

PACSystems™ RX3i

PROFINET CONTROLLER COMMAND LINE INTERFACE MANUAL

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Chapter 1: Introduction

A computer can monitor a PROFINET Controller module and check its operation on the network by accessing the module's built-in Command Line Interface. If a problem occurs, the Command Line Interface can be used to help pinpoint the cause.

The Command Line Interface operates in background mode on the PROFINET Controller. It cannot be used during powerup diagnostics or when the module is in firmware update mode. The Command Line Interface may not be accessible during very heavy communications load.

This chapter describes the Command Line Interface and explains how to use it.

Chapter 2, Monitor Commands defines the commands, counters, and Log Events that can be used to view information about the operation of the network.

Chapter 3, Modify Commands defines additional password-protected commands that can be used to control network functions

1.1 Accessing the Command Line Interface

A computer can access the PROFINET Controller's Command Line Interface either through the module's built-in Micro USB port or through the PROFINET network, using telnet with a terminal emulation application such as HyperTerminal.

When connecting through the Micro USB port, a driver compatible with the PROFINET Controller's Micro USB port must first be installed as described in the PROFINET Controller Manual, GFK-2571.

Serial port settings must be 115200 baud, 8-None-1, with no flow control.

1.1.1 Setting Up Telnet on the PROFINET Controller

A computer's terminal emulation application can be used to communicate with the PROFINET Controller via telnet. Telnet is initially disabled on the PROFINET Controller. It can be enabled by connecting a Windows-based computer to the module's Micro USB port, entering the telnetd Command Line Interface command, and power-cycling the module.

Telnet functionality is accessed through port number 23.

Once telnet has been enabled, it remains enabled through power cycles unless it is disabled again using the telnetd Command Line Interface.

Note: *If the PNC is power cycled or reset an established terminal emulation connection will cease to work. Performing a manual Disconnect/Connect operation in the terminal emulation program will restore operation of the connection.*

Terminating a Command Line Interface Session

A Command Line Interface session terminates if:

1. the terminate command is entered.
2. the terminal application is disconnected, either physically or by command.
3. the session becomes inactive. The Command Line Interface automatically disconnects if the session has remained inactive for the timeout period. The inactivity timeout value can be viewed with the show sessionTimeout command. The default timeout, 600 seconds (10 minutes), can be changed using the modify-level sessionTimeout command.

Terminal-related parameters (such as display settings and Alias values) that have been established during a Telnet session are lost when the Telnet session is terminated. However, terminal-related parameters that are established using the Command Line Interface are retained until the next power cycle / restart

1.2 Initial Prompt

After connecting a computer to the Command Line Interface, the following prompt appears:

device-name>

The device-name is the PROFINET Device Name of the module. If the device has not been named yet, the device name is an empty character string “”.

The > indicates the Command Line Interface session is in the Monitor access level, which provides a limited set of commands. Changing to Modify access level enables use of a greater number of commands. In the Modify access level, the prompt changes to: =

1.2.1 Entering Parameter Values

Parameter values must be alphanumeric characters, except for a few special commands that are specified in the command descriptions. Parameters can be passed in single quotes or double quotes.

1.2.2 Keyboard Shortcuts

Some useful keyboard shortcuts include:

- | | |
|-----------|--|
| Ctrl -a | jump to beginning of line. |
| Ctrl -e | jump to end of line. |
| Ctrl-k | cut remainder of line. |
| Ctrl-f | move cursor forward one character. |
| Ctrl-b | move cursor back one character. |
| Up / down | cycle between previously used commands |

The help edit command lists all command line editing shortcuts.

1.3 Viewing the Commands

To view the commands that are available in the current mode, at the Command Line prompt enter either:

Help to see the available global and non-global commands.

? to see only the non-global commands.

help global to see only the global commands

1.3.1 Completing a Partially-Typed Command

Enter ? or press the Tab key to automatically complete a partially-typed command or parameter.

Note: To complete “no” to “node” use ?, not Tab.

1.3.2 Listing the Parameters of a Command

After a command has been fully entered, type ? to list the possible parameters for that command, and help text associated with those parameters.

Example for showing the ARP table:

device-name>	Initial display
device-name> sho?	Enter sho? to view self-completion help.
device-name> show	Enter show to see the full command
device-name> show ?	Enter show ? to view the available show parameters. Partial results: Arp - Show ARP table Config - Show Configuration items
device-name> show arp	Enter arp to display the ARP table.

1.3.3 The “No” Parameter

For certain commands, entering a no parameter produces the opposite result. For example, the command telnetd enables telnet while no telnetd disables telnet. The Command Line Interface help shows these commands as: [no] command

1.4 Access Levels for the Command Line Interface

The Command Line Interface provides two access levels of commands:

- **Monitor access level commands** – these are commands that do not affect the operation of the module, or that are read-only. Monitor level commands are always accessible. The Command Line Interface always starts (or restarts after inactivity) at Monitor access level. See chapter 2 for detailed definitions of Monitor level commands.

- **Modify access level commands** – these commands can be used to change some operating parameters, such as certain configuration items. Modify level commands are password-protected and have predefined login names. See chapter 3 for Modify level command definitions.

Note: *If a Modify level command is entered while at Monitor level, the message "Error: Bad command Syntax:" will appear.*

1.4.1 Global Commands

Global commands are basic commands (such as help) that are always available at the current access level. Some global commands are available only in Modify access level mode (not Monitor mode). For example, the command login is a Monitor access level global command. However, logout is a Modify access level global command.

Example of Global Command Use

PROFINET Controller prompt in Modify level (not in Configuration mode):

device-name=

Enter help global to view available global commands at the Modify access level:

device-name= help global

alias - Text substitution

cls - Clear the screen

help - Show available commands

history - Show command history

log - Display local log table

node - Display Identification and physical module information show - Show system attributes

terminate - End a command shell session

1.4.2 Non-Global Commands

Non-Global commands are commands whose functionality varies at different access levels

1.4.3 Command Summary

The tables in this section summarize the PROFINET Controller Command Line Interface commands. In addition, they indicate the access levels and modes where various commands are valid.

A command that can set a parameter and that has an equivalent show command to display the current value(s) associated with that parameter displays the same information as the show command form if the command is entered without any parameters. For example, entering deviceName in Configuration mode with no parameters displays the same information as show config deviceName.

Commands/parameter names that can be unambiguously interpreted with fewer letters are accepted as though the full command/parameter were entered. For example, the command `show config ip` displays the same information as `show config i` because there are no other parameters following `show config` that begin with `i`. Likewise, the whole command can be abbreviated `sho co i`.

Commands and parameters (when applicable) are not case-sensitive.

In the tables that follow:

Global	The command is available in all modes and access levels.
Non-Global	The command capability or access to certain parameters change in some modes or access levels.
[]	The parameter is optional. Within the brackets each possible option for that parameter is listed, with a bar between parameters.
< >	Parameters that can take on a range of values are shown in angle brackets

Commonly-Performed Tasks

To do this:	Use this command:
Clear the screen	<code>cls</code>
Display configuration of Device Name, IP parameters and redundant media role	<code>show config</code> or <code>show config all</code>
Display detailed port information.	<code>show port all</code>
Display details on the most recent software exceptions.	<code>show debug exception</code>
Display help for the current access level	<code>help</code>
Display or change shell terminal configuration	<code>shConfig</code>
Display parameters for a command	<code><command> ?</code>
Display saved fatal error debug data stored non-volatile memory.	<code>show debug fatalInfo</code>
Display summary of internal and external port information.	<code>show port</code>
Display the local log table	<code>log</code>
End the Command Line Interface Session.	<code>terminate</code>
Go to the Modify access level (Monitor mode)	<code>login</code>
Go to the Monitor access level (Modify mode)	<code>Logout</code>
Restart the module firmware. (Modify mode)	<code>restart</code>
Send ICMP Echo requests. (Modify mode)	<code>ping</code>
Start the module identification LED blink pattern (Modify mode)	<code>blinkId begin</code>
Stop the module identification LED blink pattern (Modify mode)	<code>blinkId end</code>

1.4.4 Monitor Level Commands

Command	Description
Alias [replacement text] [command name]]	Global. Used to assign a different name to a string. For example, entering alias sh show would set up the alias sh for show to be used in subsequent commands, for example sh time for the show time command. Alias definitions are not saved between sessions. Enter alias to view the currently-defined aliases. The module is provided with a set
cls	Global. Clears the current screen so that only a single command prompt is shown at the top of screen.
help [global edit], ?	Global. Displays commands available in the current access level/mode. help global displays global commands. help edit describes key sequences for line editing. ? or <TAB> also performs self-completion or suggests possible commands when a command is only partially entered. In addition, ?
history [clear]	Global. Shows command history with a history number associated with each previously-entered command; clear parameter clears the
!<history Number>	Global. Executes a command associated with the history number in the
up arrow () or <ctrl>p	Global. Shows previous command in command history.
down arrow () or <ctrl>n	Global. Shows next command in command history. Only valid after moving up through command history with the up arrow () or <ctrl>p.
log [details [<entry>]]	Global. Displays the local log table. This includes displaying the counter that indicates the number of entries that were lost due to overflow. The local log table is displayed with additional fault details by specifying the optional details parameter. An individual log entry in complete detail by specifying log details followed by the log entry number. This command
login	Non-Global. Enter Modify access level.
node	Global. Displays same information as show node command.
shConfig	Non-Global. Sets and shows shell terminal configuration such as number or rows/columns to display whether to wrap at screen width. The default row/columns are 25/80 (equivalent to HyperTerminal defaults).
show arp	Global. Shows ARP table.
show config [deviceName ip rdnMedia all]	Global. show config or show config all displays Device Name, IP parameters (IP Address, subnet mask, gateway), redundant media role (disabled, client, manager), ring port assignment, ring test interval, and ring monitor count). Display individual parameter values by typing in the parameter name. For example, show config deviceName displays only
show debug exception	Global. Displays details on the most recent software exceptions.
show debug fatalInfo	Global. Display saved fatal error debug data stored non-volatile
show icmp	Global. Shows both ICMP and IGMP status and counters
show ip	Global. Shows IP status and counters.
show log [details	Global. Displays the local log table. This includes displaying the counter that indicates the number of entries that were lost due to overflow. The

Command	Description
[<entry>]]	local log table is displayed with additional fault details by specifying the optional details parameter. An individual log entry in complete detail by specifying log details followed by the log entry number. This command is equivalent to log.
show mac	Global. Displays active and non-volatile MAC addresses for the module's four external and one internal Ethernet ports.
show mem	Global. Show System Memory status for various memory pools.
show network	Global. Show Network Interface status and counters.
show node [id info	Global. The show node command shows id and info data. show node all status all]
status all]	
	<p>Appendix.A: id parameter displays PROFINET Device name, IP Address, subnet mask and default gateway.</p> <p>Appendix.B: info parameter displays Type of Device, Device Catalog number, Copyright notice, Primary firmware revision, Boot firmware revision, hardware revision and FPGA revision.</p> <p>Appendix.C: status parameter displays the restart reason code, and other module status. In addition, it shows whether the configuration data source is from the Programmer or if any configuration parameters have been set via another means (Command Line Interface, DCP or default values).</p>
show port [all sfp status fdb <portName>]	<p>Global. show port displays summary-level internal and external port information. show port all displays detailed port information.</p> <p>Appendix.D: sfp shows specific information on either all or specific SFP devices and in addition shows all the SFP EEPROM contents. If a device supports diagnostic information, the command provides this information as well.</p> <p>Appendix.E: status shows link status (up/down), negotiated network speed/duplex mode, switch management state (Disabled, Blocked, Forwarding, Learning), switch override status and switch monitor status (monitor port and which ports are being monitored) on each external and internal Ethernet port</p> <p>Appendix.F: fdb shows the filtering database for either one port or all ports.</p> <p>Appendix.G: <portName> shows details for the specified port name. For example show port 1 displays detailed information for port #1.</p>
show profinet [alarms <device> all <device> ars <device> counters <device> iocrs <device>]	Global. Displays PROFINET status and counters for configured PROFINET devices. The optional parameters allow displaying detailed information for the specified remote device.
show rdnMedia	
show session Timeout	Global. Display session inactivity timeout

Command	Description
show tcp	Global. Shows TCP server status and counters.
show telnetd	Global. Indicates whether the telnet server is enabled or disabled and other telnet status such as number of telnet connections
show time	Global. Display internal IO LAN interface clock.
show udp	Global. Shows UDP status and counters.
terminate	Global. Ends the Command Line Interface Session.

1.4.5 Modify Level Commands

The following commands are additionally available in Modify level.

Command	Description
arp [add clear]	Non-Global. clear clears ARP cache. add adds a static entry in ARP table.
blinkId [begin end]	Non-Global. Begin/End blinking Identification LED pattern. blinkId with no parameters displays whether the pattern is Blinking or Stopped.
clear arp	Non-Global. Clears ARP cache. (Equivalent to arp clear.)
clear counters [all icmp igmp ip network rdnMedia tcp udp]	Non-Global. Clear specified counters or clear all counters. clear counters do not clear all counters. Enter clear counters all too clear all counters.
clear log	Non-Global. Clears the local log table and resets the counter of lost log entries.
clear statLED	Non-Global. Reset the STATUS LED (log isn't cleared). The STATUS LED is turned on until the next entry is placed into the local log table. This command does nothing if the module has an invalid MAC Address
default	Non-Global. Returns module to factory default values and logs out of Modify Access level. Does not affect MAC addresses.
loginCfg [password default]	Non-Global. Change the login password. loginCfg default returns login password to the default. The password setting persists over a power cycle.
logout	Non-Global. Return to Monitor Access Level.
[no] monport [<monitor> <<ports>]	Non-Global. Display the monitor port and the ports being monitored. Port monitoring is enabled by specifying the optional monitor port and one or more ports to be monitored. no monport disables port monitoring.
Ping <ip>	Non-Global. Sends ICMP Echo requests.
restart	Non-Global. Restarts the module firmware and logs out of Modify Access level.
sessionTimeout [<seconds>]	Non-Global. Displays and sets the session inactivity timeout value.
[no] telnetd	Non-Global. telnetd enables the telnet server. no telnetd command disables the telnet server. This requires a power cycle to take effect. telnet is disabled by default. This parameter is preserved over a power cycle.
Time <date> <time>	Non-Global. Changes the internal IO LAN clock.

Chapter 2: Monitor-Level Commands

This chapter describes commands that are available with Monitor-level access to the Command Line Interface. The same commands are also available at the Modify level. Additional commands, restricted to Modify-level access, are defined in chapter 3.

2.1 Monitor Access Level Commands

- Alias
- Cls
- Help
- History
- Log
- Login
- Node
- Shconfig
- Show arp
- Show config
- Show debug exception
- Show debug fatalinfo
- Show icmp
- Show ip
- Show log
- Show mac
- Show mem
- Show network
- Show node
- Show port
- Show profinet
- Show rdnmedia
- Show session timeout
- Show sm
- Show tcp
- Show telnetd
- Show time
- Show udp
- Terminate

2.2 alias

Global Command

This command provides a mechanism for assigning a name to a string, which allows replacement of a word or string with another string. This is useful for abbreviating a command, or for adding default arguments to a regularly used command. For example, the command `alias sh show` sets up the alias `sh` for `show`, which may be used to issue subsequent commands, for example `sh time` for the `show time` command. Alias strings that include a space must be enclosed with quotations (for example, `alias scfg "show config"`). Aliases may be deleted by entering `alias` followed by the alias value. For example, `alias sh` deletes the `sh` alias. Entering `alias` with no parameters shows all the currently defined aliases. Alias definitions do not persist between Command Line Interface sessions or across power cycles.

2.2.1 alias Command Format

alias [Replacement Text] [<CommandCommand Name>]]

<Replacement Text>	Any string using alphanumeric values. If a space is desired within the string, the aliasValue must be enclosed in quotations (single or double).
<Command Name>	Typically, a string containing any valid Command Line Interface command or parameter combinations. If the string contains spaces, the string must be enclosed within quotations (single or double).

2.2.2 Example

Screen Display	
<pre> device-name> alias sh show device-name> alias shcfg "show config" device-name> alias 'sho ip' 'show config ip' device-name> alias his history device-name> alias sh show shcfg show config sho ip show config ip his history device-name> his 1. alias sh show 2. alias shcfg "show config" 3. alias 'sho ip' 'show config ip' 4. alias his history 5. alias 6. his </pre>	

2.3 cls

Global Command

This command clears the current screen so that only a single command prompt appears at the top of screen.

2.3.1 cls Command Format

cls

2.3.2 Example

Screen Display
device-name> alias sh show device-name> alias shcfg "show config" device-name> alias 'sho ip' 'show config ip' device-name> alias his history device-name> cls
device-name>

2.4 help

Global Command

This command displays commands that are available at the current access level.

Help	at the command prompt displays all commands available at the current access level/mode (both global and non-global).
?	at the command prompt displays all non-global commands available at the current access level/mode.
help global	displays global commands.
help edit	describes key sequences for line editing.
? or <TAB>	perform automatic completion or suggest possible commands when a command is only partially-entered. In addition, ? lists possible parameters and associated help strings after a command has been fully-entered.

2.4.1 help Command Formats

help [global | edit]

?

2.4.2 Examples

Displaying All Commands for Monitor Access Level

Screen Display	
device-name> help	
login	- Enter Higher Access Level
shConfig	- Set/Show Shell settings
<<< Global Commands >>>	
alias	- Text substitution
cls	- Clear the screen
help	- Show available commands
history	- Show command history
log	- Display local log table
node	- Display Identification, Status and Module Info
show	- Show system attributes
terminate	- End a command shell session
device-name>	

Displaying Non-Global Commands for Monitor Access Level

Screen Display	
device-name> ?	
login	- Enter Higher Access Level
shConfig	- Set/Show Shell settings

Displaying Global Commands for Monitor Access Level

Screen Display	
device-name> help global	
alias	- Text substitution
cls	- Clear the screen
help	- Show available commands
history	- Show command history
log	- Display local log table
node	- Show Identification and physical module
information	
show	- show system attributes
terminate	- End a command shell session
device-name>	

Displaying Editing Keystrokes

Screen Display
<pre>device-name> help edit Available editing keystrokes Delete current character.....Ctrl-d Delete text up to cursor.....Ctrl-u Delete from cursor to end of line.....Ctrl-k Move to beginning of line.....Ctrl-a Move to end of line.....Ctrl-e Get prior command from history.....Ctrl-p Get next command from history.....Ctrl-n Move cursor left.....Ctrl-b Move cursor right.....Ctrl-f Move back one word.....Esc-b Move forward one word.....Esc-f Convert rest of word to uppercase.....Esc-c Convert rest of word to lowercase.....Esc-l Delete remainder of word.....Esc-d Delete word up to cursor.....Ctrl-w Transpose current and previous character....Ctrl-t Enter command and return to root prompt.....Ctrl-z Refresh input line.....Ctrl-l device-name></pre>

Displaying Parameters for a Command

This example shows the use of ? to display the parameters for the Show command...

Screen Display
<pre>device-name> show ? arp - Show ARP table config - Show Configuration items icmp - Show ICMP status and/or counters ip - Show IP status and/or counters log - Show local log table mac - Show active and non-volatile MAC addresses mem - Show System Memory status and/or counters network - Show Network Interface status and/or counters node - Show Identification, Status and Module Info port - Show Ethernet port info profinet - Show PROFINET status and/or counters rdnMedia - Show Media redundancy status and/or counters sessionTimeout - Show session inactivity timeout value sm - Show shared memory status and/or counter tcp - Show TCP server status and/or counters telnetd - Show whether telnet is enabled or disabled time - Show internal module clock udp - Show UDP status and/or counters device-name></pre>

Automatic Completion of a Command

This example uses ? for automatic completion. In this case, *sh* is ambiguous so the Command

Line Interface shows the possible matching commands *shConfig* and *show*.

Screen Display	
<pre>device-name> sh? shConfig show device-name></pre>	

This example also uses ? for automatic completion. In this case, *con* is unambiguous, and the Command Line Interface completes the command by displaying *show config*.

Screen Display	
<pre>device-name> show con? Config device-name> show config</pre>	

This example uses <TAB> for automatic completion. In this case *con* is unambiguous and the Command Line Interface completes the command by displaying *show config*. <TAB> has a slightly different display than ?.

Screen Display	
<pre>device-name> show con<TAB> device-name> show config</pre>	

2.5 history

Global Command

This command displays command history with a history number for each previously-entered command. The clear parameter clears the command history.

“!*<historyNumber>*” executes a command associated with the history number in the command history.

up arrow (↑) or <ctrl>p shows previous command in the command history.

down arrow (↓) or <ctrl>n shows next command in command history. Only valid after moving up through command history with the up arrow (↑) or <ctrl>-p.

2.5.1 history Command Formats

history [clear]

!*<historyNumber>*

[↑ | <Ctl>p]

[↓ | <Ctl>n]

2.5.2 Examples

Using the History Command to Display Previously Entered Commands

<i>Screen Display</i>
device-name> alias sh show device-name> alias shcfg "show config" device-name> history 1. alias sh show 2. alias shcfg "show config" 3. history device-name>

Clearing Command History

<i>Screen Display</i>
device-name> history clear History Cleared device-name> history 1. history device-name>

Executing a Command from the Command History

This example uses the `!` operator to execute a specific command in the command history. In this case, the `help` command is executed.

Screen Display	
<pre> device-name> alias sh show device-name> help login - Enter higher access level shConfig - Set/Show Shell settings <<< Global Commands >>> alias - Text substitution cls - Clear the screen help - Show available commands history - Show command history log - Display local log table node - Show Identification, Status and Module Info show - show system attributes terminate - Ends a Command Line Interface session device-name> alias shcfg "show config" device-name> history 1. alias sh show 2. help 3. alias shcfg "show config" 4. history device-name> !2 device-name> login - Enter Higher Access Level shConfig - Set/Show Shell settings <<< Global Commands >>> alias - Text substitution cls - Clear the screen help - Show available commands history - Show command history log - Display local log table node - Show Identification, Status and Module Info show - show system attributes terminate - Ends a Command Line Interface session device-name> </pre>	

Using the Up Arrow to Select a Command from History

In this example, the last line is the result of four up arrows (↑) which displays the command at history number 3.

Screen Display	
<pre> device-name> history 1. alias sh show 2. help 3. alias shcfg "show config" 4. history 5. help 6. history device-name> alias shcfg "show config" </pre>	

Using the Up Arrow to Select a Command from History

In this case, the last line is the result of pressing the down arrow (↓) twice, which displays the command at history number 5.

```
device-name> history
1. alias sh show
2. help
3. alias shcfg "show config"
4. history
5. help
6. history
device-name> help
```

2.6 log

Global Command

This command displays all the Local Log table entries. This command is equivalent to *show log*.

Log displays a summary of log entries

log details display all log entries in detail

log details <logEntryNumber> displays the log table entry identified by the parameter

<logEntryNumber> in detail

2.6.1 log Command Format

log [details [<logEntryNumber>]]

2.6.2 Examples

Displaying the Local Log Table

Screen Display				
device-name> log				
IC695PNC001 PROFINET Controller: Ver. 1.00 (44A1)				
Log displayed:		06-JUL-2000	19:01:00.7001	
Log last cleared:		01-JAN-2000	00:00:00.5000	
Number of Entries Overflowed:		0		
No.	Date	Time	Loc	Description

001	01-JAN-00	00:00:00.5000	000	Start-up
002	06-JUL-00	18:33:00.5000	003	Loss of Device
003	06-JUL-00	18:34:00.5000	004	Loss of Device
004	06-JUL-00	18:35:00.5000	004	Addition of Device
005	06-JUL-00	18:36:00.5000	003	Addition of Device
006	06-JUL-00	18:44:00.0000	004	Loss of I/O Module
device-name>				

Displaying the Local Log Details for a Specific Log Entry

This example displays the details for log entry number 6, which is listed in the sample Local Log table on page 18.

```
device-name> log details 6
No.   Date       Time      Loc      Description
-----
006 06-JUL-00 18:44:00.0000 004 Loss of I/O Module
      Device Name Associated with Location
-----
device-name-4
Fault Location
-----
00.07.D003.r00.s004.ss001
EntryType  Circuit  Group  Action  Category  Type  Description
-----
I/O Fault   ---      003    2        002      000      000
Extra Data
-----
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
device-name>
```

2.6.3 Fault Location Fields for Faults in Local Log Table

When displaying the detailed view of a fault on the PROFINET Controller, the Fault Location field contents vary, depending on the exact type and location of the fault being logged. The table below shows the possible fault locations along with the expected display formats.

Fault Location	Format of Fault Location Field	Description
PROFINET Controller	<Rack>.<Slot>	PROFINET Controller in rack #<Rack> and slot #<Slot> logged its own fault.
Profinet Device	<Rack>.<Slot>.D<Device>	PROFINET Controller in rack #<Rack> and slot #<Slot> logged a fault for Profinet Device #<Device>.
Profinet Module	<Rack>.<Slot>.D<Device>.r<RemoteRack>.s<RemoteSlot>	PROFINET Controller in rack #<Rack> and slot #<Slot> logged a fault for the module located in rack #<RemoteRack> and slot #<RemoteSlot> of Profinet IO Device #<Device>.
Profinet Submodule	<Rack>.<Slot>.D<Device>.r<Remote Rack>.s<RemoteSlot>.ss<RemoteSubslot>	PROFINET Controller in rack #<Rack> and slot #<Slot> logged a fault for the sub-module located in rack #<RemoteRack>, slot #<RemoteSlot>, and subslot #<RemoteSubslot> of Profinet IO Device #<Device>.

Fault Location	Format of Fault Location Field	Description
Profinet Interface	<Rack>.<Slot>.D<Device>. r<RemoteRack>.s<RemoteSlot>. i<Interface>	PROFINET Controller in rack #<Rack> and slot #<Slot> logged a fault for the interface in rack #<RemoteRack>, slot #<RemoteSlot>, and interface #<Interface> of Profinet IO Device #<Device>.
Profinet Interface Port	<Rack>.<Slot>.D<Device>. r<RemoteRack>. s<RemoteSlot>.i<Interface>. p<Port>	PROFINET Controller in rack #<Rack> and slot #<Slot> logged a fault for the interface port in rack #<RemoteRack>, slot #<RemoteSlot>, interface #<Interface>, and port #<Port> of Profinet IO Device #<Device>.

2.7 login

Non-Global Command

This command can be used to change the access level. The Command Line Interface prompts for a user name and password.

Login name (cannot be changed): admin

Default password: system

The password can be changed from the Modify level.

2.7.1 login Command Format

login

2.7.2 Example

Screen Display
<pre>device-name> login Login: admin Password: system Note: Display is informative. The password entered will not be shown. device-name=</pre>

2.8 node

Global Command

The *node* command displays device ID and physical module information. This command displays the same information as the *show node* command without parameters (see page 40, 40).

2.8.1 node Command Format

node

2.8.2 Example

Screen Display
<pre> device-name> node 25-FEB-2011 15:00:33.0579 <<< Node Info >>> Device Type: PROFINET Controller Catalog Number: IC695PNC001 Serial Number: A123456 Date Code: 11-JUN-2011 Revision Information: Primary FW: 1.00 (05D1) Boot FW: 1.00 (01D1) FPGA: 0.33 (46A1) BIOS: PNC1D001 (23-JUL-2010) PNIO Stack: 2.1.6.1 (c) 2008-2011 GE Intelligent Platforms, Inc. All rights reserved. <<< Node ID >>> Device Name: device-name IP Address: 10.10.0.134 Subnet Mask: 255.255.255.0 Default Gateway: 10.10.0.1 device-name> </pre>

2.9 shConfig

Global Command

This command sets and displays the Command Line Interface terminal settings for the current session. Settings include configuration, such as number of rows/columns to display and whether to wrap the output at screen width. The default row/columns are 24/80 (equivalent to HyperTerminal defaults). These settings may be used to match the Command Line Interface output to the display device or program. ShConfig settings do not persist between Command Line Interface sessions or across power cycles.

shConfig or shConfig info displays the current terminal settings.

shConfig rows <numberOfRows> sets the number of displayed rows in a page.

shConfig columns <numberOfColumns> sets the number of columns to use when displaying information.

shConfig hardwrap enables wrapping text at the current column setting independent of the terminal application column setting (such as the HyperTerminal column setting). shConfig no hardwrap turns off the hard wrap feature. hardwrap is disabled by default.

shConfig paging enables paging of output text.

shConfig no paging disables paging of output text. paging is enabled by default.

shConfig retries enables reprinting of the user input. If the user command input has an error, the cursor is placed on the error...

shConfig no retries disables the retries feature. retries is enabled by default.

When the shConfig command is used to specify a value, the updated terminal settings are displayed if the command completes successfully.

The number of rows and columns cannot be modified for the HyperTerminal console.

2.9.1 shConfig Command Formats

shConfig [rows <numOfRows> | columns <numOfColumns>] [rows <numOfRows> | columns <numOfColumns>]

[[no] hardwrap | info | [no] paging] | [no] retries]

<numOfRows>	Specifies the number of rows for the Command Line Interface to display in a page. Valid values are 10 to 256 inclusive. The default value is 24.
<numOfColumns>	Specifies the number of columns for the Command Line Interface to use when displaying data. Valid values are 20 to 255 inclusive. The default value is 80.
<hardwrap>	Enables wrapping output at the display column width. The default is off.
<info>	Displays the active shConfig settings
<paging>	Enables lengthy output to be paused when a page (set by the number of rows) has been displayed. The default is on.
<retries>	Enables re-displaying erroneous command line input, so it may be corrected and resubmitted. The default is on.

2.9.2 Examples

Displaying CLI Terminal Settings

Screen Display	
<pre>device-name> shConfig Terminal Type: ANSI Screen width : 80 Screen height: 24 Hard wrap : Off Paging On Retries On</pre>	

Changing the Display Dimensions

Screen Display	
device-name> shConfig rows 20 columns 70	
Terminal Type: ANSI	
Screen width : 70	
Screen height: 20	
Hard wrap : Off	
Paging On	
Retries On	

Enabling the Hardwrap Feature

Screen Display	
device-name> shConfig rows 24 columns 80 hardwrap	
Terminal Type: ANSI	
Screen width : 80	
Screen height: 24	
Hard wrap : On	
Paging On	
Retries On	

Disabling the Paging Feature

Screen Display	
device-name> shConfig no paging	
Terminal Type: ANSI	
Screen width : 80	
Screen height: 24	
Hard wrap : On	
Paging Off	
Retries On	

Enabling the Paging Feature

Screen Display	
device-name> shConfig paging	
Terminal Type: ANSI	
Screen width : 80	
Screen height: 24	
Hard wrap : On	
Paging On	
Retries On	

Response to an Invalid Command Sequence with Retries Enabled

This example shows the response to an invalid command sequence when retries is enabled. The illegal command line is re-displayed and the cursor points to the location of the error.

Screen Display
<pre>device-name> shConfig paging invalidCmd Error: Too many parameters Syntax: paging device-name> shConfig paging _invalidCmd</pre>

Response to an Invalid Command Sequence with Retries Disabled

This example shows the response to an invalid command sequence when retries is disabled. In this case, the illegal command line is not re-displayed, and the cursor is not pointing to the location of the error.

- a. Disable retries.

Screen Display
<pre>device-name> shConfig no retries Terminal Type: ANSI Screen width : 80 Screen height: 24 Hard wrap : On Paging On Retries Off</pre>

- b. Enter an invalid command.

Screen Display
<pre>device-name> shConfig paging invalidCmd -----^ Error: Too many parameters Syntax: paging device-name></pre>

2.10 show arp

Global Command

This command displays the contents of the Controller's IP-to-physical address translation table used by Address Resolution Protocol (ARP).

2.10.1 Show arp Command Formats

show arp

2.10.2 Example

Screen Display
<pre>device-name> show arp 01-JAN-2000 00:50:49.0000 <<< ARP Cache >>> 10.10.0.250 at 00:60:6f:30:8c:12 on gei0</pre>

2.11 show config

Global Command

Entering show config or show config all displays Device Name, ip parameters (IP Address, subnet mask, default gateway), redundant media role (disabled, client, manager), ring port assignment, ring test interval, and ring test retries. Entering individual parameter names displays the specified parameters. For example, show config deviceName displays just the PROFINET Device Name.

2.11.1 show config Command Format

show config [all | deviceName | ip | rdnMedia]

2.11.2 Examples

Displaying the PNC Configuration

Screen Display

device-name> show config

Src	Parameter	Parameter Value

PME	Device Name	myDevice
	IP	
PME	IP Address	10.10.0.2
PME	Subnet Mask	255.255.255.0
PME	Default Gateway	0.0.0.0
	Media Redundancy	
PME	Role	Client
PME	Ring Port 1	1
PME	Ring Port 2	2
PME	Test Interval	20 ms
PME	Monitor Count	3

device-name>

Displaying only the PNC deviceName

Screen Display		
device-name> show config deviceName		
Src	Parameter	Parameter Value
----	-----	-----
PME	Device Name	device-name
device-name>		

Displaying only the PNC IP Parameters

Screen Display		
device-name> show config ip		
Src	Parameter	Parameter Value
----	-----	-----
PME	IP Address	10.10.0.2
PME	Subnet Mask	255.255.255.0
PME	Default Gateway	0.0.0.0
device-name>		

Displaying only the PNC Redundant Media Settings

Screen Display		
device-name> show config rdnMedia		
Src	Parameter	Parameter Value
----	-----	-----
PME	Role	Client
PME	Ring Port 1	1
PME	Ring Port 2	2
PME	Test Interval	20 ms
PME	Monitor Count	3
device-name>		

2.11.3 Parameter Sources

The Src column indicates the entity that last set the parameter. The following table defines the entities that may be listed.

PAC Machine Edition	The parameter was set via the hardware configuration from PAC Machine Edition.
DCP	The parameter was set through DCP, a protocol typically used by PAC Machine Edition, PROFINET Controllers, third-party controllers and third-party programmers to set parameters such as Device Name and IP Address).
CMD	The parameter was set through the Command Line Interface.
DEF	The parameter has not been set and is the default value.
NA	The parameter does not apply in the current configuration

2.11.4 Redundant Media Roles

The Role parameter shown as part of the Redundant Media configuration defines the current function of the module on the Media Redundancy Ring. Possible values for this parameter are:

Disabled	Media Redundancy is currently disabled.
Client	Module is operating as a Media Redundancy Client (MRC).
Manager	Module is operating as a Media Redundancy Manager (MRM).

2.12 show debug exception

Global Command

This command displays details of the most recent software exceptions that have occurred since the module was last powered on or restarted. Exceptions may provide useful data for diagnosing problems with customer support. The information is lost when the Controller is power cycled.

2.12.1 Show debug exception Command Format

show debug exception

2.12.2 Example

Screen Display			
device-name> show debug exception			
01-JAN-2000 01:16:51.0000			
<<< Exception Trace >>>			
ModId	Line	Scode	Message
----	----	-----	-----
3	867	89430041h	OSSocketImpl::connect(SocketAddress & socketAddr, times
			pec *pTimeout) OS connect func failed
3	867	89430041h	OSSocketImpl::connect(SocketAddress & socketAddr, times
			pec *pTimeout) OS connect func failed
device-name>			

2.13 show debug fatalInfo

Global Command

This command displays saved fatal error debug data stored in non-volatile storage. When a fatal error occurs, the controller halts normal processing, captures this data, and displays a failure mode indication by blinking a sequence on its faceplate LEDs. This information may provide useful data for diagnosing the problem with customer support.

2.13.1 show debug fatalInfo Command Format

show debug fatalInfo

2.13.2 Example - show debug fatalInfo

```

device-name> show debug fatalInfo
Log Size:          12288 bytes (3 pages)
Record Size:       4096 bytes
Max Records:       2
CPU Type:          0x5a
Errors Missed:     0 (old) + 0 (recent)
Error count:       2
Boot count:        2
Generation count:  2

==[1/2]=====
Severity/Facility:  INFO/BOOT
Boot Cycle:         2
OS Version:         6.2.0
Time:               THU JAN 01 00:00:00 1970 (ticks = 0)
Task:               "tRootTask" (0x06bf9d50)
Injection Point:    D:/WindRiver/vxworks-
6.2/target/config/comps/src/edrStub.c:175

System Booted - normal boot
==[2/2]=====
Severity/Facility:  FATAL/USER
Boot Cycle:         2
OS Version:         6.2.0
Time:               THU JAN 01 00:00:28 1970 (ticks = 5691)
Task:               "tIoScan" (0x02736010)
Injection Point:    vx_pox_isr.c:452

0x3400: Fatal Error:

<<<<<Memory Map>>>>>
0x00016000 -> 0x007b8a60: kernel

<<<<<Registers>>>>>
edi      = 0x04ba3a68   esi      = 0x00003400   ebp      =
0x04ba39f8
esp      = 0x04ba3920   ebx      = 0x04ba3990   edx      =
0x00ac46b7
ecx      = 0x00ac46b7   eax      = 0x04ba394c   eflags   =
0x00000202
pc       = 0c00ac46b7

<<<<<Traceback>>>>>
0x0037c7e4 vxTaskEntry +0x5c : _Z14osThreadBridgeP12IGefRunnable ()
0x0006784c _Z14osThreadBridgeP12IGefRunnable+0xcc :
ZN9pncmodule12PncIoScanner3runEv ()
0x00211ffc _ZN9pncmodule12PncIoScanner3runEv+0x214: logPncFault ()
0x001f06f0 logPncFault +0x3d8: poxCatastrophicFailure ()
device-name>

```

2.14 show icmp

Global Command

This command displays Internet Control Message Protocol (ICMP) status and counters.

2.14.1 show icmp Command Format

show icmp

2.14.2 Example

Screen Display
<pre> device-name> show icmp 01-JAN-2000 00:44:37.0000 <<< ICMP Status >>> Ip: 1846 total packets received 0 forwarded 0 incoming packets discarded 1576 incoming packets delivered 724 requests sent out 1 dropped because of missing route Icmp: 1 ICMP message received 0 input ICMP message failed ICMP input histogram: destination unreachable: 1 1 ICMP messages sent 0 ICMP messaged failed ICMP output histogram: destination unreachable: 1 <<< ICMP Counters >>> InMsgs =00000001H InErrors=00000000H InDstUnr=00000001H InTimeEx=00000000H InParmPr=00000000H InSrcQch=00000000H InRedir =00000000H InEchos =00000000H InEchoRp=00000000H InTmSp =00000000H InTmSpRp=00000000H InAdRM =00000000H InAdMRp=00000000H OtMsgs =00000001H OtErrors=00000000H OtDstUnr=00000001H OtTimeEx=00000000H OtParmPr=00000000H OtSrcQch=00000000H OtRedir =00000000H OtEchos =00000000H OtEchoRp=00000000H OtTmSp =00000000H OtTmSpRp=00000000H OtAdRM =00000000H OtAdMRp=00000000H device-name> </pre>

2.14.3 Counter Definitions

The following table defines the ICMP counters.

Counter Name	Counter Description
InMsgs	The total number of ICMP messages received.
InErrors	The number of ICMP messages received that have errors (bad checksums, etc.).
InDstUnr	The number of ICMP Destination Unreachable messages received.
InTimeEx	The number of ICMP Time Exceeded messages received.
InParmPr	The number of ICMP Parameter Problem messages received.
InSrcQch	The number of ICMP Source Quench messages received.
InRedir	The number ICMP Redirect messages received.
InEchos	The number of ICMP Echo (request) messages received.
InEchoRp	The number of ICMP Echo Reply messages received.

Counter Name	Counter Description
InTmSp	The number of ICMP Timestamp (request) messages received.
InTmSpRp	The number of ICMP Timestamp Reply messages received.
InAdrM	The number of ICMP Address Mask Request messages received.
InAdrMRp	The number of ICMP Address Mask Reply messages received.
OtMsgs	The total number of ICMP messages attempted to send.
OtErrors	The number of ICMP messages not sent due to problems discovered within ICMP.
OtDstUnr	The number of ICMP Destination Unreachable messages sent.
OtTimeEx	The number of ICMP Time Exceeded messages sent.
OtParmPr	The number of ICMP Parameter Problem messages sent.
OtSrcQch	The number of ICMP Source Quench messages sent.
OtRedir	The number of ICMP Redirect messages sent.
OtEchos	The number of ICMP Echo (request) messages sent.
OtEchoRp	The number of ICMP Echo Reply messages sent.
OtTmSp	The number of ICMP Timestamp (request) messages sent.
OtTmSpRp	The number of ICMP Timestamp Reply messages sent.
OtAdrM	The number of ICMP Address Mask Request messages sent.
OtAdrMRp	The number of ICMP Address Mask Reply messages sent

2.15 show ip

Global Command

This command displays Internet Protocol (IP) status and counters.

2.15.1 show ip Command Format

show ip [conn | counters | status]

2.15.2 Examples

Displaying all IP Details

Screen Display					
device-name> show ip					
01-JAN-2000 00:44:37.0000					
Network Stack Version: v4/v6 Host (v4 only build) stack ver. 3.1.2.0					
<<< IP Status >>>					
Ip:					
1846 total packets received					
0 forwarded					
0 incoming packets discarded					
1576 incoming packets delivered					
724 requests sent out					
1 dropped because of missing route					
Icmp:					
1 ICMP message received					
0 input ICMP message failed					
ICMP input histogram:					
destination unreachable: 1					
1 ICMP messages sent					
0 ICMP messaged failed					
ICMP output histogram:					
destination unreachable: 1					
INET route table - vr: 0, table: 254					
Destination	Gateway	Flags	Use	IF	Metric
10.10.0.0	10.10.0.2	UGS	0	gei0	0
224.0.0.0	10.10.0.2	UC	2	gei0	0
INET sockets					
Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
TCP	0	0	10.10.0.100.23	10.10.0.1.4066	ESTABLISHED
TCP	0	0	0.0.0.0.23	0.0.0.0.0	LISTEN

Screen Display					
TCP	0	0	0.0.0.0.21	0.0.0.0.0	LISTEN
<<< IP Counters >>>					
InRecv =00000023H	InHdrErr=00000000H	InAdrErr=00000000H			
ForwDgms=00000000H					
InUnkPro=00000000H	InDiscds=00000000H	InDelivs=00000023H	OutReq		
=00000023H					
OutDiscd=00000000H	OutNoRts=00000000H	ReasmTO =0000003cH			
ReasmReq=00000000H					
ReasmOKs=00000000H	ReasmFai=00000000H	FragOKs =00000000H			
FragFail=00000000H					
FragCrea=00000000H	Filtered=00000000H				
device-name>					

Displaying Active Internet Connections

Screen Display					
device-name> show ip conn					
INET sockets					
Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
-----	-----	-----	-----	-----	----
TCP	0	0	10.10.0.100.23	10.10.0.1.4066	ESTABLISHED
TCP	0	0	0.0.0.0.23	0.0.0.0.0	LISTEN
TCP	0	0	0.0.0.0.21	0.0.0.0.0	LISTEN
device-name>					

Displaying IP Counter Details

Screen Display			
device-name> show ip counters			
01-JAN-2000 00:44:37.0000			
<<< IP Counters >>>			
InRecv =00000023H	InHdrErr=00000000H	InAdrErr=00000000H	
ForwDgms=00000000H			
InUnkPro=00000000H	InDiscds=00000000H	InDelivs=00000023H	OutReq
=00000023H			
OutDiscd=00000000H	OutNoRts=00000000H	ReasmTO =0000003cH	
ReasmReq=00000000H			
ReasmOKs=00000000H	ReasmFai=00000000H	FragOKs =00000000H	
FragFail=00000000H			
FragCrea=00000000H	Filtered=00000000H		
device-name>			

IP Counters

The following table defines each of the IP Counters.

Counter Name	Counter Description
InRecv	The total number of input datagrams received from interfaces, including those received in error.
InHdrErr	The number of input datagrams discarded due to errors in their IP headers.
InAdrErr	The number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address to be received at this entity.
ForwDgms	The number of input datagrams for which this entity was not their final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination. (Not used in this release.)
InUnkPro	The number of locally-addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.
InDiscds	The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (for example, for lack of buffer space).
InDelivs	The total number of input datagrams successfully delivered to IP user-protocols (including ICMP).
OutReq	The total number of IP datagrams which local IP user-protocols (including ICMP) supplied to IP in requests for transmission.

Counter Name	Counter Description
OutDiscd	The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (for example, for lack of buffer space).
OutNoRts	The number of IP datagrams discarded because no route could be found to transmit them to their destination.
ReasmTO	The maximum number of seconds during which received fragments are held while they are awaiting reassembly at this entity. (Not used in this release.)
ReasmReq	The number of IP fragments received which needed to be reassembled at this entity.
ReasmOKs	The number of IP datagrams successfully re-assembled.
ReasmFai	The number of failures detected by the IP re-assembly algorithm (for example, timed out, errors, message size too big,...)
FragOKs	The number of IP datagrams that have been successfully fragmented at this entity.
FragFail	The number of IP datagrams that have been discarded because they needed to be fragmented at this entity but could not be, e.g., because their Don't Fragment flag was set.
FragCrea	The number of IP datagrams that have been generated as a result of fragmentation at this entity.
Filtered	IP packets ignored because not addressed to this node and destination is unreachable.

Displaying IP Status

Screen Display					
device-name> show ip status					
01-JAN-2000 00:44:37.0000					
Network Stack Version: v4/v6 Host (v4 only build) stack ver. 3.0.0.0					
<<< IP Status >>>					
Ip:					
1846 total packets received					
0 forwarded					
0 incoming packets delivered					
1576 incoming packets delivered					
724 requests sent out					
1 dropped because of missing route					
Icmp:					
1 ICMP message received					
0 input ICMP message failed					
ICMP input histogram:					
destination unreachable: 1					
1 ICMP messages sent					
0 ICMP messaged failed					
ICMP output histogram:					
destination unreachable: 1					
INET route table - vr: 0, table: 254					
Destination	Gateway	Flags	Use	If	Metric
-----	-----	-----	-----	-----	-----
10.10.0.0	10.10.0.2	UGS	0	gei0	0
224.0.0.0	10.10.0.2	UC	2	gei0	0
-----	-----	-----	-----	-----	-----
device-name>					

INET Route Table Flag Values

The flags field in the INET route table represents the flags specified for a given route. The following is a list of the defined flag values:

Letter	Flag	Description
1	RTF_PROTO1	protocol specific routing flag #1
2	RTF_PROTO2	protocol specific routing flag #2
B	RTF_BLACKHOLE	just discard packets (during updates)
b	RTF_BROADCAST	route represents a broadcast address
C	RTF_CLONING	generate new routes on use
c	RTF_PRCLONING	protocol-specified generate new routes on use
D	RTF_DYNAMIC	created dynamically (by redirect)
G	RTF_GATEWAY	destination requires forwarding by intermediary
H	RTF_HOST	host entry (net otherwise)
L	RTF_LLINFO	valid protocol to link address translation
M	RTF_MODIFIED	modified dynamically (by redirect)
R	RTF_REJECT	host or net unreachable
S	RTF_STATIC	manually added
U	RTF_UP	route usable
W	RTF_WASCLONED	route was generated as a result of cloning
X	RTF_XRESOLVE	external daemon translates protocol to link address

2.16 show log

Global Command

This command displays the local log table. This command is equivalent to the command log described on page 18.

2.17 show mac

Global Command

This command displays active and non-volatile Media Access Control (MAC) addresses for the four external and one internal (interface) Ethernet ports.

2.17.1 show mac Command Format

show mac

2.17.2 Example

Screen Display		
device-name> show mac		
Port	Active MAC Addresses	Saved MAC Address
-----	-----	-----
1 (Ext)	00:09:91:40:77:80	00:09:91:40:77:80
2 (Ext)	00:09:91:40:77:81	00:09:91:40:77:81
3 (Ext)	00:09:91:40:77:82	00:09:91:40:77:82
4 (Ext)	00:09:91:40:77:83	00:09:91:40:77:83
5 (Int)	00:09:91:40:77:84	00:09:91:40:77:84
device-name>		

2.18 show mem

Global Command

This command displays System Memory status for various memory pools. show mem shows status and counters for all memory pools. The following parameters request status for a specific memory pool:

1. heaps – shows various memory heaps. The number and name of memory heaps are PNC/PNS product dependent and are not described in detail in this document.
2. netData – shows status for the network data memory pool which provides the stack with the memory it needs for packet-oriented data received from or transmitted over the Internet.
3. netSys – shows status for the network system memory pool which provides the network communications stack with the memory it needs for its internal structures and data types.

2.18.1 show mem Command Format

show mem [heaps | netData | netSys]

2.18.2 Examples

Displaying Status and Counters for all Memory Pools

Screen Display
<pre> device-name> show mem 01-JAN-2000 05:44:17.0000 <<< OSVol Status >>> Free Bytes in Partition : 7843016 Free Blocks in Partition : 24 Maximum free block size : 7841296 Allocated Bytes in Partition : 8624368 Allocated Blocks in Partition : 1107 Max Heap Usage: 3942056 <<< usrRoVol Status >>> Free Bytes in Partition : 7843016 Free Blocks in Partition : 24 Maximum free block size : 7841296 Allocated Bytes in Partition : 8624368 Allocated Blocks in Partition : 1107 Max Heap Usage: 3942056 Additional output not shown here. See examples on the following pages. </pre>

Displaying Memory Heap Status

Screen Display
<pre> device-name> show mem heaps 01-JAN-2000 05:44:17.0000 <<< OSVol Status >>> Free Bytes in Partition : 7843016 Free Blocks in Partition : 24 Maximum free block size : 7841296 Allocated Bytes in Partition : 8624368 Allocated Blocks in Partition : 1107 Max Heap Usage: 3942056 <<< usrRoVol Status >>> Free Bytes in Partition : 7843016 Free Blocks in Partition : 24 Maximum free block size : 7841296 Allocated Bytes in Partition : 8624368 Allocated Blocks in Partition : 1107 Max Heap Usage: 3942056 device-name> </pre>

Displaying Network System Memory Status

Screen Display

device-name> show mem netSys

01-JAN-2000 05:44:17.0000

<<< Network System Memory Pool Status >>>

type number

FREE : 1138

TOTAL : 1140

number of mbufs: 1140

number of times failed to find space: 0

number of times waited for space: 0

number of times drained protocols for space: 0

CLUSTER POOL TABLE

size clusters free usage minsize maxsize empty

20 250 235 17 8 20 19

44 200 193 7 24 40 39

96 100 89 11 48 84 58

172 150 142 11 116 160 161

292 100 96 8 176 216 97

664 50 42 12 384 556 156

1144 30 29 1 1144 1144 1144

2048 10 10 0 0 0 0

device-name>

Displaying Network Data Memory Pool Status

Screen Display

device-name> show mem netData

01-JAN-2000 05:44:17.0000

<<< Network Data Memory Pool Status >>>

type number

FREE : 655

TOTAL : 655

number of mbufs: 655

number of times failed to find space: 0

number of times waited for space: 0

number of times drained protocols for space: 0

CLUSTER POOL TABLE

size	clusters	free	usage	minsize	maxsize	empty
64	100	100	7	4	56	17
128	400	400	761	128	128	128
256	40	40	0	0	0	0
512	40	40	0	0	0	0
1024	25	25	0	0	0	0
2048	50	50	0	0	0	0

device-name>

Cluster Pool Table Definitions

size – the size of the cluster in bytes.

clusters - the total number of clusters of that size that have been allocated.

free - the number of available clusters of that size (the total number of clusters minus those clusters that are in use).

usage - the number of times clusters have been allocated (not the number of clusters currently in use).

minsize, maxsize, empty – minimum, maximum and empty size in bytes of the cluster.

2.19 show network

Global Command

This command displays Network Interface status and counters.

2.19.1 show network Command Format

show network

2.19.2 Example

In this example “lo0” is the internal loopback port; “gei0” is the internal network port.

Screen Display	
device-name>	show network
01-JAN-2000	05:44:17.0000
<<< Network Interface Status >>>	
lo0	Link type:Local loopback Queue:none
	inet: 127.0.0.1 mask 255.255.255.255
	UP RUNNING LOOPBACK MULTICAST
	MTU:1536 metric:1 VR:0 ifindex:1
	RX packets:6 mcast:0 errors:0 dropped:1
	TX packets:6 mcast:0 errors:0
	collisions:0 unsupported proto:0
	RX bytes:244 TX bytes:244
gei0	Link type:Ethernet Hwaddr 00:09:91:43:3b:61 Queue:none
	capabilities: TXCSUM TX6CSUM VLAN_MTU VLAN_TXHWTAG VLAN_RXHWTAG
	inet 10.10.0.100 mask 255.255.255.0 broadcast 10.10.0.255
	UP RUNNING SIMPLEX BROADCAST MULTICAST
	MTU:1536 metric:1 VR:0 ifindex:2
	RX packets:2390 mcast:1644 errors:0 dropped:0
	TX packets:583 mcast:0 errors:0
	collisions:0 unsupported proto:0
	RX bytes:179k TX bytes:72k
device-name>	

2.20 show node

Global Command

This command displays device identification and physical module information. Show node is equivalent to the node command.

The show node command shows id and info data.

all parameter – displays id, info **and** status data.

id parameter - displays PROFINET Device name, IP Address, subnet mask and default gateway.

info parameter - displays Type of Device, Device Catalog number, Copyright notice, Primary firmware revision, Boot firmware revision, BOC revision (where applicable), FPGA revision and PROFINET IO communications stack version status parameter - restart reason code (Power cycle, reset pushbutton, fatal error), and another module status. In addition, status shows whether the configuration data source of all configuration is from the Programmer or if any configuration parameters have been set via another means (Command Line Interface, DCP or default values) (See Config Source in the example below. The valid values are Programmer or Other).

2.20.1 show node Command Format

show node [all | id | info | status]

2.20.2 Examples

Displaying Device Identification and Physical Module Information

Screen Display
<pre> device-name> show node 01-JAN-2000 05:44:17.0000 <<< Node Info >>> Device Type: PROFINET Controller Catalog Number: IC695PNC001 Serial Number: A123456 Date Code: 11-JUN-2011 Revision Information: Primary FW: 1.00 (04D1) Boot FW: 1.00 (01D1) FPGA: 0.33 (46A1) BIOS: PNC1D001 (13-APR-2010) PNIO Stack: 2.1.6.1 @ 2019 Intelligent Platforms LLC. All rights reserved. <<< Node ID >>> Device Name: device-name IP Address: 10.10.0.10 Subnet Mask: 255.255.255.0 Default Gateway: 0.0.0.0 device-name> </pre>

Displaying Device Name and IP Details

Screen Display
<pre> device-name> show node id 01-JAN-2000 05:44:17.0000 <<< Node ID >>> Device Name: device-name IP Address: 10.10.0.10 Subnet Mask: 255.255.255.0 Default Gateway: 0.0.0.0 device-name> </pre>

Displaying Device Name and Firmware Revision Details

Screen Display
<pre>device-name> show node info 01-JAN-2000 05:44:17.0000 <<< Node Info >>> Device Type: PROFINET Controller Catalog Number: IC695PNC001 Serial Number: A123456 Date Code: 11-JUN-2011 Revision Information: Primary FW: 1.00 (04D1) Boot FW: 1.00 (01D1) FPGA: 0.33 (46A1) BIOS: PNC1D001 (13-APR-2010) PNIO Stack: 2.1.6.1 @ 2019 Intelligent Platforms LLC. All rights reserved. device-name></pre>

Displaying Ethernet Port/SFP/Link Status

Screen Display
<pre>device-name> show node status 01-JAN-2000 05:44:17.0000 <<< Node Status >>> Module Status: OK Config Source: Programmer Restart Reason: Power Cycle device-name></pre>

Displaying Identification and Physical Module Information

Screen Display
<pre>device-name> show node all 01-JAN-2000 05:44:17.0000 <<< Node Info >>> Device Type: PROFINET Controller Catalog Number: IC695PNC001 Serial Number: A123456 Date Code: 11-JUN-2011 Revision Information: Primary FW: 1.00 (04D1) Boot FW: 1.00 (01D1) FPGA: 0.33 (46A1) BIOS: C305D013 (23-JUL-2010) PNIO Stack: 2.1.6.1 @ 2019 Intelligent Platforms LLC. All rights reserved. <<< Node ID >>> Device Name: device-name IP Address: 10.10.0.10 Subnet Mask: 255.255.255.0 Default Gateway: 0.0.0.0 <<< Node Status >>> Module Status: OK Config Source: Programmer Restart Reason: Power Cycle device-name></pre>

2.20.3 Node Status Definitions

Field	Value	Definition
Module Status	OK	Module is operating correctly.
	NOT OK	Module has encountered a fatal error.
Config source	Programmer	All configuration items for the module were delivered via the Programmer.
	Other	Some or all configuration items for the module were delivered via means other than the Programmer. (e.g. via Command Line Interface commands). Use “show config” to see source for specific configuration items.
Restart Reason	Power Cycle	Power-cycle cause the last reset of the module.
	Reset Button	A push of the reset button caused the last reset of the module.
	Command Line Interface	Execution of the Command Line Interface command restart caused the last reset of the module.
	Fatal Error	A fatal error detected by the module caused the last reset of the module.
	Firmware Update	An update for the module’s firmware caused the last reset of the module.
	Go To Boot Firmware Update	Start of firmware update caused the last reset of the module.
	Over Temperature	Module detected an over temperature condition and caused the last reset of the module.
	Hardware Watchdog Trip	Unexpected hardware watchdog expiration caused the last reset of the module.
	Module Restart – Unknown Reason	Cause of the last reset of the module is not known.

2.21 show port

Global Command

The command show port displays a summary of internal and external port information:

all displays detailed port information on all ports. Note that this display does not include fdb (filtering database) information.

sfp shows information for either a specified Small Form-factor Pluggable (SFP) device or all SFP devices and dumps all the SFP EEPROM contents. If the device supports diagnostic information, it is included.

status shows the link status (up or down), negotiated network speed/duplex mode, switch management state (Disabled, Blocked, Forwarding, Learning), switch override status and switch monitor status (monitor port and which ports are being monitored) of each external and internal Ethernet port.

fdb shows the filtering database for one port or all ports in the switch.

<portName> shows details for the specified port name. For example, show port 1 displays detailed information for port #1. Valid values are 1, 2, 3, or 4 for the four external ports and “int” for the internal data port. No SFP data is returned for external RJ-45 copper ports 1 and 2, or the internal port.

2.21.1 show port Command Format

show port [all | sfp [<portName>] | status | fdb]

2.21.2 Examples

Displaying Internal and External Port Information

Screen Display						
device-name> show port						
01-JAN-2000 05:44:17.0000						
<<< Port Status >>>						
Port	State	DataRate	Mode	SwitchState	SwchOvrld	MonitoredBy
-----	-----	-----	-----	-----	-----	-----
1 (Ext)	UP	1000Mbps	Full duplex	FORWARDING		Monitor
2 (Ext)	DOWN	NA	NA	DISABLED		Port 1
3 (Ext)	UP	1000Mbps	Full duplex	LEARNING		None
4 (Ext)	UP	100Mbps	Full duplex	BLOCKING	X	Port 1
5 (Int)	UP	1000Mbps	Full duplex	LEARNING		NA
<<< SFP Info >>>						
Pt	SFP Type	Vendor Name	Vendor Part No.	Description		
-----	-----	-----	-----	-----		
03	1000BASE-T	FINISAR CORP.	FCLF-8521-3	Copper 1Gbit Enet		
04	100BASE-LX10	3COM	3CSFP82	Fiber 100Mbit Enet		
SingleMode						
device-name>						

Displaying Port Status

Screen Display						
device-name> show port status						
01-JAN-2000 05:44:17.0000						
<<< Port Status Details>>>						
Port	State	DataRate	Mode	SwitchState	SwchOvrdr	MonitoredBy
1(Ext)	UP	1000Mbps	Full duplex	FORWARDING		Monitor
Port Counters:						
InGdOcLo=00012E8FH InGdOcHi=00000000H InBdOcts=00000000H OutFCSEr=00000000H						
InUnicst=00000006H Deferred=00000000H InBrdcst=00000003H InMltcst=00000291H						
Octets64=00000002H Octet127=00000581H Octet255=00000000H Octet511=00000000H						
Octet1023=00000000H OctetMax=00000000H OuOcteLo=00013479H OuOcteHi=00000000H						
OuUncsts=00000005H Excessiv=00000000H OuMltcst=0000028FH OuBrdcst=00000055H						
Single =00000000H OutPause=00000000H InPause =00000000H Multiple=00000000H						
Undersize=00000000H Framgmnts=00000000H Oversize=00000000H Jabber =00000000H						
InMCRvEr=00000000H InFCSErr=00000000H Collisns=00000000H Late =00000000H						
Port Counters:						
InGdOcLo=00012E8FH InGdOcHi=00000000H InBdOcts=00000000H OutFCSEr=00000000H						
InUnicst=00000006H Deferred=00000000H InBrdcst=00000003H InMltcst=00000291H						
Octets64=00000002H Octet127=00000581H Octet255=00000000H Octet511=00000000H						
Octet1023=00000000H OctetMax=00000000H OuOcteLo=00013479H OuOcteHi=00000000H						
OuUncsts=00000005H Excessiv=00000000H OuMltcst=0000028FH OuBrdcst=00000055H						
Single =00000000H OutPause=00000000H InPause =00000000H Multiple=00000000H						
Undersize=00000000H Framgmnts=00000000H Oversize=00000000H Jabber =00000000H						
InMCRvEr=00000000H InFCSErr=00000000H Collisns=00000000H Late =00000000H						
Port Counters:						
InGdOcLo=00012E8FH InGdOcHi=00000000H InBdOcts=00000000H OutFCSEr=00000000H						
InUnicst=00000006H Deferred=00000000H InBrdcst=00000003H InMltcst=00000291H						
Octets64=00000002H Octet127=00000581H Octet255=00000000H Octet511=00000000H						
Octet1023=00000000H OctetMax=00000000H OuOcteLo=00013479H OuOcteHi=00000000H						
OuUncsts=00000005H Excessiv=00000000H OuMltcst=0000028FH OuBrdcst=00000055H						
Single =00000000H OutPause=00000000H InPause =00000000H Multiple=00000000H						
Undersize=00000000H Framgmnts=00000000H Oversize=00000000H Jabber =00000000H						
InMCRvEr=00000000H InFCSErr=00000000H Collisns=00000000H Late =00000000H						
Press any key to continue (Q to quit)						
Port	State	DataRate	Mode	SwitchState	SwchOvrdr	MonitoredBy
3(Ext)	UP	1000Mbps	Full duplex	LEARNING		None
Port Counters:						
InGdOcLo=00012E8FH InGdOcHi=00000000H InBdOcts=00000000H OutFCSEr=00000000H						
InUnicst=00000006H Deferred=00000000H InBrdcst=00000003H InMltcst=00000291H						
Octets64=00000002H Octet127=00000581H Octet255=00000000H Octet511=00000000H						
Octet1023=00000000H OctetMax=00000000H OuOcteLo=00013479H OuOcteHi=00000000H						
OuUncsts=00000005H Excessiv=00000000H OuMltcst=0000028FH OuBrdcst=00000055H						
Single =00000000H OutPause=00000000H InPause =00000000H Multiple=00000000H						
Undersize=00000000H Framgmnts=00000000H Oversize=00000000H Jabber =00000000H						
InMCRvEr=00000000H InFCSErr=00000000H Collisns=00000000H Late =00000000H						
[Additional output not shown here.]						

Displaying Status and Details for SFPs

```

device-name> show port sfp
01-JAN-2000 05:44:17.0000
<<< SFP Info >>>
Pt   SFP Type      Vendor Name      Vendor Part No.  Description
-----
03 1000BASE-T    FINISAR CORP.    FCLF-8521-3      Copper 1Gbit Enet
Vendor Revision:      A
Vendor Serial Number: A000000
Date Code:            010725
SFP EEPROM Contents:
Id Ex Cn Transceiver      En BR NA Lk L9 L5 L6 LC NA VendorName->
-----
03 04 00 00 00 00 08 00 00 00 00 01 0C 00 00 00 00 00 64 00 46 49 4E 49
00
VendorName(cont)          NA VendrOUI VendorPartNumber ->
-----
53 41 52 20 43 4F 52 50 2E 20 20 20 00 00 90 65 46 43 4C 46 2D 38 35 32
18
VendorPartNumber(cont)  VendorRev  WvLen NA CB|Optns Bx Bn VndrSerNo->
-----
31 2D 33 20 20 20 20 20 41 20 20 20 00 00 00 1C 00 10 00 00 41 30 30 30
30
VendorSerialNumber(cont)      DateCode      DG EO CM CE|
-----
30 30 32 20 20 20 20 20 20 20 20 20 30 31 30 37 32 35 20 20 00 00 00 F9
48
VendorSpecific ->
-----
01 00 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
60
VendorSpecific(cont)  Reserved ->
-----
00 00 00 00 00 00 00 00 00 20 01 00 00 00 00 00 00 00 00 00 00 00 00
78
Reserved(cont)
-----
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
90
Reserved(cont)
-----
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
A8
Reserved(cont)
-----
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
C0
Reserved(cont)
-----
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D8
Reserved(cont)
-----
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
F0
[Additional output not shown here.]

```

Displaying Help for the Show Port SFP Command

The show port sfp help command provides definitions for the fields displayed in the show port sfp command output.

Screen Display
<pre> device-name> show port sfp help [Additional output not shown here. See the following table for definitions.] </pre>

Definitions for show port sfp Command Output

Base ID Fields	Heading	Description
	Id	Identifier - Type of serial transceiver.
	Ex	Ext. Identifier - Extended identifier of type of serial Transceiver.
	Cn	Connector - Code for connector type.
	Transceiver	Transceiver - Code for electronic compatibility or optical Compatibility.
	En	Encoding - Code for serial encoding algorithm.
	BR	Nominal bit rate, units of 100 MBits/sec.
	NA	Not Available/Reserved. Set to 0.
	Lk	Length(9mm)/km - Link length supported for 9/125 mm fiber, units of km.
	L9	Length (9mm) - Link length supported for 9/125 mm fiber, units of 100 m.
	L5	Length (50mm) - Link length supported for 50/125 mm fiber, units of 10 m.
	L6	Length (62.5mm) - Link length supported for 62.5/125 mm fiber, units of 10 m.
	LC	Length (Copper) - Link length supported for copper, units of meters
	VendorName	Vendor name - SFP transceiver vendor name (ASCII).
	VendrOUI	Vendor OUI - SFP transceiver vendor IEEE company ID.
	VendorPartNumber	Part number provided by SFP transceiver vendor (ASCII).
	VendorRev	Revision level for part number provided by vendor (ASCII).
	WvLen	Wavelength - Laser wavelength.
	CB	CC_BASE - Check code for Base ID Fields (addresses 0 to 62). A "I" symbol is placed next to "CB" to indicate the end of the Base ID Fields.
Extended ID Fields	Heading	Description
	Optns	Options - Indicates which optional transceiver signals are implemented.
	Bx	Maximum bit rate - Upper bit rate margin, units of %.
	Bn	Minimum bit rate - Lower bit rate margin, units of %.
	VndrSerNo	Vendor Serial No. - Serial number provided by vendor (ASCII).
	DateCode	Date code Vendor's manufacturing date code.
	DG	Diagnostic Monitoring Type - Indicates which type of diagnostic monitoring is implemented (if any) in the transceiver.
	EO	Enhanced Options - Indicates which optional enhanced features are implemented (if any) in the transceiver.
	CM	Indicates which revision of SFF-8472 the transceiver complies with.
	CE	CC_EXT - Check code for the Extended ID Fields (addresses 64 to 94). A "I" symbol is placed next to "CE" to indicate the end of the Extended ID Fields.
	VendorSpecific	Vendor Specific - Vendor Specific EEPROM data.
	Reserved	Reserved - Reserved for SFF-8079.

Displaying Status and Details for a Specific Port

The following example shows counters and status details for port 3.

Screen Display						
device-name> show port 3						
01-JAN-2000 05:44:17.0000						
<<< Port Status Details>>>						
Port	State	DataRate	Mode	SwitchState	SwchOvrld	MonitoredBy
3 (Ext)	UP	1000Mbps	Full duplex	LEARNING		None
Port Counters:						
InGdOcLo=00012E8FH InGdOcHi=00000000H InBdOcts=00000000H OutFCSEr=00000000H						
InUnicst=000000006H Deferred=00000000H InBrdcst=00000003H InMltcst=00000291H						
Octets64=000000002H Octet127=00000581H Octet255=00000000H Octet511=00000000H						
Octet1023=00000000H OctetMax=00000000H OuOcteLo=00013479H OuOcteHi=00000000H						
OuUncsts=000000005H Excessiv=00000000H OuMltcst=0000028FH OuBrdcst=00000055H						
Single =00000000H OutPause=00000000H InPause =00000000H Multiple=00000000H						
Undersize=00000000H Fragmnts=00000000H Oversize=00000000H Jabber =00000000H						
InMCRvEr=00000000H InFCSEr=00000000H Collisns=00000000H Late =00000000H						
[Additional output not shown here.]						

Displaying Status and Details for a Specific SFP

The following example shows counters and status details for port 3.

Screen Display																				
device-name> show port sfp 3																				
01-JAN-2000 05:44:17.0000																				
<<< SFP Info >>>																				
Pt	SFP Type				Vendor Name				Vendor Part No.				Description							

03	1000BASE-T				FINISAR CORP.				FCLF-8521-3				Copper 1Gbit Enet							
Vendor Revision: A																				
Vendor Serial Number: A000000																				
Date Code: 010725																				
SFP EEPROM Contents:																				
Id	Ex	Cn	Transceiver							En	BR	NA	Lk	L9	L5	L6	LC	NA	VendorName->	

03	04	00	00	00	00	00	08	00	00	00	00	01	0c	00	00	00	00	64	00	46 49 4E 49 17
00																				
VendorName (cont)															NA VendrOUI VendorPartNumber ->					

[Additional output not shown here.]																				

Note that when SFP details are displayed, the Vendor Specific and Reserved Fields are not shown if there is no data from the device or all the data is set to 0.

Empty SFP Cages and Unsupported SFPs

The following example shows the display when there is an empty SFP cage (Port 3) and when an SFP is unsupported (Port 4).

Screen Display						
device-name> show port						
01-JAN-2000 05:44:17.0000						
<<< Port Status >>>						
Port	State	DataRate	Mode	SwitchState	SwchOvr	MonitoredBy
1 (Ext)	UP	1000Mbps	Full duplex	FORWARDING		Monitor
2 (Ext)	DOWN	NA	NA	DISABLED		Port 1
3 (Ext)	UNPLUG	NA	NA	NA		None
4 (Ext)	UNSUP	NA	NA	NA		None
5 (Int)	UP	1000Mbps	Full duplex	LEARNING		NA
<<< SFP Info >>>						
Pt	SFP Type	Vendor Name	Vendor Part No.	Description		
03	UNPLUGGED	NA	NA	NA		
04	UNSUPPORTED	NA	NA	NA		

Displaying the Filtering Database for a Given Port

The following example shows the display for show port fdb command. The number of entries and mix of entry types in this example are not representative of what will normally be displayed but is merely intended to show the possible values that can be displayed.

Screen Display							
device-name> show port fdb							
01-JAN-2000 05:44:17.0000							
<<< Filtering Database Info >>>							
MACAddress	DPV/ TrunkID	Prio	DENum	State	Prio	QPrio	Ovr
00:09:91:42:A5:8C	P000000008	000	0000	UC_TO_CPU_STATIC	0	0	
00:09:91:42:A5:8D	P000000010	000	0000	UC_TO_CPU_STATIC	0	0	
00:09:91:42:A5:8E	P000000020	000	0000	UC_TO_CPU_STATIC	0	0	
00:09:91:42:A5:8F	P000000040	000	0000	UC_TO_CPU_STATIC	0	0	
00:09:91:42:A5:91	P000000200	000	0000	UC_DYNAMIC	0	0	
00:90:27:70:FC:16	P000000020	000	0000	UC_DYNAMIC	0	0	

The fields on this display provide the following information:

Heading	Description
MACAddress	MAC address of the device associated with this Address Translate Unit (ATU) entry.
DPV/Trunk ID	Either the Destination Port Vector (DPV) or the Trunk ID associated with the ATU entry. The field begins with P (for Port) if it represents the DPV, or T (for Trunk) if it represents the Trunk ID. The DPV represents a bit mask of the switch port to use to forward a frame containing the specified destination MAC Address.
Prio	The entry's priority.
DBNum	ATU MAC Address Database number. If multiple address databases are not being used, DBNum is set to zero. If multiple address databases are being used, this value is set to the database number associated with this MAC Address.
State	Entry State. The state of this ATU entry (See the next table for state definitions).
Prio Ovrd	Priority Override. If MAC frame priority override is true and the port's SA and/or DA FPriOverride features are enabled, this field is used to override the frame priority on any frame associated with this MAC. Overrides can only occur on MAC addresses that are Static or where the Port is Locked, and where the port is mapped as a source port for the MAC address. Valid values are 0 through 7 inclusive. If the priority override is disabled, displays "-".
QPrio Ovrd	Queue Priority Override. If the EntryState indicates Queue Priority Override and the port's Source Address and/or Destination Address QPriOverride features are enabled, this field is used to override the queue priority on any frame associated with this MAC. Valid values are 0 through 3 inclusive. If the queue priority override is disabled, displays "-".

Entry States are defined below.

Entry State	Description
UC_DYNAMIC	Unicast dynamic entry
UC_NO_PRI_TO_CPU_STATIC_NRL	Static unicast entry that will be forwarded to management CPU without forcing priority and with no rate limiting (NRL).
UC_TO_CPU_STATIC_NRL	Static unicast entry that will be forwarded to management CPU without rate limiting.
UC_NO_PRI_STATIC_NRL	Static unicast entry without forcing priority and without rate limiting.
UC_STATIC_NRL	Static unicast entry with no rate limiting.
UC_NO_PRI_TO_CPU_STATIC	Static unicast entry that will be forwarded to management CPU without forcing priority.
UC_TO_CPU_STATIC	Static unicast entry that will be forwarded to CPU.
UC_NO_PRI_STATIC	Static unicast entry without forcing priority.
UC_STATIC	Static unicast entry.
MC_MGM_STATIC_NRL	Static multicast management entry with no rate limiting.
MC_STATIC_NRL	Static multicast regular entry with no rate limiting.
MC_MGM_STATIC	Static multicast management entry.
MC_STATIC	Static multicast regular entry.
MC_PRIO_MGM_STATIC_NRL	Static multicast management entry with priority and with no rate limiting.
MC_PRIO_STATIC_NRL	Static multicast regular entry with priority and with no rate limiting.
MC_PRIO_MGM_STATIC	Static multicast management entry with priority.
MC_PRIO_STATIC	Static multicast regular entry with priority.

2.22 show profinet

Global Command

The show profinet command shows status and counters for the PROFINET Controller's PROFINET network interface.

show profinet displays summary data for each device it is configured to connect to.

show profinet all <deviceNum> displays all detailed information for the specified IO Device.

show profinet ar <deviceNum> shows detailed information about one device's Application Relationships (AR)

show profinet iocrs <deviceNum> shows detailed information about one device's IO Communication Relationships (IOCR).

show profinet alarm <deviceNum> shows detailed information about one device's alarms

show profinet counters <deviceNum> shows detailed information about one device's counters

2.22.1 show profinet Command Formats

show profinet [<all | ar | iocr | alarm | counters> <deviceNum>]

<deviceNum> Identifies the PROFINET Remote Device. It refers to the Device number that is assigned to a PROFINET remote device using PAC Machine Edition.

Note: *show profinet all <deviceNum> shows all the information in the detailed displays in the following examples, except the header information is shown only at the top (the header information ends with the ProviderState field in these examples).*

2.22.2 Examples

For definitions of the fields displayed in the command output screens, see page 55, 56.

Displaying a Summary of Devices Connected to the PNC

Screen Display					
device-name> show profinet					
01-JAN-2000 00:06:38.0000					
PNCDeviceName: device-name					
ProviderState: Run					
Dev#	Vendor	Device	AR#	ARStat	DeviceName
001	0015h	0001h	001	LocCtrl	remote-io-device1
005	0015h	0001h	002	Disconn	remote-io-device5
007	0015h	0001h	003	NoCtrl	remote-io-device7
011	0015h	0001h	004	RemCtrl	remote-io-device11
021	0015h	0001h	005	LocCtrl	remote-io-device21
022	0015h	0001h	006	Disconn	remote-io-device22
device-name>					

Displaying Detailed Information about a Device's AR

The following example displays AR details for device number 1.

Screen Display					
device-name> show profinet ar 1					
01-JAN-2000 00:06:38.0000					
PNCDeviceName: device-name					
ProviderState: Run					
Dev#	Vendor	Device	AR#	ARStat	DeviceName
001	0015h	0001h	001	LocCtrl	remote-io-device1
<<< AR Configuration>>>					
AR# 001					
AR Block Version High: 01					
AR Block Version Low: 00					
ARType: IOCARSsingle					
Redundancy Type: Simplex AR					
ARProperties: 0x000000031					
PullModuleAlarmAllowed: False (PullAlarm for both submodule & module)					
AckCompanionAR: False (No Companion AR or No Ack for					
Companion AR)					
CompanionAR: Single AR					
DeviceAccess: Only submodules from ExpectedSubmoduleBlock					
ParameterizationServer: CM Initiator					
SupervisorTakeover: Not Allowed					
State: Active					
CMInitiatorActivityTimeoutFactor: 60.000 seconds					
device-name>					

Note: For ARType = System Redundancy AR only, the 16-byte ARUUID value is also displayed following the AR# value.

Displaying Detailed Information about a Device's IOCRs

Note: The `show profinet iocrs <device number>` command displays values even when the connection to the device is not active. When the device is disconnected, the *Current Data Status* field and the *Value* column display the last values received. When using this command, be aware of the device's connection status.

The following example displays IOCR details for device number 7.

Screen Display									
device-name> show profinet iocrs 7									
01-JAN-2000 00:06:38.0000									
PNCDeviceName: device-name									
ProviderState: Run									
Dev#	Vendor	Device	AR#	ARStat	DeviceName				
----	-----	-----	----	-----	-----				
007	0015h	0001h	003	NoCtrl	remote-io-device7				
<<< IOCR Status >>>									
<<< IOCR 0x0000-(Input CR)-Update Period: 1 ms >>>									
IOCRProperties: 0x00000001									
MediaRedundancy:					No media redundant frame transfer				
RTClass:					RT Class 1 (Data-RTC-RDU)				
IOCRTagHeader: 0xC000									
IOCR User Priority:					6 (IO CR Priority)				
Vlan ID:					0x000 (No VLAN)				
Current Data Status: 0x02									
Station Problem Indicator: Problem detected									
Provider State: Stop									
Data Valid: Invalid									
State: Primary									
Len	FrmId	SendClk(us)	Ratio	Phase	FrmOffset	WatchDg	DataHold	APIs	
-----	-----	-----	-----	-----	-----	-----	-----	-----	
0040h	c080h	1000.00	001	0001h	00000000h	0003h	0003h	001	
<<< API 0 >>>									
ObjType	Slot#	Subslot#	FrmOffset		ModId	SubModId	Leng	Value	
-----	-----	-----	-----		-----	-----	-----	-----	
InIOCS	000h	0001h	0005h		00000001h	00000001h	0001	80h	
InIOPS	000h	0001h	0004h		00000001h	00000001h	0001	80h	
InData	000h	0001h	0000h		00000001h	00000001h	0004	05h	
InIOPS	000h	0002h	0006h		00000001h	FFFF010Ah	0001	80h	
InData	000h	0002h	0006h		00000001h	FFFF010Ah	0000	00h	
InIOPS	000h	8000h	0007h		00000001h	00100000h	0001	80h	
InData	000h	8000h	0007h		00000001h	00100000h	0000	00h	
InIOPS	000h	8001h	0008h		00000001h	00010000h	0001	80h	
InData	000h	8001h	0008h		00000001h	00010000h	0000	00h	
InIOPS	000h	8002h	0009h		00000001h	00020000h	0001	80h	
InData	000h	8002h	0009h		00000001h	00020000h	0000	00h	

Screen Display

<<< IOCR 0x0001-(Output CR)-Update Period: 1 ms >>>

IOCRProperties: 0x00000001

MediaRedundancy: No media redundant frame transfer

RTClass: RT Class 1

IOCRTagHeader: 0xC000

IOCR User Priority: 6 (IO CR Priority)

Vlan ID: 0x000 (No VLAN)

Current Data Status: 0x01

Station Problem Indicator: Problem detected

Provider State: Stop

Data Valid: Invalid

State: Primary

Len	FrmId	SendClk(us)	Ratio	Phase	FrmOffset	WatchDg	DataHold	APIs
0040h	ffffh	1000.00	001	0001h	00000000h	0003h	0003h	001

<<< API 0 >>>

ObjType	Slot#	Subslot#	FrmOffset	ModId	SubModId	Leng	Value
OutIOCS	000h	0001h	0005h	00000001h	00000001h	0001	60h
OutIOCS	000h	0002h	0006h	00000001h	FFFF010Ah	0001	60h
OutIOCS	000h	8000h	0007h	00000001h	00100000h	0001	60h
OutIOCS	000h	8001h	0008h	00000001h	00010000h	0001	60h
OutIOCS	000h	8002h	0009h	00000001h	00020000h	0001	60h
OutIOPS	000h	0001h	0004h	00000001h	00000001h	0001	60h
OutData	000h	0001h	0000h	00000001h	00000001h	0004	00h

device-name>

Displaying Detailed Information about a Device's Alarm Status

The following example shows alarm status details for device number 1.

Screen Display					
device-name> show profinet alarm 1					
01-JAN-2000 00:06:38.0000					
PNCDeviceName:		device-name			
ProviderState:		Run			
Dev#	Vendor	Device	AR#	ARStat	DeviceName
----	-----	-----	----	-----	-----
001	00B0h	0003h	001	LocCtrl	remote-io-device1
<<< Alarm CR Status >>>					
RTA Timeout: 100 ms					
RTA Retry: 03					
device-name>					

Displaying Detailed Information about a Device's Counters

The following example shows counter details for device number 1.

Screen Display					
device-name> show profinet counters 1					
01-JAN-2000 00:06:38.0000					
PNCDeviceName: device-name					
ProviderState: Run					
Dev#	Vendor	Device	AR#	ARStat	DeviceName
----	-----	-----	---	-----	-----
001	0015h	0001h	001	LocCtrl	remote-io-device1
<<< PROFINET Counters >>>					
<<< Connect Counters >>>					
ConnReq =00000002H ConnRsp+=00000002H ConnRsp-=00000000H ConnDif =00000001H					
ApRdyDif=00000000H DiscReq =00000000H DiscRsp+=00000000H DiscRsp-=00000000H					
DiscInd =00000001H AbortReq=00000000H AsyncRdy=00000000H AsyncCon=00000000H					
CloseInd=00000000H RqPriReq=00000000H RqPrRsp+=00000000H RqPrRsp-=00000000H					
RqBakReq=00000000H RqBkRdp+=00000000H RqBkRsp-=00000000H					
<<< Alarm Counters >>>					
AlmInd =00000000H DiagInd =00000000H ProcAlm =00000000H PullInd =00000000H					
PlugInd =00000000H ManufInd=00000000H RdnInd =00000000H OtherInd=00000000H					
AlmAck+ =00000000H AlmAck- =00000000H AlmCnf+ =00000000H AlmCnf- =00000000H					
<<< IOCR Counters >>>					
0: (Input CR)					
LatchReq=00000000h LatchCnt=00000000h					
1: (Output CR)					
LatchReq=00000000h LatchCnt=00000000h					
<<< SubModule Counters Per Slot/Subslot >>>					
0.1					
InptSens=00000000h DataLtch=00000000h BadInScn=00037c39h					
OutScans=00000000h OutCltrd=00000000h BdOutScn=00000000h					
1.1					
InptSens=00000000h DataLtch=00000000h BadInScn=00000000h					
OutScans=0000000Ah OutCltrd=0000000Ah BdOutScn=00000000h					
device-name>					

Field Definitions

The following table defines the fields shown in the preceding examples:

Field	Description
PNCDevice Name	The PROFINET Device Name of the PROFINET Controller.
Provider State	The PROFINET Provider state that is sent with each RTC frame. This reflects the state of the PACSystems Controller CPU's Output Enable line. The possible states and meaning are: Run –the CPU's Output Enable is enabled. Stop –the CPU's Output Enable Line is disabled.
Dev#	The Device number associated with the Remote I/O Device.
AR#	A number the PROFINET Controller associates with the Application Relationship's ARUUID that uniquely identifies a particular AR. The possible values are 001 through 999.
ARStat	Indicates the Application Relationship (AR) connection and control status. The possible values are: Disconn – the AR has not successfully been established with the specified remote IO device. LocCtrl – the AR is established, and the local PNC has the Primary AR. RemCtrl – the AR is established, and a different PNC has the Primary AR. NoCtrl – the AR is established but no PNC has the Primary AR.
DeviceName	Specifies the PROFINET Device Name of the associated Remote IO Device.
Vendor	Remote Device PROFINET Vendor ID used to specify an IO-Device's vendor on the PROFINET network.
Device	Remote Device PROFINET Device ID used to specify an IO-Device's type on the PROFINET network.
Vendor Description	An optional description provided by the Remote IO-Device that is vendor specific (typically contains model name and/or catalog number). If the IO-Device does not provide this information, the field is blank.
ARUUID	A number that uniquely identifies a particular AR within the system. (Displayed only for ARType = System Redundancy AR.)
ARType	Indicates the type of AR. The possible values are IOCARSingle and IOCARSR. The IOCARSR indicates System Redundancy or Configure in Run.
Redundancy Type	Indicates whether this AR is part of a PNIO System Redundancy set or not. The possible values are Simplex AR and System Redundancy AR.
ARProperties	Displays the binary value of the AR Properties field for the Application Relationship. The actual properties are decoded in the indented fields just below the ARProperties field (PullModuleAlarmAllowed, CompanionAR, etc.).
CMInitiator ActivityTimeoutFactor	The remote device timeout between the Connect response and receipt of new service requests from the PROFINET Controller. The IO device application stops this monitoring when IOCR operations start. This value is fixed at 60.0 seconds.

Field	Description
RedundancyDataHoldTime	The remote device timeout between loss of the Primary AR and recognition of a new Primary AR. (Loss of Primary AR may occur when the AR is terminated, or the AR switches to Backup.) If another AR does not become Primary within this timeout interval, the IO device aborts all related Backup ARs. This timeout is used and displayed only when Redundancy Type is "System Redundancy AR".
MaxTakeOverTime	The PROFINET controller timeout between the Request of a new Primary AR and confirmation from the remote device. If the remote device does not confirm the new Primary AR within this interval, the Controller aborts the AR. This value is calculated for each AR connection. This timeout is used and displayed only when the Redundancy Type is "System Redundancy AR".
<<< IOCR 0x0001 - (Input CR)- Update Period: 1 ms >>>	0x0001 in this example header represents the IOCR reference number to uniquely identify the IOCR within the AR. (Input CR) in this example header is the type of IOCR. The two possible values are (Input CR) and (Output CR). Update Period – is the rate at which cyclic IO associated with this IOCR is updated between the PROFINET Controller and the IO Device. The Update Period is calculated by multiplying the SendClk value times the Ratio value.
IOCR Properties	The binary value of the IOCR Properties field for the AR. The actual properties are decoded in the indented fields just below the ARProperties field (MediaRedundancy, RTClass.).
IOCR Tag Header	See PROFINET Application Layer Services for Decentralized Periphery and Distributed Automation Specification, Version 2.2, October 2007.
Current Data Status	The data status value from the IOCR. The individual fields of the status are decoded in the lines below. Station Problem Indicator can either be Problem detected or Normal operation. Provider State can either be Stop or Run. Data Valid can either be Invalid or Valid. State can either be Primary or Backup. For the Input CR only, Redundancy can either be "Primary Present" or "Primary Not Present".
Len	The data length in bytes of the RTC Frame associated with this IOCR.
FrmlId	Contains the identifier of the data within the RTC frame and tells the producer what frame Id the consumer wants to use when the RTC data transfer occurs.
SendClk(us)	SendClockTime is the base interval for IOCR timing. SendClockTime is calculated as: $\text{SendClockTime} = \text{SendClockFactor} \times 31.25$. See PROFINET Application Layer Services for Decentralized Periphery and Distributed Automation Specification, Version 2.2, October 2007, for definition of SendClockFactor.
Ratio	Reduction Ratio where $\text{IOCR Update Period} = \text{SendClockTime} \times \text{ReductionRatio}$. See PROFINET Application Layer Services for Decentralized Periphery and Distributed Automation Specification, Version 2.2, October 2007, for definition of Reduction Ratio.

Field	Description
Phase	Determines which time slot within an IO update cycle an I/O frame is sent when the Reduction Ratio is greater than 1. See PROFINET Application Layer Services for Decentralized Periphery and Distributed Automation Specification, Version 2.2, October 2007, for definition of Phase.
FrmOffset	Frame Send Offset. The relative time offset from the start of a Send Clock Time cycle to transmit the RTC Frame associated with this IOCR in nanosecond units. See PROFINET Application Layer Services for Decentralized Periphery and Distributed Automation Specification, Version 2.2, October 2007. for definition of Frame Send Offset.
WatchDg	Watchdog Factor. See PROFINET Application Layer Services for Decentralized Periphery and Distributed Automation Specification, Version 2.2, October 2007. for definition of Watchdog Factor.
DataHold	Data Hold Factor. See PROFINET Application Layer Services for Decentralized Periphery and Distributed Automation Specification, Version 2.2, October 2007, for definition of Data Hold Factor.
APIs	The number of Application Relationships contained within this IOCR. The value can be 1 or 2.
<<< API 0 >>>	API number of the following data, 0 in this example indicates the API number.
ObjType	The type of data located at the Frame Offset within the RTC frame associated with this IO Communication Relationship (IOCR). The possible meaning and values are: InData – Input data transferred from the IO module to the controller. This data also includes IO Provider Status (IOPS) associated with the input data. OutData – Output data transferred from the controller to the IO module. This data also includes the IOPS associated with the output data. InIOCS – the IO Consumer Status (IOCS) status associated with the input data of the IO module transferred from the controller to the IO Device. OutIOCS – the IOCS status associated with the output data of the output module transferred from the IO-Device to the controller.
Slot#	The slot number of the module associated with the ObjType.
Subslot#	The subslot number of the module associated with the ObjType.
FrmOffset	The offset in the RTC frame associated with the IOCR where the module's Input/Output data or IOCS data is transmitted.
ModId	The Module Identification value associated with the IO Module. For Emerson modules, the lowest word contains the major and minor types for the module.
SubModId	The Submodule Identification value associated with the IO Module. For Emerson IO modules, the value is the same as the ModId.
Leng	The length of data in bytes transmitted for the ObjType within the RTC frame associated with the IOCR.
Value	Actual data for the corresponding objType.

Field	Description
RTA Timeout	The timeout for acknowledging an RTA Data frame typically used for signaling PROFINET alarms. $RTATimeout = RTATimeoutFactor \times 100 \text{ ms}$. Valid values are 0x0001 to 0xFFFF. This field is set to a fixed value of 1.
RTA Retry	The number of retries if an ACK is not received within an RTA Timeout for an RTA Data frame. Valid values are 0x0003 to 0x000F. This field is set to 0x0003.
ConnReq	The number of Connect Requests sent to the PROFINET Controller communications stack.
ConnRsp+	The number of Positive (successful) responses to Connect Requests received from the PROFINET Controller communications stack.
ConnRsp-	The number of Negative (failure) responses to Connect Requests received from the PROFINET Controller communications stack.
ConnDiff	The number of Connect Responses received from the PROFINET Controller communications stack that include a Module Diff Block.
ApRdyDif	The number of Application Ready indications received that included a Module Diff Block.
DiscReq	The number of Disconnect Requests sent to the PROFINET Controller communications stack.
DiscRsp+	The number of Positive (successful) responses to Disconnect Requests received from the PROFINET controller communications stack.
DiscRsp-	The number of Negative (failure) responses to Disconnect Requests received from the PROFINET Controller communications stack.
DiscInd	The number of Disconnect Indications received from the PROFINET Controller communications stack.
AbortReq	The number of Abort Requests sent to the PROFINET Controller communications stack.
AsyncRdy	The number of times that the PROFINET Controller stack indicated that Application Ready was received out of sequence.
AsyncCon	The number of times that the PROFINET Controller stack indicated that Connect Response was received out of sequence.
CloseInd	The number of "AR Closed" indications received from the PROFINET Controller communications stack.
RqPriReq	The number of Primary AR Requests sent to the PROFINET Controller communications stack.
RqPrRsp+	The number of positive (successful) responses to Primary AR Requests received from the PROFINET Controller communications stack.
RqPrRdp-	The number of negative (failure) responses to Primary AR Requests received from the PROFINET Controller communications stack.
RqBakReq	The number of Backup AR Requests sent to the PROFINET Controller communications stack.
RqBkRsp+	The number of positive (successful) responses to Backup AR Requests received from the PROFINET Controller communications stack.
RqBkRsp-	The number of negative (failure) responses to Backup AR Requests received from the PROFINET Controller communications stack.

Field	Description
AlmInd	Number of all Alarm indications received from the device.
DiagInd	Number of Diagnostic alarms received from the device. Includes: Diagnosis and Diagnosis Disappears alarm types.
ProcAlm	Number of Process alarms received from the device. Includes: Process alarm type.
PullInd	Number of Pull alarms received from the device. Includes: Pull and Pull Module alarm types.
PlugInd	Number of Plug alarms received from the device. Includes: Plug and Plug Wrong Submodule alarm types.
ManufInd	Number of Manufacturing Specific alarms received from the device.
RdnInd	Number of System Redundancy alarms received from the device.
OtherInd	Number of alarms received that do not fall in one of the other specified alarm categories.
AlmAck+	Number of positive Alarm Acknowledgements sent by the PROFINET Controller.
AlmAck-	Number of negative Alarm Acknowledgements sent by the PROFINET Controller.
AlmCnf+	Number of positive Alarm confirmations received from the device.
AlmCnf-	Number of negative Alarm confirmations received from the device.
LatchReq	Number of times the PROFINET Controller attempted to latch IOCR data to/from the network.
LatchCnt	Number of times the PROFINET Controller successfully latched IOCR data to/from the network.
InptScns	Number of times a submodule was scanned for input.
DataLtch	Number of times a submodule successfully latched its input data from the network.
BadInScn	Number of times the submodule had a failure scanning input.
OutScans	Number of times a submodule was scanned for output.
OutCltrd	Number of times the PROFINET Controller successfully read the submodule output values from PACSystems Controller.
BdOutScn	Number of times the submodule had a failure scanning output.

2.23 show rdnMedia

Global Command

This command displays media redundancy status and counters.

Status includes:

- Role (MRM, MRC, Disabled)
- Ethernet ports used in ring
- Ring status closed/open (MRM only)-

Redundant Media Counters includes:

- Count of the number of times a break has been detected/repared since powerup/restart (MRM only)

2.23.1 show rdnMedia Command Format

show rdnmedia

2.23.2 Example

The following example displays Media Redundancy status for a device that is a Media Redundancy Manager (MRM).

Screen Display
<pre>device-name> show rdnMedia 01-JAN-2000 05:44:17.0000 <<< Media Redundancy Status >>> Role: Manager (MRM) Ring Ports: 1 and 2 Ring Status: Closed <<< Media Redundancy Counters >>> Break Detected/Repared: 00000001H device-name></pre>

The Role field can contain the following values:

Client (MRC)	Module is operating as a Media Redundancy Client.
Manager (MRM)	Module is operating as a Media Redundancy Manager.
Disabled	Module is operating with Media Redundancy disabled.

The Ring Status field can contain the following values:

Closed	Module operating as Media Redundancy Manager and the network ring is currently OK (ring not broken).
Broken	Module operating as Media Redundancy Manager and the network ring is currently broken.
NA	Module is operating either as Media Redundancy Client or with Media Redundancy disabled.

2.24 show session timeout

Global Command

The Command Line Interface disconnects after a period of inactivity. This command displays the current session inactivity timeout value in seconds. This timeout determines how long the Command Line Interface will remain idle before closing the current session. A timeout warning is issued when one-half of the session timeout period has passed.

If a timeout occurs, it will be necessary to start a new session.

- For a USB connection, pressing Enter within the terminal application starts a new session at the Monitor access level.
- For a network connection, a new telnet session must be established.

2.24.1 show session timeout Command Format

show session Timeout

2.24.2 Example

Screen Display
device-name> show sessionTimeout Session Inactivity Timeout: 600 seconds device-name>
device-name> This terminal has been idle for 300 seconds. It will be logged out if it remains idle for another 300 seconds. device-name> Log out by the system

2.25 show sm

Global Command

This command displays the PROFINET Controller / PACSystems Controller backplane Shared Memory (SM) status and counters.

2.25.1 show sm Command Format

show sm

2.25.2 Example

Screen Display	
<pre> device-name> show sm 01-JAN-2000 00:06:38.0000 <<< Shared Memory Status >>> Shared memory startup complete (07H) Slave firmware version: 1.00 Master firmware version: 1.00 Shared memory heap status: Heap memory size (bytes) = 16773120 (00FFF000H) Slave heap size (bytes) = 8336896 (007F3600H) Slave heap overhead (bytes) = 41216 (0000A100H) Master heap size (bytes) = 8386560 (007FF800H) Slave currently avail (bytes) = 8336896 (007F3600H) Slave currently in use (bytes) = 0049664 (0000C200H) Master currently avail (bytes) = 8386560 (007FF800H) Master currently in used (bytes) = 0 (00000000H) <<< Shared Memory Interface Counters >>> IcRqRset=00000001cH IcHIPmsg=00000001H IcLOPmsg=00000000H IcTstInt=00000001H IcSftRst=00000001bH IcMIntIn=00000001H IoScanPD=00000000H HpRlbSlv=00000000H HpRlbMst=00000000H HpBBound=00000000H HpBogSlv=00000000H HpBogMst=00000001H HpRsvBad=00000000H MbLoQput=00000003H MbHiQput=0001edcbH MbLoQget=00000003H MbHiQget=00000004H device-name> </pre>	

2.25.3 Shared Memory Interface Counter Definitions

The following table provides a description of each Shared Memory Interface counter.

Counter	Description
IcRqRset	“Slave hard reset request” interrupt commands sent.
IcHIPmsg	“High priority message waiting” interrupt commands sent.
IcLOPmsg	“Low priority message waiting” interrupt commands sent.
IcTstInt	“Test” interrupt commands sent.
IcSftRst	“Slave soft reset request” interrupt commands sent.
IcMIntIn	Shared memory interrupts received.
IoScanPD	Input I/O data productions.
HpRlbSlv	Released slave shared memory heap blocks.
HpRlbMst	Released master shared memory heap blocks.
HpBBound	Shared memory heap block boundary errors.
HpBogSlv	Duplicate frees of slave shared memory heap blocks.
HpBogMst	Duplicate frees of master shared memory heap blocks.
HpRsvBad	Shared memory heap full errors.
MbLoQput	Low priority mail sent to PACSystems Controller.
MbHiQput	High priority mail sent to PACSystems Controller.
MbLoQget	Low priority mail received from PACSystems Controller.
MbHiQget	High priority mail received from PACSystems Controller.

2.26 show tcp

Global Command

This command displays Transmission Control Protocol (TCP) status and counters.

2.26.1 show tcp Command Format

show tcp [details]

2.26.2 Examples

Displaying Status and Counters of TCP Connections

Screen Display
<pre> device-name> show tcp 01-JAN-2000 05:44:17.0000 <<< TCP Status >>> Tcp: 0 active connection openings 2 passive connection openings 0 failed connection attempts 1 connection resets received 1 connections established 43 segments received 36 segments sent out 11 segments retransmitted 0 bad segments received 2 resets sent <<< TCP Counters >>> ActOpens=00000000H PasOpens=00000001H AtmptFai=00000000H EstabRes=00000000H CurEstab=00000001H InSegs =00000125H OutSegs =00000124H RtranSeg=00000000H InErrs =00000000H SndRsts =00000000H device-name> </pre>

Displaying Status Details of TCP Connections

Screen Display
<pre> device-name> show tcp details 01-JAN-2000 05:44:17.0000 <<< TCP Status Details >>> Tcp: 0 active connection openings 2 passive connection openings 0 failed connection attempts 1 connection resets received 1 connections established 43 segments received 36 segments sent out 11 segments retransmitted 0 bad segments received 2 resets sent device-name> </pre>

2.26.3 TCP Counter Definitions

Counter	Description
ActOpens	The number of times TCP connections have made a direct transition to the SYN-SENT state from the CLOSED state.
PasOpens	The number of times TCP connections have made a direct transition to the SYN-RCVD state from the LISTEN state.
AtmptFai	The number of times TCP connections have made a direct transition to the CLOSED state from either the SYN-SENT state or the SYN-RCVD state, plus the number of times TCP connections have made a direct transition to the LISTEN state from the SYN-RCVD state.
EstabRes	The number of times TCP connections have made a direct transition to the CLOSED state from either the ESTABLISHED state or the CLOSE-WAIT state.
CurEstab	The number of internal TCP data structures currently in use. This value corresponds to the "Current Conn" value in the status section.
InSegs	The total number of segments received, including those received in error. This count includes segments received on currently established connections.
OutSegs	The total number of segments sent, including those on current connections but excluding those containing only retransmitted bytes.
RtranSeg	The total number of segments retransmitted – that is, the number of TCP segments transmitted containing one or more previously transmitted bytes.
InErrs	TCP segments received in error.
SndRsts	TCP segments sent with RST flag.

2.27 show telnetd

Global Command

This command indicates whether the telnet server is enabled or disabled and shows the number of telnet connections.

2.27.1 show telnetd Command Format

show telnetd

2.27.2 Example

Screen Display
<pre> device-name> show telnetd 01-JAN-2000 05:44:17.0000 <<< Telnet Server Status >>> telnet Status: Enabled Max telnet Connections: 16 Active telnet Connections: 1 device-name> </pre>

The telnet server status can be:

Field	Value	Definition
telnet Status	Disabled	Telnet server is currently disabled. (Default)
	Enabled	Telnet server is currently enabled.

2.28 show time

Global Command

This command displays the current time of the Controller's internal clock. The internal clock is synchronized with the PACSystems Controller at power-up.

2.28.1 show time Command Format

show time

2.28.2 Example

Screen Display
<pre>device-name> show time 01-JAN-2000 05:44:17.0000 device-name></pre>

2.29 show udp

Global Command

This command displays User Datagram Protocol (UDP) status and counters.

2.29.1 show udp Command Format

show udp

2.29.2 Example

Screen Display
<pre>device-name>show udp 01-JAN-2000 01:30:27.0 <<< UDP Status >>> Udp: 11711 packets received 11 packets to unknown port received 0 packet receive errors 6 packets sent <<< UDP Counters >>> InDatagram=00000010H NoPorts =0000000bH InErrors=00000000H OtDatagram=00000033H device-name></pre>

2.29.3 UDP Counter Definitions

Counter	Description
InDatagm	Number of incoming datagrams validated and accepted by the UDP communications stack.
NoPorts	Number of incoming datagrams discarded by the UDP communications stack because the destination UDP ports were not initialized for reception.
InErrors	Number of incoming datagrams discarded by the UDP communications stack because they are invalid datagrams, e.g., invalid checksums, etc.
OtDatagm	Number of outgoing UDP datagrams sent by the UDP communications stack to remote hosts.

2.30 terminate

Global Command

This command ends the Command Line Interface session. When the session ends, terminal session parameters (for example, terminal row/column settings) are not saved.

Note: In HyperTerminal, the session does not close after executing the terminate command. To re-establish the connection, it may be necessary to disconnect and reconnect the HyperTerminal application and press the Enter key.

2.30.1 terminate Command Format

terminate

2.30.2 Example

Screen Display
<pre>device-name> terminate 01-JAN-2000 05:44:17.0000 Command Shell Session Terminated</pre>

Chapter 3: Modify-Level Commands

This chapter describes commands that are available for Modify-level access to the Command Line Interface. Global commands, which are common to both Monitor- and Modify-level access, are defined in chapter 1.

3.1 Modify Access Level Commands

- Arp
- BlinkId
- Clear arp
- Clear counters
- Clear counters profinet
- Clear log
- Clear statLED
- Default
- LoginCfg
- Logout
- Monport
- Ping
- Restart
- SessionTimeout
- Telnetd
- Time

3.2 Modify-Level Login

Logging into and out of Modify-level access is done using the login and logout commands. Both the login name and password are case-sensitive (however, commands are not case-sensitive). When Modify-level access is enabled, the command line prompt displays “=” following the device name.

Login name (cannot be changed): admin

Default password: system

The password can be changed from the Modify level.

3.2.1 Example of Changing Access Level

Initial display:

device-name>

Enter the login command to enter Modify Access Level using the admin user name and password (this is an example only; the password does not actually appear):

device-name>

device-name> login Login:admin Password:system device-name=

Enter ? to view the available non-global commands in Modify level:

device-name= ?

arp	- Show ARP Table
clear	- clear ARP, counters, log, STAT LED.
Default	- Return module to factory default values.
Login	- Enter higher Access Level
loginCfg	- Set login parameters such as password
logout	- Return to Monitor Access Level
[no] monport	- Specify the monitor port/ports to be monitored
Ping	- Send ICMP Echo requests.
Restart	- Restart the IO LAN module firmware
sessionTimeout	- Sets/Displays session inactivity timeout
shConfig	- Set/Show Shell settings
[no] telnetd	- Enables/Disables telnet server.
Time	- Change the internal IO LAN clock.

3.3 arp

Non-Global Command

This command provides the following methods for modifying the Address Resolution Protocol

(ARP) table.

arp shows ARP table.

arp add adds a static entry in ARP table.

arp clear clears arp cache

Entering arp displays the current ARP table with the same display as show arp.

3.3.1 arp Command Format

arp [add <IP Address> <MAC Address> | clear]

3.3.2 Examples

Adding an Entry in the ARP Table

Screen Display
device-name=arp add 10.10.0.50 00:09:91:40:77:80 Entry Added device-name=

Displaying the ARP Table with the new Entry

Screen Display
device-name=arp 01-JAN-2000 06:29:35.0231 <<< ARP Cache >>> 10.10.0.50 at 00:09:91:40:77:80 published on gei0 10.10.0.165 at 00:25:64:9e:02:c0 on gei0 device-name=

Clearing the ARP Cache

Screen Display
device-name=arp clear ARP Cache Cleared device-name=

Displaying the Cleared ARP Cache

Screen Display
device-name=arp 01-JAN-2000 00:50:49.0000 <<< ARP Cache >>> device-name=

3.4 blinkId

Global Command

This command displays the current setting, starts, or stops the module's LED Identification pattern. This command is useful for identifying a specific Controller in a system with multiple Controllers.

After receiving the blinkId begin command, the module will continue to blink its Identification LED pattern until one of the following occurs:

- The module receives the *blinkId end* command
- the operation is commanded to stop via DCP (from PAC Machine Edition or a third-party controller),

- the module is restarted or encounters a fatal error and is configured to present a fatal error blink code.

If the Identification LED pattern has been started via DCP, the blinkId end command stops the Identification LED pattern.

3.4.1 blinkId Command Format

blinkId [begin | end]

3.4.2 Examples

Displaying the Identification LED Pattern Status

```
device-name= blinkId
Identification Blink Pattern Status:  Stopped
device-name=
```

Starting the Identification LED Pattern

Screen Display
device-name= blinkId begin Identification Blink Pattern Started device-name=

Stopping the Identification LED Pattern

Screen Display
device-name= blinkId end Identification Blink Pattern Stopped device-name=

3.5 clear arp

Non-Global Command

This command clears the Address Resolution Protocol (ARP) cache. The command clear arp is equivalent to the command arp clear, described on page 71.

3.5.1 clear arp Command Format

clear arp

3.5.2 Example

Clearing the ARP Cache

Screen Display
device-name=clear arp ARP Cache Cleared device-name=

3.6 clear counters

Non-Global Command

This command clears specified counters or clears all counters.

All clears all counters

Icmp clears Internet Control Message Protocol and Internet Group Management Protocol counters

Ip clears Internet Protocol counters

Network clears network counters

profinet [all | <DeviceNum>] clears PROFINET counters. See page 75 for more information.

rdnMedia clears Media Redundancy counters

sm clears Shared Memory counters

tcp clears Transmission Control Protocol counters

udp clears User Datagram Protocol counters

3.6.1 clear counters Command Format

clear counters [all | icmp | igmp | ip | network | profinet [all | <deviceNumber>] | rdnMedia | sm | tcp | udp]

3.6.2 Examples

Clearing UDP Counters

Step 1. Use show udp to display the UDP details and counters.

Screen Display
<pre>device-name=show udp 01-JAN-2000 01:47:26.0590 <<< UDP Status >>> Udp: 191 packets received 1 packets to unknown port received 0 packet receive errors 6 packets sent <<< UDP Counters >>> InDatagm= 000000bfH NoPorts = 00000001H InErrors= 00000000H OtDatagm= 00000006H device-name =</pre>

Step 2. Clear the UDP counters.

Screen Display
<pre>device-name=clear counters udp UDP Counters Cleared iolan-controller01=</pre>

Step 3. Use show udp to display the UDP details and counters. The counters have been cleared.

Screen Display
<pre> device-name=show udp 01-JAN-2000 01:58:09.0681 <<< UDP Status >>> Udp: 210 packets received 1 packets to unknown port received 0 packet receive errors 6 packets sent <<< UDP Counters >>> InDatagm= 00000000H NoPorts = 00000000H InErrors= 00000000H OtDatagm= 00000000H iolan-controller01= </pre>

Clearing All Counters

Screen Display
<pre> device-name= clear counters all All Counters Cleared device-name= </pre>

3.7 clear counters profinet

Global Command

This command clears all Profinet counters the PROFINET Controller maintains locally for all of the currently configured devices, or for only the single device specified.

3.7.1 clear counters profinet Command Formats

clear counters profinet [all | <DeviceNum>]

<all> Indicates that the counters for all PROFINET Devices should be cleared.

<DeviceNum> Identifies the Profinet Device that should have its counters cleared. Refers to the Device number assigned to the PROFINET Device by PAC Machine Edition.

3.7.2 Examples

Clearing PROFINET Counters for a Specific Device

Screen Display
<pre> device-name= clear counters profinet 4 Profinet counters for device 4 cleared device-name= </pre>

Clearing All PROFINET Counters

Screen Display
<pre> device-name= clear counters profinet all All Profinet counters cleared device-name= </pre>

3.8 clear log

Non-Global Command

This command clears the Controller's Local Log table. This also resets the counter of overflowed log entries.

3.8.1 clear log Command Format

clear log

3.8.2 Example

Clearing the Local Log Table

Step 1. Use clear log to clear the Local Log table.

Screen Display	
device-name=	clear log
	STAT LED modified
	Local log table cleared
device-name=	

Step 2. Use log to display the Local Log table.

Screen Display	
device-name=	log
	IC695PNC001 PROFINET Controller: Ver. 1.00 (44A1)
	Log displayed: 06-JUL-2000 19:01:00.7001
	Log last cleared: 06-JUL-2000 19:00:00.5000
	Number of Entries Overflowed: 0
No.	Date Time Loc Description
---	-----
	log is empty
device-name=	

3.9 clear statLED

Non-Global Command

Normally, the STAT LED is solid green at power-up and is turned off when a fault (other than a fault logged due to restart) is logged in the Controller's Local Log. This command returns the module's STATUS LED to solid green (the Local Log table is not cleared). The STATUS LED remains ON until another fault is entered in the local log table. This command has no effect if the module has an invalid MAC Address (in that case, the STATUS LED is red blinking).

3.9.1 clear statLED Command Format

clear statLED

3.9.2 Example

Screen Display
<pre>device-name= clear statLED STAT LED turned ON device-name=</pre>

3.10 default

Non-Global Command

This command returns the PROFINET Controller parameters to their factory default values. However, it does not affect the active or stored MAC addresses. This causes the following items to be changed to their default values:

- Node Name
- Modify-level Command Line Interface password
- IP Configuration (IP Address, subnet mask, gateway)
- Telnet Configuration (enabled/disabled, max number of connections)
- Media Redundancy Configuration

3.10.1 default Command Format

default

3.10.2 Example

Screen Display
<pre>device-name= default Return Module to Out-of-the-box Factory Default Values? (Y/N) WARNING! Doing this will also cause the module to restart itself. Y Applying Factory Default ValuesComplete Restarting...</pre>

3.11 loginCfg

Non-Global Command

This command changes the Modify Access level login password.

Passwords are case-sensitive. The following characters are allowed for passwords: Any alphanumeric character and in addition:

` ~ @ ^ & * _ - + = { } [] \ / ; : < , (comma) . (period)

Passwords must be between 4 and 10 characters.

loginCfg password prompts to set new Modify access level.

loginCfg default returns the Modify access level password to its default value.

3.11.1 loginCfg Command Format

loginCfg [default | password]

3.11.2 loginCfg password Parameters

<oldPassword>	Specifies the current password that will be replaced with the newPassword. If the oldPassword value does not equal the current password, the command returns an error.logincfg
<newPassword>	Specifies the new password to replace the current password.

3.11.3 Examples

Returning the Modify Access Level Password to its Default Value

Screen Display
device-name= loginCfg default login password changed to default device-name=

Changing the Modify Access Level Password

Screen Display
device-name= loginCfg password Enter the existing Password : system Enter the new Password : ge123 Confirm the new password : ge123 Modify level login password changed device-name=

3.12 logout

Non-Global Command

This command returns the Command Line Interface to the Monitor Access Level.

3.12.1 logout Command Format

logout

3.12.2 Example

Screen Display
device-name=logout device-name>

3.13 monport

Non-Global Command

This command enables or disables port monitoring. Port monitoring allows a port to monitor network activity on other ports and is useful when using network sniffer tools to check network bus activity and diagnose connection problems. Entering no monport disables port monitoring. Each command completely overwrites any previous monport settings. The current monitor state of the ports can be viewed using this command. In addition, the “MonitoredBy” column in the output of the show port command provides the monitor state information.

3.13.1 monport Command Format

[no] monport <monitorPort> [<portToMonitor> [<portToMonitor>] [<portToMonitor>]]

<monitorPort>	Species the port to monitor (or mirror) all traffic that is sent or received on selected other ports. Valid values are 1, 2, 3 or 4. The value must not be the same as any of the <portToMonitor> values in the same command string. If the specified port is not available, the command returns an error.
<portToMonitor>	Specifies one of the ports for the monitor port to monitor. Valid values are 1, 2, 3, 4, or “int” (which represents the internal Ethernet port). The value must not be the same as any <monitorPort> or any other <portToMonitor> values within the same command string.

3.13.2 Examples

Displaying Monitor Port Status

Screen Display	
<pre>device-name= monport <<< Monitor Port Status >>> Port MonitoredBy ----- 1 (Ext) NA 2 (Ext) NA 3 (Ext) NA 4 (Ext) NA 5 (Int) NA device-name=</pre>	

Setting Port 3 to Monitor Ports 1, 2 and 4

Screen Display	
<pre>device-name= monport 3 < 1 2 4 <<< Monitor Port Status >>> Port MonitoredBy ----- 1 (Ext) Port 3 2 (Ext) Port 3 3 (Ext) Monitor 4 (Ext) Port 3 5 (Int) NA device-name=</pre>	

Disabling Port Monitoring

Screen Display	
device-name= no monport	
<<< Monitor Port Status >>>	
Port	MonitoredBy
-----	-----
1 (Ext)	NA
2 (Ext)	NA
3 (Ext)	NA
4 (Ext)	NA
5 (Int)	NA
device-name=	

Setting Port 1 to Monitor Port 3

Screen Display	
device-name= monport 1 < 3	
<<< Monitor Port Status >>>	
Port	MonitoredBy
-----	-----
1 (Ext)	Monitor
2 (Ext)	NA
3 (Ext)	Port 1
4 (Ext)	NA
5 (Int)	NA
device-name=	

3.14 ping

Non-Global Command

This command sends ICMP Echo requests to a specified network device. The *ping* operation must complete before another command can be issued to the same Command Line Interface session. For example, if a very long *ping* operation (such as a large count *<cnt>* value) is executed, it is not possible to stop the operation.

3.14.1 ping Command Format

ping <pHostpHost> [<cnt>] [<sch>] [<len>]

The output of the ping command cannot be customized.

<pHost>	The IP address of the remote node to be pinged (send ICMP Echo Request messages). Enter in standard IP dotted-decimal form.
<cnt>	The number of times the ping is to be repeated. Default is 3. Range is 1 through 65535.
<sch>	The maximum amount of time to wait for a reply to each ping. The timeout interval is expressed in 1-second units. Default is 1 second. Range is 0 through 10. If you enter 0, a timeout value of 1 second is used.
<len>	The number of data bytes in the Echo Request message. The actual data pattern cannot be changed. Default length is 64 bytes. Range is 12 through 4096 but is limited by system buffer memory.

3.14.2 Examples

Sending an ICMP Echo Request

The following example repeats the ping operation five times with a timeout value of 5 seconds.

Screen Display
<pre> device-name= ping 10.10.0.103 5 5 128 Ping initiated Command: ping 10.10.0.103 5 5 128 Pinging 10.10.0.103 (10.10.0.103) with 128 bytes of data: Reply from 10.10.0.103 bytes=128 ttl=64 seq=0 time=0ms Reply from 10.10.0.103 bytes=128 ttl=64 seq=1 time=5ms Reply from 10.10.0.103 bytes=128 ttl=64 seq=2 time=10ms Reply from 10.10.0.103 bytes=128 ttl=64 seq=3 time=10ms Reply from 10.10.0.103 bytes=128 ttl=64 seq=4 time=10ms --- 10.10.0.103 ping statistics --- 5 packets transmitted, 5 received, 0% packet loss, time 20010 ms rtt min/avg/max = 0/7/10 ms device-name= </pre>

Sending an ICMP Echo Request with Default Values

Screen Display
<pre> device-name= ping 10.10.0.103 Ping initiated Command: ping 10.10.0.103 3 1 64 Pinging 10.10.0.103 (10.10.0.103) with 64 bytes of data: Reply from 10.10.0.103 bytes=64 ttl=64 seq=0 time=0ms Reply from 10.10.0.103 bytes=64 ttl=64 seq=1 time=5ms Reply from 10.10.0.103 bytes=64 ttl=64 seq=2 time=10ms --- 10.10.0.103 ping statistics --- 3 packets transmitted, 3 received, 0% packet loss, time 2010 ms rtt min/avg/max = 0/5/10 ms device-name= </pre>

3.15 restart

Non-Global Command

This command restarts the module. This command has the same effect as pressing the Restart pushbutton. An entry indicating a command shell restart occurred is entered into the local log.

3.15.1 restart Command Format

restart

3.15.2 Example

Screen Display
<pre> device-name= restart Do you want to restart the module <Y/N> Y Restarting module </pre>

3.16 SessionTimeout

Global Command

This command sets or displays the session inactivity timeout value for the current Command Line Interface session. Entering the command without the newTimeout parameter displays the current timeout setting.

3.16.1 sessionTimeout Command Format

sessionTimeout <newTimeout>

<newTimeout> Specifies the new session inactivity timeout value in seconds. It determines the amount of time the Command Line Interface session can remain inactive (no keyboard input) before closing the session. The default value is 600 seconds (10 minutes). Values between 1 and 604,800 (1 week) inclusive are valid.

3.16.2 Examples

Changing the Session Timeout Value

Screen Display
device-name= sessionTimeout 900 Session Inactivity Timeout Set To 900 seconds device-name=

Displaying the Session Timeout Value

Screen Display
device-name= sessionTimeout Session Inactivity Timeout: 900 seconds device-name=

3.17 telnetd

Non-Global Command

This command enables or disables the telnet server. To take effect, change in telnet server status requires a power cycle or restart . telnet is disabled by default and is enabled by accessing the Command Line Interface by connecting directly to the Controller via the Micro USB port. This parameter is preserved over a power cycle.

3.17.1 telnetd Command Format

[no] telnetd [<maxConnections>]

<maxConnections > The maximum number of telnet connections allowed. Valid values are 1 through 16 inclusive. The default is 2.

3.17.2 Examples

Enabling Telnet

Step 1. Use telnetd to enable the Telnet server.

Screen Display
<pre>device-name= telnetd Enabling telnet Server telnet changes will not take effect until next powerup or restart device-name=</pre>

Step 2. Restart or power cycle the PNC. Use show telnet to display the Telnet status.

Screen Display
<pre>{Power-cycle occurs} device-name> show telnet 01-JAN-2000 05:44:17.0000 <<< Telnet Info >>> telnet Status: Enabled Max telnet Connections: 16 Active telnet Connections: 1 device-name></pre>

Changing the Maximum Number of Telnet Connections

Step 1. Change the maximum connections.

Screen Display
<pre>device-name= telnetd 4 Max telnet Connections changed to 4 telnet changes will not take effect until next powerup or restart device-name=</pre>

Step 2. Restart or power cycle the PNC. Use show telnet to display the Telnet status.

Screen Display
<pre>{Power-cycle occurs} device-name> show telnet 01-JAN-2000 05:44:17.0000 <<< Telnet Info >>> telnet Status: Enabled Max telnet Connections: 4 Active telnet Connections: 1 device-name></pre>

Disabling Telnet Connections

Step 1. Use no telnetd to disable all telnet connections.

Screen Display
<pre>device-name= no telnetd telnet changes will not take effect until next powerup or restart device-name=</pre>

Step 2. Restart or power cycle the PNC. Use show telnet to display the Telnet status.

Screen Display	
<pre>{Power-cycle occurs} device-name> show telnet 01-JAN-2000 05:44:17.0000 <<< Telnet Info >>> telnet Status: Disabled Max telnet Connections: 0 Active telnet Connections: 0 device-name></pre>	

3.18 time

Non-Global Command

This command can be used to display the PNC's current time or to change the internal module clock

Note that the PNC synchronizes its internal clock with the PACSystems CPU at module powerup. Changes made using the time command do not persist over power cycles. For more information see "Time Synchronization" in the PROFINET Controller Manual, GFK-2571.

3.18.1 time Command Format

time [<date>] [<time>]

Format for date: DD-MON-YYYY

Format for time: <HH>[:<MM>[:<SS>]]

< DD >	Specifies the day of the month with a two-digit decimal number. Valid values are from 1 to 28 for all months and 29 to 31 depending on the month.
< MON >	Specifies the month of the year in 3-character format (JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC). The month values are not case-sensitive.
< YYYY >	Specifies the year with a four-digit decimal number. Valid values are from 2000 to 2105 inclusive.
< HH >	Specifies the hour of the day in 24-hour format using two decimal digits. The valid values are 00 through 23 inclusive.
< MM >	Specifies the minutes within the hour using two decimal digits. The valid values are 00 through 59 inclusive. If unspecified, defaults to 00.
< SS >	Specifies the seconds within the minute using two decimal digits. The valid values are 00 through 59 inclusive. If unspecified, defaults to 00.

3.18.2 Examples

Displaying the PNC's Current Time

Screen Display	
<pre>device-name= time 01-JAN-2000 05:44:17.0000 device-name=</pre>	

Changing the Date

Screen Display
device-name= time 22-FEB-2007 13 22-FEB-2007 13:00:00.0000 device-name=

Changing the Date and Time

Screen Display
device-name= time 29-OCT-2008 20:30:55 29-OCT-2008 20:30:55.0000 device-name=

Technical Support & Contact Information

Home link: <http://www.Emerson.com/Industrial-Automation-Controls>

Knowledge Base: <https://www.emerson.com/Industrial-Automation-Controls/support>

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