**

Display the registered source IP address.

**prot**

Display the registered upper protocol than IP.

**icmpv6**

ICMPv6(protocol number = 58) is specified to the upper protocol than IP as a filter condition. In the case the type number of ICMPv6 is specified, it is displayed behind "icmp".

**tcp**

TCP(protocol number = 6) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "tcp".

**udp**

UDP(protocol number = 17) is specified to the upper protocol than IP as a filter condition.

In the case the destination port number is specified, it is displayed behind "udp".

**all**

No upper protocol of IP is specified as a filter condition.

## 5.6 Isec status display commands

**show ipsec secret**

[Normal user]

**Function**            Display the registration list of apre-shared key used in the IKE.

**Format**            **show ipsec secret**

**Parameters**        None

### Execution example

```
(c)NS-2250> show ipsec secret
<secret psk>
id selectors
-----
1.1.2.3
1.1.2.3 100.200.0.10
alice@example.com bob@example.com
(any)
```

**Explanation**      **secret psk**

The registration list of a pre-shared key used in the IKE is displayed.

**id selectors**

The ID being a selection condition of a pre-shared key is displayed.



**show ipsec conn**

[Normal user]

**Function** Display the information of the connection setting.**Format** **show ipsec conn** [*connlist*]**Parameters** **conn** [*connlist*]

Display the information of the connection setting.

[*connlist*]

Specify the number of a connection in the range of 1 to 8.

You can execute a setting of some connections in one command if specifying the number of a connection in the list using a hyphen "-" or comma ",".

If you omit this parameter, the summary of each connection of all ports in two lines is displayed.

**Execution example**

```
(c)NS-2250> show ipsec conn
<ipsec connections information>
conn_no : status   left      right
           leftsubnet  rightsubnet  auto
-----
conn_01 : enable   200.1.0.3    1.2.3.4
           192.168.1.0/24  200.0.0.0/8    add (responder)
conn_02 : disable  200.1.0.3    200.0.0.101
           192.168.1.3/32  172.31.0.0/16  start(initiator)
conn_03 : disable  200.1.0.3    200.0.0.203
           192.168.1.3/32  172.31.8.203/32 start(initiator)
conn_04 : enable   200.1.0.3    200.0.0.104
           192.168.1.0/24  172.31.0.0/16  start(initiator)
conn_05 : disable  ---
           ---
conn_06 : disable  ---
           ---
conn_07 : disable  ---
           ---
conn_08 : disable  ---
           ---
```

**Explanation** **ipsec connections information**

The information of the connection setting is displayed.

**conn\_no**

The connection number is displayed.

**status**

The status of the connection settings is displayed.

**left**

The IP address of the security gateway of own side is displayed.

**right**

The IP address of the security gateway of the opposite side is displayed.

**leftsubnet**

The network address of own side which communicates under encrypted by using IPsec is displayed.

**rightsubnet**

The network address of the opposite side which communicates under encrypted by using IPsec is displayed.

**auto**

The setting whether to initiate a key exchange or respond is displayed.

**Execution example**

```
(c)NS-2250> show ipsec conn 1
<conn_01>
status      : enable
auto        : add
leftid      : alice@example.com
rightid     : bob@example.com
left        : 200.1.0.3
right       : 1.2.3.4
leftsubnet  : 192.168.1.0/24
rightsubnet : 200.0.0.0/8
leftsourceip : 192.168.1.3
rightsourceip : ---
keyexchange : ike
ikelifetime : 10800
lifetime    : 3600
ike         : aes256-sha1-modp1024
esp         : aes256-sha1
forceencaps : no
dpdaction   : none
```

**Explanation**    **<conn\_XX>**

The connection number is displayed.

**status**

The status of the connection settings is displayed.

**auto**

The setting whether to initiate a key exchange or respond is displayed.

**leftid**

The ID of the security gateway of own side is displayed.

**rightid**

The ID of the security gateway of the opposite side is displayed.

**left**

The IP address of the security gateway of own side is displayed.

**right**

The IP address of the security gateway of the opposite side is displayed.

**leftsubnet**

The network address of own side which communicates under encrypted by using IPsec is displayed.

**rightsubnet**

The network address of the opposite side which communicates under encrypted by using IPsec is displayed.

**leftsourceip**

The source IP address of own side which communicates in the IPsec tunnel is displayed.

**rightsourceip**

The source IP address of the opposite side which communicates in the IPsec tunnel is displayed.

**keyexchange**

The version of the IKE protocol is displayed.

**ikelifetime**

The lifetime of ISAKMP-SA is displayed.

**lifetime**

The lifetime of IPSEC-SA is displayed.

**ike**

The encryption algorithm of ISAKMP-SA is displayed.

**esp**

The encryption algorithm of IPSEC-SA is displayed.

**forceencaps**

Whether to encapsulate the communication of the IPSEC-SA by UDP always or not is displayed.

**dpdaction**

Whether to execute DPD or not is displayed.

**show ipsec status****[Normal user]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Display the information of ISAKMP-SA/IPSEC-SA.  |
| <b>Format</b>     | <b>show ipsec status [detail]</b>   |
| <b>Parameters</b> | <b>status [detail]</b><br>The information of ISAKMP-SA/IPSEC-SA is displayed.<br><b>[detail]</b><br>The detail information of ISAKMP-SA / IPSEC-SA is displayed.<br>If you omit this parameter, the summary of it is displayed. |

**Execution example**

```
(c)NS-2250> show ipsec status
Security Associations (1 up, 0 connecting):
  conn_04[42]: ESTABLISHED 106 minutes ago, 2.1.0.3[2.1.0.3]...2.0.0.4[2.0.0.4]
  conn_04{155}:  INSTALLED, TUNNEL, reqid 1, ESP SPIs: c4405d52_i df27799d_o
  conn_04{155}:   192.168.1.0/24 === 172.31.0.0/16
```

**Explanation**      **Security Associations**

The information of the established SA is displayed.

**(X up, Y connecting)**

Regarding the enabled connection setting, each the number of the established SA(X) and being established SA(Y) are displayed.

**conn\_XX[YY]**

The information of ISAKMP-SA generated from the connection number(XX) is displayed. YY is the unique consecutive number of ISAKMP-SA.

The status, the elapsed time from generated, the address of the security gateway of own side and its ID and the address of the security gateway of the opposite side and its ID are displayed.

**conn\_XX{YY}**

The information of IPSEC-SA generated from the connection number(XX) is displayed. YY is the unique consecutive number of IPSEC-SA.

In the line 1, the status, the mode(tunnel), reqid and SPI value of ESP(\*\*\*\*\_i is the input side, \*\*\*\*\_o is the output side) are displayed.

In the line 2, the network information of own side and the opposite side which communicates under encrypted by using IPsec.

**Execution example**

```
(c)NS-2250> show ipsec status detail
Connections:
  conn_04:  2.1.0.3...2.0.0.4  IKEv1
  conn_04:  local:  [2.1.0.3]  uses pre-shared key authentication
  conn_04:  remote: [2.0.0.4]  uses pre-shared key authentication
  conn_04:  child:  192.168.1.0/24 === 172.31.0.0/16 TUNNEL
Security Associations (1 up, 0 connecting):
  conn_04[42]: ESTABLISHED 106 minutes ago, 2.1.0.3[2.1.0.3]...2.0.0.4[2.0.0.4]
  conn_04[42]: IKEv1 SPIs: d898be3904ad0193_i* 6cc53b53af2eb871_r, pre-shared key
  reauthentication in 57 minutes
  conn_04[42]: IKE proposal: AES_CBC_128/HMAC_SHA1_96/PRF_HMAC_SHA1/MODP_1536
  conn_04{155}:  INSTALLED, TUNNEL, reqid 1, ESP SPIs: c4405d52_i df27799d_o
  conn_04{155}:  AES_CBC_128/HMAC_SHA1_96, 128772 bytes_i (1533 pkts, 1s ago),
```

```
128772 bytes_o (1533 pkts, 1s ago), rekeying in 17 minutes
conn_04{155}: 192.168.1.0/24 === 172.31.0.0/16
```

**Explanation****Connections**

The setting information of the enabled connection is displayed.

**conn\_XX**

conn\_XX

The setting information of the connection number(XX) is displayed.

In the line 1, the address of the security gateway of own side, the one of the opposite side and the version of IKE protocol are displayed.

In the line 2, ID information of own side and the way of authentication(pre-shared key) are displayed.

In the line 3, ID information of the opposite side and the way of authentication(pre-shared key) are displayed.

In the line 4, the network information of own side and the opposite side which communicates under encrypted by using IPsec in IPSEC-SA and the mode(tunnel) are displayed.

**Security Associations**

The information of the established SA is displayed.

**(X up, Y connecting)**

Regarding the enabled connection setting, each the number of the established SA(X) and being established SA(Y) are displayed.

**conn\_XX[YY]**

The information of ISAKMP-SA generated from the connection number(XX) is displayed. YY is the unique consecutive number of ISAKMP-SA.

In the line 1, the status, the elapsed time from generated, the address of the security gateway of own side and the address of the security gateway of the opposite side are displayed.

In the line 2, the version of IKE protocol, the value of SPI(\*\*\*\*.i is initiator side, \*\*\*\*.r is responder side), the way of authentication(pre-shared key) and the generated time are displayed.

In the line 3, the encryption algorithm decided in IKE protocol is displayed.

**conn\_XX{YY}**

The information of IPSEC-SA generated from the connection number(XX) is displayed. YY is the unique consecutive number of IPSEC-SA.

In the line 1, the status, the mode(tunnel), reqid and SPI value of ESP(\*\*\*\*.i is the input side, \*\*\*\*.o is the output side) are displayed.

In the line 2, the encryption algorithm decided in IKE protocol, the number of bytes of the decrypted received data(the number of the packet, the time from decrypted finally), the number of bytes of the encrypted sent data(the number of the packet, the time from encrypted finally) and the time by rekeying are displayed.

In the line 3, the network information of own side and the opposite side which communicates under encrypted by using IPsec are displayed.

**show ipsec spd**

[Normal user]

**Function** Display the information of the security policy database.

**Format** **show ipsec spd**

**Parameters** None

**Execution example**

```
(c)NS-2250> show ipsec spd
src 192.168.1.0/24 dst 172.31.0.0/16
    dir fwd priority 289760
src 172.31.0.0/16 dst 192.168.1.0/24
    dir fwd priority 189760
    tmpl src 200.0.0.104 dst 200.1.0.3
        proto esp reqid 1 mode tunnel
src 172.31.0.0/16 dst 192.168.1.0/24
    dir in priority 189760
    tmpl src 200.0.0.104 dst 200.1.0.3
        proto esp reqid 1 mode tunnel
src 192.168.1.0/24 dst 172.31.0.0/16
    dir out priority 189760
    tmpl src 200.1.0.3 dst 200.0.0.104
        proto esp reqid 1 mode tunnel
```

**Explanation** **src xxx.xxx.xxx.xxx/xx dst xxx.xxx.xxx.xxx/xx**

The source address/destination address of the IP packet to become the condition of the security policy is displayed.

**dir fwd priority xxxx**

The forwarded IP packet becomes the condition. This does not related to NS-2250 because it does not forward in IP protocol.

**dir in priority xxxx**

The received IP packet becomes the condition.

**dir out priority xxxx**

The sent IP packet becomes the condition.

**tmpl src xxx.xxx.xxx.xxx dst xxx.xxx.xxx.xxx**

**proto esp reqid XX mode tunnel**

ESP protocol is distributed to SAD that reqid is XX.

**show ipsec sad****[Normal user]****Function** Display the information of the security association database.**Format** **show ipsec sad****Parameters** None**Execution example**

```
(c)NS-2250> show ipsec sad
src 200.1.0.3 dst 200.0.0.104
    proto esp spi 0xdf27799d reqid 1 mode tunnel
    replay-window 0 flag af-unspec
    auth-trunc hmac(sha1) 96
    enc cbc(aes)
src 200.0.0.104 dst 200.1.0.3
    proto esp spi 0xc4405d52 reqid 1 mode tunnel
    replay-window 32 flag af-unspec
    auth-trunc hmac(sha1) 96
    enc cbc(aes)
```

**Explanation** **src XXX.XXX.XXX.XXX dst YYY.YYY.YYY.YYY**

The information of the security association whose source address is XXX.XXX.XXX.XXX and destination address is YYY.YYY.YYY.YYY.

**proto esp spi 0xXXXXXXXXXX reqid Y mode tunnel**

The value of SPI(0xXXXXXXXXXX), reqid (Y) and the mode(tunnel) are displayed.

**replay-window X flag af-unspec**

The replay window(X) and the flag information are displayed.

**auth-trunc XXXX(XXX) 96**

The authentication algorithm(XXXX(XXX)) and the number of bit(96 bits) are displayed.

**enc XXX(XXX)**

The cryptographic algorithm(XXX(XXX)) is displayed.

## 5.7 User status display commands

**show user**

[Normal user]

**Function** Display a list of created users.

**Format** **show user** [ *user name* ]

**Parameters** None

**Execution example**

```
(c)NS-2250> show user
User-Name      Category(Uid)  Public-Key  Port-Access-List
-----
root           root(0)
setup          setup(198)
verup          verup(199)
log            log(200)
somebody       normal(100)    stored
portusr        portusr(500)   1-48
smartcs        portusr(501)   1-12
```

**Explanation** **User-Name**

Displays a list of created user names.

**Category(Uid)**

Displays the group name and the user ID corresponding to each user.

**Public-Key**

Displays the public key setting of SSH sessions for each user.

The public key is displayed in addition to the above when the user name is specified.

**Port-Access-List**

Displays a list of serial ports authorized for port users.

**Execution example**

```
(c)NS-2250 > show user extusr01
User-Name      :extusr01
Category(Uid)  :extusr(401)
Permission
  normal       :on
  ttymanage    :off
Port-Access-List:1-4,8,12-16
Public-Key      :
```

**Explanation** **User-Name**

Displays a list of created user names.

**Category(Uid)**

Displays the group name and the user ID corresponding to each user.

**Permission**

The permissions set for the user are displayed.

This item is output only for extended users.

**normal**

The permissions of normal users are displayed.



**on**

Command execution authority of normal user is valid.

**ttymanage**

The permission of tty manage commands is displayed.

**on**

The permission of tty manage commands is valid.

**off**

The permission of tty manage commands is invalid.

**Port-Access-List**

Displays a list of serial ports authorized for port users or extened users.

**Public-Key**

Displays the public key setting of SSH sessions for each user.

The public key is displayed in addition to the above when the user name is specified.

**show user login****[Normal user]****Function** Display a list of currently logged in users.**Format** **show user login****Parameters** None**Execution example**

```
(c)NS-2250> show user login
User-Name      Dev  Login-Time      Idle  Remote-Host
-----
somebody        cons Feb 16 14:17:18 00:03
sshsomebody      0    Feb 16 14:50:15 00:00 fe80::a00:27ff:fe65:b879%eth1
somebody        1    Feb 16 14:51:57 00:01 172.31.1.194
somebody        2    Feb 16 15:03:14 00:00 3fff:ffff:ffff:ffff::1
```

**Explanation** **User-Name**

Displays the name of the users logged into the NS-2250.

**Dev**

Displays the name or the number of the NS-2250 device used for connection.

**Login-Time**

Displays the time when the user logged in.

**Idle**

Displays the time elapsed from the last operation.

**Remote-Host**

Displays the IP address or the name of the connected host.

## 5.8 SNMP status display command

**show snmp**

[Normal user]

**Function**            Display the status of the SNMP agent.

**Format**            **show snmp**

**Parameters**        None

**Execution example**

```
(c)NS-2250> show snmp
status           : enable
location         : Tokyo xxx
contact          : xxx@example.com
engineid         : 800001070300801542183c
linktrap         : on
powertrap        : on
authentrap       : off
coldstarttrap    : on
bondingactswtrap : on
dsrtrap(tty1-8)  : off off off off off off off off
dsrtrap(tty9-16) : off off off off off off off off
dsrtrap(tty17-24): off off off off off off off off
dsrtrap(tty25-32): off off off off off off off off
dsrtrap(tty33-40): off off off off off off off off
dsrtrap(tty41-48): off off off off off off off off
--- trap configurations (2 entry) ---
<trap 1>
  manager address : 172.16.1.1
  community       : public
  version         : v1
  snmpuser        : -
<trap 2>
  manager address : 3fff:ffff:ffff:ffff::1000
  community       : -
  version         : v3
  snmpuser        : 1
--- community configurations (1 entry) ---
<community 1>
  community       : public
  manager address : 172.16.1.1
--- snmpuser configurations (1 entry) ---
<snmpuser 1>
  name            : public
  auth protocol   : sha
  priv protocol   : aes
(c)NS-2250>
```

**Explanation**      **status**

Displays the status of the SNMP agent.

**location**

Displays the location where the device is installed.

**contact**

Display the administrator contact information.

**engineid**

Displays the snmpEngineID as notified to the manager by SNMPv3.

**linktrap**

Displays the setting for the sending of link traps.

**powertrap**

Displays the setting for the sending of power traps.

**authentrap**

Displays the setting for the sending of authentication failure traps.

**coldstarttrap**

Displays the setting for the sending of cold start traps.

**bondingactswtrap**

Displays the setting for the sending of the active port switched traps.

**dsrtrap**

Displays the setting for the sending of DSR signal traps for each serial port.

**trap configurations****manager address**

Displays the IP address of the trap destination SNMP server.

**community**

Displays the community name of the trap destination.

**version**

Displays the version of the trap.

**community configurations****community**

Displays the community name corresponding to the community number.

**manager address**

Displays the IP address of the SNMP server.

**snmpuser configurations**

The configuration information of the user used for SNMPv3 is displayed.

**name**

Your user name will be displayed.

**auth protocol**

The authentication algorithm is displayed.

**priv protocol**

The cryptographic algorithm is displayed.

## 5.9 SNTP status display command

**show sntp****[Normal user]****Function** Display the status of the SNTP client.**Format** **show sntp****Parameters** None**Execution example**

```
(c)NS-2250> show sntp
<sntp information>
  status          : enable
  poll interval   : 300
  last sync server : 172.16.1.1

<primary server>
  server address   : 192.168.1.1
  last access time : 2015/04/28 09:44:30
  access result    : NG (ntp server no response)

<secondary server>
  server address   : 172.16.1.1
  last access time : 2015/04/28 09:44:32
  access result    : OK
```

**Explanation** **status**

Displays the status of the SNTP client.

**poll interval**

Displays the polling interval of SNTP packets.

**last sync server**

Displays the time and result of the last access to the SNTP server.

**server address**

Displays the IP address or host name of the SNTP server.

**last access time**

Displays the time of the last access to the SNTP server.

**access result**

Displays the result of the last access to the SNTP server.

## 5.10 Syslog status display command

**show syslog****[Normal user]****Function** Display the status of the syslog client.**Format** **show syslog****Parameters** None**Execution example**

```
(c)NS-2250> show syslog
Syslog Status:enable
```

| No. | Syslog Host               | Portlog-Facility | Syslog-Facility |
|-----|---------------------------|------------------|-----------------|
| 1   | 172.31.1.197              | local0           | local7          |
| 2   | 2010::e934:96b3:8875:5d10 | local0           | local1          |

**Explanation** **Syslog Status**

Displays the status of the syslog client.

**Syslog Host**

Displays the IP address of the syslog server.

**Portlog-Facility**

Displays the port log facility.

**Syslog-Facility**

Displays the syslog facility.

## 5.11 NFS status display command

**show nfs**

[Normal user]

**Function** Display the status of the NFS client function.

**Format** **show nfs**

**Parameters** None

**Usage example** **show nfs**

**Execution example**

```
(c)NS-2240> show nfs
<NFS information>
Status           : enable
Rotate           : on
Minute           : 0
Hour             : 0
Day              : 1
Month            : *
Day of the week  : *

<NFS server 1>
IP address       : 10.1.1.1
Path             : /mnt/nfslog
Protocol         : udp
Mount status     : mount
(---)

<NFS server 2>
IP address       : ---
Path             : ---
Protocol         : udp
Mount status     : umount
(---)
```

**Explanation** <NFS information>

**Status**

Display the status of the NFS client function.

**Rotate**

Displays the port log rotation on/off setting and interval.

<NFS server X>

**IP address**

Displays the IP address of the NFS server.

**Path**

Displays the path of the NFS server where the port logs are saved.

**Protocol**

Displays the NFS protocol (TCP/UDP).

**Mount status**

Display the NS-2250 mount status (mount/umount).

Displays (---) when the mounting process finished successfully or was not performed yet.

If an error occurs resulting in the unmount status, the reason is displays in the parentheses.



## 5.12 Port server status display commands

**show portd**

[Normal user]

**Function** Display the port server status.

**Format** **show portd**

**Parameters** None

**Usage example** **show portd**

**Execution example**

```
(c)NS-2250> show portd
auth status      : basic
connect status   : direct
base port number
    telnet rw : 8101 ro : 8201
    ssh  rw : 8301 ro : 8401 sshxpt : 19301
timeout status
    idle_timeout : off
    ro_timeout   : off
menu status      : off
-----
tty Label                                Listen Port                                TimeOut
                                telrw telro sshrw sshro  sshxpt  idle  ro
-----
 1 chiba_makuhari_1                8101 8201 8301 8401 19301    -    -
 2 -                                -    -    -    -    -        -    -
 3 -                                8103    -    -    - 19303    -    -
 4 fukuoka_2                        8104 8204 8304 8404    -    -    -
 5 osaka_3                          8105 8205 8305 8405 19305    -    -
 6 tokyo_4                          8106 8206 8306 8406    -    -    -
:
:
```

**Explanation** **auth status**

Displays the port user authentication setting used with Telnet access.

**connect status**

Displays the connection mode to the port server.

**direct**

Direct mode

**select**

Select mode

**base port number**

Displays the Telnet/SSH start port number for port server.

**timeout status**

**idle\_timeout**

Displays the idle timer setting of the port server.

**ro\_timeout**

Displays the session timer setting of the port server.

**menu status**

Displays the display method of the port server menu.

**auto**

Operates according to the port log save function setting.

When the port log save function is enabled, the port server menu is displayed.

When it is disabled, the port server menu is not displayed.

**on**

The port server menu is always displayed.

**off**

The port server menu is not displayed.

**tty**

Displays the serial port number.

**Label**

Displays the label attached to the serial port.

**Listen Port****telrw**

Displays the port number of Telnet Normal mode.

**telro**

Displays the port number of Telnet Monitoring mode.

**sshrw**

Displays the port number of SSH Normal mode.

**sshro**

Displays the port number of SSH Monitoring mode.

**sshxpt**

Displays the port number of SSH transparent function(sshxpt).

**TimeOut****idle**

Displays the idle timeout of port server.

**ro**

Displays the session timeout of port server.

**show portd tty**

[Normal user]

**Function** Display the port server setting for each serial port.**Format** **show portd tty****Parameters** None**Execution example**

```
(c)NS-2250> show portd tty
tty label                rw ro sess mode xpt to  brk nl cmd sdnl
-----
 1 TS-2910                1 1 both rw  ssh off -   cr -  -
 2 TS-2950                1 1 both rw  -  off -   cr -  -
 3 SmartEMT               1 1 both rw  ssh off -   cr -  -
 4 -                      1 1 ssh both -  off -   cr -  cr
 5 -                      1 1 tel ro  ssh off -   cr -  -
 6 -                      1 1 -    -    -  off -   cr -  crlf
 7 -                      1 1 both rw  -  off -   cr -  -
 8 -                      1 1 both rw  -  off -   cr -  -
 9 -                      1 1 both rw  -  off -   cr -  -
10 -                      1 1 both rw  -  off -   cr -  -
11 -                      1 1 both rw  -  off -   cr -  -
12 -                      1 1 both rw  -  off -   cr -  -
13 -                      1 1 both rw  -  off -   cr -  -
14 -                      1 1 both rw  -  off -   cr -  -
15 -                      1 1 both rw  -  off -   cr -  -
16 -                      1 1 both rw  -  off -   cr -  -
:
:
```

**Explanation** **tty**

Displays the serial port number.

**label**

Displays the label of the monitored equipment.

**rw**

Displays the maximum number of connection sessions.

**ro**

Displays the maximum number of connection sessions.

**sess**

Displays the connectable sessions.

**ssh**

Displayed when SSH sessions are authorized.

**tel**

Displayed when Telnet sessions are authorized.

**all**

Displayed when both Telnet and SSH sessions are authorized.

**-**

No authorized.

**mode**

Displays the available modes.

|             |   |
|-------------|---|
| <b>rw</b>   | Displayed when Normal mode(rw) are authorized.  |
| <b>ro</b>   | Displayed when Monitoring mode(ro) are authorized.  |
| <b>all</b>  | Displayed when both modes are authorized.   |
| <b>-</b>    | No authorized.  |
| <b>xpt</b>  | Displays the status of SSH transparent connection.  |
| <b>ssh</b>  | SSH transparent connection is valid.  |
| <b>-</b>    | SSH transparent connection is invalid.  |
| <b>to</b>   | Displays the setting of the session timeout.  |
| <b>on</b>   | session timeout is enable.  |
| <b>off</b>  | session timeout is disable.   |
| <b>brk</b>  | Displays the setting of the NVT break character conversion.   |
| <b>brk</b>  | Send the NVT break character.   |
| <b>-</b>    | Not send the NVT break character.   |
| <b>nl</b>   | Displays the setting of the line feed code conversion.  |
| <b>cr</b>   | line feed code change to CR.  |
| <b>lf</b>   | line feed code change to LF.  |
| <b>-</b>    | Not change the line feed code.  |
| <b>cmd</b>  | Displays the hexadecimal code used to return to the NS-2250 port server menu when connected to the monitored equipment. |
| <b>sdnl</b> | Displays the setting of the line feed code to be sent when starting the transparent connection.                         |
| <b>-</b>    | The line feed code is not sent to the serial port of NS-2250.   |
| <b>cr</b>   | CR(0x0d) is sent to the serial port of NS-2250 as the line feed code.   |
| <b>lf</b>   | LF(0x0a) is sent to the serial port of NS-2250 as the line feed code.   |
| <b>crlf</b> | CR/LF(0x0d 0x0a) is sent to the serial port of NS-2250 as the line feed code.   |

**show portd session**

[Normal user]

**Function** Display the status of port server sessions.**Format** **show portd session** [ **tty** *ttylist* ]**Parameters** [ **tty** *ttylist* ]

Specify the tty number corresponding to the serial ports to display in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

The status of all ports is displayed if this parameter is omitted.

**Usage example** **show portd session****Execution example**

```
(c)NS-2250> show portd session
telnet rw :   2   ro :   0
ssh   rw :   1   ro :   0
available session ( telnet only : 77 / ssh only : 77 )

-----
tty   : Label                               Session-Limit
  Type Login-User           Local   Remote
-----
tty  1 : -                               RW: 1 / RO: 1
      rw 1 nsport1           tel:8101 172.31.100.67:37726

tty  2 : -                               RW: 1 / RO: 1
      rw 1 nsport2           ssh:8302 3fff:ffff:ffff:ffff::67.43181

tty 16 : -                               RW: 1 / RO: 1
      rw 1 nsport3           tel:8116 3fff:ffff:ffff:ffff::67.58826
```

**Explanation** **telnet**

Number of Telnet sessions currently accessing the serial ports.

When using Select mode, the session displaying the selection menu is not included.

**ssh**

Number of SSH sessions currently accessing the serial ports.

When using Select mode, the session displaying the selection menu is not included.

**available session**

Displays the number of remaining sessions that can connect to the NS-2250.

Number of sessions remaining in the case the future sessions are only Telnet and in the case they are only SSH are displayed.

**tty**

Displays the serial port number.

**Label**

Displays the label attached to the serial port.

**Session-Limit**

Displays the number of sessions that can connect to the port.

**Type**

Displays the connection mode (rw/ro) and the session number.

**Login-User**

Displays the names of the port users accessing the NS-2250 port server.

**Local**

Displays the connection protocol (Telnet/SSH) and the client port number

**Remote**

Displays the IP address of the client and the destination port number.

**show tty**

[Normal user]

**Function** Displays the status of the serial ports.**Format** **show tty** [ *ttylist* ]**Parameters** **tty** [ *ttylist* ]

Specify the tty number corresponding to the serial ports to display in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

The status of all ports is displayed if this parameter is omitted.

**Execution example**

```
(c)NS-2250> show tty
-----base----- -dsr-
tty      baud bc parity st flow  dct
-----
  1      9600  8  none  1  xon  off
  2      9600  8  none  1  xon  off
  3      9600  8  none  1  xon  off
  4      9600  8  none  1  xon  off
  5      9600  8  none  1  xon  off
  6      9600  8  none  1  xon  off
  :
  :
```

**Explanation** **tty**

Displays the serial port number.

**baud**

Displays the transfer speed of the serial port.

**bc**

Displays the data bit length for the serial port.

**parity**

Displays the serial port parity.

**st**

Displays the stop bit length for the serial port.

**flow**

Displays the serial port flow control.

**dct**

Displays the setting of automatic hang up that occurs when there is a change in the DSR signal.

**Execution example**

```
(c)NS-2250> show tty 1
tty : 1
  baud      : 115200
  bitchar   : 8
  parity    : none
  stop      : 1
```

```
flow      : none
detect_dsr : on
```

**Explanation****tty**

Displays the serial port number.

**baud**

Displays the transfer speed of the serial port.

**bitchar**

Displays the data bit length for the serial port.

**parity**

Displays the serial port parity.

**stop**

Displays the stop bit length for the serial port.

**flow**

Displays the serial port flow control.

**detect\_dsr**

Displays the setting of the DSR signal transition detection function.



**show stats tty**

[Normal user]

**Function** Displays the serial ports statistical information.**Format** **show stats tty** [ *ttylist* ]**Parameters** **tty** [ *ttylist* ][ *ttylist* ]

Specify the tty number corresponding to the serial port in the 1 to 48 range.  
 The range of ports that you can specify varies depending on the model.  
 Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.  
 The information for all ports is displayed if this parameter is omitted.

**Execution example**

```
(c)NS-2250> show stats tty
tty   TX Octets   RX Octets   DSR  CTS  DTR  RTS  CD
-----
  1           0           0   on  off  off  on  off
  2           0           0   on  off  off  on  off
  3           0           0   on  on   on  on  on
  4           0           0   on  off  off  on  off
  5           0           0   on  off  off  on  off
  6           0           0   on  off  off  on  off
  :
  :
```

**Explanation** **tty**

Displays the serial port number.

**TX Octets**

Displays the number of sent octets.

**RX Octets**

Displays the number of received octets.

**DSR CTS DTR RTS CD**

Displays the current status of signal lines (DSR/CTS/DTR/RTS/CD).

**Execution example**

```
(c)NS-2250> show stats tty 1
tty : 1
  TX Octets      : 0
  RX Octets      : 0
  Error Parity   : 0
  Error Framing  : 0
  Error Overrun  : 0
  Break Count    : 0
  Status         : DSR:on   CTS:off  DTR:off  RTS:on   CD:on
```

**Explanation** **tty**

Displays the serial port number.

**TX Octets**

Displays the number of sent octets.

**RX Octets**

Displays the number of received octets.

**Error Parity**

Displays the number of reception parity errors.

**Error Framing**

Displays the number of reception framing errors.

**Error Overrun**

Displays the number of reception overrun errors.

**Break Count**

Displays the number of received reception breaks.

**Status**

Displays the current status of signal lines (DSR/CTS/DTR/RTS/CD).

**show logd**

[Normal user]

**Function** Display the port log status of each serial port.**Format** **show logd** [ **tty** [ *ttylist* ] ]**Parameters** [ **tty** [ *ttylist* ] ]  
[ *ttylist* ]

Specify the tty number corresponding to the serial ports to display in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to display the port log status of multiple serial ports.

The port log status of all ports is displayed if this parameter is omitted.

**Execution example**

```
(c)NS-2250> show logd
Log stored in   : RAM
Total Log Size  : 24000 KB (Free 0 KB / Total 24000 KB)
Timestamp       : off, Interval Time : 60 sec
(c)NS-2250>
```

**Explanation** **Log stored in**

Displays the save destination of the port logs.

**Total Log Size**

Displays the size of the port logs.

**Timestamp**

Displays the information of time stamp.

**Execution example**

```
(c)NS-2250> show logd tty
      -----log-----  --output--  -----sendlog-----
tty   log   size lstamp  syslog nfs  intvl ratio  send
-----
  1   on   500   off    off off    60   80  mail
  2   on   500   off    off off    60   80   off
  3   on   500   off    off off    60   80   off
  4   on   500   off    off off    60   80   off
  5   on   500   off    off off    60   80   off
  6   on   500   off    off off    60   80   off
  :
  :
```

**Explanation** **tty**

Displays the serial port number.

**log**

Displays the save destination of the port log.

**size**

Displays the size of the port logs.

**lstamp**

Displays the setting of login time stamp.

**syslog**

Displays the syslog output setting of the port log.

**nfs**

Displays the NFS storage setting of the port log.

**intvl**

Displays the interval setting of the port log.

**ratio**

Displays the ratio setting of the port log.

**send**

Displays the port log transfer method.

**Execution example**

```
(c)NS-2250> show logd tty 1
tty : 1
  Log : on, size : 500 KB
  Syslog output : off
    Timestamp : off
    Hostname : off
    Label : off
  NFS output : off
  loginstamp : off
  Trigger : Interval : 60 min
           Ratio : 80 %
  SendLog : mail
  FTP server(1) : -
    Auth account : -
  FTP server(2) : -
    Auth account : -
  SMTP server(1) : 172.31.1.197
    Auth account : -
    Mail addr : cs-tarou@example.co.jp
    From addr : portuser@NS-2250 (default)
    Subject : "portlog TTY_01" (default)
    Type : attachment
  SMTP server(2) : -
    Auth account : -
    Mail addr : -
    From addr : portuser@NS-2250 (default)
    Subject : "portlog TTY_01" (default)
    Type : attachment
```

**Explanation**     **tty**

Displays the serial port number.

**Log**

Displays the size of the saved port log (KByte).

**Syslog output**

Displays the syslog output setting of the port log.

**NFS output**

Displays the NFS storage setting of the port log.

**loginstamp**

Displays the login stamp setting.

**Trigger**

Displays the condition of port log output to an external server.

**Interval**

Displays the interval setting of the port log.

**Ratio**

Displays the ratio setting of the port log.

**SendLog**

Displays the port log transfer method.

**FTP server**

Displays the address of the destination FTP server for port log external transfer.

**Auth account**

Displays the FTP account used when sending the port log.

**SMTP server**

Displays the address of the destination email server for port log external transfer.

**Auth account**

Displays the SMTP-Auth account used when sending the port log.

**Mail addr**

Displays the destination email address for sending the port log.

**From addr**

Displays the sender email address used when sending the port log.

**Subject**

Displays the email subject.

**Type**

Displays the port log sending method.

**show stats logd tty****[Normal user]****Function** Display the port log statistical information of each serial port.**Format** **show stats logd tty** [ *ttylist* ]**Parameters** **tty** [ *ttylist* ][ *ttylist* ]

Specify the tty number corresponding to the serial ports to display in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to display the port log status of multiple serial ports.

The port log status of all ports is displayed if this parameter is omitted.

**Execution example**

```
(c)NS-2250> show stats logd
  ---rest---  --result--  -----overflow-----
tty  ratio intvl  exec  last      display  ftp/mail  logsave
-----
  1      0   59    0  -          0          0          0
  2      0   59    0  -          0          0          0
  3      0   59    0  -          0          0          0
  4      0   59    0  -          0          0          0
  5      0   59    0  -          0          0          0
  6      0   59    0  -          0          0          0
  :
  :
```

**Explanation** **tty**

Displays the port number of the serial port.

**ratio**

Displays the current log usage rate.

**intvl**

Displays the remaining time for the interval timer.

**exec**

Displays the number of FTP/email executions result.

**last**

Displays the number of FTP/email last result.

**display**

Displays the number of overflow bytes in screen display.

**ftp/mail**

Displays the number of overflow bytes in FTP/email sending.

**logsave**

Displays the number of overflow bytes in the "logsave" command.

**Execution example**

```
(c)NS-2250> show stats log tty 1
tty : 1
  Overflow Display : 0 byte
```

```

          FTP/MAIL : 0 byte
          Save      : 0 byte
Log ratio      : 0 %
Interval rest  : 18 min
FTP/MAIL exec  : 0, Last return : -
(c)NS-2250>

```

**Explanation**     **tty**

Displays the port number of the serial port.

**Overflow Display**

Displays the number of overflow bytes in screen display.

**FTP/MAIL**

Displays the number of overflow bytes in FTP/email sending.

**Save**

Displays the number of overflow bytes in the "logsave" command.

**Log ratio**

Displays the current log usage rate.

**Interval rest**

Displays the remaining time for the interval timer.

**FTP/MAIL exec**

Displays the number of FTP/email executions and the last result.

## 5.13 Tty manage status display commands

**show ttymanage**

[Normal user]

**Function** Display information on tty managed functions and session status.

**Format** **show ttymanage** [ **session** ]

**Parameters** [ **session** ]

Displays session information accessing the serial port.

If this parameter is omitted, configuration information of tty managed function is displayed.

```
(c)NS-2250> show ttymanage
<ttymanage information>
status : enable
```

### Explanation

The configuration information of the tty managed function is displayed.

#### **enable**

The TTY managed function is valid.

#### **disable**

The TTY managed function is invalid.

### Execution example

```
(c)NS-2250> show ttymanage session
```

```
-----
tty Login-User
```

```
Remote
-----
```

|              |                       |
|--------------|-----------------------|
| 1 nsextusr01 | 172.31.100.67:37726   |
| 2 nsextusr02 | 172.31.100.69:50961   |
| 3 nsextusr03 | 2002::200c:417b.36876 |

**Explanation** **tty**

The serial port number is displayed.

#### **Login-User**

Displays the extended username accessing the serial port.

#### **Remote**

The IP address and port number of the connection source are displayed.



## 5.14 Tty manage terminal configuration display commands

**show terminal ttymanage**

**[TTY manage]**

**Function** Display terminal configuration information on tty managed functions.

**Format** **show terminal ttymanage [ detail ]**

**Parameters** **[ detail ]**

Displays the detailed information of "waitstr", "waitregex" and "errorregex".

```
(c)NS-2250> show terminal ttymanage
tty          : 1
timeout      : 10
newline      : crlf
after_error   : execute
waitstr      1 : "NS-2250> "
waitstr      2 : "NS-2250# "
waitregex    1 : "NS-[0-9][0-9][0-9][0-9](>|#) "
errorregex   3 : "Error:[ ]?"

(c)NS-2250> show terminal ttymanage detail
tty          : 1
timeout      : 10
newline      : cr
after_error   : execute
waitstr      1 : "NS-2250>"
00000000 4e 53 2d 32 32 35 30 3e 20      |NS-2250> |
waitstr      2 : "NS-2250#"
00000000 4e 53 2d 32 32 35 30 23 20      |NS-2250# |
waitregex    1 : "NS-[0-9][0-9][0-9][0-9](>|#) "
00000000 4e 53 2d 5b 30 2d 39 5d 5b 30 2d 39 5d 5b 30 2d |NS-[0-9][0-9][0-9][0-9](>|#) |
00000010 39 5d 5b 30 2d 39 5d 28 3e 7c 23 29 20      |9][0-9](>|#) |
errorregex   3 : "Error:[ ]?"
00000000 45 72 72 6f 72 3a 5b 20 5d 3f      |Error:[ ]?|
```

### Explanation

The serial port number which the commands of tty managed object are sent to.

#### timeout

Timeout time until the command of tty managed object ends.

#### newline

The line feed code added to the strings sent by the commands of tty managed object.

#### after\_error

The operation when subsequent commands of tty managed object are executed to the same serial port after an error occurred.

#### waitstr

The strings to be listened for when the commands of tty managed object were executed.

#### waitregex

The regular expressions to be listened for when the commands of tty managed object were executed.

#### errorregex

The regular expressions to judge that the commands of tty managed object are error.

## 5.15 CONSOLE port status display command

**show console****[Normal user]****Function**            Display the CONSOLE port status.**Format**            **show console****Parameters**        None**Execution example**

```
(c)NS-2250> show console
Baud       : 9600
BitChar    : 8
Parity     : none
Stop       : 1
Flow       : xon
```

**Explanation**      **Baud**

Displays the transfer speed of the CONSOLE port.

**BitChar**

Displays the data bit length for the CONSOLE port.

**Parity**

Displays the CONSOLE port parity.

**Stop**

Displays the stop bit length for the CONSOLE port.

**Flow**

Displays the CONSOLE port flow control.

**show stats console****[Normal user]****Function** Display the CONSOLE port statistical information.**Format** **show stats console****Parameters** None**Execution example**

```
(c)NS-2250> show stats console
<Console information>
-----
Receive Bytes           2056
Transmit Bytes          89715
Parity Errors            0
Framing Errors           0
Overrun Errors           0
Break Count              0
Status                  RTS|CTS|DTR|DSR
```

**Explanation** **Receive Bytes**

Displays the number of received octets.

**Transmit Bytes**

Displays the number of sent octets.

**Parity Errors**

Displays the number of reception parity errors.

**Framing Errors**

Displays the number of reception framing errors.

**Overrun Errors**

Displays the number of reception overrun errors.

**Break Count**

Displays the number of reception breaks.

**Status**

Displays the signal lines currently on (DSR/CTS/DTR/RTS/CD).

## 5.16 Display command for the internal management servers

**show service**

[Normal user]

**Function**            Display status of internal management servers.

**Format**            **show service**

**Parameters**        None

**Execution example**

```
(c)NS-2250> show service
<telnetd>
  status   : enable
  port     : 23

<sshd>
  status   : enable
  port     : 22
  auth     : basic
  host_key : device_depend

<ftpd>
  status   : enable
```

**Explanation**      **telnetd**

Displays the status of Telnet server.

**status**

Displays the Telnet server setting.

**port**

Displays the reception port number of Telnet server.

**sshd**

Displays the status of SSH server.

**status**

Displays the SSH server setting.

**port**

Displays the reception port number of SSH server.

**auth**

Displays the SSH server authentication method.

**host\_key**

Displays the seed value into which a key for host authentication is formed.

**ftpd**

Displays the status of FTP server.

**status**

Displays the FTP server setting.

## 5.17 Display command for the list of hosts and services authorized for connection

**show allowhost**

[Normal user]

**Function** Display a list of hosts and services authorized for connection.  
The following command is categorized under this group.

**Format** **show allowhost**

**Parameters** None

**Execution example**

| (c)NS-2250> show allowhost |               |                 |
|----------------------------|---------------|-----------------|
| Service                    | Address/Mask  | Access tty List |
| -----                      |               |                 |
| ftpd                       | 10.0.0.0/16   | -               |
| portd/sshrw                | 10.0.0.0/16.. | 1,3,5,7         |
| portd/sshrw                | 2001::/16     | 1-16            |
| portd/telro                | all           | all             |
| portd/telrw                | 2001::/16     | 10,12,14,16     |
| portd/telrw                | 10.0.0.0/16   | all             |
| sshd                       | all           | -               |
| telnetd                    | all           | -               |

**Explanation** **Service**

Displays the services authorized for connection.

The following services are available.

**telnetd**

Telnet server

**sshd**

SSH server

**ftpd**

FTP server

**portd/telrw**

Port server (Telnet Normal mode)

**portd/telro**

Port server (Telnet Monitoring mode)

**portd/sshrw**

Port server (SSH Normal mode)

**portd/sshro**

Port server (SSH Monitoring mode)

**Address/Mask**

Displays the host or network addresses corresponding to the authorized services.

**Access tty List**

Displays a list of serial ports authorized for connection.

## 5.18 Setting file display commands

**show config**

[Administrator]

**Function** Display the NS-2250 current settings.

**Format** **show config**  
**[ running**  
**[ { all | acct | auth | bonding | console | dns | ether |**  
**ip [ { host | route } ] | ip6 | ip6route | ipinterface | ipfilter |**  
**ipsec | logd | maintenance | nfs | portd | service | snmp | sntp |**  
**syslog | system | temperature | terminal | tty | user } ] ]**

**Parameters** **running**  
 Specify "running" to display the NS-2250 settings currently running (running configuration).

**[ { all | acct | auth | bonding | console | dns | ether | ip [ { host | route } ] | ip6 | ip6route | ipinterface | ipfilter | ipsec | logd | maintenance | nfs | portd | service | snmp | sntp | syslog | system | temperature | terminal | tty | user } ] ]**

Select a further category to display only the settings corresponding to that category.

The whole running configuration is displayed if this parameter is omitted.

**all**

Display all settings.

**acct**

Display the accounting method and the RADIUS accounting client settings.

**auth**

Display the authentication method and the RADIUS authentication client settings.

**bonding**

Display the configuration of the bonding function.

**console**

Display the console settings.

**dns**

Display the DNS client settings.

**ether**

Display the Ethernet settings.

**ip**

Display the IP settings.

**ip host**

Display the IP host settings.

**ip route**

Display the IP route settings.

**ip6**

Display the IPv6 settings.

**ip6route**

Display the IPv6 route settings.

**ipinterface**

Display the IP interface settings.

**ipfilter**

Display the IP filter settings.

**ipsec**

Display the configuration of the IPsec.

**logd**

Display the port log settings.

**maintenance**

Display the configuration of the maintenance function.

**nfs**

Display the NFS settings.

**portd**

Display the port server settings.

**service**

Display the service settings.

**snmp**

Display the SNMP agent settings.

**sntp**

Display the SNTP client settings.

**syslog**

Display the syslog client settings.

**system**

Display the system settings.

**temperature**

Display the temperature settings.

**terminal**

Display the terminal settings.

**tty**

Display the TTY port settings.

**user**

Display the user settings.

**Execution example**

```
(c)NS-2250# show config running ip
#
echo "IP configuration..."
#
set hostname NS-2250
set ipaddr eth1 192.168.1.1/24
set tcpkeepalive 360
#
```

**show config startup****[Administrator]****Function** Display the content of the startup files.**Format** **show config startup** [ *config-number* [ { **internal** | **external** } ] ]**Parameters** [ *config-number* [ { **internal** | **external** } ] ]

The content of the startup file selected when the NS-2250 starts is displayed if this parameter is omitted.

*config-number*

Specify the number (1 to 4) of the startup file to display.

[ { **internal** | **external** } ]

Specify "internal" to display the content of the startup file saved inside the NS-2250.

Specify "external" to display the content of the startup file saved in the USB memory.

**Execution example**

```
(c)NS-2250# show config startup 4
=== show external startup4 ===

#
echo "SYSTEM configuration..."
#
set timezone Tokyo
#
#
echo "IP configuration..."
#
set hostname NS-2250
set ipaddr eth1 172.31.3.97/16
set ipaddr eth2 192.168.254.1/24
#
#
echo "User configuration..."
#
create user setup group setup uid 198
set user setup sshkey ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEaph5FigT/SLbGEM3n6Qs5s
qUJYq4V08CTK09bZPA+oTnRPnS372FB5l3XZBuz3KMl9PoGr/diWW/h9c/wmveupz8E9bYQWzShIsAL
iNo5aSI9u0rS
create user log group log uid 200
create user somebody group normal uid 100
:
:
```

**Explanation** The NS-2250 has four startup files in the USB memory and internal memory.



**show config info****[Administrator]****Function** Display information related to the startup files.**Format** **show config info****Parameters** None**Execution example**

```
(c)NS-2250# show config info
boot startup : external startup1

internal startup files
name          date          size  default
-----
startup1      May 2  03:59      411    *
startup2      May 2  03:59      411
startup3      May 2  03:59      411
startup4      May 2  03:59      411

external startup files
name          date          size  default
-----
startup1      May 1  14:48     8302    *
startup2      Apr 28 09:58     9284
startup3      Apr 23 20:50      411
startup4      Apr 24 10:06     8496
```

**Explanation** **boot startup**

Displays the startup file imported at startup.

**internal startup files**

Displays the information of internal startup file.

**external startup files**

Displays the information of external startup file (USB memory).

**name**

Displays the filename.

**date**

Displays the date and time of the file.

**size**

Displays the file size. The unit is a byte.

**default**

"\*" is shown to the startup file set as default.

## 5.19 Terminal setting information display command

**show terminal****[Normal user]****Function** Display the settings of the used terminal.**Format** **show terminal****Parameters** None**Execution example**

```
(c)NS-2250> show terminal
timeout          : off
width            : 80
height          : 23
page            : disable
editing         : enable
redisp          : on
prompt device   : off
prompt hostname : on
prompt time     : off
```

**Explanation** **timeout**

Timeout time for automatic logout.

**width**

Maximum number of characters per line.

**height**

Number of lines per page.

**page**

Paging function setting (enable/disable).

**editing**

Line editing function setting (enable/disable).

**redisp**

Setting (on/off) for character string redisplay after an input error.

**prompt device**

Prompt display setting (on/off) for terminal information.

**prompt hostname**

Prompt display setting (on/off) for NS-2250 host name.

**prompt time**

Prompt display setting (on/off) for current time.

## 5.20 Authentication/accounting function display commands

**show auth****[Normal user]****Function** Display the user authentication method.**Format** **show auth****Parameters** None**Execution example**

```
(c)NS-2250> show auth
<auth information>
Mode           : radius
su_cmd username : root
```

**Explanation** **Mode**

Display the user authentication method.

**local**

Use NS-2250 local authentication for user authentication.

**radius**

Use NS-2250 local authentication and RADIUS authentication for user authentication.

**tacacs**

Use NS-2250 local authentication and TACACS+ authentication for user authentication.

**su\_cmd username**

User name used for external authentication with RADIUS or TACACS+ servers when executing the "su" command.

**show auth radius**

[Normal user]

**Function** Display the RADIUS authentication client settings.**Format** **show auth radius****Parameters** None**Usage example** **show auth radius****Execution example**

```
(c)NS-2250> show auth radius
<auth radius information>
  Retry      : 3
  Default User : portusr

<radius server 1>
  IP address      : 172.31.1.197
  Port number     : 1812
  Password        : stored
  Timeout         : 5
  NAS_ID          : smartcs
  Attribute of portusr : ---
  Attribute of normal : ---
  Attribute of root  : ---

<radius server 2>
  IP address      : 172.31.100.67
  Port number     : 1812
  Password        : stored
  Timeout         : 5
  NAS_ID          : smartcs
  Attribute of portusr : ---
  Attribute of normal : ---
  Attribute of root  : ---
```

**Explanation** **<auth radius information>**

Display the RADIUS authentication settings.

**Retry**

Displays the number of retries for sending the RADIUS authentication packet.

**Default User**

Displays the access method for users for which a user group cannot be identified (access group or "filter\_id\_head" setting does not match).

**<radius server>****IP address**

Displays the IP address of the RADIUS authentication server.

**Port number**

Displays the port number of the RADIUS authentication server.

**Password**

Display the secret key setting of the RADIUS authentication server.

**Timeout**

Displays the timeout time for the RADIUS authentication server. The unit is one second.

**NAS\_ID**

This is the NAS-ID attribute notified to the RADIUS authentication server.  
When "---" is displayed, the NS-2250 host name is automatically saved in the NAS-ID attribute.

**Attribute of portusr**

Displays the attribute identifier for port users.

**Attribute of normal**

Displays the attribute identifier for normal users.

**Attribute of root**

Displays the attribute identifier for device management users.

**show auth tacacs**

[Normal user]

**Function** Display the settings for TACACS+ authentication and approval.

**Format** **show auth tacacs**

**Parameters** None

**Usage example** **show auth tacacs**

**Execution example**

```
(c)NS-2250> show auth tacacs
<auth tacacs+ information>
  Default User : none
  Service Name : smartcs

<tacacs+ server 1>
  IP address      : 10.1.1.1
  Port number     : 49
  Password        : stored
  Timeout         : 5

<tacacs+ server 2>
  IP address      : 192.168.100.1
  Port number     : 49
  Password        : stored
  Timeout         : 5
```

**Explanation****<auth tacacs+ information>**

Display the settings for TACACS+ authentication and approval.

**Default User**

Displays the access method for users for which a user group cannot be identified (access group setting does not match).

**Service Name**

Displays the service name of the TACACS+ server.

**<tacacs+ server>****IP address**

Displays the IP address of the TACACS+ server.

**Port number**

Displays the port number of the TACACS+ server.  
The port number is fixed to TCP 49.

**Password**

Display the secret key setting of the TACACS+ server.

**Timeout**

Displays the timeout time for the TACACS+ server. The unit is one second.

**show auth access\_group**

[Normal user]

|                   |   |
|-------------------|---|
| <b>Function</b>   | Display the access group setting information.   |
| <b>Format</b>     | <b>show auth access_group</b><br>[ { <b>root</b>   <b>normal</b>   <b>portusr</b> [ <b>port</b> [ <i>enable_port_list</i> ] ]   <b>attr</b> <i>string</i> } ]   |
| <b>Parameters</b> | <p>[ { <b>root</b>   <b>normal</b>   <b>portusr</b> [ <b>port</b> [ <i>enable_port_list</i> ] ]   <b>attr</b> <i>string</i> } ]</p> <p>The settings of all access groups (normal users, device management users, and port users) are displayed when this parameter is omitted.</p> <p><b>root</b></p> <p>Display the settings of device management user access groups.</p> <p><b>normal</b></p> <p>Display the settings of the normal user access groups.</p> <p><b>portusr</b> [ <b>port</b> [ <i>enable_port_list</i> ] ]</p> <p>Display the settings of the access group for port user.<br/>Specify only "portusr" to display the settings of port user access groups in the alphabetic order.</p> <p><b>port</b> [ <i>enable_port_list</i> ]</p> <p>Display the settings of the access groups for the specified serial ports.<br/>Specify the numbers of the ports to display in the 1 to 48 range. The range of ports that you can specify varies depending on the model. Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.<br/>Moreover, specify only "port" to display the settings of port user access groups in the order of serial port numbers.</p> <p><b>attr</b> <i>string</i></p> <p>Display the settings of the access groups specified with string.<br/>You can specify from 1 through 64 characters for string. You can use half-width alphanumeric characters, underbars "_", hyphens "-", at marks "@", and periods ".".</p> |

**Execution example**

[When using RADIUS]

```
(c)NS-2250> show auth access_group
Protocol   : Radius
Attribute  : Filter-ID
-----
<root>
  attr : admin
  attr : bbbb
  attr : root
-----
<normal>
  attr : aaaa
  attr : normal
-----
<portusr>
  attr : portusr
  port : 1-48
  attr : smartcs
  port : 1-32
```

[When using TACACS+]

```
(c)NS-2250> show auth access_group
```

```
Protocol   : Tacacs+
```

```
Attribute  : UserSpecific
```

```
-----
```

```
<root>
```

```
    attr_val : grp=admin
```

```
    attr_val : grp=manager
```

```
-----
```

```
<normal>
```

```
    attr_val : grp=general
```

```
-----
```

```
<portusr>
```

```
    attr_val : grp=grp1
```

```
        port : 1-10
```

```
    attr_val : grp=grp2
```

```
        port : 21-32
```

```
    attr_val : grp=grp3
```

```
        port : 21-32
```

#### Explanation

##### Protocol

Displays the set authentication protocol.

##### Attribute

Displays the attribute used for user group identification.

##### Filter-Id

The attribute is "Filter-Id" when using RADIUS.

##### User Specific(Attribute Value Pair)

The user specific pair (attribute value pair) can be freely defined by the device administrator.

##### <root>

Displays the user group of management user.

##### <normal>

Displays the user group of normal user.

##### <portusr>

Displays the user group of port user.

##### attr

Displays the registered access group name.

When using RADIUS, the attribute name freely defined by the device administrator are displayed.

##### attr\_val

Displays the registered access group name.

When using TACACS+, the attribute name and value pair freely defined by the device administrator are displayed in the following format: attribute=value.

##### port

Displays the serial ports authorized for access.

#### Execution example

[When using RADIUS]

```
(c)NS-2250> show auth access_group portusr port 1
```

```
Protocol   : Radius
```



```
Attribute : Filter-ID
Category  : portusr
```

```
-----
port : 1
  attr : portusr
  attr : smartcs
```

[When using TACACS+]

```
(c)NS-2250> show auth access_group portusr port 1
Protocol :Tacacs+
Attribute : UserSpecific (Attribute Value Pair)
Category :portusr
-----
port : 1
  attr_val : grp=grp1
  attr_val : grp=grp2
```

|                    |   |
|--------------------|---|
| <b>Explanation</b> | <b>Protocol</b><br>Displays the set authentication protocol.  |
|                    | <b>Attribute</b><br>Displays the attribute used for user group identification.  |
|                    | <b>Filter-Id</b><br>The attribute is "Filter-Id" when using RADIUS.   |
|                    | <b>User Specific(Attribute Value Pair)</b><br>The user specific pair (attribute value pair) can be freely defined by the device administrator.  |
|                    | <b>Category</b><br>Displays the user group.   |
|                    | <b>root</b><br>Displays the user group of management user.  |
|                    | <b>normal</b><br>Displays the user group of normal user.  |
|                    | <b>portusr</b><br>Displays the user group of port user.   |
|                    | <b>port</b><br>Display the settings of the access groups for the serial ports.  |
|                    | <b>attr</b><br>Displays the registered access group name.<br>When using RADIUS, the attribute name freely defined by the device administrator are displayed.  |
|                    | <b>attr_val</b><br>Displays the registered access group name.<br>When using TACACS+, the attribute name and value pair freely defined by the device administrator are displayed in the following format: attribute=value. |

### Execution example

[When using RADIUS]

```
(c)NS-2250> show auth access_group attr smartcs
Protocol : Radius
```

```
Attribute : Filter-ID
```

```
-----
<portusr>
  attr : smartcs
  port : 1-32
```

[When using TACACS+]

```
(c)NS-2250> show auth access_group attr grp
Protocol :Tacacs+
Attribute : UserSpecific (Attribute Value Pair)
-----
<portusr>
  attr_val : grp=grp1
  port : 1-10
```

#### Explanation

#### Protocol

Displays the set authentication protocol.

#### Attribute

Displays the attribute used for user group identification.

#### Filter-Id

The attribute is "Filter-Id" when using RADIUS.

#### User Specific(Attribute Value Pair)

The user specific pair (attribute value pair) can be freely defined by the device administrator.

#### <root>

Displays the user group of management user.

#### <normal>

Displays the user group of normal user.

#### <portusr>

Displays the user group of port user.

#### attr

Displays the registered access group name.

When using RADIUS, the attribute name freely defined by the device administrator are displayed.

#### attr\_val

Displays the registered access group name.

When using TACACS+, the attribute name and value pair freely defined by the device administrator are displayed in the following format: attribute=value.

#### port

Displays the serial ports authorized for access.

**show stats auth radius****[Normal user]****Function** Display the statistical information of RADIUS authentication client.**Format** **show stats auth radius****Parameters** None**Execution example**

```
(c)NS-2250> show stats auth radius
<auth radius statistics>
Id IP address          Send  Rcv_Allow  Rcv_Deny  Rcv_Error  Timeout
-----
1 2323:1234:abed::f329    1      0         0         0         1
2 172.31.100.67          1      0         1         0         0
```

**Explanation****Id**

Displays the identification number of the RADIUS authentication server.

**IP address**

Displays the IP address of the RADIUS authentication server.

**Send**

Displays the number of authentication request packets sent by the RADIUS client.

**Rcv\_Allow**

Displays the number of authentication accepted packets received by the RADIUS client.

**Rcv\_Deny**

Displays the number of authentication denied packets received by the RADIUS client.

**Rcv\_Error**

Displays the number of error packets received by the RADIUS client.

**Timeout**

Displays the number of RADIUS authentication timeout events.

**show stats auth tacacs**

[Normal user]

**Function** Displays TACACS+ statistical information.**Format** **show stats auth tacacs [ detail ]****Parameters** [ detail ]

Displays the detail of TACACS+ statistical information.

The outline of TACACS+ statistical information is displayed if this parameter is omitted.

**Execution example**

```
(c)NS-2250> show stats auth tacacs

<authentication tacacs+ statistics>
Id IP address          Send  Rcv_Allow  Rcv_Deny  Rcv_Error  Timeout
-----
 1 2323:1234:abed::f329    24      12         3         0         9
 2 10.1.1.1                0       0         0         0         0

<authorization tacacs+ statistics>
Id IP address          Send  Rcv_Allow  Rcv_Deny  Rcv_Error  Timeout
-----
 1 2323:1234:abed::f329    0       0         0         0         0
 2 10.1.1.1                0       0         0         0         0
```

**Explanation** <authentication tacacs+ statistics>

Displays the authentication statistics of the TACACS+ server.

&lt;authorization tacacs+ statistics&gt;

Displays the authorization statistics of the TACACS+ server.

**Id**

Displays the identification number of the TACACS+ server.

**IP address**

Displays the IP address of the TACACS+ server.

**Send**

Displays the number of sent TACACS+ authentication/approval request packets.

**Rcv\_Allow**

Displays the number of received TACACS+ authentication/approval accepted packets.

**Rcv\_Deny**

Displays the number of received TACACS+ authentication/approval denied packets.

**Rcv\_Error**

Displays the number of received TACACS+ authentication/approval error packets.

**Timeout**

Displays the number of TACACS+ authentication/approval timeout events.

**Execution example**

```
(c)NS-2250> show stats auth tacacs detail
```

|                                     |          |     |
|-------------------------------------|----------|-----|
| <authentication tacacs+ statistics> |          |     |
| Id                                  | 1        | 2   |
| IP address                          | 10.1.1.1 | --- |
| -----                               |          |     |
| Connection_OK                       | 1        | 0   |
| Connection_NG                       | 0        | 0   |
| Send_Start                          | 1        | 0   |
| Send_Start_NG                       | 0        | 0   |
| Send_Continue                       | 1        | 0   |
| Send_Continue_NG                    | 0        | 0   |
| Recv_Pass                           | 1        | 0   |
| Recv_GetUser                        | 0        | 0   |
| Recv_GetPass                        | 1        | 0   |
| Recv_Fail                           | 0        | 0   |
| Recv_GetData                        | 0        | 0   |
| Recv_Restart                        | 0        | 0   |
| Recv_Error                          | 0        | 0   |
| Recv_Follow                         | 0        | 0   |
| Recv_LengthErr                      | 0        | 0   |
| Recv_SeqNoErr                       | 0        | 0   |
| Recv_SeqNoLimit                     | 0        | 0   |
| Recv_Illegal                        | 0        | 0   |
| Timeout                             | 0        | 0   |
|                                     |          |     |
| <authorization tacacs+ statistics>  |          |     |
| Id                                  | 1        | 2   |
| IP address                          | 10.1.1.1 | --- |
| -----                               |          |     |
| Connection_OK                       | 1        | 0   |
| Connection_NG                       | 0        | 0   |
| Send_Request                        | 1        | 0   |
| Send_NG                             | 0        | 0   |
| Recv_PassAdd                        | 1        | 0   |
| Recv_PassReplace                    | 0        | 0   |
| Recv_Fail                           | 0        | 0   |
| Recv_Error                          | 0        | 0   |
| Recv_Follow                         | 0        | 0   |
| Recv_LengthErr                      | 0        | 0   |
| Recv_SeqNoErr                       | 0        | 0   |
| Recv_Illegal                        | 0        | 0   |
| Timeout                             | 0        | 0   |

**Explanation****<authentication tacacs+ statistics>**

Displays the authentication statistics of the TACACS+ server.

**Id**

Displays the identification number of the TACACS+ server.

**IP address**

Displays the IP address of the TACACS+ server.

**Connection\_OK**

Number of successfully established connections.

**Connection\_NG**

Number of connection failures.

**Send\_Start**

Number of times SEND.START has been sent.

**Send\_Start\_NG**

Number of SEND\_START transmission failures.

**Send\_Continue**

Number of times SEND\_CONTINUE has been sent.

**Send\_Continue\_NG**

Number of SEND\_CONTINUE transmission failures.

**Recv\_Pass**

Number of times the TAC.PLUS.AUTHEN.STATUS.PASS

AUTHEN.REPLY packet has been received.

The authentication is successful when you received this packet.

**Recv\_GetUser**

Number of times the TAC.PLUS.AUTHEN.STATUS.GETUSER

AUTHEN.REPLY packet has been received.

**Recv\_GetPass**

Number of times the TAC.PLUS.AUTHEN.STATUS.GETPASS

AUTHEN.REPLY packet has been received.

**Recv\_Fail**

Number of times the TAC.PLUS.AUTHEN.STATUS.FAIL

AUTHEN.REPLY packet has been received.

**Recv\_GetData**

Number of times the TAC.PLUS.AUTHEN.STATUS.GETDATA

AUTHEN.REPLY packet has been received.

**Recv\_Restart**

Number of times the TAC.PLUS.AUTHEN.STATUS.RESTART

AUTHEN.REPLY packet has been received

**Recv\_Error**

Number of times the TAC.PLUS.AUTHEN.STATUS.ERROR

AUTHEN.REPLY packet has been received

**Recv\_Follow**

Number of times the TAC.PLUS.AUTHEN.STATUS.FOLLOW

AUTHEN.REPLY packet has been received

**Recv\_LengthErr**

Number of received packets with an invalid length.

**Recv\_SeqNoErr**

Number of received packets with an invalid sequence number.

**Recv\_SeqNoLimit**

Number of received packets with a sequence number exceeding the maximum value (10)

**Recv\_Illegal**

Number of received packets which are not prescribed Authentication\_reply packets.

**Timeout**

Number of timeout events.

**<authorization tacacs+ statistics>**

Displays the authorization statistics of the TACACS+ server.

**Connection\_OK**

Number of successfully established connections.

**Connection\_NG**

Number of connection failures.

**Send\_Request**

Number of times SEND\_REQUEST has been sent.

**Send\_NG**

Number of SEND\_REQUEST transmission failures.

**Recv\_PassAdd**

Number of times the TAC.PLUS.AUTHOR.STATUS.PASS.ADD  
AUTHOR\_RESPONSE packet has been received  
The approval is successful when you received this packet.

**Recv\_PassReplace**

Number of times the TAC.PLUS.AUTHOR.STATUS.PASS.REPL  
AUTHOR\_RESPONSE packet has been received

**Recv\_Fail**

Number of times the TAC.PLUS.AUTHOR.STATUS.FAIL  
AUTHOR\_RESPONSE packet has been received

**Recv\_Error**

Number of times the TAC.PLUS.AUTHOR.STATUS.ERROR  
AUTHOR\_RESPONSE packet has been received

**Recv\_Follow**

Number of times the TAC.PLUS.AUTHOR.STATUS.FOLLOW  
AUTHOR\_RESPONSE packet has been received

**Recv\_LengthErr**

Number of received packets with an invalid length.

**Recv\_SeqNoErr**

Number of received packets with an invalid sequence number.

**Recv\_Illegal**

Number of received packets which are not prescribed Authorization\_response  
packets.

**Timeout**

Number of timeout events.

**show acct****[Normal user]****Function**            Display the account saving method.**Format**             **show acct****Parameters**        None**Usage example**      **show acct****Execution example**

```
(c)NS-2250> show acct
<acct information>
Mode : radius
```

**Explanation**      **Mode****local**

Accounts are not sent.

**radius**

Accounts are sent to a RADIUS accounting server.

**tacacs**

Accounts are sent to a TACACS+ server.



**show acct radius****[Normal user]****Function** Display the RADIUS accounting client settings.**Format** **show acct radius****Parameters** None**Usage example** **show acct radius****Execution example**

```
(c)NS-2250> show acct radius
<acct radius information>
  Retry      : 1
  Auth_deny_stop : remote
  Session_id  : 262780267

<radius server 1>
  IP address  : 172.16.1.1
  Port number : 1813
  Password    : stored
  Timeout     : 5
  NAS_ID      : SmartCS

<radius server 2>
  IP address  : 192.168.1.254
  Port number : 1813
  Password    : stored
  Timeout     : 5
  NAS_ID      : ---
```

**Explanation** **<acct radius information>**

Displays the accounting statistics of the RADIUS server.

**Retry**

Displays the number of retries for sending the RADIUS accounting.

**Auth\_deny\_stop**

Displays the sending method of RADIUS accounting STOP packets used when authentication fails.

**Session\_id**

Displays the last session ID of the RADIUS accounting packet.

**<radius server>****IP address**

Displays the IP address of the RADIUS accounting server.

**Port number**

Displays the port number of the RADIUS accounting server.

**Password**

Display the secret key setting of the RADIUS accounting server.

**Timeout**Displays the timeout time for the RADIUS accounting server.  
The unit is one second.**NAS\_ID**This is the NAS-ID attribute notified to the RADIUS accounting server.  
When "---" is displayed, the NS-2250 host name is automatically saved in the NAS-ID attribute.

**show acct tacacs****[Normal user]****Function** Display the settings for TACACS+ accounting.**Format** **show acct tacacs****Parameters** None**Usage example** **show acct tacacs****Execution example**

```
(c)NS-2250> show acct tacacs
<acct tacacs+ information>
Auth_deny_stop : remote
Task_id       : 3

<tacacs+ server 1>
IP address   : 10.1.1.1
Port number  : 49
Password     : stored
Timeout      : 5

<tacacs+ server 2>
IP address   : 10.1.1.2
Port number  : 49
Password     : stored
Timeout      : 5
```

**Explanation****<acct tacacs+ information>**

Displays the accounting statistics of the RADIUS server.

**Auth\_deny\_stop**

Displays the sending method of accounting STOP packets used when authentication fails.

**Task\_id**

Displays the last task ID of the account.

**<tacacs+ server>****IP address**

Displays the IP address of the TACACS+ server.

**Port number**

Displays the port number of the TACACS+ server.

**Password**

Display the secret key setting of the TACACS+ server.

**Timeout**

Displays the timeout time for the TACACS+ server. The unit is one second.

**show stats acct radius****[Normal user]****Function** Display statistical information of the RADIUS accounting client.**Format** **show stats acct radius****Parameters** None**Usage example** **show stats acct radius****Execution example**

```
(c)NS-2250> show stats acct radius
<acct radius statistics>
Id IP address          Send_Start  Send_Stop  Rcv_Resp  Rcv_Error  Timeout
-----
1 2323:1234:abed::f329      7          4          0          0          11
2 172.31.3.29              5          2          0          0          10
```

**Explanation****Id**

Displays the identification number of the RADIUS accounting server.

**IP address**

Displays the IP address of the RADIUS accounting server.

**Send\_Start**

Displays the number of accounting START packets sent to the RADIUS accounting server by the RADIUS client.

**Send\_Stop**

Displays the number of accounting STOP packets sent to the RADIUS accounting server by the RADIUS client.

**Rcv\_Resp**

Displays the number of accounting RESPONSE packets received from the RADIUS accounting server.

**Rcv\_Error**

Displays the number of error packets received by the RADIUS client.

**Timeout**

Displays the number of RADIUS accounting timeout events.

**show stats acct tacacs****[Normal user]****Function** Display statistical information of TACACS+ accounting.**Format** **show stats acct tacacs [ detail ]****Parameters** **[ detail ]**

Displays the detail of TACACS+ accounting statistical information.

The outline of TACACS+ statistical information is displayed if this parameter is omitted.

**Execution example**

```
(c)NS-2250> show stats acct tacacs
<acct tacacs+ statistics>
Id IP address          Send_Start  Send_Stop  Rcv_Resp  Rcv_Error  Timeout
-----
 1 2323:1234:abed::f329      8          4          0          0          2
 2 10.1.1.1                  2          1          0          0          0
```

**Explanation** **Id**

Displays the identification number of the TACACS+ server.

**IP address**

Displays the IP address of the TACACS+ server.

**Send\_Start**

Displays the number of sent TACACS+ accounting START packets.

**Send\_Stop**

Displays the number of sent TACACS+ accounting STOP packets.

**Rcv\_Resp**

Displays the number of accounting RESPONSE packets received from the TACACS+ server.

**Rcv\_Error**

Displays the number of error packets received from the TACACS+ server.

**Timeout**

Displays the number of TACACS+ accounting timeout events.

**Execution example**

```
(c)NS-2250> show stats acct tacacs detail
<acct tacacs+ statistics>
Id          1          2
IP address  ---          ---
-----
Connection_OK      0          0
Connection_NG      0          0
Send_Start         0          0
Send_Stop          0          0
Send_NG            0          0
Recv_Success       0          0
Recv_Error         0          0
Recv_Follow        0          0
Recv_LengthErr     0          0
Recv_SeqNoErr      0          0
```

|              |   |   |
|--------------|---|---|
| Recv_Illegal | 0 | 0 |
| Timeout      | 0 | 0 |

**Explanation** Display the detailed statistical information for each TACACS+ server.

**Connection\_OK**

Number of successfully established connections.

**Connection\_NG**

Number of connection failures.

**Send\_Start**

Number of sent TAC\_PLUS\_ACCT\_FLAG\_START packets.

**Send\_Stop**

Number of sent TAC\_PLUS\_ACCT\_FLAG\_STOP packets.

**Send\_NG**

Number of accounting transmission failures.

**Recv\_Success**

Number of times the TAC\_PLUS\_ACCT\_STATUS\_SUCCESS  
ACCT\_RESPONSE packet has been received

**Recv\_Error**

Number of times the TAC\_PLUS\_ACCT\_STATUS\_ERROR  
ACCT\_RESPONSE packet has been received

**Recv\_Follow**

Number of times the TAC\_PLUS\_ACCT\_STATUS\_FOLLOW  
ACCT\_RESPONSE packet has been received

**Recv\_LengthErr**

Number of received packets with an invalid length.

**Recv\_SeqNoErr**

Number of received packets with an invalid sequence number.

**Recv\_Illegal**

Number of received packets which are not prescribed.

**Timeout**

Number of timeout events.

## 5.21 Time zone display command

**show timezone****[Normal user]**

**Function**            Display the NS-2250 time zone and a list of the time zones that can be set.

**Format**            **show timezone** [ **list** [ *string* ] ]

**Parameters**        [ **list** [ *string* ] ]

The time zone currently set to the NS-2250 is displayed if this parameter is omitted.

**list**

Display a list of the time zones that can be set.

[ **list** [ *string* ] ]

Display the list of time zones whose beginning of their names matches the specified string.

### Execution example

```
(c)NS-2250> show timezone
Timezone is "Tokyo"
(c)NS-2250> show timezone list ja
Jakarta
Jamaica
Jan_Mayen
Japan
Jayapura
(c)NS-2250>
```

**Explanation**        **Timezone is**

Display the NS-2250 time zone.

## Chapter6

# Maintenance commands

---

Chapter 6 describes the maintenance commands that can be used on the NS-2250.

## 6.1 Basic maintenance commands

**date****[Normal user]**

**Function** Set and display the NS-2250 date and time.

**Format** **date** [ YYYY/MM/DD hh:mm:ss | **ntp** { *ipaddr* | *host* } ]

**Parameters** [ YYYY/MM/DD hh:mm:ss | **ntp** { *ipaddr* | *host* } ]

This command displays the current date and time saved in the NS-2250 if this parameter is omitted.

YYYY/MM/DD hh:mm:ss

To set the date and time manually, enter the date in the "year/month/day" format, leave a space, and then enter the time in the "hours/minutes/seconds" format.

The maximum number of digits is four for the years, and two for the other values.

**ntp** { *ipaddr* | *host* }

To set a new date and time using an NTP server, specify "ntp" followed by the NTP server IP address or host name.

**Note** When you configure the date manually, the entered date must be after the first of January 2015 (2015/01/01), otherwise an error occurs.

**Usage example** To set the first of November 2015 for the date and 12:00:00 for the time.

**date 2015/11/01 12:00:00**



**engineering****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Switch the NS-2250 operating mode to engineering mode.   |
| <b>Format</b>        | <b>engineering</b> [ <b>password</b> ]   |
| <b>Parameters</b>    | <p>[ <b>password</b> ]</p> <p>When the command is executed with this parameter specified, a message prompting you to enter a password is displayed. Enter a password.</p> <p>When you press the Enter key after entering the password, a message prompting you to confirm the password is displayed. Enter the same password again.</p> <p>If you do not specify this parameter, no passwords are allocated to maintenance engineer users.</p> |
| <b>Usage example</b> | <b>engineering</b>   |
| <b>Explanation</b>   | The engineering mode is a special mode accessible only by device management users. In the engineering mode, you can execute hidden commands and commands whose effects are not guaranteed. We will not describe the commands that can be executed in this mode.  |

**exit****[Normal user]**

---

**Function**

This command is alias of logout

**logout****[Normal user]****Function** Log out from the NS-2250.**Format** **logout****Parameters** None**Usage example** **logout**

**Explanation** When this command is executed in the following modes, you exit the mode.

You return to the normal user mode when executed in the device management user mode.

You return to the device management user mode when executed in the engineering mode.

**ping****[Normal user]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Confirm the communication with the connected host on an IP network.   |
| <b>Format</b>        | <b>ping</b> [ <b>count</b> <i>number</i> ] [ <b>length</b> <i>len</i> ] [ <b>interval</b> <i>sec</i> ] { <i>dstaddr</i>   <i>host</i> }   |
| <b>Parameters</b>    | <p>[ <b>count</b> <i>number</i> ]</p> <p>Specify the number of ping request packets to send in the 1 to 65535 range.<br/>This parameter is set to "3" by default.</p> <p>[ <b>length</b> <i>len</i> ]</p> <p>Specify the length of sent packet datagrams.<br/>The round-trip time cannot be calculated when the length is less than 8 octets.<br/>This parameter is set to "56" by default.</p> <p>[ <b>interval</b> <i>sec</i> ]</p> <p>Set the interval between sent packets in the 1 to 1800 seconds range.<br/>This parameter is set to "1" by default.</p> <p>{ <i>dstaddr</i>   <i>host</i> }</p> <p>Specify the IP address or host name of the connected host with which you want to check the connection.</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• In the case of host name specification, if there is an IPv4 address in the address acquired by name resolution, communication is performed in IPv4.</li> <li>• In the case of host name specification, if there is only IPv6 address acquired by name resolution, communication is performed in IPv6.</li> </ul>   |
| <b>Usage example</b> | To send the ping request 10 times to the host 192.168.0.105.<br><br><b>ping count 10 192.168.0.105</b>  |

**ping6**

[Normal user]

|                      |  |
|----------------------|--|
| <b>Function</b>      | Confirm IPv6 communication with the connected host on the IP network.  |
| <b>Format</b>        | <b>ping6</b> [ <b>count</b> <i>number</i> ] [ <b>length</b> <i>len</i> ] [ <b>interval</b> <i>sec</i> ] { <i>ip6addr[%if]</i>   <i>host</i> }  |
| <b>Parameters</b>    | <p>[ <b>count</b> <i>number</i> ]</p> <p>Specify the number of times to send ICMPv6 Echo packets in the range from 1 to 65535.</p> <p>This parameter is set to "3" by default.</p> <p>[ <b>length</b> <i>len</i> ]</p> <p>Specify the datagram length of the packet to be transmitted in the range of 0 to 2048 octets.</p> <p>This parameter is set to "56" by default.</p> <p>[ <b>interval</b> <i>sec</i> ]</p> <p>Set the interval between sent packets in the 1 to 1800 seconds range.</p> <p>This parameter is set to "1" by default.</p> <p>{ <i>ip6addr[%if]</i>   <i>host</i> }</p> <p>Specify the IP address or host name of the connected host with which you want to check the connection.</p> <p><i>ip6addr[%if]</i></p> <p>Specify the IPv6 address in x:x:x:x:x:x:x format.</p> <p>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.</p> <p>If there are consecutive 0 in the front of the field they can be omitted.</p> <p>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> <p>If the IPv6 address is a link local address, specify the interface to communicate subsequently to "%".</p> <p><i>host</i></p> <p>Specify the host name of the connected host with which you want to check the connection.</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• In case of host name specification, it is an error if there is no IPv6 address in the address obtained by name resolution.</li> </ul>   |
| <b>Usage example</b> | To send the ping request 10 times to the host 2001:db8::192.   |
|                      | <b>ping6 count 10 2001:db8::192</b>  |

**reboot****[Administrator]**

**Function** Reboot the NS-2250.

**Format** **reboot** [ { **main** | **backup** } ]  
 [ **startup** *config\_number* [ { **internal** | **external** } ] ]

**Parameters** [ { **main** | **backup** } ]

Select the system software to reboot.

The NS-2250 includes two system software units.

**main**

Specify "main" to reboot the main system software.

**backup**

Specify "backup" to reboot the backup system software.

[ **startup** *config\_number* [ { **internal** | **external** } ] ]

**startup** *config\_number*

Specify the startup file (1 to 4) to be imported at startup.

[ { **internal** | **external** } ]

Specify "internal" to import the startup file with the specified number saved inside the NS-2250.

When you omit both the "internal" and "external" parameters,

**internal**

Specify "external" to import the startup file with the specified number saved in the USB memory. A USB memory must be inserted into the USB port to use this function.

**external**

"external" is automatically selected if a USB memory is inserted in the USB port, otherwise "internal" is selected.

When the entire "startup" parameter is omitted, the default startup file is imported at startup. If a USB memory is inserted when the NS-2250 reboots, the default startup file saved in the USB memory is imported.

**Usage example** To reboot the NS-2250 using the default startup file.

**reboot**

To reboot the backup system software and import the startup file 2 from the USB memory.

**reboot startup 2**

**shutdown****[Administrator]****Function** Shut down the NS-2250.**Format** **shutdown [ logclear ]****Parameters** [ **logclear** ]

Shut down the NS-2250 and delete the following logs at the same time.

- Console log
- Command log
- Log file created with the "logsave" command
- Previous login information displayed at login
- Port log Shut down the NS-2250 without deleting log if this parameter is omitted.

**Note** The settings changed after startup are lost when the NS-2250 is shut down.

To save the changed settings, execute the "write" command to save the running configuration to the startup file before shutting down the NS-2250.

**Usage example** To shut down the NS-2250 and delete the logs at the same time.**shutdown logclear**

**su****[Normal user]****Function**      Log in as a device management user.**Format**        **su****Parameters**    None**Usage example**      **su**



| telnet               | [Normal user]  |
|----------------------|--|
| <b>Function</b>      | Log in to a connected host via a Telnet client.  |
| <b>Format</b>        | <b>telnet</b> { <i>ipaddr</i>   <i>ip6addr[%if]</i>   <i>host</i> } [ <i>tcpport</i> ]   |
| <b>Parameters</b>    | <p>{ <i>ipaddr</i>   <i>ip6addr[%if]</i>   <i>host</i> }</p> <p>Specify the IP address or host name of the connected host to which you want to log in.</p> <p><i>ipaddr</i></p> <p>Specify the IPv4 address.</p> <p>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr[%if]</i></p> <p>Specify the IPv6 address in x:x:x:x:x:x:x format.</p> <p>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.</p> <p>If there are consecutive 0 in the front of the field they can be omitted.</p> <p>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> <p>If the IPv6 address is a link local address, specify the interface to communicate subsequently to "%".</p> <p><i>host</i></p> <p>Specify the host name of the connected host to which you want to log in.</p> <p>[ <i>tcpport</i> ]</p> <p>Specify the TCP destination port number used by the Telnet client.</p> <p>This parameter is set to "23" by default.</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• In the case of host name specification, if there is an IPv4 address in the address acquired by name resolution, communication is performed in IPv4.</li> <li>• In the case of host name specification, if there is only IPv6 address acquired by name resolution, communication is performed in IPv6.</li> </ul>  |
| <b>Usage example</b> | <p>To log in to the host with the IP address 192.168.215.105 via port 1023 using Telnet.</p> <p><b>telnet 192.168.1.105 1023</b></p>  |

**traceroute**

[Normal user]

**Function** Examine the information of the route to the specified host.

**Format** **traceroute** [ **udp** *udpport* ] { *dstaddr* | *host* }

**Parameters** [ **udp** *udpport* ]

Set the number of the UDP port to examine.

This parameter is set to "33434" by default.

{ *dstaddr* | *host* }

Specify the IP address or host name of the host of the route you want to examine.

**Note**

- In the case of host name specification, if there is an IPv4 address in the address acquired by name resolution, communication is performed in IPv4.
- In the case of host name specification, if there is only IPv6 address acquired by name resolution, communication is performed in IPv6.

**Usage example** To examine the route to the host 192.168.250.1.

**traceroute 192.168.250.1**

**tracert6**

[Normal user]

|                      |  |
|----------------------|--|
| <b>Function</b>      | Examine the information of the route to the specified host   |
| <b>Format</b>        | <b>tracert6</b> [ <b>udp</b> <i>udpport</i> ] { <i>ip6addr[%if]</i>   <i>host</i> }  |
| <b>Parameters</b>    | <p>[ <b>udp</b> <i>udpport</i> ]</p> <p>Set the number of the UDP port to examine.<br/>This parameter is set to "33434" by default.</p> <p>{ <i>ip6addr[%if]</i>   <i>host</i> }</p> <p>Specify the IP address or host name of the host of the route you want to examine.</p> <p><i>ip6addr[%if]</i></p> <p>Specify the IPv6 address in x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.<br/>If the IPv6 address is a link local address, specify the interface to communicate subsequently to "%".</p> <p><i>host</i></p> <p>Specify the host name of the host of the route you want to examine.</p> |
| <b>Note</b>          | <ul style="list-style-type: none"> <li>• In case of host name specification, it is an error if there is no IPv6 address in the address obtained by name resolution.</li> </ul>   |
| <b>Usage example</b> | To examine the route to the host 2001:db8::192   |
|                      | <b>tracert6 2001:db8::192</b>  |

**switch bonding****[Administrator]****Function** Switch the active port.**Format** **switch bonding { eth1 | eth2 }****Parameters** **{ eth1 | eth2 }**

Specify the slave interface which you want to switch to active port.

**Note** When a state of the slave interface is down or going back , you can't switch it to active port.

When the slave interface is already active port , you can't switch it to active port.

**Usage example** To switch active port to eth2.**switch bonding eth2****Explanation** The slave interface can be manually switched to active port by this command.

**hangup****[Administrator]****Function**      Reset the service of a specific serial port.**Format**        **hangup tty** *tylist***Parameters**   **tty** *tylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Specify a list of serial ports separated by hyphens "-" and commas "," to set multiple ports in a single command.

**Usage example**   To reset the service of serial port 1.**hangup tty 1**

**history****[Normal user]****Function**            Display the command execution history.**Format**             **history****Parameters**        None**Note**                The last 20 commands are displayed.**Execution example**

```
(c)NS-2250> history
 1 history
 2 date
 3 ping 192.168.1.1
 4 telnet 192.168.1.1
 5 history
```

**logsave****[Administrator]****Function** Save the port logs of serial ports.**Format** **logsave tty** *ttylist***Parameters** **tty** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

Save the log of the specified serial ports into a file.

**Usage example** To save the port log of serial port 1.**logsave tty 1****Explanation** (1) The log is created with the following name: ttyNN\_yymmddhhmm.log (NN is the serial port number).

(2) To acquire the log file, connect to the NS-2250 FTP/SFTP server from an external FTP/SFTP client, log in as a port log acquisition user (log), and execute the "get" command.

(3) To delete the log file, log in as explained above and execute the "delete" command.

For details on how to acquire and delete a log file, see Section 5.6, "Save and acquire port logs manually" in the Instruction Manual.

**loginfo****[Administrator]****Function**            Display a list of port log files saved in a FLASH memory, and the used and free space.**Format**            **loginfo****Parameters**        None**Usage example**      **loginfo****Execution example**

```
(c)NS-2250# loginfo
Total(1K-blocks)      Used   Available Use%
-----
          471620      2318     440434   1%

Size      SaveTime      Name
-----
  118902   Oct 11 14:41 tty01_0610111441.log
 3072016   Oct 12 10:21 tty01_0610121021.log
```



**clear arp****[Administrator]****Function** Delete all dynamic ARP entries registered in the NS-2250.**Format** **clear arp****Parameters** None**Usage example** To delete the dynamic ARP entries of the NS-2250.**clear arp****Note** The ARP entry referred to from a routing cash table inside the NS-2250 isn't deleted.

**trace****[Administrator]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Perform tracing of the packets sent and received by the NS-2250 for each protocol.  |
| <b>Format</b>        | <b>trace { eth1   eth2   bond1 } { icmp   icmp6   ipsec   radius   tacacs }<br/>[ count count ] [ level level ]</b>   |
| <b>Parameters</b>    | <b>{ eth1   eth2   bond1 }</b><br><b>{ icmp   icmp6   ipsec   radius   tacacs }</b><br><br><b>icmp</b><br>Specify "icmp" to perform tracing for the ICMP protocol.<br><b>icmp6</b><br>Specify "icmp6" to perform tracing for the ICMPv6 protocol.<br><b>ipsec</b><br>Specify "ipsec" to perform tracing for the IKE/ESP protocol.<br><b>radius</b><br>Specify "radius" to perform tracing for the RADIUS protocol.<br><b>tacacs</b><br>Specify "tacacs" to perform tracing for the TACACS protocol.<br><br><b>count count</b><br>Specify the packet count for tracing. Specify a number of packets from 1 through 1000.<br>This parameter is set to "50" by default.<br><br><b>level level</b><br>Specify the trace level from 1 through 3.<br>This parameter is set to "1" by default.<br>Specify "1" to perform level 1 tracing (basic). The content of each packet is displayed in one line.<br>Specify "2" to perform level 2 tracing (advanced). The content of each packet is analyzed and displayed in multiple lines.<br>Specify "3" to perform level 3 tracing (advanced + hex dump). In addition to level 2 information, the packet content is displayed in hex dump. |
| <b>Note</b>          | During usually using, please invalidate this function.<br>The bond1 interface designation become the error if the bonding function is disabled.   |
| <b>Usage example</b> | To perform a level 1 tracing of 100 RADIUS packets.<br><br><b>trace eth1 radius level 1 count 100</b>   |

**disconnect****[Administrator]**

**Function** Disconnect the TCP session connected to the specified service.

**Format** **disconnect** { **device** *number* | **ftp** | **ftpd** | **sftpd** | **portd** **tty** *ttylist* }  
 [ { **all** | **rw** { **all** | *session\_id* } | **ro** { **all** | *session\_id* } } ]

**Parameters** { **device** *number* | **ftp** | **ftpd** | **sftpd** | **portd** **tty** *ttylist* }

Specify the service of the connected TCP session.

**device** *number*

Disconnect the session by specifying the terminal device number.

*number*

Specify the terminal device number displayed by the "show user login" command in the range of 0 to 1023.

**ftp**

Disconnect session of the ftp client connected to the NS-2250.

**ftpd**

Disconnect session of the ftpd service connected to the NS-2250.

**sftpd**

Disconnect session of the sftpd service connected to the NS-2250.

**portd**

Disconnect session of the portd service connected to the NS-2250.

**tty** *ttylist*

Specify the tty number corresponding to the serial port in the 1 to 48 range.

[ { **all** | **rw** { **all** | *session\_id* } | **ro** { **all** | *session\_id* } } ]

Specify the type of session.

The parameter "all" is set if this parameter is omitted.

**all**

Disconnect all sessions connected to the specified serial port.

**rw** { **all** | *session\_id* }

Disconnect the Normal mode (rw) sessions connected to the specified serial port. This parameter is enabled only when you have specified the portd.

**all**

Disconnect all sessions.

*session\_id*

Disconnect the specified sessions.

**ro** { **all** | *session\_id* }

Disconnect the Monitoring mode (ro) sessions connected to the specified serial port. This parameter is enabled only when you have specified the portd.

**all**

Disconnect all sessions.

*session\_id*

Disconnect the specified sessions.

**Note**

Since the sessions of portd service can't be disconnected by specifying the terminal device number, specify "portd" option in this command.

**Usage example** To disconnect all Normal mode (rw) sessions connected to serial port 1.

**disconnect portd tty 1 rw all**

**msleep****[Administrator]****Function** Wait for specified time.**Format** **msleep** *milliseconds***Parameters** *milliseconds*

Specifies the time to wait in milliseconds. The range of values is 100 to 1800000.

**Usage example** When waiting for 10 seconds.**msleep 10000**

**tftp setup****[Administrator]**

|                   |  |
|-------------------|--|
| <b>Function</b>   | Send and receive the startup files by TFTP.  |
| <b>Format</b>     | <b>tftp { get   put } setup startup { 1   2   3   4   number }<br/>{ internal   external } [ bsize size ] [ remote "remote_file" ] { ipaddr   ip6addr }</b>  |
| <b>Parameters</b> | <p><b>{ get   put }</b><br/>Send and receive the startup files by TFTP.</p> <p><b>get</b><br/>Received a startup file from a TFTP server.</p> <p><b>put</b><br/>Send a startup file to a TFTP server.</p> <p><b>setup startup { 1   2   3   4   number } { internal   external }</b></p> <p><b>startup { 1   2   3   4   number }</b><br/><b>{ 1   2   3   4 }</b><br/>Specify the number of the startup file you want to obtain from the TFTP server.</p> <p><b>number</b><br/>Specify "number" to select the number of the startup file imported to the NS-2250 at startup.</p> <p><b>internal</b><br/>Specify "internal" to select the startup files saved inside the NS-2250.</p> <p><b>external</b><br/>Specify "external" to select the startup files saved to an USB memory.</p> <p><b>[ bsize size ]</b><br/>Specify the block size forwarded in TFTP.<br/>The setting range is from 1 through 65535.<br/>The parameter "512" is set if this parameter is omitted.</p> <p><b>[ remote "remote_file" ]</b><br/>Specify the name and path of the file to obtain from the TFTP server within double quotation marks. You can use alphanumeric and space characters. The maximum number of characters is 64.<br/>When received, the specified file is saved inside the NS-2250 or in the USB memory and overwrites the file "startup+specified number".<br/>When you do not specify this option, an error occurs if there is no file named "startup+1 to 4" in the TFTP server.</p> <p><b>{ ipaddr   ip6addr }</b><br/>Specify the IP address of the TFTP server.</p> <p><b>ipaddr</b><br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><b>ip6addr</b><br/>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> |

**Usage example** To acquire the startup file 2 in the internal from the TFTP server 192.168.0.1.

**tftp get setup startup 2 internal remote startup 192.168.0.1**

**tftp verup****[Administrator]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Send and receive the upgrade files for system by TFTP.  |
| <b>Format</b>     | <b>tftp { get   put } verup { system   system-image }</b><br><b>[ bsize size ] [ remote "remote_file" ] { ipaddr   ip6addr }</b>  |
| <b>Parameters</b> | <p><b>{ get   put }</b><br/> Send and receive the upgrade files for system by TFTP.</p> <p><b>get</b><br/> Received a upgrade file from a TFTP server.</p> <p><b>put</b><br/> Send a upgrade file to a TFTP server.</p> <p><b>verup { system   system-image }</b><br/> Specify the upgrade file you want to obtain from the TFTP server.</p> <p><b>system</b><br/> Upgrade file is sent between the TFTP server.</p> <p><b>system-image</b><br/> System image file is sent and received between the TFTP server.</p> <p><b>[ bsize size ]</b><br/> Specify the block size forwarded in TFTP.<br/> The setting range is from 1 through 65535.<br/> The parameter "512" is set if this parameter is omitted.</p> <p><b>[ remote "remote_file" ]</b><br/> Specify the IP address of the TFTP server, and the name and path of the upgrade file to obtain from the TFTP server within double quotation marks. You can use alphanumeric and space characters. The maximum number of characters is 64.<br/> When received, the specified file is saved in the upgrade file save area inside the NS-2250 and overwrites the file "system".<br/> When you do not specify this option, an error occurs if there is no file named "system" in the TFTP server.</p> <p><b>{ ipaddr   ip6addr }</b><br/> Specify the IP address of the TFTP server.</p> <p><b>ipaddr</b><br/> The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><b>ip6addr</b><br/> Specify the IPv6 address in x:x:x:x:x:x:x format.<br/> The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/> If there are consecutive 0 in the front of the field they can be omitted.<br/> The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> |

**Usage example** To acquire the upgrade file from the TFTP server 192.168.0.1.

**tftp get verup system 192.168.0.1**

**tftp log****[Administrator]**

**Function** Send the log files by TFTP.

**Format** **tftp put log** *logfiles* [ **bsize** *size* ] [ **remote** "*remote\_file*" ] { *ipaddr* | *ip6addr* }

**Parameters** **put**

Send a log file to a TFTP server.

**log** *logfiles*

Enter a character string within double quotation marks to specify the log file created using the "logsave" command. You can use alphanumeric and space characters. The maximum number of characters is 64.

When specifying logsave\_file, execute the "loginfo" command to check the log file names of the corresponding port.

[ **bsize** *size* ]

Specify the block size forwarded in TFTP.

The setting range is from 1 through 65535.

The parameter "512" is set if this parameter is omitted.

[ **remote** "*remote\_file*" ]

Specify the name and path of the file to save in the TFTP server within double quotation marks. You can use alphanumeric and space characters. The maximum number of characters is 64.

You can save the file in the TFTP server with a name of your choosing.

The file is saved in the TFTP server with the same name as the logsave\_file file if this parameter is omitted.

{ *ipaddr* | *ip6addr* }

Specify the IP address of the TFTP server.

*ipaddr*

The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).

*ip6addr*

Specify the IPv6 address in x:x:x:x:x:x:x:x format.

The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.

If there are consecutive 0 in the front of the field they can be omitted.

The field composed of only 0 can also be omitted only once by specifying as "::" in the address.

**Usage example** To send the log file of TTY1 to the TFTP server 192.168.0.1.

**tftp put log tty01\_1501051503.log 192.168.0.1**

**tftp support****[Administrator]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Send the supportlog files by TFTP.  |
| <b>Format</b>     | <b>tftp put support</b> [ <b>bsize</b> <i>size</i> ] [ <b>remote</b> " <i>remote_file</i> " ] { <i>ipaddr</i>   <i>ip6addr</i> }  |
| <b>Parameters</b> | <p><b>put support</b><br/>Send the supportlog files by TFTP.</p> <p>[ <b>bsize</b> <i>size</i> ]<br/>Specify the block size forwarded in TFTP.<br/>The setting range is from 1 through 65535.<br/>The parameter "512" is set if this parameter is omitted.</p> <p>[ <b>remote</b> "<i>remote_file</i>" ]<br/>Specify the name and path of the file to save in the TFTP server within double quotation marks. You can use alphanumeric and space characters. The maximum number of characters is 64.<br/>You can save the file in the TFTP server with a name of your choosing.<br/>The file is saved in the TFTP server with the same name as the logsave_file file if this parameter is omitted.</p> <p>{ <i>ipaddr</i>   <i>ip6addr</i> }<br/>Specify the IP address of the TFTP server.</p> <p><i>ipaddr</i><br/>The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><i>ip6addr</i><br/>Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>If there are consecutive 0 in the front of the field they can be omitted.<br/>The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> |

**Usage example** To send the support log file to the TFTP server 192.168.0.1.

**tftp put support 192.168.0.1**



| ftp                  | [Administrator]   |
|----------------------|---|
| <b>Function</b>      | Various files is sent and received between the FTP server.  |
| <b>Format</b>        | <b>ftp { setup { internal   external }   verup   support   log } { ipaddr   ip6addr }</b>   |
| <b>Parameters</b>    | <p><b>{ setup { internal   external }   verup   support   log }</b><br/>           Various files is sent and received between the TFTP server.</p> <p><b>setup { internal   external }</b><br/> <b>internal</b><br/>           Specify "internal" to select the startup files saved inside the NS-2250.<br/> <b>external</b><br/>           Specify "external" to select the startup files saved to an USB memory.</p> <p><b>verup</b><br/>           Upgarade files is send and received between the FTP server.</p> <p><b>support</b><br/>           Support log files is send and received between the FTP server.</p> <p><b>log</b><br/>           Log files is send and received between the FTP server.</p> <p><b>{ ipaddr   ip6addr }</b><br/>           Specify the IP address of the FTP server.</p> <p><b>ipaddr</b><br/>           The IP address must be specified in the dot-decimal notation (xxx.xxx.xxx.xxx).</p> <p><b>ip6addr</b><br/>           Specify the IPv6 address in x:x:x:x:x:x:x:x format.<br/>           The "x" in each field of the address is represented by the hexadecimal of the 16 bit part.<br/>           If there are consecutive 0 in the front of the field they can be omitted.<br/>           The field composed of only 0 can also be omitted only once by specifying as "::" in the address.</p> |
| <b>Usage example</b> | <p>To sent and received the startup file 1 saved inside the NS-2250 to the FTP server 192.168.0.1.</p> <p><b>ftp setup internal 192.168.0.1</b></p>   |
| <b>Explanation</b>   | <p>NS-2250 functions as a FTP client.</p> <p>After login, the following command can be used for a FTP server.</p> <p><b>pwd</b><br/>           Displays the current directory on the server.</p> <p><b>cd</b><br/>           Change the current directory on the server.</p> <p><b>mkdir</b><br/>           Create the directory on the server.</p> <p><b>{ ls   dir }</b><br/>           Displays the list of files on the server.</p> <p><b>get [ &lt;remote&gt; ] &lt;local&gt;</b><br/>           Received the file on the server.</p> <p><b>[ &lt;remote&gt; ]</b><br/>           The remote filename &lt;local&gt; is set if this parameter is omitted.</p>   |

**<local>**

Specify character strings are startup1-4, startup\_number, system and NS-2250.sys

**put <local> [ <remote> ]**

Send the file to a server.

**<local>**

Specify character strings are startup1-4, startup\_number, system and NS-2250.sys

**[ <remote> ]**

The remote filename <local> is set if this parameter is omitted.

**mget**

Received the files on the server.

**mput**

Send the files to a server.

**prompt**

Switched the interactive mode.

**hash**

Switched the hash indication function when send and received data.

**passive**

Switched the passive mode.

**binary**

Switched the transfer mode to binary.

**ascii**

Switched the transfer mode to ascii.

**status**

Displays the information of FTP.

**verbose**

Displays the detail of FTP connection.

**debug**

Displays the inside processing of FTP client.

**{ quit | exit | bye }**

Exit the FTP command.

**{ help | ? }**

Displays the list of commands.

## 6.2 Management commands for settings files

**write****[Administrator]**

**Function** Save the NS-2250 current settings in the specified startup file.

**Format** **write** [ **startup** *config\_number* [ { **internal** | **external** } ] ]

**Parameters** [ **startup** *config\_number* [ { **internal** | **external** } ] ]

**startup** *config\_number*

Specify "startup" and the number (1 to 4) of a startup file to select the destination startup file.

The settings are saved to the startup file selected when the NS-2250 starts if this parameter is omitted.

[ { **internal** | **external** } ]

Specify the save destination of the startup file.

When omitting this parameter, it's saved by both of inside the NS-2250 and USB memory.

**internal**

Specify "internal" to save the settings to a startup file saved inside the NS-2250.

**external**

Specify "external" to save the settings to a startup file saved in an USB memory.

### Execution example

```
(c)NS-2250# write
Do you really want to write default startup1 [y/n] ? y
write external startup1
.....writing
write internal startup1
.....writing
(c)NS-2250# write startup 2 internal
Do you really want to write internal startup2 [y/n] ? y
.....writing
```

**Explanation** This command displays the progress situation "...."

The NS-2250 has eight startup files (four files in the USB memory and four files in the internal memory of the NS-2250).

When you execute this command, a message such as "Do you really want to write ... [y/n] ?" is displayed, asking you if you want to save the settings to the imported or specified startup file. Press "y" to save the settings.

**clear startup****[Administrator]**


---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Return the specified startup file to the default settings.   |
| <b>Format</b>        | <b>clear startup</b> { <i>config_number</i>   <b>all</b> } [ { <b>internal</b>   <b>external</b> } ]   |
| <b>Parameters</b>    | <p><b>{ <i>config_number</i>   <b>all</b> }</b></p> <p><i>config_number</i><br/>Specify the number (1 to 4) of the startup file to return to the default settings in <i>config_number</i>.</p> <p><b>all</b><br/>Specify "all" to select all the four startup files (1 to 4).</p> <p><b>[ { <b>internal</b>   <b>external</b> } ]</b></p> <p><b>internal</b><br/>Specify "internal" to select the startup files saved inside the NS-2250.</p> <p><b>external</b><br/>Specify "external" to select the startup files saved to the USB memory.</p>               |
| <b>Usage example</b> | <p>To return the "startup1" file in the USB memory to the default settings.</p> <p><b>clear startup 1 external</b></p> <p>To return all startup files to the default settings.</p> <p><b>clear startup all</b></p>   |
| <b>Explanation</b>   | <p>(1) You can check that the startup files correctly returned to the default settings with the "show config info" command. Check the displayed startup file date and size.</p> <p>(2) The NS-2250 has eight startup files (four files in the USB memory and four files in the internal memory of the NS-2250).</p> <p>(3) When you execute this command, a message such as "Do you really want to clear ... [y/n] ?" is displayed, asking you if you want to initialize the settings of the specified startup file. Press "y" to initialize the settings.</p> |

**default startup****[Administrator]**

|                   |  |
|-------------------|--|
| <b>Function</b>   | Specify the startup file to be imported at startup.  |
| <b>Format</b>     | <b>default startup</b> <i>config_number</i> [ { <b>internal</b>   <b>external</b> } ]  |
| <b>Parameters</b> | <b>startup</b> <i>config_number</i><br>Specify the number (1 to 4) of the startup file to set as the default startup file.<br>[ { <b>internal</b>   <b>external</b> } ]<br><br><b>internal</b><br>Specify "internal" to select the startup files saved inside the NS-2250.<br><b>external</b><br>Specify "external" to select the startup files saved to the USB memory. |

**Execution example**

To make the "startup2" file in the USB memory the default startup file.

```
(c)NS-2250# default startup 2
Do you really want to set default config startup2 [y/n] ? y
(c)NS-2250#
```

|                    |  |
|--------------------|--|
| <b>Explanation</b> | <p>(1) The NS-2250 has eight startup files (four files in the USB memory and four files on the internal memory of the device).</p> <p>(2) When you execute this command, a message such as "Do you really want to set default config ... [y/n] ?" is displayed, asking you if you want to set the specified startup file as the default startup file to be imported at startup. Press "y" to make the setting.</p> |
|--------------------|--|

**copy startup****[Administrator]****Function** Copy a startup file.**Format** **copy startup** *config\_number1* { **internal** | **external** }  
**to startup** *config\_number2* { **internal** | **external** }

**Parameters** **startup** *config\_number1*  
Specify the number (1 to 4) of the startup file to copy.  
{ **internal** | **external** }

**internal**  
Specify "internal" to select the startup files saved inside the NS-2250.

**external**  
Specify "external" to select the startup files saved to the USB memory.

**to startup** *config\_number2*  
Specify the number (1 to 4) of the destination startup file.  
{ **internal** | **external** }

**internal**  
Specify "internal" to select the startup files saved inside the NS-2250.

**external**  
Specify "external" to select the startup files saved to the USB memory.

**Execution example**

To copy the "startup1" file in the NS-2250 to the "startup2" in the USB memory.

```
(c)NS-2250# copy startup 1 internal to startup 2 external
Do you really want to copy startup1 internal to startup2 external [y/n] ? y
(c)NS-2250#
```

**Explanation** (1) The NS-2250 has eight startup files (four files in the USB memory and four files in the internal memory of the device).

(2) When you execute this command, a message such as "Do you really want to copy internal startup1 to external startup1 [y/n] ?" is displayed, asking you if you want to copy the specified startup file. Press "y" to copy the file.

**echo****[Administrator]**

---

**Function**      Display the specified character string.**Format**        **echo** *string***Parameters**    *string*

Specify the character string to display. You can specify from 1 through 128 characters.

Enter the character strings within double quotation marks (") to display multiple strings.

After system has started, this command doesn't display a specified character strings.

## 6.3 Management command for the system software

**copy system****[Administrator]**

---

|                      |  |
|----------------------|--|
| <b>Function</b>      | Copy the system software image.  |
| <b>Format</b>        | <b>copy system { main   backup } to { main   backup }</b>  |
| <b>Parameters</b>    | <b>system { main   backup }</b><br>Specify "main" or "backup" for the system software to copy.<br><b>main</b><br><b>backup</b><br><br><b>to { main   backup }</b><br>Specify "main" or "backup" for the destination system software.<br><b>main</b><br><b>backup</b> |
| <b>Usage example</b> | To copy the main system software to the backup system software.<br><br><b>copy system main to backup</b>   |



**verup execute****[Administrator]**

---

|                    |   |
|--------------------|---|
| <b>Function</b>    | Upgrade or downgrade the system software using a file sent via FTP or SFTP.   |
| <b>Format</b>      | <b>verup execute [ { main   backup } ]</b>  |
| <b>Parameters</b>  | <b>execute</b><br><br><b>[ { main   backup } ]</b><br><br><b>main</b><br><br><b>backup</b>  |
| <b>Note</b>        | New system is applied by this command from the next system start. After confirming the command result, execute the reboot command.  |
| <b>Explanation</b> | Rebooting may take a long time after the "verup execute" command and upgrade/downgrade have been executed. Do not switch off the power or press the RESET switch until the NS-2250 starts. Otherwise, the system software will no longer start. |

**verup cleanup****[Administrator]**

**Function** Delete the system software upgrade or downgrade file sent via FTP or SFTP.

**Format** **verup cleanup**

**Parameters** None

**Execution example**

```
(c)NS-2250# verup cleanup
clean up successful
(c)NS-2250#
```

**backup system-image****[Administrator]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Made the backup of system software.<br>Backup file is made on the RAM.  |
| <b>Format</b>     | <b>backup system-image { main   backup }</b>  |
| <b>Parameters</b> | <b>{ main   backup }</b><br>Specify the system software which makes a backup.<br><b>main</b><br>Made the backup of main system software.<br><b>backup</b><br>Made the backup of backup system software. |

**Usage example** Made the backup of main system software.

**backup system-image main**

**Execution example**

```
(c)NS-2250# backup system-image main
Please wait a few minutes... done.
backup successful
(c)NS-2250#
```

- Note**
- When NS-2250 is restarted, backup file is deleted.
  - For details of backup operation, see the NS-2250 Instruction Manual.

**restore system-image****[Administrator]**

|                   |   |
|-------------------|---|
| <b>Function</b>   | Restore the backup of system software.  |
| <b>Format</b>     | <b>restore system-image to { main   backup }</b>  |
| <b>Parameters</b> | <b>to { main   backup }</b><br>Specify the system software which restores a backup.<br><b>main</b><br>Restore the main system software.<br><b>backup</b><br>Restore the backup system software. |

**Usage example** Restore the main system software.

**restore system-image to main**

**Execution example**

```
(c)NS-2250# restore system-image to main
Please wait a few minutes... done.
restore successful
(c)NS-2250#
```

**Note** For details of restore operation, see the NS-2250 Instruction Manual.

**clear system-image****[Administrator]****Function** Delete the backup file of system software.**Format** **clear system-image****Parameters** None

**Note**

- This commands are the backup file made by the backup command and the command from which forwarded backup file is send by TFTP/SFTP/FTP.
- For details of restore operation, see the NS-2250 Instruction Manual.

**show system-image****[Administrator]****Function** Displays the backup file and restore file of system software.**Format** **show system-image****Parameters** None**Execution example**

```
(c)NS-2250> show system-image
System Image Name : NS-2250.sys
Product           : NS-2250
Version           : 1.0
Date              : 2015-10-01
Status            : available
```

**Explanation** **System Image Name**

Display the name of system image.

**Product**

Displays the name of product.

**Version**

Displays the version of system software.

**Date**

Displays the date and time when an image was made are created.

**Status**

Displays the status of system image.

**available**

The image it possible to restore.

**not available**

The image it isn't possible to restore.

## 6.4 Console output control commands

**console****[Administrator]**

---

|                   |   |
|-------------------|---|
| <b>Function</b>   | The output destination of a console message is controlled.  |
| <b>Format</b>     | <b>console [ { on   off } ]</b>   |
| <b>Parameters</b> | <b>[ { on   off } ]</b><br>Displays the status of system image.<br>The parameter "on" is set if this parameter is omitted.<br><b>on</b><br>The terminal where this command has been executed becomes an output destination for console messages.<br><b>off</b><br>Stop the console message output to the terminal where this command is executed. |

**Usage example** This command is the same as the "console on" command.

**console on**

**loglevel****[Administrator]**

---

**Function**            Change the output level of the console messages.

**Format**            **loglevel ipsec level**

**Parameters**       **ipsec**

                     Change the output level of the console messages the ipsec object outputs.

*level*

                     Specify the output level in the range from 0 to 3.

                     If you specify as "3", it is the most detail level.

                     If you specify as "0", the log messages are not outputted.

                     If you do not execute this command, the value "1" is specified.

**Usage example**    In the case of changing the output level of the console messages the ipsec object outputs as "2".

**loglevel ipsec 2**



## 6.5 Terminal output control commands

**terminal timeout****[Normal user]****Function** Set the terminal automatic logout time.**Format** **terminal timeout { on *time* | off }****Parameters** **{ on *time* | off }**

Specify the time for automatic logout timeout of the user that executed the command on the terminal. This setting applies to normal users and device management users who log in to the NS-2250.

The corresponding user is automatically log out if no operation, such as entering a command, is performed during the specified time.

Specify the timeout time from 1 through 60 minutes if you have specified "on". The unit one minute.

Specify "off" to disable automatic logout.

The default parameter is set according to the "set terminal default timeout" command setting. When the "set terminal default timeout" command has not been executed, the default parameter is "on" and "10" minutes.

**Usage example** To set the timeout time for automatic logout to 30 minutes.**terminal timeout on 30**

**terminal editing****[Normal user]**

---

|                      |   |
|----------------------|---|
| <b>Function</b>      | Enable or disable the terminal line editing function.   |
| <b>Format</b>        | <b>terminal editing { enable   disable }</b>  |
| <b>Parameters</b>    | <b>{ enable   disable }</b><br>Set to enable or disable the editing of command lines using the terminal delete and arrow keys.<br>Specify "enable" to enable the line editing function.<br>Specify "disable" to disable the line editing function.<br>The default parameter is set according to the "set terminal default editing" command setting. When the "set terminal default editing" command has not been executed, the default parameter is "enable". |
| <b>Usage example</b> | To disable line editing on the terminal.<br><br><b>terminal editing disable</b>   |

**terminal page****[Normal user]****Function** Enable or disable the terminal paging function.**Format** **terminal page { enable | disable }****Parameters** **{ enable | disable }**

With this command you can enable the paging function that separates the output text into a different page when the text exceeds the specified number of lines per page. Disable the paging function to display the output text continuously.

Specify "enable" to enable the paging function.

Specify "disable" to disable the paging function.

The default parameter is set according to the "set terminal default page" command setting. When the "set terminal default page" command has not been executed, the default parameter is "enable".

**Usage example** To disable the paging function on the terminal.**terminal page disable**

**terminal height****[Normal user]****Function** Specify the number of lines per page of the terminal.**Format** **terminal height** *rows***Parameters** *rows*

Specify the number of lines per page from 10 through 256.

The default parameter is set according to the "set terminal default height" command setting. When the "set terminal default height" command has not been executed, the default parameter is "23".

**Usage example** To set to 32 the number of lines on one page.**terminal height 32**

**terminal width****[Normal user]**

**Function** Specify the number of characters per line of the terminal.

**Format** **terminal width** *columns*

**Parameters** *columns*

Specify the number of characters per line from 40 through 256.

The default parameter is set according to the "set terminal default width" command setting. When the "set terminal default width" command has not been executed, the default parameter is "80".

**Usage example** To set to 120 the number of characters on one line.

**terminal width 120**

| terminal prompt      | [Normal user]  |
|----------------------|--|
| <b>Function</b>      | Specify the display format of the terminal prompt.   |
| <b>Format</b>        | <b>terminal prompt { device { on   off }   hostname { on   off }   time { on   off } }</b>   |
| <b>Parameters</b>    | <p><b>{ device { on   off }   hostname { on   off }   time { on   off } }</b><br/>Specify the display format of the terminal prompt.</p> <p><b>device { on   off }</b><br/>Specify the identification information of the terminal.<br/>The default parameter is set according to the "set terminal default prompt" command setting. When the "set terminal default prompt" command has not been executed, the default parameter is "on".</p> <p><b>on</b><br/>Display the identification information (terminal number, etc.) of the terminal used on the prompt.</p> <p><b>off</b><br/>No display the identification information (terminal number, etc.) of the terminal used on the prompt.</p> <p><b>hostname { on   off }</b><br/>Specify the NS-2250 host name of the terminal.<br/>The default parameter is set according to the "set terminal default prompt" command setting. When the "set terminal default prompt" command has not been executed, the default parameter is "on".</p> <p><b>on</b><br/>Display the NS-2250 host name on the prompt.</p> <p><b>off</b><br/>No display the NS-2250 host name on the prompt.</p> <p><b>time { on   off }</b><br/>Specify the current time of the terminal.<br/>The default parameter is set according to the "set terminal default prompt" command setting. When the "set terminal default prompt" command has not been executed, the default parameter is "off".</p> <p><b>on</b><br/>Display the current time on the prompt.</p> <p><b>off</b><br/>No display the current time on the prompt.</p> |
| <b>Usage example</b> | To include the current time in the items displayed on the prompt.  |
| <b>Explanation</b>   | <p><b>terminal prompt time on</b></p> <p>The prompt display is as follows when the host name, terminal identification number, and current time are displayed.</p> <p>(c) [12:30:10]NS-2250 &gt;</p> <p>(c) indicates that the terminal used is connected to the CONSOLE port. When a number is shown in the parentheses (), it means that the terminal used is a Telnet/SSH terminal connected to the NS-2250. The number in parentheses is the terminal number. [12:30:10] in the middle shows the current time in the following format: [hours:minutes:seconds]. "NS-2250" on the right is the NS-2250 host name.</p>  |

**terminal redisp****[Normal user]**

**Function** Specify whether or not to redisplay the previously entered command string on the next prompt screen after a command input error has occurred.

**Format** **terminal redisp { on | off }**

**Parameters** **{ on | off }**

Specify "on" to redisplay the command string that caused the error.

Specify "off" not to redisplay the command string that caused the error.

The default parameter is set according to the "set terminal default redisp" command setting. When the "set terminal default redisp" command has not been executed, the default parameter is "on".

**Usage example** To set not to redisplay the command string.

**terminal redisp off**

| terminal ttymanage | [TTY manage]   |
|--------------------|--|
| <b>Function</b>    | Set each parameter of tty manage object command in advance.  |
| <b>Format</b>      | <b>terminal ttymanage { tty <i>ttyno</i>   timeout <i>sec</i>   nl { cr   lf   crlf }   after_error { execute   cancel }   waitstr <i>num</i> input   waitregex <i>num</i> input   errorregex <i>num</i> input }</b>   |
| <b>Parameters</b>  | <p><b>{ tty <i>ttyno</i>   timeout <i>sec</i>   nl { cr   lf   crlf }   after_error { execute   cancel }   waitstr <i>num</i> input   waitregex <i>num</i> input   errorregex <i>num</i> input }</b></p> <p>Set each parameter of tty manage object command in advance.</p> <p><b>tty <i>ttyno</i></b><br/>Specify the tty number in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>The default value of this parameter is "1".</p> <p><b>timeout <i>sec</i></b><br/>Specify the time (seconds) to wait for the received string in the range of 1 to 65535.<br/>The default value of this parameter is "10".</p> <p><b>nl { cr   lf   crlf }</b><br/>Specifies the line feed code to be added to the send string.<br/>The default value of this parameter is "cr".</p> <p><b>cr</b><br/>Sends a string with a line feed code of CR (0x0d).</p> <p><b>lf</b><br/>Sends a string with line feed code LF (0x0a).</p> <p><b>crlf</b><br/>Sends a string with a line feed code of CR / LF (0x0d 0x0a).</p> <p><b>after_error { execute   cancel }</b><br/>Specify whether subsequent commands of tty managed object are executed to the same serial port or not, after an error occurred.<br/>The default value of this parameter is "execute".</p> <p><b>execute</b><br/>Subsequent commands of tty managed object are executed even after an error occurred.</p> <p><b>cancel</b><br/>Subsequent commands of tty managed object aren't executed even after an error occurred.</p> <p><b>waitstr <i>num</i> input</b><br/>The strings to be listened for when the commands of tty managed object were executed.<br/>The strings specified with this option are valid for the "ttypendwaitset" and "ttywaitset" command.</p> <p><b>waitstr</b><br/>Wait for the specified strings in exact match.</p> <p><b><i>num</i></b><br/>Specify the line number of the string in 1 to 16 range.</p> <p><b>input</b><br/>After "waitstr&gt; " prompt is displayed by this command input the string.</p> <p><b>waitregex <i>num</i> input</b></p> |



The regular expressions to be listened for when the commands of tty managed object were executed.

The regular expressions specified with this option are valid for the "ttsendwaitset" and "ttywaitset" command.

#### **waitregex**

Wait for the strings with regular expressions.

#### **num**

Specify the line number of the regular expressions in 1 to 8 range.

#### **input**

After "waitregex> " prompt is displayed by this command input the regular expression.

#### **errorregex num input**

The regular expressions to judge that the commands of tty managed object are error.

The regular expressions specified with this option are valid for the "ttsend", "ttsendwait", "ttsendwaitset", "ttywait" and "ttywaitset" command.

#### **errorregex**

The commands of tty managed object become an error when the received strings match specified regular expressions.

#### **num**

Specify the line number of the regular expressions in 1 to 8 range.

#### **input**

After "errorregex> " prompt is displayed by this command input the regular expression.

**Complement** The regular expressions used in "waitregex" and "errorregex" option are as follows.

- Expression which matches a certain character

|        |  |
|--------|--|
| .      | Matches any character  |
| [...]  | ("..." is any charaters) Matches any character in "..."          |
| [^...] | ("..." is any characters) Matches any character except "..."     |
| \k     | (k is a non-alphanumeric character) Matches an escaped character |
| \d     | Matches a digit from 0 to 9                                      |
| \D     | Matches a character except "\d"                                  |
| \s     | Matches any space character                                      |
| \S     | Matches a character except "\s"                                  |
| \w     | Matches an alphanumeric character or "_"(underscore)             |
| \W     | Matches a character except "\w"                                  |
| \r     | CR(0x0d)   |
| \n     | LF(0x0a)   |

- Repeat expression

|       |   |
|-------|---|
| *     | Zero or more times repetition   |
| +     | One or more times repetition  |
| ?     | Zero or one time repetition   |
| {m}   | (m is an integer greater than or equal to 0)<br>Just m times repetition             |
| {m,}  | (m is an integer greater than or equal to 0)<br>m or more times repetition          |
| {m,n} | (m and n are an integer greater than or equal to 0)<br>From m to n times repetition |

- Other expression

|                      |   |
|----------------------|---|
| <code>(regex)</code> | <code>(regex</code> is any regular expression) Matches regular expression "regex" |
| <code> </code>       | Matches any regular expression separated by " "                                   |
| <code>[0-9]</code>   | Matches a digit from 0 to 9   |
| <code>[a-z]</code>   | Matches a lowercase character   |
| <code>[A-Z]</code>   | Matches an uppercase character  |

- Combination expression

|                        |                           |
|------------------------|---------------------------|
| <code>(^ \n \r)</code> | Matches beginning of line |
|------------------------|---------------------------|

## 6.6 Tty manage commands

**ttysend**

[TTY manage]

|                   |   |
|-------------------|---|
| <b>Function</b>   | Sends a string to the serial port.  |
| <b>Format</b>     | <pre>ttysend [ tty <i>ttyno</i> ] [ delay <i>sec</i> ] [ nl { cr   lf   crlf } ]       { nlonly   string "<i>sendstr</i>"   input   ctl_char <i>char_number</i> }</pre>   |
| <b>Parameters</b> | <p>[ <b>tty</b> <i>ttyno</i> ]</p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range. The range of ports that you can specify varies depending on the model. If this parameter is omitted, it is the value specified by the "terminal ttymanage tty" command (default is 1).</p> <p>[ <b>delay</b> <i>sec</i> ]</p> <p>Specify the waiting time (seconds) from sending a string to the end of the command in the range of 1 to 65535. If omitted, 1 is specified.</p> <p>[ <b>nl</b> { <b>cr</b>   <b>lf</b>   <b>crlf</b> } ]</p> <p>Specifies the line feed code to be added to the send string. If this parameter is omitted, it is the value specified by the "terminal ttymanage nl" command (default is cr).</p> <p><b>cr</b></p> <p>Sends a string with a line feed code of CR (0x0d).</p> <p><b>lf</b></p> <p>Sends a string with line feed code LF (0x0a).</p> <p><b>crlf</b></p> <p>Sends a string with a line feed code of CR / LF (0x0d 0x0a).</p> <p>{ <b>nlonly</b>   <b>string</b> "<i>sendstr</i>"   <b>input</b>   <b>ctl_char</b> <i>char_number</i> }</p> <p>Specifies the string to send to the serial port.</p> <p><b>nlonly</b></p> <p>Send only line feed code.</p> <p><b>string</b> "<i>sendstr</i>"</p> <p>Specify the transmission string by using double quotation marks. The characters that can be specified are alphanumeric characters and part of spaces and symbols (for the characters that can not be specified, refer to the supplement). The maximum string is 128 characters.</p> <p><b>input</b></p> <p>When you run the command, you will see the "sendstr&gt;" prompt. Enter the string to send to the serial port.</p> <p><b>ctl_char</b> <i>char_number</i></p> <p>Specify the hexadecimal code(00-1f,7f) as the control character to be sent.</p> |

| code | control<br>character | code | control<br>character | code | control<br>character |
|------|----------------------|------|----------------------|------|----------------------|
| 00   | [Ctrl-@]             | 0b   | [Ctrl-K]             | 16   | [Ctrl-V]             |
| 01   | [Ctrl-A]             | 0c   | [Ctrl-L]             | 17   | [Ctrl-W]             |
| 02   | [Ctrl-B]             | 0d   | [Ctrl-M]             | 18   | [Ctrl-X]             |
| 03   | [Ctrl-C]             | 0e   | [Ctrl-N]             | 19   | [Ctrl-Y]             |
| 04   | [Ctrl-D]             | 0f   | [Ctrl-O]             | 1a   | [Ctrl-Z]             |
| 05   | [Ctrl-E]             | 10   | [Ctrl-P]             | 1b   | [Ctrl-[]             |
| 06   | [Ctrl-F]             | 11   | [Ctrl-Q]             | 1c   | [Ctrl-\]             |
| 07   | [Ctrl-G]             | 12   | [Ctrl-R]             | 1d   | [Ctrl-]]             |
| 08   | [Ctrl-H]             | 13   | [Ctrl-S]             | 1e   | [Ctrl-^]             |
| 09   | [Ctrl-I]             | 14   | [Ctrl-T]             | 1f   | [Ctrl-_]             |
| 0a   | [Ctrl-J]             | 15   | [Ctrl-U]             | 7f   | [Delete]             |

**Usage example** When sending the string "show version" to serial port 10.

**ttysend tty 10 string "show version"**

**Explanation** (1)Use this command in an SSH session  
 (2)Characters that can not be specified in "<sendstr>" are as follows

> ! " # < ? [ ] \ | { }

**ttysendwait****[TTY manage]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Sends a string to the serial port and listens for the string specified in the argument.   |
| <b>Format</b>        | <b>ttysendwait</b> [ <b>tty</b> <i>ttyno</i> ] [ <b>timeout</b> <i>sec</i> ] [ <b>delay</b> <i>sec</i> ] [ <b>nl</b> { <b>cr</b>   <b>lf</b>   <b>crlf</b> } ]<br>{ <b>nlonly</b>   <b>string</b> " <i>sendstr</i> " } " <i>waitstr</i> "   |
| <b>Parameters</b>    | <p>[ <b>tty</b> <i>ttyno</i> ]</p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range. The range of ports that you can specify varies depending on the model. If this parameter is omitted, it is the value specified by the "terminal ttymanage tty" command (default is 1).</p> <p>[ <b>timeout</b> <i>sec</i> ]</p> <p>Specify the time (seconds) to wait for the received string in the range of 1 to 65535. If this parameter is omitted, it is the value specified by the "terminal ttymanage timeout <i>sec</i>" command (default is 10).</p> <p>[ <b>delay</b> <i>sec</i> ]</p> <p>Specify the waiting time (seconds) to start waiting for the received string after sending the string in the range of 0 to 65535. If this parameter is omitted, 0 is specified.</p> <p>[ <b>nl</b> { <b>cr</b>   <b>lf</b>   <b>crlf</b> } ]</p> <p>Specifies the line feed code to be added to the send string. If this parameter is omitted, it is the value specified by the "terminal ttymanage nl" command (default is cr).</p> <p><b>cr</b></p> <p>Sends a string with a line feed code of CR (0x0d).</p> <p><b>lf</b></p> <p>Sends a string with line feed code LF (0x0a).</p> <p><b>crlf</b></p> <p>Sends a string with a line feed code of CR / LF (0x0d 0x0a).</p> <p>{ <b>nlonly</b>   <b>string</b> "<i>sendstr</i>"   <b>input</b> }</p> <p>Specifies the string to send to the serial port.</p> <p><b>nlonly</b></p> <p>Send only line feed code.</p> <p><b>string</b> "<i>sendstr</i>"</p> <p>Specify the transmission string by using double quotation marks. The characters that can be specified are alphanumeric characters and part of spaces and symbols (for the characters that can not be specified, refer to the supplement). The maximum string is 128 characters.</p> <p>"<i>waitstr</i>"</p> <p>Specify the string to be listened to from the serial port by using double quotation marks. The characters that can be specified are alphanumeric characters and part of spaces and symbols (for the characters that can not be specified, refer to the supplement). The maximum string is 64 characters.</p> |
| <b>Usage example</b> | <p>When sending the string "show version" to serial port 10 and specifying "SmartCS%" as the string to listen on</p> <p><b>ttysendwait tty 10 string "show version" "SmartCS% "</b></p>   |

**Explanation**

(1)The conditions under which this command ends are as follows:

When the string received from the target TTY port matches the string specified by the argument "<waitstr>".

When time to wait for incoming string has passed (Error :: Timeout. Will be displayed).

(2)Use this command in an SSH session.

(3)Characters that can not be specified in "<sendstr>" are as follows.

> ! " # < ? [ ] \ | { }

**ttysendwaitset****[TTY manage]**

|                   |  |
|-------------------|--|
| <b>Function</b>   | Sends a string to the serial port and listens for a pre-specified string.  |
| <b>Format</b>     | <b>ttysendwaitset</b> [ <b>tty</b> <i>ttyno</i> ] [ <b>timeout</b> <i>sec</i> ] [ <b>delay</b> <i>sec</i> ] [ <b>nl</b> { <b>cr</b>   <b>lf</b>   <b>crlf</b> } ]<br>{ <b>nlonly</b>   <b>string</b> " <i>sendstr</i> "   <b>input</b>   <b>ctl_char</b> <i>char_number</i> }  |
| <b>Parameters</b> | <p>[ <b>tty</b> <i>ttyno</i> ]</p> <p>Specify the tty number corresponding to the serial port in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.<br/>If this parameter is omitted, it is the value specified by the "terminal ttymanage tty" command (default is 1).</p> <p>[ <b>timeout</b> <i>sec</i> ]</p> <p>Specify the time (seconds) to wait for the received string in the range of 1 to 65535.<br/>If this parameter is omitted, it is the value specified by the "terminal ttymanage timeout <i>sec</i>" command (default is 10).</p> <p>[ <b>delay</b> <i>sec</i> ]</p> <p>Specify the waiting time (seconds) to start waiting for the received string after sending the string in the range of 0 to 65535.<br/>If this parameter is omitted, 0 is specified.</p> <p>[ <b>nl</b> { <b>cr</b>   <b>lf</b>   <b>crlf</b> } ]</p> <p>Specifies the line feed code to be added to the send string.<br/>If this parameter is omitted, it is the value specified by the "terminal ttymanage nl" command (default is cr).</p> <p><b>cr</b></p> <p>Sends a string with a line feed code of CR (0x0d).</p> <p><b>lf</b></p> <p>Sends a string with line feed code LF (0x0a).</p> <p><b>crlf</b></p> <p>Sends a string with a line feed code of CR / LF (0x0d 0x0a).</p> <p>{ <b>nlonly</b>   <b>string</b> "<i>sendstr</i>"   <b>input</b>   <b>ctl_char</b> <i>char_number</i> }</p> <p><b>nlonly</b></p> <p>Send only line feed code.</p> <p><b>string</b> "<i>sendstr</i>"</p> <p>Specify the transmission string by using double quotation marks. The characters that can be specified are alphanumeric characters and part of spaces and symbols (for the characters that can not be specified, refer to the supplement).<br/>The maximum string is 128 characters.</p> <p><b>input</b></p> <p>When you run the command, you will see the "sendstr&gt;" prompt. Enter the string to send to the serial port.</p> <p><b>ctl_char</b> <i>char_number</i></p> <p>Specify the hexadecimal code(00-1f,7f) as the control character to be sent.</p> |

| code | control<br>character | code | control<br>character | code | control<br>character |
|------|----------------------|------|----------------------|------|----------------------|
| 00   | [Ctrl-@]             | 0b   | [Ctrl-K]             | 16   | [Ctrl-V]             |
| 01   | [Ctrl-A]             | 0c   | [Ctrl-L]             | 17   | [Ctrl-W]             |
| 02   | [Ctrl-B]             | 0d   | [Ctrl-M]             | 18   | [Ctrl-X]             |
| 03   | [Ctrl-C]             | 0e   | [Ctrl-N]             | 19   | [Ctrl-Y]             |
| 04   | [Ctrl-D]             | 0f   | [Ctrl-O]             | 1a   | [Ctrl-Z]             |
| 05   | [Ctrl-E]             | 10   | [Ctrl-P]             | 1b   | [Ctrl-[]             |
| 06   | [Ctrl-F]             | 11   | [Ctrl-Q]             | 1c   | [Ctrl-\]             |
| 07   | [Ctrl-G]             | 12   | [Ctrl-R]             | 1d   | [Ctrl-]]             |
| 08   | [Ctrl-H]             | 13   | [Ctrl-S]             | 1e   | [Ctrl-^]             |
| 09   | [Ctrl-I]             | 14   | [Ctrl-T]             | 1f   | [Ctrl-_]             |
| 0a   | [Ctrl-J]             | 15   | [Ctrl-U]             | 7f   | [Delete]             |

**Usage example** When sending the string "show version" to the 10th serial port and waiting with the preset string "SmartCS%" as the string to listen on

**ttysendwaitset tty 10 string "show version"**

**Explanation** (1)The conditions under which this command ends are as follows:

When the string received from the target TTY port matches the string specified by the "terminal ttymanage waitstr" command.

When the string received from the target TTY port matches any of the regular expressions specified by the "terminal ttymanage waitregex" command.

When time to wait for incoming string has passed (Error :: Timeout. Will be displayed).

(2)Use this command in an SSH session.

(3)Characters that can not be specified in "<sendstr>" are as follows.

> ! " # < ? [ ] \ | { }



**ttyread****[TTY manage]**

**Function** Displays characters received from the serial port.

**Format** **ttyread** [ **tty** *ttyno* ] *sec*

**Parameters** [ **tty** *ttyno* ]

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

If this parameter is omitted, it is the value specified by the "terminal ttymanage tty" command (default is 1).

*sec*

Specify the time (seconds) to display received characters from the serial port in the range of 1 to 65535.

**Usage example** Displays received characters from serial port 10 for 30 seconds.

**ttyread tty 10 30**

**Explanation** (1)Use this command in an SSH session

**ttymwait****[TTY manage]**

**Function** Listens for the specified string from the serial port.

**Format**

**フォーマット** **ttymwait** [ **tty** *ttyno* ] [ **timeout** *sec* ] [ **delay** *sec* ] "*waitstr*"

**Parameters** [ **tty** *ttyno* ]

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

If this parameter is omitted, it is the value specified by the "terminal ttymanage tty" command (default is 1).

[ **timeout** *sec* ]

Specify the time (seconds) to wait for the received string in the range of 1 to 65535.

If this parameter is omitted, it is the value specified by the "terminal ttymanage timeout *sec*" command (default is 10).

[ **delay** *sec* ]

Specify the waiting time (seconds) to wait for the reception string in the range of 0 to 65535.

If this parameter is omitted, 0 is specified.

"*waitstr*"

Specify the string to be listened to from the serial port by using double quotation marks. The characters that can be specified are alphanumeric characters and part of spaces and symbols (for the characters that can not be specified, refer to the supplement). The maximum string is 64 characters.

**Usage example** When specifying "SmartCS%" as the string to listen from serial port 10

**ttymwait tty 10 "SmartCS% "**

**Explanation**

(1)The conditions under which this command ends are as follows:

When the string received from the target TTY port matches the string specified by the argument "<waitstr>".

When time to wait for incoming string has passed (Error :: Timeout. Will be displayed).

(2)Use this command in an SSH session.

(3)Characters that can not be specified in "<waitstr>" are as follows.

> ! " # < ? [ ] \ | { }

**ttymwaitset****[TTY manage]**

**Function** Listens for the string specified in advance from the serial port.

**Format**

**フォーマット** **ttymwaitset** [ **tty** *ttyno* ] [ **timeout** *sec* ] [ **delay** *sec* ]

**Parameters** [ **tty** *ttyno* ]

Specify the tty number corresponding to the serial port in the 1 to 48 range.

The range of ports that you can specify varies depending on the model.

If this parameter is omitted, it is the value specified by the "terminal ttymanage tty" command (default is 1).

[ **timeout** *sec* ]

Specify the time (seconds) to wait for the received string in the range of 1 to 65535.

If this parameter is omitted, it is the value specified by the "terminal ttymanage timeout *sec*" command (default is 10).

[ **delay** *sec* ]

Specify the waiting time (seconds) to wait for the reception string in the range of 0 to 65535.

If this parameter is omitted, 0 is specified.

**Usage example** When listening for the string specified in advance from serial port 10

**ttymwaitset tty 10**

**Explanation** (1)The conditions under which this command ends are as follows:

When the string received from the target TTY port matches one of the strings specified by the "terminal ttymanage waitstr" command.

When the string received from the target TTY port matches one of the regular expressions specified by the "terminal ttymanage waitregex" command.

When time to wait for incoming string has passed (Error :: Timeout. Will be displayed).

(2)Use this command in an SSH session.

**ttylog****[TTY manage]**

|                      |   |
|----------------------|---|
| <b>Function</b>      | Handle the port logs of the specific serial port.   |
| <b>Format</b>        | <b>ttylog tty <i>ttyno</i> { display [ { <i>lines</i>   all [ erase ] } ]   erase }</b>   |
| <b>Parameters</b>    | <p><b>tty <i>ttyno</i></b><br/>Specify the tty number in the 1 to 48 range.<br/>The range of ports that you can specify varies depending on the model.</p> <p><b>{ display [ { <i>lines</i>   all [ erase ] } ]   erase }</b><br/>Handle the port logs.</p> <p><b>display [ { <i>lines</i>   all [ erase ] } ]</b><br/>Display the port logs.</p> <p><b>{ <i>lines</i>   all [ erase ] }</b><br/>Specify the number of lines of displayed port logs.</p> <p><b><i>lines</i></b><br/>Specify the number of lines of latest port logs in 1 to 1000 range.</p> <p><b>all [ erase ]</b><br/>Display all port logs.<br/>When specifying "erase" option, port logs will be deleted after displaying logs.</p> <p><b>erase</b><br/>Delete port logs.</p> |
| <b>Usage example</b> | When displaying all port logs of serial port 10.  |
|                      | <b>ttylog tty 10 display all</b>  |
| <b>Explanation</b>   | (1)Use this command in an SSH session   |

## Chapter7

### Other commands

---

Chapter 7 describes the other setting commands that can be used on the NS-2250.

## 7.1 Port server menu commands

Commands used to operate sessions and logs displayed in the port server.

- 0 (return Port Select Menu)
- 1 (display Port Log)
- 2 (display Port Log (LAST))
- 3 (start tty connection)
- 4 (close telnet/ssh session)
- 5 (show all commands)
- 6 (display & erase Port Log)
- 7 (erase Port Log)
- 8 (send Port Log)
- 9 (show Port Log configuration)
- 10 (send break to tty)

When you access a serial port with the port log function enabled, the following port log menu is displayed.

```
-- RW1 -----
Host : "NS-2250-1"
Label : L3SW-1
-----
0 : return Port Select Menu
1 : display Port Log
2 : display Port Log (LAST)
3 : start tty connection
4 : close telnet/ssh session
5 : show all commands
tty-1:rw>
```

### 0 (return Port Select Menu)

---

**Function** Return to port selection menu.

**Explanation** This menu appears only when Select mode is selected. It does not appear when Direct mode is selected.

#### Execution example

```
connect tty 1 RW mode
-- RW1 -----
Host : "NS-2250-1"
Label : L3SW-1
-----
0 : return Port Select Menu
1 : display Port Log
2 : display Port Log (LAST)
3 : start tty connection
4 : close telnet/ssh session
```

```
5 : show all commands
tty-1:rw> 0
return Port Select Menu
Host : "NS-2250-1 "
login from 192.168.1.1
user (user1) Access TTY List
=====
tty : Label RW R0
-----
1 : EXAtrax-Tokyo-6F-00001 1 0
2 : EXAtrax-II 2 1
3 : BlueBrick-Makuhari-7F-00001 0 N/A
4 : BlueBrick-Makuhari-7F-00002 0 N/A
5 : Switch-1 1 0
: (Omitted)
-----
Enter tty number to access serial port
<ttyno> : connect to serial port RW session ( 1 - 32 )
<ttyno>r : connect to serial port R0 session ( 1r - 32r )
l : show tty list
l<ttyno>-<ttyno> : show a part of tty list
d : show detail tty list
d<ttyno>-<ttyno> : show a part of detail tty list
h : help message
e : exit
=====
tty>
```

## 1 (display Port Log)

---

**Function**            Display the port log of the currently connected serial port.

**Execution example**

```
tty-1:rw>1
Sep 8 11:16:15 ether: port 1 LINK DOWN.
Sep 8 11:16:15 ether: port 2 LINK DOWN.
           (Display the log of monitored equipment)
:
:
:
```



**2 (display Port Log (LAST))**

---

**Function**            Display the most recent part of the ports log of the currently connected serial port.

**Explanation**       Displays approximately the 5000 most recent characters of the port log.

**Execution example**

```
tty-1:rw>2
:
:
:
Sep 8 11:30:15 ether: port 1 LINK UP.
Sep 8 11:30:25 ether: port 2 LINK UP.
```

**3 (start tty connection)**

---

**Function**            Access the monitored equipment.

**Execution example**

```
tty-1:rw>3
Press "CTRL-A" to return this MENU.
Start tty connection
Welcome to xxxx
XXXXX login:
```

**Note**            See the description of the "set portd tty cmdchar" command for details on how to set "cmdchar".

**4 (close telnet/ssh session)**

---

**Function**            Close the session of the currently connected serial port.

**Note**                Only the session in which the command has been entered is closed. The other connected sessions do not change.

**5 (show all commands)**

---

**Function**            Display a list of port server menu commands.

**Execution example**

```
tty-1:rw>5
-- RW1 -----
Host : "NS-2250-1"
Label : L3SW-1
-----
1 : display Port Log
2 : display Port Log (LAST)
3 : start tty connection
4 : close Telnet/SSH session
5 : show all commands
6 : display & erase Port Log
7 : erase Port Log
8 : send Port Log
9 : show Port Log configuration
10 : send break to tty
tty-1:rw>
```

**Note**            You can also press "?" or "TAB" to display the port server menu list.

**6 (display & erase Port Log)**

---

**Function**            Display and delete the port log of the currently connected serial port.

**Note**                When this command is executed, port logs saved in the USB memory or NS-2250 internal memory are not actually deleted. It simply hides the log displayed with "1: display Port Log".

**7 (erase Port Log)**

---

**Function** Delete the port log of the currently connected serial port.

**Note** When this command is executed, port logs saved in the USB memory or NS-2250 internal memory are not actually deleted. It simply hides the log displayed with "1: display Port Log".

**8 (send Port Log)**

---

**Function** Forcibly send the port log of the currently connected serial port to the external FTP/email server that has been set.

**Note**

- If no destination server (FTP or email) has been set for the port logs, nothing happens when you execute this command.
- Only a prompt is displayed when you execute this command.
- The transmission result (success/failure) is not displayed. Check the result on the destination server (FTP or email server).

**9 (show Port Log configuration)**

---

**Function**            Display setting information, such as the save space, transfer interval, and transfer destination server of the port log of the currently connected serial port.

**Execution example**

```
tty-1:rw>9
tty : 1
  Log : on, size : 500KB
  Syslog output: on
  NFS output : on
  loginstamp : on
  Trigger : Interval : 60 min
           : Ratio : 80 %
  SendLog : mail
           : Mail addr : mgr@example.co.jp SMTP server : 192.168.1.251
           : Mail addr : - SMTP server : -
tty-1:rw>
```



**10 (send break to tty)**

---

**Function** Send a break signal to the currently connected serial port.

**Note** To send a break signal to a serial port with this command, you must first use the "set portd tty brk\_char brk" command to make the settings to enable the sending of NTV break characters.

If the above command has not been set ("set portd tty brk\_char" setting), no break signal is sent when you execute this command.

## 7.2 Port selection menu commands

Commands of the port selection menu displayed in the port server when in Select mode.

- *ttyno*
- *ttynor*
- *l*
- *l ttyno-ttyno*
- *d*
- *d ttyno-ttyno*
- *h*
- *e*

When you log in as a port user to the NS-2250 from a Telnet/SSH client, and when the port server connection mode is Select mode, the following port selection menu is displayed.

```
Host : "NS-2250-1 "
login from 192.168.1.1
user (user1) Access TTY List
=====
tty : Label                                RW      RO
-----
  1 : EXAtrax-Tokyo-6F-00001                1        0
  2 : EXAtrax-II                          2        1
  3 : BlueBrick-Makuhari-7F-00001           0       N/A
  4 : BlueBrick-Makuhari-7F-00002           0       N/A
  5 : Switch-1                             1        0
  : (Omitted)
-----
Enter tty number to access serial port
<ttyno>          : connect to serial port RW session ( 1 - 32 )
<ttyno>r         : connect to serial port RO session ( 1r - 32r )
l                : show tty list
l<ttyno>-<ttyno>  : show a part of tty list
d                : show detail tty list
d<ttyno>-<ttyno>  : show a part of detail tty list
h                : help message
e                : exit
=====
tty>
```

*ttyno*

---

**Function**            Connect to the specified serial ports in Normal mode.

### Execution example

To connect to the serial port 7 in Normal mode.

7

*ttynor*

---

**Function**            Connect to the specified serial ports in Normal mode.

**Execution example**

To connect to the serial port 7 in Monitoring mode.

7r

---

**1**

---

**Function**      Refresh the list of ports to which connection is possible.

**l**ttyno-ttyno

---

**Function** Refresh the specified range of ports from list of ports to which connection is possible.

**Execution example**

To redisplay serial ports 2 to 8.

```
12-8
```

To redisplay serial ports 10 and higher numbers.

```
110-
```

To redisplay serial ports 15 and lower numbers.

```
1-15
```

**d**

---

**Function** Refresh detailed information of the user connected to the serial port (port number, user name, and IP address of Telnet/SSH client).

**dttyno-ttyno**

---

**Function** Refresh detailed information of the users connected to a range serial ports (port number, user name, and IP address of Telnet/SSH client).

**Execution example**

To redisplay serial ports 2 to 8.

```
d2-8
```

To redisplay serial ports 10 and higher numbers.

```
d10-
```

To redisplay serial ports 15 and lower numbers.

```
d-15
```

**h**

---

**Function**      Display a list of port selection menu commands.

**Note**            You can also press "?" or "TAB" to display the port server menu list.



---

**e**

---

**Function**            Close the port selection menu and disconnect the Telnet/SSH session.

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