

GE Intelligent Platforms
Programmable Control Products

TCP/IP Ethernet Communications

for Series 90*-30 CPU372 *PLUS* and CPU374 *PLUS*
Station Manager Manual, GFK-2383A

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Contents

Chapter *Introduction*

1

This manual describes how to access and use the Station Manager features of the Series 90-30 PLUS Ethernet interface, which is embedded in the Series 90-30 CPU models IC693CPU372 PLUS and IC693CPU374 PLUS.

Chapter 1, *Introduction*, is an overview of the Station Manager.

Chapter 2, *Getting Started*, explains how to use the Station Manager and describes how the Station Manager can provide diagnostic information when setting up the Ethernet interface.

Chapter 3, *Station Manager Commands*, is a reference to all of the Station Manager commands.

Appendix A, *Tallies of Ethernet Tasks*, lists the types of information that may be displayed using the TALLY command.

Appendix B, *Exception Log Events*, describes the information that may be displayed using the LOG and LOG Z commands.

For general information about Ethernet communications for the Series 90-30 PLUS PLCs, please refer to GFK-2382, *TCP/IP Ethernet Communications for Series 90-30 CPU372 PLUS and CPU374 PLUS*.

Station Manager Overview

The Station Manager is a built-in function of an Ethernet interface. The Station Manager function can be used to monitor the Ethernet interface itself and check its operation on the network. If a problem occurs, the Station Manager may be used to pinpoint the source.

The Station Manager provides:

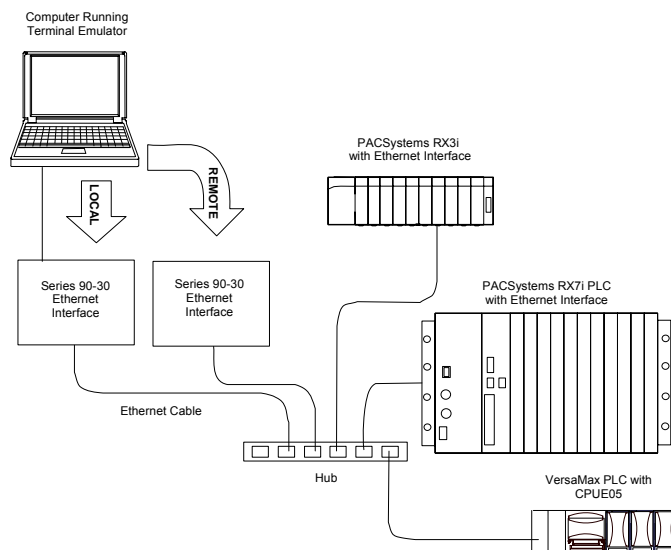
- An interactive set of commands that can be used to interrogate and control the Ethernet interface.
- The ability to observe and modify internal statistics, an exception log, and advanced user parameters (AUPs).
- Password security for commands that change the Ethernet interface parameters or states.

The Station Manager function operates in background mode when the Ethernet interface is in its Operational state. It cannot be accessed during Powerup Diagnostics or when using the Software Loader. Station Manager functionality may also be unavailable during very heavy communications load.

Using the Station Manager

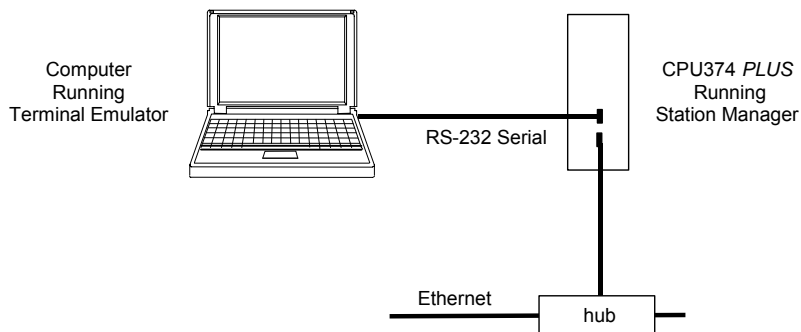
The operator interface to the Station Manager function is a computer running a terminal emulator such as the Hyper Terminal application provided with Windows operating system software. An ASCII terminal can also be used.

The computer or terminal can be connected locally at the Station Manager port, or it can be connected remotely at another device on the network via the UDP network protocol.



Making a Local Connection to the Station Manager

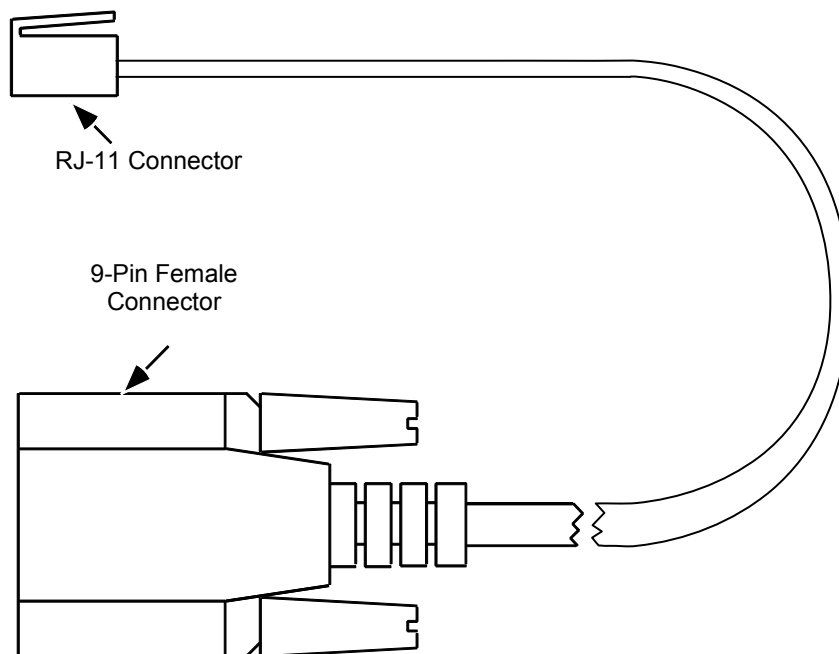
For local operation, connect the computer or terminal to the RS-232 Station Manager port on the CPU372 PLUS or CPU374 PLUS, using the Station Manager serial cable IC693CBL316A.



The following cable is available from GE :

IC200CBL316A

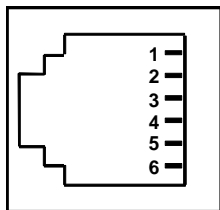
Station Manager Cable



The end of the cable with the six-pin RJ-11 connector connects to the Station Manager port on the CPU372 PLUS or CPU374 PLUS. The end of the cable with the nine-pin D-type connector connects to the RS-232 serial port on your PC or terminal.

Station Manager Port Pin Assignments

The Station Manager port pin assignments are shown below. For more information about this port, refer to GFK-2382, *TCP/IP Ethernet Communications for Series 90-30 CPU372 PLUS* and *CPU374 PLUS*.



<i>Pin Number</i>	<i>Signal</i>	<i>Direction</i>	<i>Description</i>
1*	CTS	IN	Clear to Send
2	TD	OUT	Transmit Data
	SG		Signal Ground
	SG		Signal Ground
	RD	IN	Receive Data
6	RTSDTR	OUT	Ready to Send

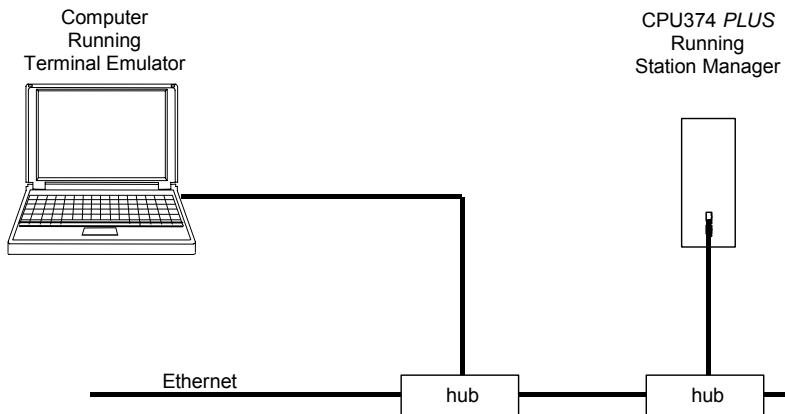
* Pin 1 is located at the top of the serial port connector as viewed from the front of the module.

Matching the Port Settings

The serial port of the computer or ASCII terminal and the Station Manager port must use the same communications parameters. If you need to configure the Ethernet interface Station Manager port, refer to GFK-2382, *TCP/IP Ethernet Communications for Series 90-30 CPU372 PLUS* and *CPU374 PLUS* for configuration instructions.

Making a Remote Connection to the Station Manager

The Station Manager function within the CPU372 *PLUS* and CPU374 *PLUS* can be also be accessed from a terminal that is connected to another device running the Station Manager:



Communicating with the Station Manager Remotely

To communicate with the Station Manager from a terminal connected to another node on the network, use the Station Manager *REM(ote)* command to establish communications with the embedded Ethernet interface, then enter the command to be executed by the Ethernet interface. When invoked remotely, the Station Manager software processes the command as if it had been entered locally. The Station Manager then automatically directs output from the command over the network to the station that issued the request. If another terminal is also connected to the Ethernet interface and running the Station Manager locally, there is no indication at the local Station Manager terminal that a remote command is being processed.

Both the local and remote access share the same security level. See the LOGIN and LOGOUT command descriptions.

Note: The Series 90-30 *PLUS* Ethernet interface supports Remote Station Manager operation via UDP network protocol. It does not support IEEE 802.3 Remote Station manager operation using a MAC address. It cannot be accessed remotely from GE CNC OSI-Ethernet Interfaces.

Chapter *Getting Started*

2

This chapter explains how to use the Station Manager and describes how the Station Manager can provide diagnostic information when setting up the Series 90-30 PLUS Ethernet interface.

- Types of Station Manager Commands
 - Monitor Commands
 - Modify Commands
 - Station Manager Commands for Monitor or Modify Mode
- Entering Commands and Reading the Display
 - Entering Command Parameters
 - Station Manager Display Format
- Checking IP Addresses
 - Checking the IP Address of the Ethernet Interface
 - Verifying that the IP Address of the Ethernet Interface is Unique
- Changing the Backup Parameters of the Ethernet Interface
 - Changing the Backup Configuration Parameters
 - Changing the Backup Advanced User Parameters
- Testing Communications on the Network
- Using the Station Manager for Network Troubleshooting
 - Displaying Information about a Node
 - Viewing the Exception Log
 - Checking the Network Connection

Types of Station Manager Commands

There are two types of Station Manager commands, *Monitor* commands and *Modify* commands. Both types can be used either locally or remotely.

Monitor Commands

Monitor commands are available to anyone using the Station Manager. These commands provide information about the Ethernet interface and the network. Executing the *Monitor* commands does not affect the operation of the Ethernet interface or the network.

Accessing Monitor Mode

Press the Enter key on the computer or ASCII terminal. The Station Manager responds with the Station Manager Monitor mode prompt:

>

You can enter any *Monitor* commands from this prompt.

Modify Commands

Modify commands perform functions that may change the operation of the Ethernet interface. Access to *Modify* commands is password-protected. Password protection helps prevent inadvertent misuse of the *Modify* commands. For the greatest protection, restrict the number of people who know the password, restrict access to the Station Manager terminal, and always log off when you leave the Station Manager terminal.

At the *Modify* level, if no commands are executed within a configurable timeout period, the *Modify* login expires and you will have to log in again. By default, the timeout period is 10 minutes. It can be changed as needed using the *CHLTIME* command.

Accessing Modify Mode

To log in to *Modify* mode, type from the Monitor-level ">" prompt:

```
login <RET>
```

The password prompt appears:

```
Password:
```

Type in the password and press the Enter key. The password is case-sensitive and can include special characters. The default password is "system" (lower case).

If the entered password is correct, the *Modify* prompt appears.

=

If you want to change the password or if you have forgotten the password, refer to the instructions in Chapter 3, *Commands*, for using the *CHPARM STPASSWD* command.

You can execute all *Monitor* and *Modify* commands from the *Modify* prompt.

Station Manager Commands for Monitor or Modify Mode

The following table lists all of the Station Manager commands, and shows whether they are Monitor-level (always available) or Modify-level commands:

Command	Function Performed	Available in this Mode
bootp	Temporarily assign TCP/IP parameters.	Modify
cd	Change file system working directory	Monitor and Modify
channel	Display individual communication channel information	Monitor and Modify
chltime	Change login inactivity timeout	Modify
chparm	Change backup Advanced User Parameters	Modify
chsosw	Change backup Ethernet configuration	Modify
chtime	Change internal Ethernet clock	Modify
clear	Clear selected items	Modify
del	Delete file from file system current working directory	Modify
dir	Display file system directory contents	Monitor and Modify
egdcmd	Send an EGD command to remote node	Modify
egdread	Display Ethernet Global Data exchange data	Monitor and Modify
egdwrite	Modify Ethernet Global Data exchange data	Modify
exs	Display Extended Status for CommReqs from PLC logic	Monitor and Modify
formats	Display web server reference formats	Monitor and Modify
?, help	Display Station Manager command set	Monitor and Modify
killms	Delete a Modbus/TCP server connection	Modify
killss	Delete an SRTP server connection	Modify
log	Display current exception log	Monitor and Modify
login	Enter Modify access level	Monitor and Modify
logout	Exit Modify access level	Modify
ltime	Display login inactivity timeout	Monitor and Modify
mkdir	Create new file system directory	Modify
net	Force network offline/online	Modify
node	Display basic identification	Monitor and Modify
ok	Reset STAT LED (log isn't cleared)	Modify
parm	Display the Advanced User Parameters	Monitor and Modify
ping	Send ICMP Echo requests	Modify
plcread	Display CPU memory	Monitor and Modify
plcwrite	Modify CPU memory	Modify
rem	Send command to remote node	Modify
rename	Rename a file in the current working directory	Modify
repp	Display latest ping results	Modify
restart	Restart Ethernet firmware	Modify
rmdir	Remove file system directory	Modify
sosw	Display Ethernet configuration	Monitor and Modify
stat	Display various operating status	Monitor and Modify
stopp	Stop ping in progress	Modify
tally	Display various operating counters	Monitor and Modify
time	Display internal Ethernet clock	Monitor and Modify
trace	Display activity for debug	Modify
xchange	Display individual EGD exchange information	Monitor and Modify

Entering Commands and Reading the Display

Entering Command Parameters

In the command descriptions in Chapter 3, *Commands*, brackets and braces are used to show optional or alternative parameters for a command. These brackets and braces are NOT part of a command; do not include them when entering a command.

<i>Bracket Type</i>	<i>Indicates</i>	<i>Example Command</i>	<i>Example Entry</i>
< >	Symbolic parameter name	tally <tasks>	tally c
[]	Optional parameter	log [z]	log
{ }	Alternative parameters	net { on off }	net on

Enter the rest of the command exactly as it is shown. Do not include extra spaces or tab characters within commands. All data entered for the command is converted to lower case unless it is enclosed in double quotes (“ ”).

Note: The Station Manager is a low-priority task. The command response time depends on the communication load of the Ethernet interface. Extremely high load conditions may cause the loss of input or output characters. The Station Manager may not be able to process commands until the load is decreased.

Entering Numeric Values

Numeric values may be entered in decimal or hexadecimal format. For a hexadecimal value, enter the trailing “H” (either upper or lower case) as its last character.

Entering Control Characters

The Station Manager accepts the ASCII control characters listed below. Other control characters are ignored.

<i>Control Character</i>	<i>Usual Keyboard Function</i>	<i>Function</i>
BS	CTRL-H (Backspace)	Delete previous character
DEL	Delete	Delete previous character
DC1	CTRL-Q	Resume output to the display
DC2	CTRL-R	Recall previous command line(s)
DC3	CTRL-S	Stop output to the display
CAN	CTRL-X	Cancel the current input line
CR	Return (Enter)	Terminate line and execute command

Entering a Multi-line Command

Use the character pair `\<CR>` to continue a command on the next line. The `\` (backslash) character is not part of any command.

Repeating a Prior Command Entry

The Station Manager stores up to the last 10 command lines. This stored list is cleared at restart or power-up. If you want to repeat a command, press CTRL-R as many times as needed.

Press CTRL-X to clear the current Station Manager command line.

Station Manager Display Format

The Station Manager display format depends on the type of data being displayed. The different formats are described below.

Numeric Values

Most numeric values are displayed in decimal format. A few values are displayed in hexadecimal format. Some values are displayed in both decimal and hexadecimal. Hexadecimal values are displayed with an "H" as their last character. An example of numeric output is shown below:

```
ifrag_tmr = 64 (40H)
```

Byte String Values

Byte strings represent each successive byte as a pair of hexadecimal digits enclosed in double angle brackets (`<<...>>`).

```
MAC Address = <<080019010842>>
```

IP Addresses

IP addresses are displayed and entered in dotted decimal format:

```
IP Address = 10.0.0.2
```

Checking IP Addresses

When setting up the system, you can check the IP address of the Ethernet interface using the Local Station Manager, and also verify that it is unique by accessing it from another device on the network. *It is very important not to duplicate IP addresses.*

Checking the IP Address of the Ethernet interface

With the terminal connected directly to the Station Manager port on the Ethernet interface, issue the *NODE* command:

```
> node
IC693 Embedded Ethernet Interface
Copyright (c) 2005. All rights reserved.
Version 3.30 (19A1) TCP/IP
Version 3.30 (16A2) Loader
IP Address = 10.0.0.2      Subnet Mask = 255.255.0.0
Gateway = 0.0.0.0
MAC Address = <<080019010203>>
SNTP Not Configured

Station Manager Port:
  Data Rate = 9600, Parity = NONE, Flow Control = NONE

Source of Soft Switches: PLC Configuration
Source of IP Address:    Configuration

June 28, 2005  7:11:19.2
Date/time initialized from PLC CPU
```

Verifying that the IP Address of the Ethernet interface is Unique

Make sure the Ethernet interface does not have the same IP address as another node.

1. Disconnect the LAN cable from the Ethernet interface.
2. Log on to another device on the network
3. From the other device, ping the IP address assigned to the Ethernet interface.

If you get an answer to the ping, it means the chosen IP address is already in use by another node. You *must* correct this situation by assigning unique IP addresses.

Changing the Backup Parameters of the Ethernet Interface

Whenever the Ethernet interface is restarted, it runs powerup diagnostics. The *EOK* LED blinks rapidly, while the other LEDs remain off. The Station Manager is not available during power-up. It is also not available during a software load.

After successful diagnostics, the Ethernet interface receives its configuration data. The Ethernet interface may also receive an Advanced User Parameters file, if one has been set up for the application.

If configuration data is not received, the Ethernet interface uses its backup configuration. (Each Ethernet interface device is shipped from the factory with a valid set of default backup configuration data.)

Note: The Factory default configuration data contains zero IP addressing data, which does not permit proper Ethernet network operation. Non-zero IP addressing data (IP address, subnet mask, and optional gateway IP address) must be setup prior to normal operation. Once setup, the Ethernet Interface will save the IP addressing data in its backup configuration for future use. Zero IP addressing data is valid only when the actual IP addressing data will subsequently be received from a BOOTP server on the user's network.

If necessary, the Station Manager can be used to change the backup configuration or advanced parameters. These changes are only in effect until a valid configuration is received. Changing the backup configuration or advanced parameters requires access to the Modify-level commands: *CHPARAM* and *CHSOSW*. Both commands are described in Chapter 3, *Commands*.

Changing the Backup Configuration Parameters

Use the *CHSOSW* command to change the following backup parameters for the Ethernet interface:

- IP address
- Subnet mask
- Gateway IP address
- SNTP timestamp synchronization for Ethernet global data
- Maximum simultaneous web server connections
- Maximum number of simultaneous FTP connections
- Station Manager port data rate (4800, 9600, 19200, 38400, 57600, 115200)
- Station Manager port parity (NONE, ODD, EVEN)
- Station Manager port flow control (NONE, HARDWARE)

Changing the Backup Advanced User Parameters

Use the *CHPARM* command to change the backup Advanced User Parameters for the Ethernet interface. A complete list of the Advanced User Parameters for the Ethernet interface is included with the description of the *PARM* command in Chapter 3, Commands. For the most part, changes to these parameters are NOT recommended. However, *CHPARM* might be used to temporarily change:

- The Station Manager password used to access the Modify-level commands
- The FTP password used to store web page files to the Ethernet interface.

Testing Communications on the Network

During system setup, use the Station Manager to test each installed Ethernet interface to be sure that each is operational and configured with proper TCP/IP parameters. To do that:

1. Enter the LOGIN command:

```
login
```

The password prompt appears:

```
Password:
```

2. The factory default password is:

```
system (lower case).
```

Enter the default password, or other password if it has been changed.

3. If the password matches the current password for the Modify level, the Modify prompt appears:

```
=
```

4. Use the *PING* command to test the ability to reach individual nodes. The test works by sending an ICMP echo request message to a specific destination and waiting for a reply. Most nodes on TCP/IP networks implement *ping*.

PING can reach remote IP networks through gateways.

Enter the *PING* command using the IP address for the destination to be tested. A typical *PING* command is shown below:

```
= ping 10.0.0.2 10
Ping initiated

<<< Ping Results >>>
Command: ping 10.0.0.2 10 100 64
Sent = 10, Received = 10, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms) min/avg/max 0/1/10
```

For more information about using *PING* and other Station Manager commands, please refer to Chapter 3, *Commands*.

Using the Station Manager for Network Troubleshooting

The PLC Fault Table and the module LEDs provide useful troubleshooting information, as described in GFK-2382, *TCP/IP Ethernet Communications for Series 90-30 CPU372 PLUS and CPU374 PLUS User's Manual*. In addition, the Station Manager commands can be used to identify and correct problems. Three Station Manager commands frequently used for troubleshooting are mentioned below.

Displaying Information about a Node

Use the Monitor-mode NODE command to display identifying information about the Ethernet interface or a remote node. For example:

```
> node
IC693 Embedded Ethernet Interface
Copyright (c) 2005. All rights reserved.
Version 3.30 (19A1) TCP/IP
Version 3.30 (16A2) Loader
IP Address = 10.0.0.2      Subnet Mask = 255.255.0.0
Gateway = 0.0.0.0
MAC Address = <<080019010203>>
SNTP Not Configured

Station Manager Port:
  Data Rate = 9600, Parity = NONE, Flow Control = NONE

Source of Soft Switches: PLC Configuration
Source of IP Address:    Configuration

June 28, 2005  7:11:19.2
Date/time initialized from PLC CPU
```

Viewing the Exception Log

When the Ethernet interface software detects an unusual condition, it records information about the condition in its *exception log*. The exception log can be viewed using the Station Manager LOG command. For example:

```
> log
<<< Exception Log >>>
IC693 Embedded Ethernet Interface version 3.30 (19A1)
Log displayed 04-JUN-2005 11:25:28.3
Log initialized using valid RAM information
Log last cleared 31-MAY-2005 09:33:46.9
  Date           Time           Event Count  Entry 2 through Entry 6
  03-APR-2003   09:33:47.0    1H    1H    0000H 0001H 0000H 0000H 0000H
  03-APR-2003   09:33:47.0    0H    1H    MII/PHY Fail
  03-APR-2003   14:01:22.2    20H   1H    0001H 8080H 0000H 0001H 0117H
->03-APR-2003   09:33:47.2    2aH   1H    0004H 0000H 0000H 0004H 0192H
```

Each new (not repeating) log event is also sent to the PLC Fault Table, where it can be viewed using the PLC Programmer or a web browser. Appendix B, Exception Log Event Descriptions, lists the log events, and shows how to interpret the fault entries that are displayed.

Checking the Network Connection

If the LAN LED is off, the Ethernet interface is not able to send or receive on the network. The usual cause is some type of hardware problem. If this occurs, follow the procedure below.

1. Check to be sure that the network cables are securely fastened to the Ethernet interface connector and to the network connection device (hub, switch, etc.).
2. Use the Station Manager to check the Network Interface task using a TALLY L command. The TALLY L command displays a list of tallies for all network interface tasks, and will identify specific communications errors that may be occurring.

If this station is the only one experiencing problems:

1. Verify that the network cable is properly connected to the Ethernet interface and to the network connection device.
2. Verify that the network connection device is operating properly on the network. (Are other devices operating on the same network segment?)
3. Make sure the PLC module is seated and secured properly.
4. Replace the network cable with a known good cable.
5. Verify that the system power supply is properly grounded.

If all stations are experiencing the problem, the network is probably at fault. Contact the network administrator.

When the STAT LED is ON

Sometimes problems can occur even when the STAT LED is on, indicating normal operation. In that case, check if the LAN LED is steadily on, indicating that the Ethernet interface is successfully attached to the Ethernet network, but there is no network activity.

To find out whether the Ethernet interface can access the CPU, issue successive TALLY C commands. If any of the following tallies: *BpdAbort* or *PlcTmout* are incrementing, there may be a hardware problem with the backplane interface. Check the PLC Fault Table entries for the Ethernet interface.

What to do if you Cannot Solve the Problem

If you are not able to solve the problem, contact GE Intelligent Platforms. Please have the following information ready.

- The name and catalog number marked on the module
- Description of symptoms of problem. Depending on the problem—you may also need the following information:

The application program and the PLC sweep time at the time the problem occurred.

A list of the configuration parameters for the Ethernet interface that failed.

A list of reported errors. This can be the contents of the Ethernet exception log, the contents of the PLC Fault Table, or both.

A description of the network configuration. This should include the following:

The number of systems accessing the network

The type of network cable used (for example, twisted pair, fiber optic, etc.)

The length of network cable

The manufacturer and quantity of hubs, and network switches used between this PLC and operational portions of the network.

Chapter *The Station Manager Commands*

3

This chapter is an alphabetical reference to all Station Manager commands for the Series 90-30 PLUS Ethernet interface.

- bootp
- cd
- channel
- chltime
- chparm
- chsosw
- chtime
- clear
- del
- dir
- egdcmd
- egdread
- egdwrite
- exs
- formats
- ?, help
- killms
- killss
- log
- login
- logout
- ltime
- mkdir
- net
- node
- ok
- parm
- ping
- plcread
- plcwrite
- rem
- rename
- repp
- restart
- rmdir
- sosw
- stat
- stopp
- tally
- time
- trace
- xchange

BOOTP

Available in Modify mode.

Use the BOOTP command to simulate a BOOT Reply from a BOOTP server on the network. Like an actual response from a BOOTP server, the simulated BOOT Reply temporarily assigns an IP address and other TCP/IP parameters to an Ethernet interface. Once an actual or simulated BOOT Reply is processed, further BOOTP commands are rejected.

The BOOTP-supplied parameters remain in effect only until the Ethernet interface receives a proper configuration or the Ethernet interface is restarted.

BOOTP Command Format

```
BOOTP < IP address > [ < subnet mask > [ < gateway > ] ]
```

<IP address>	Dotted–decimal IP address
<subnet mask>	Dotted–decimal subnet mask
<gateway>	Dotted–decimal default gateway IP address

BOOTP Command Examples

```
= bootp 10.0.0.1 255.255.0.0 0.0.0.0
```

NOTE: BOOTP data will not be saved over restart or power cycle.

CD

Available in Monitor or Modify mode.

Use the CD command to set a new working directory for file system access.

This command changes the working directory to the path specified. When the directory is successfully changed, the new working directory is displayed.

CD Command Format

CD < path >

<path>	Use a forward slash ('/') to separate directories. The path dot('.') refers to the current directory. The path '..' refers to the directory immediately up in the hierarchy. Using the CD command with no path displays the current working directory (last example below).
--------	--

CD Command Examples

```
= cd /pages
/pages
= cd images
/pages/images
= cd
/pages/images
```

CHANNEL

Available in Monitor or Modify mode.

Use the CHANNEL command to show detailed information about a specified communication channel that was activated by a Channel COMMREQ command originating within the local PLC. The channel number specified by the user in the Channel COMMREQ command block identifies each communication channel.

CHANNEL Command Format

```
channel < channel number >
```

<channel number>	Number assigned during channel activation via the Channel COMMREQ command.
------------------	--

The channel number for all active SRTP or Modbus/TCP channels can be displayed with the STAT H or STAT M command, respectively.

CHANNEL Command Example 1: SRTP Channel

In this example, the user's application logic initiates an SRTP Establish Read Channel command (2003) for channel number 4. The Station Manager command "channel 4" displays information for channel 4:

```
> channel 4
<<< Individual Channel Information >>>    15-DJun-2005  14:12:49.0
State: AWAIT_PERIOD
DCSD Status: 0001H
DCSD Flags: 0001H
Transfers Completed: 17
Number of Channel Errors: 0
Channel COMMREQ Details:
  Type: READ
  CRSW Reference Address (zero-based): 00008:00000
  Command Code: 2003
  Channel Number: 1
  Repetitions: 0
  Period Time Unit Code: 3,   Number of Period Units: 1
  Transfer Timeout: 50 10ms tics
  Local Reference Address: 00008:00500
  Remote Reference Address: 00008:00100
  Number of Remote References to Access: 10
  Remote Network Address Type: 1
  Remote Network Address Length: 4
  Remote Network Address: 10.10.0.4
```

CHANNEL Command Example 2: Modbus/TCP Channel

In this example, the user's application logic has initiated an Open Modbus/TCP Client Connection command (3000) for channel number 1; there have been no data transfers as yet on this connection. The Station Manager command "channel 1" displays information for channel 1:

```
> channel 1
<<< Individual Channel Information >>> 29-Aug-2005 10:13:02.2
Protocol: Modbus/TCP
Channel Number: 1
State: EST_IDLE
Remote Network Address: 10.10.0.20
Requests Sent: 0
Requests Succeeded: 0
Requests Errored: 0
Commregs Issued: 1
Commregs Processed: 1
Last Modbus Error/Exception: 0H: 0H
Channel COMMREQ Details:
  Type: OPEN
  CRSW Reference Address (zero-based): 8:398
  Command Code: 3000
  Channel Number: 1
  Active Commreq Reported CRSW : 1H
  Active Commreq Current CRSW : 1H
```

CHANNEL Command Example 3: Inactive Channel

In this next example, the Station Manager command "channel 2" has been issued, but channel 2 is closed: there is no channel open on channel 2.

```
> channel 2
<<< Individual Channel Information >>> 15-JUN-2005 14:14:33.0
Channel 2 does not exist
```

CHLTIME

Available in Modify mode.

Use the *CHLTIME* command to change the inactivity timeout period for the present session of Modify mode. The default timeout is 10 minutes. If no commands are entered during the timeout period, the Station Manager automatically switches back to Monitor mode. It is necessary to re-enter the password to access Modify mode again.

The change is temporary; the new timeout period is used only until the specified time passes, until the timeout period is changed during the same Modify mode session, or until the *LOGOUT* command is used. Timeout reverts to the default of 10 minutes the next time Modify mode is entered.

The login inactivity timeout clock is suspended during execution of a *TRACE* or *PING* command.

CHLTIME Command Format

CHLTIME < minutes >

<minutes>	is the login inactivity timeout value in minutes. The range is 0 to 32767. If the number of minutes specified is 0, the login inactivity timeout is not enforced.
-----------	--

CHLTIME Command Example

```
= chitime 5
```

```
Login timeout = 5 min
```

CHPARAM

Available in Modify mode.

Before a CPU configuration has been stored into the CPU, you can use the *CHPARAM* command to change the value of a specific Advanced User Parameter (AUP). However, it is not recommended that you change any AUP other than “stpasswd”. Be careful when setting any AUP. Poor choice of settings may result in degraded Ethernet interface operation. If you change these parameters, record the original values for future reference.

Changes do not take effect until the Ethernet interface is restarted or power is cycled. AUPs are saved in non-volatile memory. Changes made by the *CHPARAM* command are retained over restart and power cycles, until changed again by the *CHPARAM* command.

After the CPU configuration has been stored into the CPU, the *CHPARAM* command is prohibited and any previous changes made with it are no longer effective. Permanent changes to the default AUP values must be made in the AUP file. See the *TCP/IP Ethernet Communications for series 90-30 CPU372 PLUS and CPU374 PLUS Manual* (GFK-2382) for details.

CHPARAM Command Format

```
CHPARAM < parm name > { < value > | def }
```

or

```
CHPARAM all def
```

<parm name>	The name of an AUP (these are listed in the PARM command description later in this chapter).
<value>	The new value for the specified parameter.
“def”	May be entered instead of an actual value to set the specified parameter to its factory default value.

CHPARM Command Example: Changing the Station Manager Password

```
= chparm stpasswd newpass
```

The default Station Manager password is “system”. The normal way to change the password is via the “stpasswd” parameter in the AUP file.

If a CPU configuration has not been stored into the CPU, the Station Manager password can be changed by the *CHPARM* command; the parameter name is “stpasswd”. In order to use the *CHPARM* command, the current password is required to access the “Modify level” of the Station Manager. Note that the Station Manager new password parameter value will be converted to lowercase unless you enclose the value within double quotes.

What to Do if You Have Forgotten Your Password

If the Station Manager password has been set to a non-default value and you have forgotten the current password, you will not be able to enter Modify mode or use the modify level *CHPARM* command. In that case, you must either examine the “stpasswd” parameter in the AUP file for this CPU to determine the actual password, or store another AUP file with a known password to the CPU.

Changing the Ethernet Network Port Advanced User Parameters

Caution

The IEEE 802.3 standard strongly discourages the manual configuration of duplex mode for an Ethernet network port (as would be possible using AUPs). Before manually configuring duplex mode for a port using AUP, be sure that you know the characteristics of the link partner and are aware of the consequences of your selection. In the words of the IEEE standard: “Connecting incompatible DTE/MAU combinations such as full duplex mode DTE to a half duplex mode MAU, or a full-duplex station (DTE or MAU) to a repeater or other half duplex network, can lead to severe network performance degradation, increased collisions, late collisions, CRC errors, and undetected data corruption.”

Note: If both speed *and* duplex mode of an Ethernet interface port are forced using AUPs, that port will no longer perform automatic cable detection. This means that if you have the Ethernet interface port connected to an external switch or hub port you must use a crossover cable. If you have the Ethernet interface port connected to the uplink port on an external switch or hub, or if you have the Ethernet interface port directly connected to another Ethernet device, you must use a normal cable.

CHSOSW

Available in Modify mode.

Before a configuration has been received from the CPU, you can use the *CHSOSW* command to change the backup configuration parameters of the Ethernet interface. Changes made by the *CHSOSW* command do not take effect until the Ethernet interface is restarted or power-cycled. The changes remain in effect only until a configuration is supplied by the CPU.

After the Ethernet interface receives a configuration from the CPU, the *CHSOSW* command is prohibited and any previous changes made with it are no longer effective.

CHSOSW Command Format

```
CHSOSW { < sosw data > | def }
```

def	Sets all values to their defaults
ip_address	Dotted–decimal working IP address
subnet_mask	Dotted–decimal subnet work mask
gateway	Dotted–decimal default gateway IP address
p1_data_rate	Station Manager port data rate (4800, 9600, 19200, 38400, 57600, 115200)
p1_parity	Station Manager port parity (NONE, ODD, EVEN)
p1_flow_control	Station Manager port flow control (NONE, HARDWARE)
web_max_conn	Maximum simultaneous web server connections (0 to 16). The total number of web and FTP connections cannot be more than 16. Setting this parameter to 0 disables the web server.
ftp_max_conn	Maximum number of simultaneous FTP connections (0 to 16, in multiples of 2). Each FTP client requires two FTP connections. The total number of web and FTP connections cannot be more than 16. Setting this parameter to 0 disables the FTP server.
time_sync	Time sync option (0 = none, 1 = SNTP)

CHSOSW Command Example 1: IP Address

This example supplies the IP Address of the Ethernet interface:

```
= chsosw ip_address 10.0.0.2  
Parameter changes will not take effect until next powerup or restart.
```

CHSOSW Command Example 2: Number of Connections

These two commands change the number of web server (HTTP) connections and FTP connections:

```
= CHSOSW web_max_conn 6  
= CHSOSW ftp_max_conn 4
```

The total number of web server connections plus FTP connections must not exceed 16. Each FTP client requires two connections.

CHSOSW Command Example 3: SNTP Time Synchronization

This example selects SNTP time synchronization:

```
= CHSOSW time_sync SNTP
```

CHTIME

Available in Modify mode.

Use the *CHTIME* command to set both the time and date for the Ethernet interface.

When modified with the *CHTIME* command, the Ethernet interface internal clock is set to “not synchronized”. This command is rejected if the Ethernet interface is synchronized to an external SNTP time server.

A time value is required; a date value is optional. Valid dates are JAN 01, 2000 – DEC 31, 2097. If an invalid date or time is entered, the internal clock is not changed. Changes remain in effect until the Ethernet interface is power-cycled or restarted. This command applies only to the Ethernet interface; it does not change the time kept in the CPU.

CHTIME Command Format

```
CHTIME [ < MMM DD, YYYY > ] < HH [ : MM [ : SS ] ] >
```

<MMM>	is the month (JAN . . . DEC)
<DD>	is the day of the month (1-31)
<YYYY>	is the year (2000 . . .)
<HH>	is an hour in the range 0–23
<MM>	is an optional minute in the range 0–59 which defaults to 0
<SS>	is an optional second in the range 0–59 which defaults to 0

Leading zeros do not need to be entered.

CHTIME Command Example

```
= ctime aug 21, 2005 23:00:10  
Aug 21, 2005 23:00:10.2  
Date/time not synchronized
```

CLEAR

Available in Modify mode.

Use the *CLEAR* command to set specified Ethernet interface data to its initial values, usually zeros. The desired data is specified by command arguments.

Use the *CLEAR LOG* command to clear the exception log, and reset the STAT LED to green, which indicates that the exception log is empty.

Use the *CLEAR EXS* command to clear the Extended Status data (see EXS command).

Use the *CLEAR FILES ALL* command to clear all files stored in the file system.

Note: Except for the GE default web home page, *CLEAR FILES ALL* clears all other web pages and related files used by the web server. Those files should be saved elsewhere before using *CLEAR FILES ALL*, or they will be lost.

CLEAR Command Format

```
CLEAR {log | tally | exs | files all}
```

log	Discards all log entries and sets the log to an empty state. Also resets the STAT LED on the Ethernet interface to green.
tally	Sets all resettable tallies to zero.
exs	Sets all resettable Extended Status data to zero.
files all	Clears the content of the file system. Entering just CLEAR FILES will result in the prompt shown in Example 2 below.

CLEAR Command Example 1

```
= clear tally
Tallies cleared
```

CLEAR Command Example 2

```
= clear files
Enter CLEAR FILES ALL if you really want to delete all files.
= clear files all
Files cleared
```

DEL

Available in Modify mode.

Use the *DEL* command to delete a specified file from the current working directory in the file system. Only one file may be deleted per command, using the exact name of the file. Wildcards and regular expressions cannot be used.

After the file is deleted, a confirmation is displayed. If the file does not exist, the command returns an error message instead.

The *DEL* command cannot delete a directory. Use the *RMDIR* command to delete a directory.

DEL Command Format

```
DEL <file name>
```

DEL Command Example

```
= del myfile
myfile deleted
```

DIR

Available in Monitor or Modify mode.

Use the *DIR* command to display the list of files from the current working directory or the specified path in the file system.

DIR Command Format

```
DIR [ <path> ]
```

<path>	Use a forward slash (/) to separate directories. The path dot (.) refers to the current directory. The path '..' refers to the directory immediately up in the hierarchy. Using the <i>DIR</i> command with no path displays the current working directory, as shown in the example below.
---------------------	---

DIR Command Example

```
= dir
-rwxrwxrwx 1 0 0      8666 Jun  1 02:38 file1.htm
-rwxrwxrwx 1 0 0      8666 Jun  1 02:38 file2.htm drwxrwxrwx 1 0 0
8666 Jun  1  2005 images/
```

EGDCMD

Available in Monitor or Modify mode.

Use the EGDCMD command to send one of several Ethernet Global Data commands to a remote device.

The EGDCMD command displays an error message if the specified remote device cannot be reached in the network, or if the specified exchange does not exist at the remote device.

EGDCMD Command Format

The EGDCMD command performs several types of EGD commands; the desired EGD command must be specified. The general format of EGDCMD is:

```
EGDCMD <cmd> <target IP address> <parameter(s)>
```

The following four types of EGD commands are supported:

Cmd Type	Description
CO	Retrieve Configuration data for a specified EGD exchange at a remote device.
SU	Retrieve Summaries of all EGD exchanges configured at a remote device, starting at a specified exchange index. The number of exchange summaries in the response may be truncated to fit within a single EGD message. If the response does not contain all summaries, the remaining exchange summaries may be retrieved by subsequent Summary commands with larger exchange index.
CA	Retrieve EGD Capabilities data from a remote device.
ST	Retrieve Statistics data for a specified EGD exchange at a remote device.

The specific formats of each command type are:

```
EGDCMD CO <ip address> <producer ID> <exchange ID>
EGDCMD SU <ip address> [<exchange idx>]
EGDCMD CA <ip address>
EGDCMD ST <ip address> <producer ID> <exchange ID>
```

<IP address>	The IP address of the remote target device.
<producer ID>	The Producer ID of the Ethernet Global Data exchange, expressed in dotted decimal format.
<exchange ID>	The Exchange ID of the Ethernet Global Data exchange, expressed as a number.
<exchange idx>	Optional zero-based starting index for exchanges in the Summary command. A value of zero indicates the first configured exchange. If this parameter is not entered, the starting index defaults to zero. Exchange index values are identified in the Summary output display. For remote PLC devices, exchange index values are also displayed as in the STAT G output from that remote device.

EGDCMD Command Example

This example reads the ST(atistics) of EGD Exchange 2 from Producer ID 10.0.0.1:
(The remote target device uses IP Address 10.0.0.1)

```
> egdcmd st 10.10.0.1 10.10.0.1 2
Statistics for 0x0a0a0001(10.10.0.1):2
Configuration time = 0
Sample due time = FRI MAY 20 10:32:09 2005
Exchange state = 1 (PRODUCING/HEALTHY)
Exchange length = 100
Sample count = 491182
Missed sample count = 0
Refresh error count = 0
```


EGDREAD

Available in Monitor or Modify mode.

Use the EGDREAD command to display the data for a specified Ethernet Global Data exchange as it currently exists in the shared memory interface. Each line of up to 16 bytes returned by this command is displayed in hexadecimal format, followed by its ASCII representation. Non-printable ASCII characters are shown as dots. This command is not the same as the Read EGD Exchange command described in the *TCP/IP Ethernet Communications for Series 90-30 CPU372 PLUS and CPU374 PLUS Manual*, GFK-2382. The Read EGD Exchange command reads from the internal memory of a Class 2 producer or consumer device, not from the EGD shared memory location.

The Ethernet Global Data in the Ethernet interface may not to be scanned into the reference tables used by the application - for example, if the CPU is not in Run mode.

The EGDREAD command displays an error message if the node does not have an exchange with the specified producerID and exchangeID, or if the beginning offset is not contained within the exchange, or if the offset plus the length exceeds the size of the exchange.

EGDREAD Command Format

EGDREAD <producerID> <exchangeID> [<offset> [<len>]]

<producerID>	This producer of the Ethernet Global Data, expressed in dotted decimal format.
<exchangeID>	The exchange ID of the Ethernet Global Data, expressed as a number.
<offset>	The optional offset and length can be used to display only a part of the exchange. By default the entire exchange is displayed. If an offset is specified without a length, a length of one (1) is used.
<len>	

EGDREAD Command Example

This example reads the entire Ethernet Global Data exchange with Producer ID 10.10.10.1 and Exchange ID 1:

```
= egdread 10.10.10.1 1
Produced exchange 10.10.10.1 1 offset 0 length 32:
aa aa aa aa aa aa aa aa aa aa aa aa aa aa aa .....
aa aa aa aa aa aa aa aa aa aa aa aa aa aa aa .....
```

EGDWRITE

Available in Modify mode.

Note: This command is intended solely for use with consumed exchanges and is not the same as the Write EGD Exchange command described in the *TCP/IP Ethernet Communications for Series 90-30 CPU372 and CPU374 PLUS User's Manual*, GFK-2382. (While not forbidden for produced exchanges, the specified data will be overwritten at the next sample production.)

Use the *EGDWRITE* command to write up to 16 data values into the memory of a specified local Ethernet Global Data consumed exchange. When updating memory within the local Class 2 device, the values will persist until subsequent sample consumption on this exchange from the network overwrites the specified values.

The data values are placed into consecutive bytes of the exchange starting at the specified offset. If a data value is larger than 255 (ffH), only the least significant byte of the data value is used.

An error is displayed if the producer ID, exchange ID, or offset is not valid, or if the data specified would cause writing beyond the boundaries of the exchange, or if the new data values are not valid numeric values.

EGDWRITE Command Format

```
EGDWRITE <producerID> <exchangeID> <offset> <new data value>
[ <new data value>... ]
```

<producerID>	The producer of the Ethernet Global Data, expressed in dotted decimal format.
<exchangeID>	The exchange ID of the Ethernet Global Data, expressed as a number.
<offset>	The offset within the EGD exchange to write the new data.
<new data value>	The byte value to be placed in Ethernet Global Data memory in the Ethernet interface.

EGDWRITE Command Example

This example writes the two data values 2 and 3 into byte offsets 100 and 101 within the shared memory use by the EGD consumed exchange identified by Producer ID 10.10.0.1, and Exchange ID 1:

```
= egdwrite 10.10.10.1 1 100 2 3
written
```

EXS

Available in Monitor or Modify mode.

Use the EXS command to display Extended Status for CommReqs initiated by the local PLC logic program. This command is usually used during troubleshooting.

EXS Command Format

EXS

EXS Command Example

```
> exs
<<< Extended Status >>> 05-MAY-2005 21:18:33.0
Software version          330
Last command              4000 (0fa0HH)
Last error code           0 (0000H)
Last COMM_REQ in error    0000H 0000H 0000H 0000H 0000H 0000H 0000H 0000H
                          0000H 0000H 0000H 0000H 0000H 0000H 0000H 0000H
```

The EXS output displays the most recent CommReq command sent to this Ethernet interface, together with additional data on the most recent CommReq that generated an error. The error codes displayed in the EXS output are the same error codes returned to the PLC logic program in the CommReq Status (CRS) word. If a non-zero error code is displayed, the EXS output also displays the first 16 words of the CommReq Command Block.

The EXS output data is retained until the Ethernet interfaces is restarted or power is cycled. The EXS data may be cleared by using the CLEAR EXS command.

FORMATS

Available in Monitor or Modify mode.

Use the FORMATS command to display the list of web server reference table formats stored on the Ethernet interface, and their contents.

FORMATS Command Format

```
FORMATS [ <max length> ]
```

<max length>	The maximum length for the format string, for each format stored on the Ethernet interface. If the max length parameter is omitted, it defaults to the value 40.
--------------	--

FORMATS Command Example

```
= formats
Format      Content
0           GEF0;1;MyTableSettings;6;%R:00100:10:3>:
```

HELP

Available in Monitor or Modify mode.

Use the HELP command (or enter the single character command "?") to display a list of the Station Manager commands that can be accessed in the present mode.

HELP Command Format

HELP

or

?

HELP Command Example 1: Monitor Mode

If you are not logged in, you will see only the Monitor-level commands.

```
= help
<<< Monitor Commands >>>
?      cd      channel  dir      egdcmd   egdread
exs    help    log      login   ltime    node
parm   plcread  sosw    stat    tally    time
xchange
```

HELP Command Example 2: Modify Mode

If you are logged in to use Modify commands, you will also see all Monitor-level commands in the command list.

```
= help
<<< Monitor Commands >>>
?      cd      channel  dir      egdcmd   egdread
exs    help    log      login   ltime    node
parm   plcread  sosw    stat    tally    time
xchange

<<< Modify Commands >>>
bootp  chltime  chparm  chsosw  chtime   clear
del    egdwrite logout  mkdir   net      ok
ping   plcwrite rem     rename  repp     restart
rmdir  stopp    trace   killms  killss
```

KILLMS

Available in Modify mode.

Use the *KILLMS* command to delete an established Modbus/TCP server connection. This command disrupts the communication on a Modbus/TCP server connection. It should be used for diagnostics and maintenance only.

An endpoint number, as listed in the leftmost column of the STAT o output, identifies a connection. See the description of *STAT* later in this chapter for examples of Modbus/TCP endpoints.

KILLMS Command Format

```
KILLMS { all | <Modbus Server Endpoint> [ <Modbus Server Endpoint> [ ... ] ] }
```

< Modbus/TCP Server Endpoint >	Endpoint number of the connection to be terminated.
All	Terminates all established Modbus Server endpoints.

KILLMS Command Example

```
= killms 4 5 15
```

```
Modbus Server connection 4 shutdown initiated.
```

```
Modbus Server connection 5 shutdown initiated.
```

```
Modbus Server connection 15 shutdown initiated.
```

KILLSS

Available in Modify mode.

Use the *KILLSS* command to delete an established SRTP server connection. This command does not delete connections that are not in the established state. This command disrupts the communication on an STRP server connection. It should be used only for diagnostics and maintenance.

A connection is identified by an endpoint number, as listed in the leftmost column of the *STAT v* command output. See the description of *STAT* later in this chapter for examples of SRTP endpoints.

KILLSS Command Format

```
KILLSS { all | < SRTP Server Endpoint > [ < SRTP Server Endpoint > ...] }
```

< SRTP Server Endpoint >	Endpoint number of the connection to be terminated.
All	Terminates all established SRTP Server endpoints.

KILLSS Command Example

```
= killss 2 3 6
```

```
SRTP Server endpoint 2 shut down initiated
```

```
SRTP Server endpoint 3 shut down initiated
```

```
SRTP Server endpoint 6 shut down initiated
```

LOG

Available in Monitor or Modify mode.

Use the LOG command to display the exception log and any internal status code data.

The exception log is a circular list; a new event overwrites the oldest event in the list. An arrow points to the most recent event. Events stay in the log until they are cleared with the CLEAR LOG command or until they are overwritten. The exception log is maintained in non-volatile memory; the exception log contents are retained over normal power outage. Refer to appendix B, "Exception Events" for detailed information about the information returned by the LOG command.

LOG Command Format

LOG

LOG Command Example

The LOG command lists the current exceptions by time and date. Exceptions are identified by an "event" code, and a count is given for each type. The information on the right describes the event, as explained in appendix B.

Extra status data for some types of events appears on the right.

```
> log z
<<< Exception Log >>>
IC693 Embedded Ethernet Interface version 3.30 (19A1)
Log displayed 04-JUN-2005 11:25:28.3
Log initialized using valid RAM information
Log last cleared 31-MAY-2005 09:33:46.9
Date           Time           Event Count  Entry 2 through Entry 6      SCode           Remote IP Addr:Port
or Producer ID:Exchg   Local IP Addr:Port
04-JUN-2005    09:33:47.0    1H 1H 0000H 0001H 0000H 0000H 0000H
04-JUN-2005    09:33:47.0    0H 1H MII/PHY Fail                 80010605H
04-JUN-2005    14:01:22.2    20H 1H 0001H 0000H 0000H 0001H 0117H
->04-JUN-2005  09:33:47.2    2aH 1H 0004H 0000H 0000H 0004H 0192H
```


LOGIN

Available in Monitor or Modify mode.

Use the *LOGIN* command to access the Modify commands of the Station Manager.

LOGIN Command Format

`LOGIN`

The *LOGIN* command is followed by the password prompt:

`Password:`

Enter the password (it is not echoed). Except for the Enter key, all keys pressed after the prompt are considered part of the password. The delete and backspace characters are interpreted as part of the password. The password may not include tabs or spaces. Passwords are limited to 8 characters and all characters after the eighth are ignored.

If the password matches the current password for the Modify level, a confirmation message appears and you can access the Modify commands. If the password does not match, an error message appears and the security level does not change.

Entering a Password at the Local Station Manager

When using the Local Station Manager, the password does NOT need to be enclosed in double quotes to be case-sensitive.

Entering a Password via a Remote Station Manager

When using the *REM* command to send a *LOGIN* command to log into a remote system, you must enter the password value along with the *LOGIN* command:

```
REM <node> LOGIN <password>
```

If the password contains any uppercase letters, place it in double quotes; passwords are case sensitive.

LOGIN Command Example (Local)

```
> login
Password: system
Logged in
=
```

The Default Password

The factory default password is:

`system` (lower case).

The password is normally changed using the AUPs. It can be changed temporarily with the *CHPARAM* command.

LOGOUT

Available in Modify mode.

Use the *LOGOUT* command to exit Modify mode and return to Monitor mode. Modify commands entered after the logout receive an error message. If the inactivity timeout period was changed during the current session of Modify mode, logging out causes the timeout period to return to the default of 10 minutes for the next login.

LOGOUT Command Format

```
LOGOUT
```

LOGOUT Command Example

```
= logout  
Logged out  
>
```

LTIME

Available in Monitor or Modify mode.

Use the *LTIME* command to display the current login inactivity timeout value.

The login inactivity timeout value can be changed using the *CHLTIME* command.

LTIME Command Format

```
LTIME
```

LTIME Command Example

```
> ltime  
Login timeout = 10 min
```

MKDIR

Available in Modify mode.

Use the *MKDIR* command to create a new directory in the current working directory.

MKDIR Command Format

`MKDIR <directory name>`

<code><directory name></code>	Name of the new directory to be created
-------------------------------------	---

MKDIR Command Example

This example creates the directory "images":

```
= mkdir images  
images directory created.
```

NET

Available in Modify mode.

Use the *NET* command to cause the Ethernet interface to either ignore incoming and outgoing Ethernet frames (*NET OFF*) or to accept incoming and outgoing Ethernet frames (*NET ON*). This command can be used to remove an Ethernet interface from the network without disconnecting or restarting the module.

NET Command Format

`NET { ON | OFF }`

off	Take the Ethernet interface off the network
on	Attempt to put the Ethernet interface on the network

NET Command Example

```
= net off  
Interface off network
```

NODE

Available in Monitor or Modify mode.

Use the NODE command to display the Ethernet interface sign-on message. The NODE command shows the SNTP time synchronization status and source of the IP address being used in the node. Possible sources of the IP address are: Configuration, Backup configuration, EEPROM, Default, Network, and BOOTP.

NODE Command Format

NODE

NODE Command Example

```
> node
IC693 Embedded Ethernet Interface
Copyright (c) 2005. All rights reserved.
Version 3.30 (19A1) TCP/IP
Version 3.30 (16A2) Loader
Version 1.00 Hardware
IP Address = 10.0.0.2          Subnet Mask = 255.255.0.0
Gateway = 0.0.0.0
MAC Address = <<080019010203>>
SNTP Not Configured

Station Manager Port:
  Data Rate = 9600, Parity = NONE, Flow Control = NONE

Source of Soft Switches: PLC Configuration
Source of IP Address:    Configuration

Jun 28, 2005 0:11:19.2
Date/time not synchronized
```

OK

Available in Modify mode.

The *STAT* LED is turned off when an entry is placed into the exception log. You can use the *OK* command to turn this LED on again. This command has no effect on the contents of the exception log.

If you want to turn on the *STAT* LED and also clear the exception log, use the *CLEAR LOG* command instead.

OK Command Format

`OK`

OK Command Example

```
= ok
STAT LED modified
```

PARM

Available in Monitor or Modify mode.

Use the PARM command to display the current value of the AUPs (listed on the following pages) for specified tasks. All AUPs for the selected tasks are displayed. Pending changes may cause data to scroll off some screens. Soft switch configuration parameters for the specified tasks are not displayed; use the SOSW command to display those parameters.

The AUP values returned as *currently active* are part of the configuration that is currently downloaded to the PLC. If a currently active AUP is invalid, an e/3 event (Failure storing / setting AUPs in the Station Manager subsystem) may be logged. For more information on exception log events, see Appendix B.

PARM Command Format

```
parm { < tasks > | all }
```

all	Displays all advanced user parameters for the following tasks. Tasks not listed below have no advanced user parameters.	
<task>	<i>Applications</i>	
	g	Ethernet Global Data (EGD)
	t	FTP Server
	h	SRTP Client (Channels)
	<i>Internal Operation</i>	
	b	System Memory
	c	PLC Driver (BPD)
	f	ARP
	i	IP
	w	TCP
	l	Network Interface

PARM Command Example

This example displays the IP parameters (task i):

```
= parm i
<<< IP Parameters >>>
           Default Value      User-Set Value
ittl      =      64 (40H)*
ifrag_tmr =       3 (0003H)*

* An asterisk identifies the currently active value.
```

```
Pending local changes (must powerup or restart to activate):
ifrag_tmr = 4 (0004H)
```

Advanced User Parameters

The AUPs used by the Ethernet interface are listed below.

System Memory Parameters (task b)		Default	Range
staudp	Remote command UDP port	18245 (4745H)	0 – 65535 (ffffH)
stpasswd	Station Manager password (only visible from MODIFY prompt)	“system”	0-10 characters, case sensitive, no spaces
Backplane Driver Parameters (task c)			
crsp_tout	CPU response timeout in seconds. Amount of time to wait for the CPU to respond to a request sent through the PLC Driver.	60 (003cH)	10 – 3600 (0E10H)
chct_comp	Allows Ethernet interface to ignore SRTP header errors (typically generated by remote HCT devices) that were not detected in some previous products. 0 = HCT compatibility disabled (= report all errors) 1 = HCT compatibility enabled (= ignore some errors)	0 (0H)	0, 1
RDS Parameters (task d)		None	None
ARP Parameters (task f)		Default	Range
fflush	Interval in seconds at which to flush the ARP cache	600 (0258H)	0 – 604800 (93A80H)
Ethernet Global Data Parameters (task g)			
gctl_port	UDP port for EGD control messages	7937 (1f01H)	0 – 65535 (ffffH)
gdata_port	UDP port for point-to-point (unicast) EGD messages	18246 (4746H)	0 – 65535 (ffffH)
gbcast_ttl	IP time-to-live for global broadcast messages (hop count)	1 (1H)	0 – 255 (00ffH)
gucast_ttl	IP time-to-live for point-to-point (unicast) messages (hop count)	16 (10H)	0 – 255 (00ffH)
gp_phase	Startup delay time in ms for successive produced exchanges	0 (0H)	0 – 65535 (ffffH)
<i>EGD provides a UDP port parameter and host group IP address parameter for each of 32 possible host groups (0-31). The parameter formats for each host group are shown below. XX specifies host group 0-31.</i>			
gXX_udp	UDP port for host group XX	18246 (4746H)	0 – 65535 (ffffH)
gXX_addr	IP time-to-live for host group XX (must be Class D address)	224.0.7.XX	224.0.0.2 – 239.255.255.255
gXX_ttl	IP time-to-live for host group (multicast) messages (hop count)	1 (1H)	0 – 255 (00ffH)
RDS Parameters (task d)		None	None
SRTP Client (Channels) Parameters (task h)		Default	Range
hconn_tout	TCP Connect timeout (in milliseconds)	75000 (124F8H)	10 – 75000 (124F8H)
IP Parameters (task i)		Default	Range
ittl	IP header default time-to-live (hop count)	64 (0040H)	0 – 255 (00ffH)
ifrag_tmr	IP fragment timeout interval in seconds	3 (0003H)	0 – 65535 (ffffH)

ICMP/IGMP Parameters (task j)		None	None
Network Interface Parameters (task l)		Default	Range
lduplex0	Ethernet duplex for Controller (1 = half, 2= full)	2	0,1,2
lduplex1a	Ethernet duplex for Port 1A (0=auto-detect, 1=half, 2=full)	0	0,1,2
lduplex1b	Ethernet duplex for Port 1B (0=auto-detect, 1=half, 2=full)	0	0,1,2
lspeed0	Ethernet speed for Controller (1=10Mbit, 2=100Mbit)	2	0,1,2
lspeed1a	Ethernet speed for Port 1A (0=auto-detect, 1=10Mbit, 2=100Mbit)	0	0,1,2
lspeed1b	Ethernet speed for Port 1B (0=auto-detect, 1=10Mbit, 2=100Mbit)	0	0,1,2
UDP Parameters (task u)		None	None
SRTP Parameters (task v)		None	None
TCP Parameters (task w)		Default	Range
wndelay	TCP nodelay option (0= inactive; 1 = active)	0 (000H)	0, 1
wkal_idle	TCP keepalive timer value (in seconds)	240 seconds (= 4.0 min)	0 – 65535 (ffffH)
wkal_cnt	TCP keepalive probe count	2	0 – 65535 (ffffH)
wkal_intvl	TCP keepalive probe interval (in seconds)	60 seconds	0 – 65535 (ffffH)
wsnd_buf	TCP send buffer size (in bytes)	65535 (ffffH)	0 – 32767 (7fffH)
wrcv_buf	TCP receive buffer size (in bytes)	4096 (1000H)	0 – 32767 (7fffH)
FTP Parameters (task t)		Default	Range
tpassword	Password for login for FTP access.	“system”	0 to 8 characters

PING

Available in Modify mode.

Use the *PING* command to generate ICMP Echo requests to validate network connectivity. The *PING* command is refused if the Ethernet interface on which you are issuing the *PING* command has not been configured with a valid IP address.

Login is maintained (automatic inactivity logout is inhibited) until the *PING* sequence has ended.

The results of the last *PING* command are maintained until the Modify-level login is exited. Use the *REPP* command to display the results of the most recent *PING* command. Only one *PING* command can be active at a time.

PING Command Format

```
PING <node> [ <cnt> [ <sch> [ <len> ] ] ]
```

<node>	The IP address of the remote node to be “pinged” (to be sent ICMP Echo Request messages). Enter in standard IP dotted–decimal form.
<cnt>	The number of times the ping is to be repeated. Default is 1. Range is 1 through ffffffffH.
<sch>	The maximum amount of time to wait for a reply to each ping. The timeout interval is expressed in 10 millisecond units. Default is 100 (1 second). Range is 0 through 7fffH. If you enter 0, a delay of 100 (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 8 through 32747 but is limited by system buffer memory.

PING Command Example

This example pings the node with IP address 10.0.0.2 ten times.

```
= ping 10.0.0.2 10
Ping initiated

<<< Ping Results >>>
Command: ping 10.0.0.2 10 100 64
Sent = 10, Received = 10, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms) min/avg/max 0/1/10
```

See also the *REPP* command for detailed explanation of *PING* results.

PLCREAD

Available in Monitor or Modify mode.

Use the PLCREAD command to display data from a specified address in CPU memory, program data block memory, or local data block memory.

The data is displayed in bytes. Each line of up to 16 bytes shows the data in hexadecimal format, followed by its ASCII representation. Dots are used for non-printable ASCII characters. For discrete tables such as %I and %Q, the entire byte containing the requested address is displayed. For example, specifying %I1, %I4 or %I8 in the command would all display the same data.

An error message is displayed if the address is not valid, or if address plus the length specified exceeds the memory of the CPU.

PLCREAD Command Format

To read CPU memory, enter the address and optional length:

```
PLCREAD <address> [ <len> ]
```

<code><address></code>	<p>The address is %<selector><offset>.</p> <p>The selector is AI, AQ, I, G, L, M, P, Q, R, S, SA, SB, SC, or T.</p> <p>The offset is a numeric value in the range of 1 to the size of the reference table being displayed.</p> <p>Example addresses are %R1, %AI003 and %AQ1000.</p>
<code><len></code>	<p>The length is words for word oriented tables such as the %R, %AI, and %AQ tables. The length is bytes for the other tables.</p> <p>Length defaults to 1 (byte or word).</p>

PLCREAD Command Example

This example reads two words of %R (register) memory beginning at register 1:

```
> plcread %R1 2
01 00 02 00 ....
```

PLCWRITE

Available in Modify mode.

Use the *PLCWRITE* command to write up to 16 byte or word values into a specified location in CPU memory, program block memory, or local data block memory. An error is displayed and the data from the command is not written if the address is not valid for the CPU, or if the new data is not a valid numeric value.

PLCWRITE Command Format

To write data to CPU memory, enter the address and new data values:

```
PLCWRITE <address> <new data> [ <new data> ... ]
```

<address>	<p>The address is %<selector><offset>.</p> <p>The selector is AI, AQ, I, G, L, M, P, Q, R, S, SA, SB, SC, or T.</p> <p>The offset is a numeric value in the range of 1 to the size of the reference table being written.</p> <p>Example addresses are %R1, %AI003 and %AQ1000.</p>
<new data value>	A byte or word of data to be written.

PLCWRITE Command Example: %AQ Memory

This example writes the five words of data to %AQ memory beginning at output 20.

```
= plcwrite %AQ20 1 2 4098 64000 4444H
written
```

REM

Available in Modify mode.

Use the *REM* command to send a Station Manager command to a remote Ethernet interface for processing. The Station Manager on the remote node acts on the command as if it had been entered locally, but directs all output from processing the command back over the network to the station where the *REM* command originated.

The results are displayed at the local station with the notation “REM” along with the prompt from the remote station. An Ethernet interface cannot use the *REM* command to send any command to itself.

REM Command Format

`REM <node> <cmd> [<cmd parms>]`

<node>	The IP address of the remote Ethernet interface
<cmd>	Any Station Manager command except REM
<cmd parms>	A list of any parameters required by <cmd>

Do NOT send the *REM* command itself to an Ethernet interface:

`= rem <node> rem <node> <command>)`

REM Command Example

This example sends a NODE command to the node with IP Address 10.0.0.2:

```
= rem 10.10.0.5 node

REM> IC695 Peripheral Ethernet Interface
REM> Copyright (c) 2003-2005. All rights reserved.
REM> Version 3.00 (15A1) TCP/IP
REM> Version 2.51 (20A1) Loader
REM> Version 6.00 Hardware
REM> IP Address = 10.10.0.5          Subnet Mask = 255.255.255.0
REM> Gateway = 0.0.0.0
REM> MAC Address = <<000991408C31>>
REM> SNTP Not Configured
REM>
REM> Station Manager Port:
REM>   Data Rate = 9600, Parity = NONE, Flow Control = NONE
REM>
REM> Source of Soft Switches: Backup
REM> Source of IP Address:   Configuration

REM> Jan 5, 2005  4:59:40.5
REM> Date/time initialized from PLC CPU
```

Logging into a Remote System

To send a Modify-level command to a remote Station Manager, you must first log into the remote Station Manager. Use the REM command to send a *LOGIN* command to log into a remote system. You must also enter the password for the remote station:

```
REM <node> LOGIN <password>
```

If the password contains any uppercase letters, place it in double quotes; passwords are case-sensitive.

RENAME

Available in Modify mode.

Use the *RENAME* command to rename a file in the current working directory.

RENAME Command Format

`RENAME <old file name> <new file name>`

<code><old file name></code>	The filename to be changed
<code><new file name></code>	The new name for the file

RENAME Command Example

This example renames the file "index.html" to be "old_index.html":

```
= rename index.html old_index.html  
-rwxrwxrwx 1 0 0 8666 Jan 1 02:38 old_index.html
```

REPP

Available in Modify mode.

Use the *REPP* command to report the results of the *PING* command. The results may be for a currently-running *PING* or the most recent *PING* command. Note that the most recent *PING* results are not preserved when Station Manager exits Modify-level login.

REPP Command Format

REPP

REPP Command Example

```
= repp
<<< Ping Results >>>
Command: ping 10.0.0.2 10 100 64
Sent = 1, Received = 1, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms) min/avg/max 0/1/10
Note: The ping is still active
```

In the response:

Command	identifies the actual <i>PING</i> command parameters used (including default values for any optional parameters not specified on the command line) to generate the results
Sent	shows the number of Echo Request messages sent.
Received	shows the number of Echo Reply messages received within the expected response schedule of a corresponding Echo Request. The response schedule begins when an Echo Request is sent and ends when the schedule time specified in the <sch> parameter of the <i>PING</i> command elapses.
No Timely Response	shows the number of times that no Echo Response message arrived within the response schedule of the corresponding Echo Request; that is, when the response schedule time elapses before the corresponding Echo Response arrives.
Late/Stray Responses	indicates the number of times an Echo Response arrived outside of the response schedule of its corresponding Echo Request or when a stray Echo Response, not corresponding to any recent Echo Request, arrives.
Round-trip	indicates the minimum, average, and maximum delay (in units of milliseconds) measured between sending an Echo Request and receiving the corresponding Echo Response. These times use 1 millisecond increments.

RESTART

Available in Modify mode.

Use the *RESTART* command to restart the Ethernet interface without reloading the software. Using this command has the same effect as pressing the Restart pushbutton. Any data transfer between the CPU and the network at the time the *RESTART* command is entered is lost.

RESTART Command Format

`RESTART`

RESTART Command Example

```
= restart  
Restarting Module
```


RMDIR

Available in Modify mode.

Use the *RMDIR* command to remove a directory in the current file system working directory. If the directory is not empty, the directory contents will also be cleared.

RMDIR Command Format

RMDIR <path>

<path>	Use a forward slash (/) to separate directories. The path dot (.) refers to the current directory. The path '..' refers to the directory immediately up in the hierarchy. Using the <i>RMDIR</i> command with no path deletes the current working directory.
--------	---

RMDIR Command Example

```
= rmdir images  
images deleted
```

SOSW

Available in Monitor or Modify mode.

Use the SOSW command to show the current setting of the Ethernet configuration data (“Soft Switches”) and to indicate their source.

SOSW Command Format

SOSW

SOSW Command Example

```

> sosw
<<< Soft Switch Data >>>
IP Address      = 10.0.0.2      (TCP/IP values from Soft Switches)
Subnet Mask     = 255.255.0.0
Gateway        = 0.0.0.0
Max Web connections = 4
Max FTP connections = 6
SNTP Not Configured

Station Manager Port:
Data Rate      = 9600
Parity         = NONE
Flow Control   = NONE

Source of Soft Switches:  PLC Configuration
Source of IP Address:    Configuration

Pending local changes (must powerup or restart to activate):
pl_data_rate = 38400

```

Sources for the Soft Switches are:

PLC Configuration	Settings received in the configuration from the PLC.
Backup	Settings retrieved from the Ethernet interface’s internal backup. This is expected when configuration has not been received from the PLC.
Factory Default	Settings are factory defaults. This is expected when no current configuration or previously backed up configuration exists.

Sources for IP address are:

Configuration	IP address from Ethernet configuration (PLC or Backup)
EEPROM	IP address from EEPROM (Backup configuration is invalid)
Network	Temporary IP address set over network via SetIP utility.
BOOTP	Temporary IP address set over network from BOOTP server.
Factory Default	IP address is zero. (Backup configuration and EEPROM are invalid.)

STAT

Available in Monitor or Modify mode.

Use the STAT command to show the current status of the specified task(s). The STAT output display format varies according to the task being displayed

STAT Command Format

STAT <task(s)>

<task>	may be one or more of the following task identifiers.	
	g	Ethernet Global Data (EGD)
	o	Modbus/TCP Server
	m	Modbus/TCP Client (Channels)
	v	SRTP Server
	h	SRTP Client (Channels)
	e	Web Server
	t	FTP Server
	b	System Memory
	c	Backplane Driver (BPD)
	d	RDS
	f	ARP
	i	IP
	w	TCP
	u	UDP
	j	ICMP, IGMP (for multicast)
l	Network Interface	
n	SNTP	
s	Flash File System	

Note that STAT command output data cannot be manually reset during operation.

STAT Command Example

This example displays the status of the SRTP Server task (v):

```

> stat v
<<< SRTP Server Status >>> 03-JUN-2005 16:10:22.0
Endpoint  Task  State          Num Requests  Client Address
-----  -
0         32  ESTABLISHED    10906         10.0.0.4
1         33  ESTABLISHED    10916         10.0.0.4
2         34  ESTABLISHED    10931         10.0.0.4
3         35  ESTABLISHED    10911         10.0.0.4

Total connections used by SRTP = 10

```

STOPP

Available in Modify mode.

Use the *STOPP* command to immediately stop an active PING and view the results. This command is used to terminate a long-running PING sequence.

STOPP Command Format

```
STOPP
```

STOPP Command Example

```
= stopp
<<< Ping Results >>>
Command: ping 10.0.0.2 10 100 64
Sent = 8, Received = 8, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms) min/avg/max 0/1/10
Note: The ping was aborted.
```

TALLY

Available in Monitor or Modify mode.

Use the TALLY command to show the current value of the tallies for the specified tasks. Some tallies indicate load and performance information. Others can show whether there are local or network problems. Refer to Appendix A, "Tallies of Ethernet Tasks", for a list of the tallies and their meanings.

All tallies are displayed as 32-bit hexadecimal numbers.

TALLY Command Format

TALLY <task(s)>

<task>	May be one or more of the following task identifiers.	
	g	Ethernet Global Data (EGD)
	o	Modbus/TCP Server
	m	Modbus/TCP Client (Channels)
	d	Reliable Datagram Service (RDS)
	h	SRTP Client (Channels)
	v	SRTP Server
	e	Web Server
	t	FTP Server
	c	Backplane Driver (BPD)
	f	ARP
	i	IP
	w	TCP
	u	UDP
	j	ICMP, IGMP (for multicast)
	l	Network Interface
	n	SNTP
	s	Flash File System

TALLY Command Example

```
> tally v
<<< SRTP Server Tallies >>> 03-JUN-2005 16:07:38.0
InPDU =00000000H OutPDU =00000000H BadPDU =00000000H InConRq =00000000H
OutConRp=00000000H InDatRq =00000000H OutDatRp=00000000H InUncRq =00000000H
OutUncRq=00000000H InErrRq =00000000H OutErrRq=00000000H InDisRq =00000000H
OutDisRq=00000000H InSesRq =00000000H OpenTO =00000000H
```

TIME

Available in Monitor or Modify mode.

Use the TIME command to display the current system time. This time is used in generating time stamps for messages that require them. It is also used as a time stamp for events in the exception log displayed by the LOG command. The initial value of the time on restart, power up, or load is read from the local CPU. If this is not available, it is set to 00:00:00.0 (midnight). Time values are based on a 24 hour clock.

TIME Command Format

```
TIME
```

TIME Command Example

```
> time  
Time = 15:46:02.3
```

The command *CHTIME* can be used to change the date/time value.

TRACE

Available in Modify mode.

Use the *TRACE* command to display a diagnostic trace of certain Ethernet tasks. Login is maintained (automatic inactivity logout is inhibited) until the *TRACE* has ended. Enabling trace output has severe performance penalties for the communications software. This command should only be used in debugging problems. *TRACE* should never be left on in operational nodes. Only one *TRACE* command can be active at a time. Each new *TRACE* command automatically stops any existing traces. The *TRACE* command can be used either locally or remotely. The *TRACE* command issued last, either locally or remotely, determines where the display takes place. If a trace is initiated from a remote Station Manager, trace output continues to be sent to that remote Station Manager until terminated, even if the remote Station Manager is disconnected or logged into another station. Be sure to stop your traces.

TRACE Command Format

To display a trace:

```
TRACE <task> [( <qual> )] [ <task(s)> ] [ <mins> [ <max_len> ] ]
```

To disable all tracing:

```
TRACE !
```

Using the command *TRACE* with no arguments displays the tasks that are currently being traced, the time remaining for an active trace, and the active length value for PDU data,

!	Disables all tracing . It should only be used by itself.
<task>	<p>A letter specifies the task type:</p> <ul style="list-style-type: none"> g Ethernet Global Data o Modbus/TCP Server m Modbus/TCP Client (Channels) d RDS v SRTP Server c PLC Driver (BPD) n SNTP h SRTP Client (Channels) e Web Server z Enables Protocol Data Unit (PDU) tracing for selected traces <p>Up to eight tasks may be specified; each task may contain an optional qualifier described below. All tasks/qualifiers are entered as one parameter without spaces.</p>
<qual>	<p>Optional number that restricts tracing to a specified entry within a task. The qualifier must be enclosed in parentheses and immediately follow the task letter. The qualifiers for the above tasks are:</p> <ul style="list-style-type: none"> g (Ethernet Global Data): Exchange index (0) - (255) o (Modbus/TCP Server): Connection ID (0) - (15) v (SRTP Server): Connection ID (0) - (47) c (PLC Driver): Mailbox task ID (0) - (127) e (Web server): Connection index (0) - (max web connections) <p>Multiple trace qualifiers of the same task can be specified. See example above.</p>
<mins>	Optional timeout period from 0 (no timeout) to 32767 min. Default is 10 min.
<max_len>	For task z (PDU) only, this is an optional maximum length of data to be displayed. The range is 1 byte to 32767 bytes. Default is the first 48 bytes of the PDU.

TRACE Command Example

This command displays a trace of SRTP server tasks (task v) for connection IDs 2 and 5, for 15 minutes, with up to 64 bytes of data:

```
= trace v(2)v(5)z 15 64
Trace enabled for: v(2)v(5)z
Minutes remaining = 15
max data displayed = 64
```

TRACE Outputs for Ethernet Global Data (Task g)

Typical *TRACE* command outputs for EGD are shown below. The “ndx” value identifies a particular Ethernet Global Data exchange. You can display information about this exchange (such as remote IP address and local UDP port) with the STAT G command.

```
egd <-- ndx=1
egd --> ndx=1
```

Optional Protocol Data Unit data is also displayed if PDU trace is enabled.

TRACE Outputs for SRTP Server (Task v)

Typical *TRACE* command outputs for the SRTP Server task are shown below. The “conn” value identifies a particular SRTP Server connection. You can display information about this connection (such as remote IP address and local TCP endpoint) with the STAT V command.

```
srtп svr <-- conn=2
srtп svr --> conn=2
```

Optional Protocol Data Unit data is also displayed if PDU trace is enabled.

Trace Outputs for CPU Driver (Task c)

Typical *TRACE* command outputs for the CPU backplane driver are shown below. The “task” value identifies a particular CPU mailbox message address within the LAN interface. You can display information about this mailbox address task with the STAT C command.

```
CPU <-- task=13
CPU --> task=0
```

Optional Protocol Data Unit data is also displayed if PDU trace is enabled.

XCHANGE

Available in Monitor or Modify mode.

Use the XCHANGE command to show detailed information about the configuration of a specified Ethernet Global Data exchange. Every exchange is uniquely identified by its producer ID and exchange ID.

XCHANGE Command Format

```
xchange < producer ID > < exchange ID >
```

<producer ID>	The ID of the device that produced the exchange
<exchange ID>	The ID of the exchange

The producer ID and exchange ID values for all defined exchanges can be displayed with the STAT G command.

Note that XCHANGE counters cannot be manually reset during operation.

XCHANGE Command Example

This example displays information about EGD exchange 1 for the device with Producer ID value (expressed in dotted decimal form) is 1.2.3.4:

```
> xchange 1.2.3.4 1
<<< Individual Exchange Information >>>

Exch Mode:          PRODUCER
Producer ID:        1.2.3.4
Exchange ID:        1
Exchange State:     ACTIVE
Exchange Status:    01
Current DP Status:  01
Exchange Signature: 0.0
Producer State:     STARTED
Period:             1000 ms
Dest UDP Port:      18246
Xfer Bytes:         0
Exch Type:          STATIC
Dest IP:            10.10.0.10
Transfer Cnt:       83651
Refresh Errs:       0
SMI Xfer Errors:    0
```

Appendix *Tallies of Ethernet Tasks*

A

This appendix describes the types of information you can display using the TALLY command. Tallies are grouped by task.

- Ethernet Global Data (EGD) Tallies (task g)
- Modbus/TCP Server Tallies (task o)
- Modbus/TCP Client (Channels) (task m)
- Reliable Datagram Service (RDS) Tallies (task d)
- SRTP Client (Channels) Tallies (task h)
- SRTP Server Tallies (task v)
- Web Server Tallies (task e)
- FTP Server Tallies (task t)
- Backplane Driver Tallies (task c)
- SMI Driver Tallies (also part of task c)
- IP Tallies (task i)
- TCP Tallies (task w)
- UDP Tallies (task u)
- Network Interface Tallies (task l)
- ICMP/IGMP Tallies (task j)
- SNTP Tallies (task n)
- Flash File System (FFS) Tallies (task s)

There are no ARP Tallies (task f).

Ethernet Global Data Tallies (task g)

Use the command: `> tally g`

to display the tally data for these Ethernet operations:

Tally	Description
EstConRq	Establish Global Data connection area requests received from CPU.
EstConRp	Establish Global Data connection area replies sent to CPU.
ConnRdy	Global Data connection area is ready messages received from CPU.
EnabOut	Enable production requests received from CPU.
DisabOut	Disable production requests received from CPU.
TermRq	Terminate Global Data connection area requests received from CPU.
TermRp	Terminate Global Data connection area replies sent to CPU.
DataRx	Global Data production packets received from network.
DataTx	Global Data production packets sent to network.
RefrErr	Refresh errors encountered.
SemaErr	Semaphore locking errors encountered.
UnRecID	Consumed exchange not configured for exchange received from network.
SigErr	CMP error responses due to signature error in request.
UnscnC	EGD samples lost due to being overwritten by fresher EGD samples before they can be scanned into PLC reference memory. (May also occur when the PLC is in the STOP/Disabled state.)
Stale	Produced exchanges sent without fresh CPU data.
DataRxE	Global Data packets received with expedited handling.

EGD Command Tallies (part of EGD Tallies)

RdRqRcv	Read requests received from network.
RdRpSnt	Read responses sent to network.
WrRqRcv	Write requests received from network
WrRpSnt	Write responses sent to network.
RdRqSnt	Read requests sent to network.
RdRpRcv	Read responses received from network
WrRqSnt	Write requests sent to network.
WrRpRcv	Write responses received from network
CfRqRcv	Configuration requests received from network.
CfRpSnt	Configuration responses sent to network.
SmRqRcv	Summary requests received from network.
SmRpSnt	Summary responses sent to network.
CpRqRcv	Capabilities requests received from network.
CpRpSnt	Capabilities responses sent to network.
StRqRcv	Statistics requests received from network.
StRpSnt	Statistics responses sent to network.
AlinErr	Number of alignment errors.
ExchErr	Number of exchange errors.
SigErr	Number of signature errors.
LenErr	Number of packet data length errors.
OffErr	Number of data offset errors.
TooLong	Number of packets exceeding max data length (1400 bytes)
PduErrm	Number of packets received containing incorrect protocol version number.
RejRcv	Number of reject packets received.
RejSnt	Number of reject packets sent.
Timeout	Number of timeouts occurred.

Modbus/TCP Server Tallies (task o)

Use the command: `> tally o`
to display the tally data for these Ethernet operations:

Tally	Description
InPdu	Total Modbus/TCP PDUs received (good and bad) from network.
OutPdu	Total Modbus/TCP PDUs sent to network.
BadPdu	Bad PDUs received from network.
InConRq	Number of TCP Connection Requests received from network.
OutConRp	Number of TCP Connection Responses sent to network.
InDatRq	Number of Data Request PDUs received from network.
OutDatRp	Number of Data Response PDUs sent to network.
OutErrRp	Number of Error Response PDUs sent to network.
InDisRq	Number of Disconnect Requests received from network.
OutDisRq	Number of Disconnect Requests sent to network.
FC01	Number of Read Coils requests received from network.
FC02	Number of Read Discrete Inputs requests received from network.
FC03	Number of Read Holding Registers requests received from network.
FC04	Number of Read Input Registers requests received from network.
FC05	Number of Write Single Coil requests received from network.
FC06	Number of Write Single Register requests received from network.
FC07	Number of Read Exception Status requests received from network.
FC08	Number of Diagnostics requests received from network.
FC15	Number of Write Multiple Coils requests received from network.
FC16	Number of Write Multiple Registers requests received from network.
FC20	Number of Read File Record requests received from network.
FC21	Number of Write File Record requests received from network.
FC22	Number of Mask Write Register requests received from network.
FC23	Number of Read/Write Multiple Registers requests received from network.

Modbus/TCP Client Tallies (task m)

Use the command: `> tally m`
to display the tally data for these Ethernet operations:

Tally	Description
InPdu	Total Modbus/TCP PDUs received (good and bad) from network.
OutPdu	Total Modbus/TCP PDUs sent to network.
BadPdu	Bad PDUs received from network.
OutDatRq	Number of Data Request PDUs sent to network.
InDatRp	Number of Data Response PDUs received from network.
InErrRp	Number of Error Response PDUs received from network.
OutDisRq	Number of Disconnect Requests sent to network.
InDisRq	Number of Disconnect Requests received from network.
InCmd	Number of Channel COMMREQs received.
BadCmd	Number of unrecognized Channel COMMREQs received.
InOpen	Number of Open (3000) Channel COMMREQs received.
InClose	Number of Close (3001) Channel COMMREQs received.
InRdData	Number of Read Data (3003) Channel COMMREQs received.
InWrData	Number of Write Data (3004) Channel COMMREQs received.
InRdWr	Number of Read/Write (3005) Channel COMMREQs received.
InMskWr	Number of masked Write Data (3009) Channel COMMREQs received.
OutBpdEr	Number of BPD transfer failures while sending to local CPU.
InBpdEr	Number of BPD transfer failures while receiving from local CPU.
OutConRq	Number of TCP Connection Requests Responses sent to network.
InConRp	Number of TCP Connection Responses received from network.

RDS Tallies (task d)

Use the command: `> tally d`

to display the tally data for these Ethernet operations:

<i>Tally</i>	<i>Description</i>
RqSent	Number of requests sent.
RqRetry	Number of requests retried
RqTmOut	Number of requests timed out without response.
RpRecv	Number of replies received.
SessStrt	Number of sessions started.
SessEnd	Number of sessions terminated.
RqRecv	Number of incoming requests received/
RqFlush	Number of incoming requests flushed without processing.
RpImm	Number of immediate replies sent.
RpNonImm	Number of non-immediate replies sent.
RdDup	Number of duplicate requests received. (The reply is sent from execute-once queue.)

SRTP Client (Channels) Tallies (task h)

Use the command: `> tally h`

to display the tally data for these Ethernet operations:

<i>Tally</i>	<i>Description</i>
InPdu	Total SRTP PDUs received (good and bad) from network.
OutPdu	Total SRTP PDUs sent to network.
BadPdu	Number of Bad PDUs received from network.
OutConRq	Number of Connect Request PDUs sent to network.
InConRp	Number of Connect Response PDUs received from network.
OutDstRq	Number of Destination Request PDUs sent to network.
InDstRp	Number of Destination Response PDUs received from network.
OutSesRq	Number of Session Request PDUs sent to network.
InSesRp	Number of Session Response PDUs received from network.
OutDatRq	Number of Data Request PDUs sent to network.
InDatRp	Number of Data Response PDUs received from network.
OutErrRq	Number of Error PDUs sent to network.
InErrRp	Number of Error PDUs received from network.
OutUncRq	Number of Unconfirmed Requests sent to network.
OutDisRq	Number of Disconnect Requests sent to network.
InDisRp	Number of Disconnect Requests received from network.
InCmd	Number of channel command blocks received from PLC CPU.
BadCmd	Number of invalid channel command blocks received from PLC CPU.
OutBpdEr	Number of Backplane Driver Transfer failures while sending to PLC CPU.
InBpdEr	Number of Backplane Driver Transfer failures while receiving from PLC CPU.

SRTP Server Tallies (task v)

Use the command: `> tally v`

to display the tally data for these Ethernet operations:

Tally	Description
InPDU	Total SRTP PDUs received (good and bad) from network.
OutPDU	Total SRTP PDUs sent to network.
BadPDU	Bad PDUs received from network.
InConRq	Connect Request PDUs received from network.
OutConRp	Connect Response PDUs sent to network.
InDatRq	Data and Session Request PDUs received from network.
OutDatRp	Data Response PDUs sent to network.
InUncRq	Unconfirmed Request PDUs received from network.
OutUncRq	Unconfirmed Request PDUs sent to network.
InErrRq	Error Request PDUs received from network.
OutErrRq	Error Request PDUs sent to network.
InDisRq	Disconnect requests received from network.
OutDisRq	Disconnect requests sent to network.
InSesRq	Session Request PDUs received from network.
InDstRq	Destinations Request PDUs received from network.
OutDstRp	Destinations Response PDUs sent to network.
OpenTO	SRTP connections timed out in OPENING state.

Web Server Tallies (task e)

Use the command: `> tally e`

to display the tally data for these Ethernet operations:

Tally	Description
UrlReq	Number of URL requests received.
UrlSrvd	Number of URL requests responded to with data.
UrlUnkn	Number of requests for an unknown URL.
WebByte	Number of bytes returned to clients.
WebRef	Number of times a URL request has been refused due to lack of a connection.

FTP Server Tallies (task t)

Use the command: `> tally t`

to display the tally data for these Ethernet operations:

Tally	Description
LgnsSucc	Number of successful logins handled by the server.
LgnsRejc	Number of logins rejected by the server.

Backplane Driver Tallies (task c)

Use the command: `> tally c`

to display the tally data for these Ethernet operations:

<i>Tally</i>	<i>Description</i>
UsrReq	Service requests from BPD (backplane driver) users to CPU.
UsrRsp	Service request responses to BPD users.
UsrMsg	Messages from BPD users to CPU.
UnsolMsg	Unsolicited transfers from CPU to BPD users.
PlcReq	Service requests from CPU to BPD users.
PlcRsp	Service request responses to CPU.
Cmrq	COMMREQs received from CPU.
CmrqDscd	COMMREQs discarded for BPD Users. (This tally indicates that the PLC application is sending COMMREQs faster than the Ethernet interface can process them.)
PlcSweep	Total CPU Sweeps.
PktToPlc	Total mailbox messages sent to CPU.
PktFmPlc	Total mailbox messages received from CPU.
PktUnreg	Messages received for unregistered user.
BsyRetry	Automatic retries due to CPU busy.
BpdAbort	Transfers aborted by BPD.
PlcTmout	Timeouts awaiting response from CPU.
UsrTmout	Timeouts awaiting response from user.

Shared Memory Interface Tallies (also part of task c)

Tally	Description
SendObtn	Mailbox messages obtained from send queue.
MBSend	Mailbox messages successfully sent to PLC.
MBResend	Mailbox messages successfully resent to PLC.
SndAbort	Mailbox message send obtains aborted.
MBAvail	MB_AVAILABLE commands received from PLC.
RecvObtn	Mailbox messages obtained from receive queue.
MBRecv	Mailbox messages successfully received from PLC.
RcvAbort	Mailbox message receive obtains aborted.
Busy	BUSY commands received from PLC.
Idle	IDLE commands received from PLC.
Hrtbeats	HEARTBEAT commands received from PLC.
ClrDbCfg	CFG_BD_CFG commands received from PLC.
FactCmd	Factory Test commands received from PLC.
FactRsp	Factory Test responses sent to PLC.
EgdProd	EGD_PROD_CMP commands received from PLC.
UnknCmd	Unknown commands received from PLC.
HpAlloc	Shared memory heap buffer allocations.
HpFree	Shared memory heap buffer frees.
DbIFree	Shared memory heap buffer double-frees.

ARP Tallies (task f)

There are no ARP tallies.

IP Tallies (task i)

Use the command: `> tally i`

to display the tally data for these Ethernet operations:

<i>Tally</i>	<i>Description</i>
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)
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 (e.g., 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.
OutDiscd	The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (e.g. 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 which received fragments are held while they are awaiting reassembly at this entity. (Not used)
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 whatever reason: timed out, errors, message size too big, etc.).
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.

TCP Tallies (task w)

Use the command: `> tally w`

to display the tally data for these Ethernet operations:

Tally	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 number of entries displayed via the "STAT W" command (including the LISTEN entry).
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.

UDP Tallies (task u)

Use the command: `> tally u`

to display the tally data for these Ethernet operations:

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

Network Interface Tallies (task 1)

The TALLY command provides statistics about operation and performance of the internal connection between the embedded Ethernet network switch and Ethernet Interface.

Note: The tallies indicate problems only with the internal Ethernet network switch connections, not between the external switch and the network.

To display the tally data for the following Ethernet operations, use the command: `> tally 1`

Tally	Description
RcvUniPk	Unicast packets received from network.
RcvMcPkt	Multicast packets received from network.
DiscPkt	Received packets discarded by Network Interface.
RcvError	Error packets received from network.
UnkProto	Received packets discarded due to unknown protocol.
SndUniPk	Unicast packets sent to network.
SndMcPkt	Multicast packets sent to network.
SndError	Outbound packets discarded due to errors.
SndDscd	Outbound packets discarded.
<i>The following are Detailed Network Interface Tallies</i>	
MalErr	Number of MAL system errors detected (restarts EMAC).
EmacRst	Number of times EMAC restarted (for error recovery).
RxOvr	Number of times receive failed due to an overrun condition.
RxPause	Number of times a PAUSE frame was received.
RxBadPkt	Number of times a bad packet was received.
RxRntPkt	Number of packets received that were less than 64 bytes.
RxPhyDv	Number of times the PHY receive DV signal was too short.
RxAlign	Number of packets received with a non-integral number of bytes.
RxFCS	Number of packets received with a checksum error.
Rx2Long	Number of packets received that were greater than 1537 bytes.
RxLong	Number of packets received with an out-of-range error.
RxShrt	Number of packets received with an in-range error.
TxDead0	Number of transmit packets failed due to transmit or SQE errors.
TxSqe0	Number of transmit packets failed due to an SQE error.
TxErr0	Number of transmit packets failed due to a transmit error.
TxNoDsc	Number of times unable to transmit a packet due to a lack of transmit ring descriptors.
TxExsDef	Number of packets that were not transferred due to excessive deferrals.
TxExsCol	Number of packets that were not transferred due to excessive collisions.
TxLatCol	Number of packets that experienced a late collision.
TxMulCol	Number of transmitted packets that saw multiple collisions.
TxSngCol	Number of transmitted packets that saw exactly one collision.
TxLosCar	Number of times detected a loss of carrier.
TxUnr	Number of transmitter underrun conditions detected (restarts EMAC).

Network Interface Tallies (task I), continued

Tally	Description
<i>The following are tallies associated with each switch port</i>	
TxUniPkt	Unicast packets sent to network.
TxMcPkt	Multicast packets sent to network.
TxBcPkt	Broadcast packets sent to network.
TxDrop	Number of transmit packets dropped for lack of resources.
TxTotCol	Number of collisions seen by the port.
TxSngCol	Number of transmitted packets that saw exactly one collision.
TxMulCol	Number of transmitted packets that saw multiple collisions.
TxDefer	Number of packets whose transmission was delayed due to the medium being busy.
TxLatCol	Number of packets that experienced a late collision (more than 512 bit times into the transmission).
TxExcCol	Number of packets that were not transferred due to excessive collisions.
TxFrmDsc	Number of packets that were discarded due to lack of output space within the switch.
TxPause	Number of PAUSE frames transmitted by the port.
RxUniPkt	Unicast packets received from network.
RxMcPkt	Multicast packets received from network.
RxBcPkt	Broadcast packets received from network.
RxShort	Number of packets received that were less than 64 bytes.
RxPause	Number of times a PAUSE frame was received by the port.
RxLong	Number of packets received whose length was greater than 1522 bytes.
RxJabber	Number of times a jabber condition was detected by the receiver.
RxAlign	Number of packets received with a non-integral number of bytes.
RxFcsErr	Number of packets received with a checksum error.
RxDrop	Number of packets dropped in the receiver due to lack of space in the switch.
RxSaChng	Number of times the source address of packets changed.
RxFrgmnt	Number of packets received that were less than 64 bytes.
RxExcSiz	Number of packets received that were greater than 1537 bytes.
RxSymErr	Number of times an invalid symbol was encountered in the data stream.

ICMP/IGMP Tallies (task j)

Use the command: `> tally j`

to display the tally data for these Ethernet operations:

Tally	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 (requests) messages received.
InEchoRp	The number of ICMP Echo Reply messages received.
InTmSp	The number of ICMP Timestamp (request) messages received.
InTmSpRp	The number of ICMP Timestamp Reply messages received.
InAdmM	The number of ICMP Address Mask Request messages received.
InAdmMRp	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.
OtAdmM	The number of ICMP Address Mask Request messages sent.
OtAdmMRp	The number of ICMP Address Mask Reply messages sent.

SNTP Tallies (task n)

Use the command: `> tally n`

to display the tally data for these Ethernet operations:

Tally	Description
Ntppkt	Number of SNTP packets received (from any server).
Nstrater	Number of SNTP packets received with an invalid stratum number (outside the range 0-15).
Nverold	Number of SNTP packets received with an old version (1 or 2).
Nver3	Number of SNTP packets received with version 3.
Nver4	Number of SNTP packets received with version 4.
Nverbad	Number of SNTP packets received with an invalid version.
Nlenbad	Number of SNTP packets received with an invalid length.
Nincons	Number of SNTP packets discarded due to an inconsistent time.
Ntimeout	Number of times an SNTP server timed out by not sending a packet within 150 seconds.
Nsvrchng	Number of times the locked on SNTP server was changed.
Nloktot	Number of SNTP packets received from the locked-on server.
Nlokcons	Number of SNTP packets received with the locked-on server that were consistent.

Flash File System Tallies (task s)

Use the command: `> tally s`

to display the tally data for these Ethernet operations:

Tally	Description
FfsWrite	Number of bytes written by the flash file system
FfsReadS	Number of bytes read by the flash file system.
FfsErase	Number of sector erases done by the flash file system.
FfsErrWr	Number of writes that returned an error status.
FfsErrRd	Number of read requests that returned an error status.

Appendix *Exception Log Events*

B

This section describes the Exception Log events that can be displayed using the LOG command. Additional status information is defined in the next section.

- Viewing the Exception Log
- Descriptions of Event Types
 - Event Type 0: Powerup Diagnostics Events
 - Event Type 1: Powerup Events
 - Event Type 2: Configuration Events
 - Event Type 3: Operating System Error Events
 - Event Type 8: PLC Driver (BPD) Events
 - Event Type d: Error Handler Events
 - Event Type e: Station Manager Events
 - Event Type f: Common Utility Events
 - Event Type 1b: SRTP Server Events
 - Event Type 1c: SRTP Client (Channels) Events
 - Event Type 20: Network Interface Events
 - Event Type 28: Ethernet Global Data (EGD) Events
 - Event Type 29: SNTP Events
 - Event Type 2a: Runtime Diagnostic Events
 - Event Type 2b: Reliable Datagram Service (RDS) Events
 - Event Type 2c: Web Server Events
 - Event Type 2d: FTP Server Events
 - Event Type 2e: Flash File System Events
 - Event Type 2f: Modbus/TCP Server event
 - Event Type 31: Common SRTP (Client and Server) Events
 - Event Type 32: Channel Framework Events (used by all channel protocols)
 - Event Type 33: OS Abstraction Events
 - Event Type 34: General Ethernet System Events
 - Event Type 35: Modbus/TCP Client (Channels) Events

Viewing the Exception Log

The exception log is maintained in non-volatile memory; the exception log contents are retained over normal power outage. Events stay in the exception log until they are cleared with the *CLEAR LOG* command, or until they are overwritten by more recent data.

Use the Station Manager LOG command to view the current contents of the exception log. In addition to being accessible to the Station Manager, most exception log events also cause a fault message to be placed in the PLC Fault Table.

LOG Command Example

```
> log z
<<< Exception Log >>>
IC693 Embedded Ethernet Interface version 3.30 (19A1)
Log displayed 04-JUN-2005 11:25:28.3
Log initialized using valid RAM information
Log last cleared 31-MAY-2005 09:33:46.9
```

Date	Time	Event	Count	Entry 2 through Entry 6	SCode	Remote IP Addr:Port or Producer ID:Exchg	Local IP Addr:Port
04-JUN-2005	09:33:47.0	1H	1H	0000H 0001H 0000H 0000H 0000H			
04-JUN-2005	09:33:47.0	0H	1H	MII/PHY Fail	80010605H		
04-JUN-2005	14:01:22.2	20H	1H	0001H 0000H 0000H 0001H 0117H			
->04-JUN-2005	09:33:47.2	2aH	1H	0004H 0000H 0000H 0004H 0192H			

Event Date and Time

The exception log is a circular list; a new event overwrites the oldest event in the list. An arrow points to the most recent event. Each entry is identified by Date and Time.

Event Count

The Count column shows how many of that error type have occurred. Instead of recording each repeated event in detail, the log keeps the time of the latest event and a count of the number of repetitions of that event type.

At most 65535 (= ffffH) repetitions are counted in each entry. A subsequent repetition will cause a new entry to be created in the log with a count of 1.

Types of Exception Events

In the LOG, the type of event that has occurred is indicated by a hexadecimal value:

<i>Event Type</i>	<i>Event Group</i>
0H	Power up diagnostics events
1H	System startup event
2H	Configuration (CFG) event
3H	Operating system (RTOS) event
8H	PLC Driver (BPD) event
dH	Error handler (ERR) event
eH	Station Manager (STA) event
fH	Common Utility (UTL) event
1bH	SRTP Server (SRTP) event
1cH	SRTP Client (Channels) event
20H	Network Interface event
28H	Ethernet Global Data (EGD) event
29H	SNTP event
2aH	Run-time Diagnostics (DIAG) event
2bH	Reliable Datagram Service (RDS) event
2cH	Web Server event
2dH	FTP Server event
2eH	Flash File System (FFS) event
2fH	Modbus/TCP Server event
31H	Common SRTP (Client and Server) event
32H	Channel Framework event (used by all channel protocols)
33H	OS Abstraction event
34H	General Ethernet System event
35H	Modbus/TCP Client (Channels) event

Additional Fault Information in Entries 2 through 6

Entries 2 - 6 provide detailed information about the exception. The tables that follow in this section describe this additional information for each event type.

Additional Internal Status Information

In addition to Entries 2 – 6, many exceptions also contain an internal Status Code (SCode) value. Some exceptions contain additional information, such as identification of individual network connections or exchanges.

Descriptions of Event Types

Event Type 0: Powerup Diagnostics Events

Event Type 0 is a powerup diagnostic error. Powerup diagnostic errors are reported as short text messages.

LOG Command Display for Event Type 0

Unlike all other exception log events, Powerup Diagnostics events are displayed as text strings instead of numeric codes in Entries 2-6. The LOG command display for Event Type 0 is shown below.

Date	Time	Event	Count	Entry
12-APR-2003	00:00:00.0	0H	1H	Text description of error

Powerup Diagnostics

The table below shows the Powerup Diagnostic events. All Powerup Diagnostic events generate the PLC Fault Table entry “Module hardware fault”.

Text Descriptions of Powerup Diagnostic Events

Text Description	Exception Event that has Occurred
“Undefined Fail”	General hardware diagnostic failure.
“Enet HW Fail”	Non-specific hardware failure.
“Enet RAM Fail”	RAM memory test has failed.
“SMI Init Fail”	Shared memory initialization has failed
“SMI Diag Fail”	PLC CPU interaction test has failed.
“Enet CRC Fail”	Ethernet Controller self-test has failed.
“MAC Addr Fail (CRC)”	The unique MAC address is corrupted.
“Bad MAC Addr”	The unique MAC address is invalid.
“MII/PHY Fail”	Error communicating to internal PHY.
“PHY T/O Fail”	PHY did not respond to command.
“Serial Failure”	UART serial port test has failed.
“Ethernet Fail”	Ethernet Controller test has failed.
“Runtime Fail”	Runtime diagnostic failure.

Event Type 1: Powerup Events

Event Type 1 is logged at every initialization of the Ethernet interface. Checking the count for Event Type 1 shows how many restarts have occurred. Restarts may not indicate error conditions; powerup events do not change the STAT LED.

No Fault Table Reporting for Powerup Events

Powerup events are not reported to the PLC Fault Table. The CPU may generate a PLC Fault Table entry when the Ethernet interface is restarted.

LOG Command Display for Event Type 1

Powerup events do not use a Status Code (SCode) value, so the LOG command does not show additional information for these events. The LOG command display for Event Type 1 is shown below.

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6
12-APR-2003	00:00:00.0	1H	1H	0000H	0000H	0000H	0000H	0000H

1H = Powerup Event

Entry 2 is always 0.

The table below shows the Powerup events. For Powerup events, there are no PLC Fault Table entries. Entry 2 is always zero (see below). Entry 3 contains a restart reason code for the event. Entry 4 is only used when restarting after using the firmware loader. Entries 5 and 6 are not used.

Entry 3	Description
0	Normal powerup.
1	Restart via Ethernet Restart pushbutton.
2	Pre-emptive restart via Ethernet Restart pushbutton when a previous restart attempt did not complete.
3	Station Manager restart request.
4	Automatic restart after changing MAC address.
5	Automatic restart due to system error (see preceding exception log event).
7	Automatic restart after firmware update completion. Entry 4: b Firmware load due to corrupted Primary Ethernet firmware. 10 Firmware load requested by user via CPU serial port.
8	Automatic restart due to ACFAIL glitch or brown-out.
c	Automatic restart due to Ethernet watchdog timer expiration.
e	Automatic restart due to restart command from PLC CPU firmware. This code may also be displayed on powerup after a very brief power outage.
10	Restart via Ethernet Restart pushbutton while in Software Load mode.
ff	Restart due to unknown reason.

Event Type 2: Configuration (CFG) Events

Event Type 2 indicates a configuration exception event.

LOG Command Display for Event Type 2

Most Configuration events contain an optional Status Code (SCode) value. The LOG command display for Event Type 2 is shown below.

└─── 2H = Configuration Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	2H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Configuration events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Configuration event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
0	<p><i>“LAN system-software fault; resuming”</i> A failure occurred during primary firmware initialization. Entry 3: Internal error code indicating the subsystem that failed.</p>
1	<p><i>“LAN system-software fault; resuming”</i> Configuration subsystem task 0 failed to properly register with the PLC Driver subsystem. There is no communication with the CPU.</p>
2	<p><i>“LAN system-software fault; resuming”</i> A failure occurred attempting to send a logon request to the PLC CPU. The CFG subsystem will no longer receive change notification mail. This will cause the LED's to not properly display a configuration store or clear.</p>
3	<p><i>“LAN system-software fault; resuming”</i> The PLC CPU sent an unrecognized request to the Configuration subsystem. Entry 3: May contain an internal error code indicating the type of the request.</p>
4	<p><i>“LAN system-software fault; resuming”</i> The PLC CPU sent an unrecognized message to the Configuration subsystem. Entry 3: Internal code indicating the type of mail message for an unrecognized unsolicited mail message, or the sequence number for an unrecognized response message.</p>
5	<p><i>“LAN system-software fault; resuming”</i> The Configuration subsystem failed attempting to respond to a PLC CPU request. Entry 3: Response message type. Entry 4: Response message sequence number.</p>
6	<p><i>“LAN system-software fault; resuming”</i> A failure occurred processing the Ethernet configuration. This error is due to an invalid configuration being stored. The Configuration processing stops at the first error detected. If processing a configuration received from PLC CPU, the Ethernet interface will process the backup configuration. Entry 3: For Advanced User Parameter errors, the line number within the Advanced User Parameter file where the error occurred.</p>

Event Type 2: Configuration (CFG) Events (continued)

Entry 2	Description
7	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred in configuration timeout processing. If no Status Code value exists, the configuration was not received from the PLC CPU in a timely manner. Otherwise, an operating system error occurred attempting to send a message or event to perform the timeout processing. The last configuration stored will be retrieved from backup memory. If no configuration exists in backup, the default configuration will be used.</p>
8	<p><i>“LAN system-software fault; resuming”</i></p> <p>Failure attempting to retrieve backup configuration data from non-volatile memory. The backup configuration data has been corrupted. The default configuration will be used.</p>
9	<p><i>“LAN system-software fault; resuming”</i></p> <p>Failure attempting to store backup configuration data into non-volatile memory.</p>
a	<p><i>“LAN system-software fault; resuming”</i></p> <p>An unknown system event confirmation was received. Entry 3: Confirmation type received.</p>
b	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure was returned by the PLC Driver while attempting to send a request to the PLC CPU to retrieve the PLC CPU date/time.</p>
c	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred attempting to remove a Task from the event notification list.</p>
d	<p><i>“LAN system-software fault; resuming”</i></p> <p>An unrecognized event was received by the timeout task. Entry 3: Event code.</p>
f	<p><i>“LAN system-software fault; resuming”</i></p> <p>An unidentified subsystem attempted to vote on the module OK status.</p>
10	<p><i>“LAN system-software fault; resuming”</i></p> <p>Failure attempting to process a station manager command. Details are found in the Status Code. If no Status Code value exists, an invalid station manager command was attempted. Entry 3: Internal error code.</p>
11	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure was encountered when attempting to retrieve the internal system time from the DIAG subsystem. This will cause unreliable operation of the Ethernet Restart pushbutton and the STAT LED.</p>
12	<p><i>“LAN system-software fault; resuming”</i></p> <p>An internal operating system error occurred while retrieving or updating the current time value in shared memory. This may cause unreliable timestamp values in produced EGD exchanges. Entry 3: May contain an internal error code, which indicates a failure occurred while converting to POSIX time.</p>
13	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred receiving confirmation from one or more subsystems during the restart sequence. The restart will still occur. Entry 3: May contain an internal error code.</p>

Event Type 2: Configuration (CFG) Events (continued)

Entry 2	Description
14	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred receiving confirmation from one or more subsystems during enter sequence into factory diagnostics. Factory diagnostics will still occur.</p> <p>Entry 3: May contain an internal error code.</p>
15	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred attempting to allocate space to insert a Task into the notification list for system events.</p> <p>Entry 3: Internal error code indicating system events.</p>
16	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred while allocating memory for the Advanced User Parameters file received from the PLC.</p>
17	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred attempting to register a subsystem for system event notification.</p> <p>Entry 3: Internal error code indicating system events being registered.</p>
18	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred attempting to de-register a subsystem for system event notification.</p> <p>Entry 3: Internal error code that indicates the system events being deregistered.</p>
19	<p><i>“LAN system-software fault; resuming”</i></p> <p>A system event notification error occurred. The notification could not be sent due to an operating system error, or the notification occurred before the event notification user list was created.</p> <p>Entry 3: May contain an internal system event code (USB)</p> <p>Entry 4: May contain an internal system event code (LSB)</p>
1a	<p><i>“LAN system-software fault; resuming”</i></p> <p>An operating system error occurred while the CFG main task was receiving messages from other tasks.</p>
1d	<p><i>“LAN system-software fault; resuming”</i></p> <p>Unable to update Advanced User Parameters File during station manager CHPARM command processing. A failure occurred while allocating space for the new parameter, or while retrieving the current Advanced User Parameter file from non-volatile memory.</p>
1e	<p><i>“LAN system-software fault; resuming”</i></p> <p>An error response message was returned from the CPU for a Logon request.</p> <p>Entry 3: Response message type.</p> <p>Entry 4: Response message sequence number.</p>
1f	<p><i>“LAN system-software fault; resuming”</i></p> <p>An error response was returned from the CPU for a Get Date/Time request.</p> <p>Entry 3: Response message type.</p> <p>Entry 4: Response message sequence number.</p>
21	<p><i>“LAN system-software fault; resuming”</i></p> <p>An error response was returned from the CPU for a Get Program Name request.</p> <p>Entry 3: Response message type.</p> <p>Entry 4: Response message sequence number.</p>

Event Type 2: Configuration (CFG) Events (continued)

Entry 2	Description
23	<p><i>“LAN system-software fault; resuming”</i></p> <p>An invalid value was used for the Data Rate, Parity or Flow Control configuration parameters for the Station Manager serial port.</p> <p style="padding-left: 40px;">Entry 3: Internal error code. Entry 4: The invalid value.</p>
24	<p><i>“LAN system-software fault; resuming”</i></p> <p>An internal system error occurred while a Task was attempting to enter or exit a critical region.</p>
26	<p><i>“LAN system-software fault; resuming”</i></p> <p>An internal system error occurred attempting to initiate a Restart sequence. The restart will not occur.</p>
27	<p><i>“LAN system-software fault; resuming”</i></p> <p>An unrecognized Restart sequence command was received.</p> <p style="padding-left: 40px;">Entry 3: Internal error code.</p>
2a	<p><i>“LAN system-software fault; resuming”</i></p> <p>An operating system error occurred while getting the current settings for the Station Manager serial port. This error prevents the serial port from being configured.</p>
2b	<p><i>“LAN system-software fault; resuming”</i></p> <p>An operating system error occurred while canceling a timer. The failure occurred during the status task shutdown while preparing to enter factory diagnostics operation.</p>
2c	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred in shared memory while responding to a firmware update request. The restart sequence will still occur and the module will restart into software load mode.</p>
2d	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred attempting to write to flash to place the module into software load mode. The module will not accept a firmware update.</p>
30	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred attempting to register with the PLC for notification when PLC state changes, clear of faults occurs, and soft switch configuration changes. The Ethernet Interface will not respond to PLC state changes.</p>
31	<p><i>“LAN system-software fault; resuming”</i></p> <p>An unrecognized notification message was received from the PLC. The message is ignored.</p>
32	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred in attempting to write the IP address to non-volatile storage. No non-volatile IP address will be available.</p>
33	<p><i>“LAN system-software fault; resuming”</i></p> <p>A failure occurred trying to set the IP address from the network. The IP address of the module was not set.</p> <p style="padding-left: 40px;">Entry 3 and 4: IP Address of received from the network, displayed as two hexadecimal words. (For example, 10.0.0.2 would be shown as 0A00H 0002H)</p>

Event Type 2: Configuration (CFG) Events (continued)

Entry 2	Description
34	<i>"LAN system-software fault; resuming"</i> A failure occurred trying to process AUP information for a protocol. The protocol may not operate properly.
35	<i>"LAN system-software fault; resuming"</i> A failure occurred attempting to read PLC memory. Entry 3: May contain an internal code
36	<i>"LAN system-software fault; resuming"</i> A failure occurred attempting to write PLC memory. Entry 3: May contain an internal code
37	<i>"LAN system-software fault; resuming"</i> A failure occurred attempting to send a reply to the PLC after receiving a request to get revision information. Communication with the PLC will no longer be available. Initiate a power cycle or Ethernet restart to attempt recovery.
38	<i>"LAN system-software fault; resuming"</i> A failure occurred attempting to send a reply to the PLC after receiving a request to invalidate firmware. The software load attempt will fail. Power cycle the CPU and retry the software load.
39	<i>"LAN system-software fault; resuming"</i> A failure occurred as a result of processing a response from the PLC that returns control information. Entry 3: May contain the type of the mailbox message Entry 4: May contain the sequence number of the mailbox message
3a	<i>"LAN transceiver fault; OFF network until fixed"</i> Network interface not running when attempting to install configuration. Configuration processing will continue without network connectivity.
3b	<i>"LAN system-software fault; resuming"</i> A failure occurred while processing BOOTP. Configuration from a BOOTP server may have been lost.
3c	<i>"LAN system-software fault; resuming"</i> A failure occurred while processing a BOOTP request or response. Configuration from a BOOTP server may have been lost.
3d	<i>"LAN system-software fault; resuming"</i> A failure occurred while waiting for other subsystems to confirm notification that SYSFAIL has been detected and handled. Entry 3: Internal code
3e	<i>"LAN system-software fault; resuming"</i> A failure occurred attempting to notify that a SYSFAIL has been detected.
3f	<i>"LAN system-software fault; resuming"</i> A failure occurred attempting to notify that an ACFAIL has been detected.

Event Type 2: Configuration (CFG) Events (continued)

Entry 2	Description
40	<i>"LAN system-software fault; resuming"</i> Attempt to send a service request to the PLC failed. Entry 3: Mailbox type Entry 4: Mailbox sequence number
41	<i>"LAN system-software fault; resuming"</i> Unable to allocate memory for the Module Configuration file.
42	<i>"LAN system-software fault; resuming"</i> Error parsing the Module Configuration file. Entry 3: May contain parameter record code where error occurred Entry 4: May contain parameter record length
4c	<i>"LAN system-software fault; resuming"</i> Configuration files were received from the PLC CPU in incorrect sequence.
4d	<i>"LAN system-software fault; resuming"</i> Error registering for a communication channel. The channel is not available for use. Entry 3: Channel number

Event Type 2: Configuration (CFG) Events (continued)

Entry 2	Description
4e	<p><i>“LAN system-software fault; resuming”</i> Error deregistering for a communication channel. Entry 3: Channel number</p>
4f	<p><i>“LAN system-software fault; resuming”</i> Error occurred while processing a Task 0 service request response from the PLC CPU. Usually indicates an error updating a CommReq Status Word. Entry 3: Mailbox sequence number Entry 4: Mailbox type</p>
51	<p><i>“LAN system-software fault; resuming”</i> Internal error creating an error report message queue.</p>
52	<p><i>“LAN system-software fault; resuming”</i> Error occurred processing a CommReq from the PLC CPU. This usually indicates an unsupported CommReq command code, or an invalid CommReq Status Word address. Entry 3: (Optional) CommReq command number Entry 4: (Optional) Value of invalid status word segment selector</p>
53	<p><i>“LAN system-software fault; resuming”</i> Internal error reading a message from the error report message queue.</p>
54	<p><i>“LAN system-software fault; resuming”</i> Error occurred writing a CommReq Status Word to the PLC CPU.</p>
55	<p><i>“LAN system-software fault; resuming”</i> An unsupported feature was configured in the Module Config file. Entry 3: Parameter record code of unsupported feature. Entry 4: Parameter record length</p>
56	<p><i>“LAN system-software fault; resuming”</i> Internal error releasing CommReq processing resources.</p>
57	<p><i>“LAN system-software fault; resuming”</i> Internal error releasing memory allocated for CommReq processing.</p>
58	<p><i>“LAN system-software fault; resuming”</i> Internal error indicating a failure while attempting to update the CommReq Status Word.</p>

Event Type 3: Operating System Error Events

Event Type 3 is logged if the operating system detects an unrecoverable error. Normal operation cannot continue. The Ethernet interface is automatically restarted.

The PLC Fault Table entry for an Operating System Errors is generated after the restart has completed.

LOG Command Display for Event Type 3

Operating System Error events do not use a Status Code (SCode) value. The LOG command display for Event Type 3 is shown below.

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6
12-APR-2000	00:00:00.0	3H	1H	0001H	0000H	0000H	0000H	0000H

The table below shows the Operating System Error events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Operating System Error event. Entries 3 and 4 contain a 32-bit internal error code. Entry 3 contains the most significant 16 bits; Entry 4 contains the least significant 16 bits. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>“LAN system-software fault; restarted LAN IF”</i></p> <p>Fatal operating system error. The Ethernet interface will be automatically restarted.</p> <p style="margin-left: 20px;">Entry 3: Internal error code. (Most significant 16 bits)</p> <p style="margin-left: 20px;">Entry 4: Internal error code. (Least significant 16 bits)</p>

Event Type 8: PLC Driver (BPD) Events

Event Type 8 indicates a PLC Driver exception event.

LOG Command Display for Event Type 8

Most PLC Driver events contain an optional Status Code (SCode) value. The LOG command display for Event Type 8 is shown below.

8H = Backplane Driver Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	8H	1H	0000H	0000H	0000H	0000H	0000H	0000000H

The table below shows the PLC Driver events and corresponding PLC Fault Table entries. Entry 2 identifies the particular PLC Driver event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<i>No PLC Fault Table Entry for this error.</i> PLC Driver subsystem not initialized after PLC powerup or Ethernet restart. No communications with PLC CPU.
2	<i>No PLC Fault Table entry for this error.</i> Mailbox communication was not established with PLC CPU after a PLC powerup or Ethernet restart. There is no communication with the PLC CPU. Entry 3: Internal error code.
3	<i>“Backplane communications with PLC fault; lost request”</i> Service Request Processor (within PLC CPU) did not come online after a PLC powerup or Ethernet restart. There is no mailbox communication with the PLC CPU.
4	<i>“Backplane communications with PLC fault; lost request”</i> Mailbox packets were received from PLC CPU in wrong order. Entry 3: Task number. Entry 4: Mailbox sequence number.
5	<i>“Comm-Req Bad task ID programmed”</i> COMMREQ was received from PLC CPU for unknown or unregistered BPD User task. Entry 3: Task number. Entry 4: Mailbox sequence number.
6	<i>“Backplane communications with PLC fault; lost request”</i> A mailbox message (other than a COMMREQ) was received from the PLC CPU for an unknown or unregistered BPD User task. Entry 3: Task number. Entry 4: Mailbox sequence number.

Event Type 8: PLC Driver (BPD) Events (continued)

Entry 2	Description
8	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>PLC Driver timed out waiting for an expected response from the PLC CPU. This exception may occur when COMMREQs or other mail are sent faster than the Ethernet interface can process them. PLC Driver timeouts may also be caused by extremely heavy EGD command traffic; this is indicated by CPU faults in PLC Fault Table preceding the timeout faults.</p> <p>Entry 3: Task number. Entry 4: Mailbox sequence number.</p>
9	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>PLC Driver timed out waiting for an expected response from a BPD User task to a request from the PLC CPU.</p> <p>Entry 3: Task number. Entry 4: Mailbox sequence number.</p>
a	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>PLC Driver timed out waiting for completion of a multi-packet unsolicited transfer from the PLC CPU.</p> <p>Entry 3: Task number. Entry 4: Mailbox sequence number.</p>
b	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>PLC Driver is unable to detect PLC state changes.</p>
10	<p><i>No PLC Fault Table entry for this error.</i></p> <p>PLC Driver has stopped due to a fatal internal error.</p>
11	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error starting internal operating timers.</p> <p>Entry 3: Internal timer identification code.</p>
12	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error registering a new BPD User task.</p> <p>Entry 3: Task number. Entry 4: May contain memory allocation size.</p>
13	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error de-registering a BPD User task.</p> <p>Entry 3: Task number.</p>
14	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error receiving a mailbox transfer from a BPD User task.</p> <p>Entry 3: Task number. Entry 4: Mailbox sequence number.</p>

Event Type 8: PLC Driver (BPD) Events (continued)

Entry 2	Description
15	(No PLC Fault for this exception) Error sending a mailbox transfer to the PLC CPU. The CPU may be in an error state or otherwise not receiving mail; look for CPU faults in the PLC Fault Table. Entry 3: Either the task number or an internal error code. Entry 4: Mailbox sequence number.
16	“LAN system-software fault; resuming” Error receiving a mailbox transfer from the PLC CPU. Entry 3: Task number. Entry 4: Mailbox sequence number.
17	“LAN system-software fault; resuming” Error sending a mailbox transfer to a BPD User task. Entry 3: Either the task number or an internal error code. Entry 4: Mailbox sequence number.
18	“LAN system-software fault; resuming” Error flushing a mailbox transfer. Entry 3: Task number. Entry 4: Mailbox sequence number.
19	“LAN system-software fault; resuming” Error handling internal transfer timeout timers. Entry 3: Either the task number or an internal error code. Entry 4: Mailbox sequence number.
1a	“LAN system-software fault; resuming” Error freeing an internal transaction record. Entry 3: Task number. Entry 4: Mailbox sequence number.
1b	“LAN system-software fault; resuming” Error generating Station Manager output data. Entry 3: Internal error code. Entry 4: Station Manager command code.
1c	“LAN system-software fault; resuming” Unknown Station Manager command was received. Entry 3: Unknown Station Manager command code.
1d	“LAN system-software fault; resuming” Error starting PLC Sweep timer task.
1e	“LAN system-software fault; resuming” Error during PLC Sweep or PLC State Change notification. Entry 3: Notification type code.
1f	“LAN system-software fault; resuming” Error updating Ethernet Status Data (includes LIS word).

Event Type 8: PLC Driver (BPD) Events (continued)

Entry 2	Description
20	<i>"LAN system-software fault; resuming"</i> Reject mail received from PLC CPU. Entry 3: Task number. Entry 4: Mailbox sequence number.
2a	<i>"LAN system-software fault; resuming"</i> General non-fatal internal error.
30	<i>"LAN system-software fault; resuming"</i> Error during PLC Driver shutdown. Entry 3: Internal error code.
32	<i>"LAN system-software fault; resuming"</i> Error retrieving Advanced User Parameter data.

Event Type d: Error Handler (ERR) Events

Event Type d indicates an Error Handler exception event.

LOG Command Display for Event Type d

Most Error Handler Events contain an optional Status Code (SCode) value. The LOG command display for Event Type d is shown below.

dH = Error Handler (ERR) Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	dH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Error Handler events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Error Handler event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>“LAN system-software fault; resuming”</i></p> <p>An invalid exception index was passed to Error Handler.</p> <p>Entry 3: Invalid index</p>
2	<p><i>“LAN system-software fault; resuming”</i></p> <p>Registration for CFG event notification failed.</p>
3	<p><i>“LAN system-software fault; resuming”</i></p> <p>A memory allocation failed.</p>
4	<p><i>“LAN system-software fault; resuming”</i></p> <p>Corrupted data was detected in the exception log; the exception log was repaired.</p> <p>If Entry 3 is 0001H, the log header was corrupted, and the entire previous content of the log was discarded.</p> <p>If Entry 3 is 0002H, one or more exceptions were corrupted, and only the corrupted exceptions were discarded. Entry 4 contains the number of discarded exceptions.</p>
5	<p><i>“LAN system-software fault; resuming”</i></p> <p>A hardware failure was detected in battery-backed non-volatile RAM while repairing a corrupted exception log. The repaired log was moved to volatile RAM. The entire content of the exception log will be lost when the module is powered off.</p>

Event Type e: Station Manager (STA) Events

Event Type e indicates a Station Manager exception event.

LOG Command Display for Event Type e

Most Station Manager events contain an optional Status Code (SCode) value. The LOG command display for Event Type e is shown below.

eH = Station Manager Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	eH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Station Manager events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Station Manager event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>"LAN system-software fault; resuming"</i></p> <p>Failure to initialize / start-up the Station Manager subsystem. Entry 3: internal identification code.</p>
2	<p><i>"LAN system-software fault; resuming"</i></p> <p>Failure creating / starting a Station Manager subsystem task. Entry 3: internal identification code.</p>
3	<p><i>"LAN system-software fault; resuming"</i></p> <p>Failure storing / setting Advanced User Parameters in the Station Manager subsystem. Entry 3: internal identification code.</p>
4	<p><i>"LAN system-software fault; resuming"</i></p> <p>Another network application is communicating on the same UDP port as the remote Station Manager. Entry 3: internal identification code.</p>
5	<p><i>"LAN system-software fault; resuming"</i></p> <p>An attempt to send data to remote Station Manager failed. Entry 3: internal identification code.</p>
6	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error in processing a PING has caused the PING to be aborted. Entry 3: internal identification code.</p>

Entry 2	Description
7	<i>"LAN system-software fault; resuming"</i> An attempt to display the Station Manager prompt has failed.
a	<i>"LAN system-software fault; resuming"</i> An unexpected internal software error has occurred.

Event Type f: Common Utility (UTL) Events

Event Type f indicates a Common Utility exception event.

LOG Command Display for Event Type f

Most Common Utility events contain an optional Status Code (SCode) value. The LOG command display for Event Type f is shown below.

┌───┐ fH = Common Utility (UTL) Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	fH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Common Utility events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Common Utility event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<i>"LAN system-software fault; resuming"</i> Error in an operating system request.
2	<i>"LAN system-software fault; resuming"</i> Error in memory allocation request.
3	<i>"LAN system-software fault; aborted assoc. & resuming"</i> Error entering or leaving a critical region.
4	<i>"LAN system-software fault; resuming"</i> Error generating Station Manager output data.
5	<i>"LAN system-software fault; resuming"</i> Unknown Station Manager command was received. Event 3: Unknown Station Manager command code
6	<i>"LAN system-software fault; aborted assoc. & resuming"</i> A command to the Ethernet network interface did not complete. The LAN interface status bits relating to the network are not reliable.
7	<i>"LAN system-software fault; resuming"</i> Error registering for event notification from CFG subsystem.
8	<i>"LAN system-software fault; resuming"</i> Error entering or leaving a critical region within UTL main task.
9	<i>"LAN system-software fault; resuming"</i> Error processing an internal event request.
a	<i>"LAN system-software fault; resuming"</i> Internal event processing error.
b	<i>"LAN system-software fault; resuming"</i> Internal software error.

Event Type 1b: SRTP Server Events

Event Type 1b indicates an SRTP Server exception event.

LOG Command Display for Event Type 1b

Most SRTP Server events contain an optional Status Code (SCode), remote end point, and local end point values. Remote and local endpoint values are displayed as *IP Address: TCP port*. The LOG command display for Event Type 1b is shown below.

└── 1b = SRTP Server Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	1bH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the SRTP Server events and corresponding PLC Fault Table entries. Entry 2 identifies the particular SRTP Server event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>"LAN I/F can't init-check parms; running soft Sw Util"</i></p> <p>SRTP Server was not initialized after PLC powerup or Ethernet restart. Servicing SRTP communication requests will fail.</p> <p>Entry 3: Internal error code</p>
2	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error requesting an operating system service.</p>
3	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP Server was not able to close the listen socket when the maximum number of SRTP Server connections was established. Subsequent attempts to establish an SRTP Server connection will fail until the PLC is restarted.</p>
4	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP Server was not able to re-open a listen port upon termination of an SRTP connection. Subsequent attempts to establish an SRTP Server connection will fail until the PLC is restarted.</p>
5	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP Server lost the internal mechanism necessary to handle changes in module configuration and to process the keep-alive timer that will terminate an SRTP connection that enters a state it cannot exit.</p>
6	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP Server lost the keep-alive timer mechanism. This timer is necessary to terminate an SRTP connection that enters a state it cannot exit.</p>
7	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP Server detected invalid connection identifier while attempting to process event.</p> <p>Entry 3: Connection ID</p>
8	<p><i>"LAN system-software fault; resuming"</i></p> <p>An invalid command was received by an SRTP Server task.</p> <p>Entry 3: Task command code</p>

Event Type 1b: SRTP Server Events (continued)

Entry 2	Description
9	<p><i>“LAN system-software fault; resuming”</i></p> <p>An attempt to accept an incoming TCP Connect request failed. Subsequent attempts to establish an SRTP Server connection will fail until the PLC is restarted.</p>
a	<p><i>“LAN system-software fault; resuming”</i></p> <p>An attempt to start a trace on an SRTP Server connection being established has failed.</p>
b	<p><i>“LAN system-software fault; resuming”</i></p> <p>An attempt to receive an SRTP PDU from the remote SRTP endpoint failed. The SRTP connection has been terminated.</p>
c	<p><i>“LAN system-software fault; resuming”</i></p> <p>An attempt to send an SRTP PDU to the remote SRTP endpoint failed.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver (BPD) user task number and the transfer identification number for the SRTP PDU that failed</p>
d	<p><i>“LAN system-software fault; resuming”</i></p> <p>An attempt to process an SRTP PDU that was received from the remote SRTP endpoint failed.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver (BPD) user task number and the transfer identification number for the SRTP PDU that failed</p> <p style="padding-left: 40px;">Entry 4: Code indicating the type of SRTP PDU that could not be processed</p>
e	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>An attempt to register a connection with the Backplane Driver (BPD) failed. Communication with the PLC CPU on the SRTP Server connection cannot occur.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver (BPD) user task number that failed to register</p>
f	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>An attempt to de-register a connection with the Backplane Driver (BPD) failed. Any subsequent attempts to establish this SRTP Server connection may fail.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver (BPD) user task number that failed to be de-registered</p>
10	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>An attempt to send a request to the Backplane Driver (BPD) failed. SRTP Server will initiate the error service that will result in termination of the SRTP connection.</p>
11	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>An attempt to send a message to the Backplane Driver (BPD) failed. SRTP Server will initiate the error service that will result in termination of the SRTP connection.</p>
12	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>The Backplane Driver (BPD) was not able to process a request from SRTP Server or the corresponding response.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver (BPD) user task number and the transfer identification number of the request that failed</p>
13	<p><i>“LAN system-software fault; resuming”</i></p> <p>An unexpected request was received from the CPU.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver (BPD) user task number and the transfer identification number of the request that failed</p>

Event Type 1b: SRTP Server Events (continued)

Entry 2	Description
14	<p><i>"LAN data memory exhausted-check parms; resuming"</i></p> <p>An attempt to allocate a resource failed.</p> <p>Entry 3: May contain Backplane Driver (BPD) user task number and the transfer identification number of the request that failed</p>
15	<p><i>"LAN system-software fault; resuming"</i></p> <p>An attempt to free a resource failed.</p> <p>Entry 3: May contain the Backplane Driver (BPD) user identification number and the transfer task number of the request during which the failure occurred</p>
16	<p><i>"LAN system-software fault; resuming"</i></p> <p>An attempt to abort a request sent to the Backplane Driver (BPD) failed.</p> <p>Entry 3: May contain the Backplane Driver (BPD) user identification number and the transfer task number for the request that failed to be aborted</p>
17	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error was detected in SRTP Server that failed to be processed.</p> <p>Entry 3 & Entry 4 contain a code indicating the error that failed to be processed</p>
18	<p><i>"LAN system-software fault; resuming"</i></p> <p>An unexpected event has arrived on an SRTP Server connection. No state transition exists for the event in the connection's current state.</p> <p>Entry 3: Event code</p>
19	<p><i>"LAN system-software fault; resuming"</i></p> <p>An internal error occurred that prevented SRTP Server from sending an SRTP PDU. SRTP Server failed to understand the type of SRTP PDU that needed to be sent.</p> <p>Entry 3: Code indicating the reason for the send SRTP PDU request</p>
1a	<p><i>"LAN system-software fault; resuming"</i></p> <p>An attempt to add tracking of an open SRP session on an SRTP Server connection failed. SRTP Server will be unable to terminate the session when the connection is closed. Any subsequent attempts to open this connection will fail until the PLC is power-cycled.</p> <p>Entry 3: The session's service request processor address</p>
1b	<p><i>"LAN system-software fault; resuming"</i></p> <p>An attempt to delete tracking of an SRP session on an SRTP Server connection failed.</p> <p>Entry 3: The session's service request processor address</p>
1c	<p><i>"LAN system-software fault; resuming"</i></p> <p>An attempt to automatically terminate a dangling session with the service request processor failed. Subsequent attempts to establish this SRTP Server connection may fail.</p> <p>Entry 3: The session's service request processor address</p>
1d	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP Server failed to synchronize operating parameters with the configuration received from the PLC CPU.</p>

Event Type 1b: SRTP Server Events (continued)

Entry 2	Description			
1e	<p><i>“LAN system-software fault; resuming”</i> A valid event has arrived on an SRTP Server connection that is in an invalid state. Entry 3: Code indicating the current state of the SRTP Server connection</p>			
1f	<p><i>“LAN system-software fault; resuming”</i> An internal error occurred while attempting to delete an SRTP Server task.</p>			
20	<p><i>“LAN system-software fault; resuming”</i> SRTP Server was unable to find a record of a transaction that was sent to the PLC CPU when the Backplane Driver (BPD) notified SRTP Server that activity occurred on that transaction (either the response was received or an error occurred on that transaction). Entry 3: Backplane Driver (BPD) user task number and the transfer identification number of the request without a matching transaction record</p>			
21	<p><i>“LAN system-software fault; resuming”</i> A PDU arrived in a state in which the SRTP connection cannot handle it. SRTP Server will initiate the error service that will result in termination of the SRTP connection.</p>			
	Entry 3: Code indicating the PDU type.		Entry 4: Code indicating the state of the SRTP connection.	
	0	Connect Request	1	IDLE
	1	Connect Response	2	OPENING
	2	Data Request	3	ESTABLISHED
	3	Data Response	4	CLOSING
	4	Unconfirmed Request	5	TERMINATE
	5	Error Request		
	6	Destinations Request		
	7	Destinations Response		
	8	Session Request		
	9	Privileged Connection Request		
a	Privileged Connection Response			
22	<p><i>“LAN I/F capacity exceeded; discarded request”</i> An SRTP connection could not be created due to either enforcement of a maximum limit on the number of SRTP connections or an internal error that prevents processing an establish connection request, such as system resource exhaustion.</p>			
23	<p><i>“LAN system-software fault; resuming”</i> An attempt to increment an SRTP Server tally failed. Entry 3: ID of the tally that failed to be incremented</p>			
24	<p><i>“LAN system-software fault; resuming”</i> SRTP Server dropped a keep-alive timer tick. Timing of keep-alive timer processing may be temporarily skewed.</p>			
25	<p><i>“LAN system-software fault; resuming”</i> An attempt to restart SRTP Server failed.</p>			

Event Type 1b: SRTP Server Events (continued)

Entry 2	Description
26	<p><i>"Bad remote application request; discarded request"</i></p> <p>A PDU arrived with a version field number higher than the SRTP protocol version supported by SRTP Server</p> <p>Entry 3: The version number of the PDU</p> <p>Entry 4: The SRTP version supported by the SRTP Server</p>
27	<p><i>"Bad remote application request; discarded request"</i></p> <p>A PDU arrived with an invalid pdu_type field code.</p> <p>Entry 3: Code indicating the PDU type as listed above for Entry 2 = 21.</p>
28	<p><i>"Bad remote application request; discarded request"</i></p> <p>A PDU arrived with a non-zero data_length field, but was of a class of PDU's which must have zero (0) in this field.</p> <p>Entry 3: Code indicating the PDU type as listed above for Entry 2 = 21</p> <p>Entry 4: The lower 16 bits of the data_length field</p>
29	<p><i>"Bad remote application request; discarded request"</i></p> <p>An Error Request PDU arrived from a remote SRTP endpoint. The SRTP connection will be terminated.</p> <p>Entry 3: Error code in the Error Request PDU</p>
2a	<p><i>"LAN system-software fault; resuming"</i></p> <p>An attempt to shutdown SRTP Server failed.</p>
2b	<p><i>"Bad remote application request; discarded request"</i></p> <p>A valid SRTP PDU arrived, but the SRTP Server does not support handling it.</p> <p>Entry 3: Code indicating the PDU type as listed above for Entry 2 = 21</p>
2c	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred in establishing internal event processing.</p>
2d	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred trying to terminate the Keep Alive timer for the connection.</p>
2e	<p><i>"LAN system-software fault; resuming"</i></p> <p>The SRTP connection timed out.</p>
2f	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred while processing the Destinations Service.</p>
30	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred while processing the Privileged Connection Service.</p>
31	<p><i>"LAN system-software fault; resuming"</i></p> <p>The SRTP Server was unable to process unsolicited mail from the PLC CPU.</p>
32	<p><i>"LAN system-software fault; resuming"</i></p> <p>The SRTP Server was unable to process a service request from the PLC CPU.</p>
34	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error opening an SRTP Server connection (opening a pipe).</p>
35	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error opening an SRTP Server connection (creating a pipe).</p>
36	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal SRTP error sending a message on a pipe.</p>
37	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal SRTP error flushing previous messages from a pipe.</p>

Event Type 1c: SRTP Client (Channels) Events

Event Type 1c indicates an SRTP Client (Channels) exception event.

LOG Command Display for Event Type 1c

Most SRTP Client (Channels) events contain an optional Status Code (SCode), remote end point, and local end point values. Remote and local endpoint values are displayed as *IP Address: TCP port*. The LOG command display for Event Type 1c is shown below.

└─── 1c = SRTP Channels Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	1cH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the SRTP Client (Channels) events and corresponding PLC Fault Table entries. Entry 2 identifies the particular SRTP Client (Channels) event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP Client was not initialized after PLC powerup or Ethernet restart. SRTP Client (Channels) CommReqs cannot be processed.</p> <p>Entry 4: Internal error code</p>
2	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred requesting an operating system service.</p>
3	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred processing a Station Manager command.</p>
6	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred freeing an internal SRTP Client (Channels) transaction record.</p> <p>Entry 3 optionally specifies an individual service request in the format UUSS where UU and SS specify BPD task number and sequence number, respectively.</p>
b	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error in the SRTP Client (Channels) state machine. Invalid state entered.</p>
27	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred while updating the CommReq Status Word. The status value may not have been delivered to the PLC.</p>

Event Type 1c: SRTP Client (Channels) Events (continued)

Entry 2	Description
28	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred processing SRTP Client mail received from the PLC CPU. Entry 3: Channel number</p>
2d	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error in the SRTP Client State Machine. An internal consistency test failed. Entry 3: Channel command code</p>
41	<p><i>"LAN system-software fault; resuming"</i></p> <p>The SRTP Client received an unexpected service request from the PLC CPU. Entry 3 specifies an individual service request in the format UUSS where UU and SS specify BPD task number and sequence number, respectively.</p>
4a	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred receiving service response mail from the PLC CPU. Entry 3 specifies an individual service request in the format UUSS where UU and SS specify BPD task number and sequence number, respectively.</p>
4c	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred processing an SRTP Client CommReq received from the PLC CPU.</p>
52	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred attempting to abort a service request previously sent to the PLC CPU.</p>
54 55 56 57 58 59	<p><i>"LAN system-software fault; resuming"</i></p> <p>The SRTP Client (Channels) state machine detected an internal error.</p>
5a 5b	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred while in the IDLE state.</p>
5c 5d	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred while in one of the CONNECTING states.</p>
5e 5f	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred while in one of the ESTABLISHED states.</p>
60	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred in the CLOSING state while trying to adjust the Channel Status bits.</p>
61 62	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred while attempting to halt the channel.</p>
63	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred in the SRTP Client state machine while attempting to respond to or report a previous error (e.g. while setting status word or channel status error bit).</p>

Event Type 1c: SRTP Client (Channels) Events (continued)

Entry 2	Description
64	<i>"LAN system-software fault; resuming"</i> An error occurred processing a Station Manager command.
65	<i>"LAN system-software fault; resuming"</i> An error occurred while attempting to get the Advanced User Parameters from the configuration.
66	<i>"LAN system-software fault; resuming"</i> An SRTP "Destinations" response was received/processed that didn't include a "default" destination. A malfunctioning SRTP Server is the usual cause.
67 68 69	<i>"LAN system-software fault; resuming"</i> An internal error occurred.
6a	<i>"LAN system-software fault; resuming"</i> An error occurred while attempting to register an SRTP Client commreq handler during startup of SRTP Client (Channels). One or more kind of SRTP Client commreq cannot be processed.
6b	<i>"LAN system-software fault; resuming"</i> An error occurred while attempting to unregister the SRTP Client commreq handlers.
6c	<i>"LAN system-software fault; resuming"</i> An error occurred while attempting to notify the SRTP Client (Channels) state machine that the Commreq Status Word was updated. This could cause that Channel to get stuck in the "SET_STATUS_OK" state until an ABORT commreq is issued to the channel.
6e	<i>"LAN system-software fault; resuming"</i> An internal error occurred while attempting to validate the IP address in an SRTP Client (Channels) commreq.
6f	<i>"LAN system-software fault; resuming"</i> An internal error occurred during SRTP Client (Channels) startup, while attempting to register for communications with the local PLC.
71	<i>"LAN system-software fault; resuming"</i> An internal error occurred while attempting to send a request to the local PLC.
72	<i>"LAN system-software fault; resuming"</i> An internal error was detected when a channel was being closed, while terminating communications between that channel and the local PLC. Note that the actual problem probably occurred earlier than where it was detected here.
73	<i>"LAN system-software fault; resuming"</i> The maximum number of requests were still outstanding to the local PLC when another request to it was initiated.
74	<i>"LAN system-software fault; resuming"</i> The maximum number of requests were still outstanding to a remote PLC (for a single channel) when another request to it was initiated.

Event Type 1c: SRTP Client (Channels) Events (continued)

Entry 2	Description
75	<i>"LAN system-software fault; resuming"</i> An SRTP "Destinations" response was received that didn't include a destination. A malfunctioning SRTP Server is the usual cause.
76	<i>"LAN system-software fault; resuming"</i> An internal error occurred while attempting to send a request to a remote PLC. The Invoke ID on the PDU is already in use/outstanding.
77	<i>"LAN system-software fault; resuming"</i> An SRTP response was received that doesn't match up to an outstanding request.
78	<i>"LAN system-software fault; resuming"</i> An internal error occurred while attempting to send a request to the local PLC. The sequence number on the request is already in use/outstanding.
7a	<i>"LAN system-software fault; resuming"</i> An error occurred while attempting to stop a channel (e.g. close the SRTP connection, terminate the TCP connection, etc.).
7b	<i>"LAN system-software fault; resuming"</i> An internal error occurred.
7c	<i>"LAN system-software fault; resuming"</i> An internal error occurred while processing data received from the remote PLC. This could cause an SRTP Client channel to hang until an ABORT commreq is issued for the channel.
7d	<i>"LAN system-software fault; resuming"</i> An error occurred while attempting to close a channel (generally during internal cleanup).
7e	<i>"LAN system-software fault; resuming"</i> The amount of value data provided by the PLC (either local or remote) doesn't match the amount that is required in order to completely perform the transfer.
7f	<i>"LAN system-software fault; resuming"</i> Internal error in the SRTP Client (Channels) state machine. An internal data length consistency check failed.
80	<i>"LAN system-software fault; resuming"</i> An internal error occurred while preparing to begin the process of establishing a connection.
81	<i>"LAN system-software fault; resuming"</i> An error occurred while attempting to update the Commreq Status Word for a commreq that was received while the channel was in the process of being closed.

Event Type 20: Network Interface Events

Event Type 20 indicates a Network interface exception event.

LOG Command Display for Event Type 20

Most Network Interface events contain an optional Status Code (SCode) value. The LOG command display for Event Type 20 is shown below.

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	20H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

└─── 20 = Network Interface Event

The table below shows the Network Interface events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Network Interface event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>“LAN transceiver fault; OFF network until fixed”</i></p> <p>Ethernet interface is offline and cannot communicate on the Ethernet network. This is usually caused by disconnection from the network. Check the network cable and the connection to the network hub or switch.</p>
2	<p><i>“LAN system-software fault; aborted assoc. & resuming”</i></p> <p>Error updating LAN Interface Status (LIS) bits (the first 16 bits of the 80-bit Ethernet Status data).</p> <p style="margin-left: 40px;">Entry 3: AND mask value used to modify the LIS when the failure occurred</p> <p style="margin-left: 40px;">Entry 4: OR mask value used to modify the LIS when the failure occurred</p>
3	<p><i>“LAN system-software fault; aborted assoc. & resuming”</i></p> <p>The network switch could not be accessed because it was autonegotiating. Usually a transient error caused by a disconnected cable. If the error persists, check the network cable and connection.</p>

Event Type 28: Ethernet Global Data (EGD) Events

Event Type 28 indicates an Ethernet Global Data (EGD) exception event.

LOG Command Display for Event Type 28

Most Ethernet Global Data events contain an optional Status Code (SCode) and exchange identifier values. The EGD exchange is identified by its Producer ID and Exchange ID. The LOG command display for Event Type 28 is shown below.

28 = Ethernet Global Data Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	28H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Ethernet Global Data events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Ethernet Global Data event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error in an operating system request.</p> <p>Entry 3: May contain additional internal error code.</p> <p>Entry 4: May contain additional internal error code.</p> <p>Note: This exception may also occur when attempting to produce an EGD exchange to a non-existent unicast IP address. An exception occurs when the Operating System is unable to resolve the consumer IP address for network transmission.</p>
2	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error initializing EGD. No EGD exchanges will be processed until the module is power-cycled or restarted.</p>
3	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error retrieving the soft switch or Advanced User Parameters data. EGD may be operating with unexpected parameter settings.</p>
4	<p><i>“LAN system-software fault; resuming”</i></p> <p>Unable to register for PLC data transfers. EGD will be inoperative until this problem is fixed.</p>
5	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>An unknown internal message was received by EGD main task.</p> <p>Entry 3 and 4: Initial portion of the unrecognized message.</p>
6	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error in a PLC request to establish an EGD exchange. The exchange with this error will not be created. This is an internal error and should be reported to GE for corrective action.</p>
7	<p><i>“LAN data memory exhausted-check parms; resuming”</i></p> <p>Error in allocating memory to hold the state of an exchange. The exchange in question will not transfer any data.</p>

Event Type 28 : Ethernet Global Data (EGD) Events (continued)

Entry 2	Description
8	<p><i>“LAN I/F capacity exceeded; discarded request”</i> A request to allocate shared memory to communicate the exchange data to the PLC failed. The exchange in question will not transfer any data. Entry 3: Size of the connection area to be allocated</p>
9	<p><i>“LAN system-software fault; resuming”</i> Internal identifier that indicates the exchange was not valid. This is an internal error and should be reported to GE for corrective action. Entry 3: Internal exchange handle Entry 4: Internal connection ID.</p>
a	<p><i>“LAN system-software fault; resuming”</i> The name format in the exchange is not supported. This is an internal error and should be reported to GE for corrective action. Entry 3: Producer name format Entry 4: Consumer name format</p>
c	<p><i>“LAN system-software fault; resuming”</i> Error releasing shared memory. Entry 3: Shared memory offset</p>
d	<p><i>“LAN system-software fault; resuming”</i> Error freeing the state information for an exchange. Entry 3: Exchange number</p>
e	<p><i>“LAN system-software fault; resuming”</i> Error in accessing the semaphore for an exchange.</p>
f	<p><i>“Backplane communications with PLC fault; lost request”</i> An unexpected PLC service has been received. This is an internal error and should be reported to GE for corrective action. Entry 3: Internal identification code</p>
10	<p><i>“Backplane communications with PLC fault; lost request”</i> Unrecognized message received from the PLC. This is an internal error and should be reported to GE for corrective action.</p>
11	<p><i>“Backplane communications with PLC fault; lost request”</i> Improperly formed message received from the PLC. This is an internal error and should be reported to GE for corrective action. Entry 3: Contains the size of any data with this message</p>
12	<p><i>“LAN data memory exhausted-check parms; resuming”</i> Error in allocating memory for internal EGD communications. Entry 3: The size of the requested allocation</p>
13	<p><i>“LAN system-software fault; resuming”</i> Unrecognized message received from the PLC. This is an internal error and should be reported to GE for corrective action. Entry 3: Command code of the unrecognized message</p>

Event Type 28: Ethernet Global Data (EGD) Events (continued)

Entry 2	Description
14	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error return from a request to scan EGD consumed data. Details are given in the status data. One or more samples will be lost or delayed in being transferred to the PLC application. In some cases, this exception can occur during normal power down; if so, it does not indicate a problem.</p>
15	<p><i>“Backplane communications with PLC fault; lost request”</i></p> <p>Error in sending mail to the PLC. Typically this will result in the PLC CPU generating a “loss of module” fault on the Ethernet module.</p>
16	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error generating Station Manager output. Details are given in the status data.</p> <p>Entry 3: Additional internal error code</p>
17	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error printing tally output. Details are given in the status data.</p>
18	<p><i>“LAN system-software fault; resuming”</i></p> <p>Unknown Station Manager command was received.</p> <p>Entry 3: The unknown Station Manager command code</p>
19	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error identifying the state of a produced exchange. This is an internal error and should be reported to GE for corrective action.</p>
1a	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error communicating between EGD tasks. This is an internal error and should be reported to GE for corrective action.</p> <p>Entry 3: Additional internal error code.</p> <p>Entry 4: Additional internal error code</p>
1b	<p><i>“LAN system-software fault; resuming”</i></p> <p>Unrecognized data received on the EGD data port. The data in the received message is ignored.</p> <p>Entry 3: The unrecognized command code. Entry 4: PDU version</p>
1c	<p><i>“LAN system-software fault; resuming”</i></p> <p>The signature field in a sample is invalid. This indicates that the producer and the consumer may not agree on the format of the data. The exchange having the error is identified in the extended data.</p> <p>Entry 3: The signature</p>
1d	<p><i>“LAN system-software fault; resuming”</i></p> <p>The length of the sample received for a consumed exchange does not match the length configured for the exchange. This usually means that the producer and the consumer of the data don’t agree on its format. The exchange having the error is identified in the extended data.</p> <p>Entry 3: The received data length</p>

Event Type 28: Ethernet Global Data (EGD) Events (continued)

Entry 2	Description
1e	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error return from a request to scan EGD consumed data. Details are given in the status data. This error can be logged under a normal shutdown if a request occurs simultaneously with the power shutoff. One or more samples will be lost or delayed in being transferred to the PLC application.</p>
1f	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error retrieving information about the shared memory between the CPU and the Ethernet interface. Details are given in the status data.</p>
20	<p><i>“LAN system-software fault; resuming”</i></p> <p>Invalid adapter index encountered in an exchange.</p> <p style="padding-left: 40px;">Entry 3: The adapter index</p>
22	<p><i>“LAN system-software fault; resuming”</i></p> <p>The length field in a received sample does not match with the length of the sample packet. This normally indicates an error in the producer of the data.</p> <p style="padding-left: 40px;">Entry 3: The received data length</p>
23	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error in a mail request received from the PLC.</p>
24	<p><i>“LAN system-software fault; resuming”</i></p> <p>Internal error in the EGD subsystem.</p>
25	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error entering or leaving a critical region. Details are given in the status data.</p>
26	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error processing a consumed exchange time out. All subsequent timeout processing is suspect.</p>
27	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error processing internal events within EGD.</p> <p style="padding-left: 40px;">Entry 3: Additional internal error code</p>
28	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error attempting to start EGD production.</p>
2a	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error executing an EGD command (client or server),</p>
2b	<p><i>“LAN system-software fault; resuming”</i></p> <p>An invalid parameter was detected in an EGD command CommReq.</p>
2d	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error giving an EGD command reply to RDS for delivery to the remote client.</p> <p style="padding-left: 40px;">Entry 3: (Optional) RDS handle for this EGD command request</p> <p style="padding-left: 40px;">Entry 4: (Optional) Reply PDU size</p>

Event Type 28: Ethernet Global Data (EGD) Events (continued)

Entry 2	Description
2e	<i>"LAN system-software fault; resuming"</i> Local EGD command timeout waiting for response from PLC CPU.
2f	<i>"LAN system-software fault; resuming"</i> EGD command client task received an unrecognized reply message from the remote server.
30	<i>"LAN system-software fault; resuming"</i> Unable to allocate internal hashing table.
31	<i>"LAN system-software fault; resuming"</i> Error inserting a key into the internal hashing table.
32	<i>"LAN system-software fault; resuming"</i> Error deleting a key from the internal hashing table.
33	<i>"LAN system-software fault; resuming"</i> Error searching for a key in the internal hashing table.
34	<i>"Can't locate remote node; discarded request"</i> Unable to locate the unicast produced exchange destination device on the network.
35	<i>"LAN system-software fault; resuming"</i> Unrecognized bit(s) in EGD exchange flags. Ethernet firmware may be out of date.

Event Type 29: SNTP Events

Event Type 29 indicates an SNTP exception event.

LOG Command Display for Event Type 29

Most SNTP events contain an optional Status Code (SCode) value. The LOG command display for Event Type 29 is shown below.

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	29H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

└─── 29 = SNTP Event

The table below shows SNTP events and corresponding PLC Fault Table entries. Entry 2 identifies the particular SNTP event. Entries 3 and 4 are not used. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<i>"LAN system-software fault; resuming"</i> SNTP client failed to lock onto a valid SNTP time server within the timeout.
2	<i>"LAN system-software fault; resuming"</i> A locked-on SNTP server was lost and the time server was changed.
6	<i>"LAN system-software fault; resuming"</i> An attempt to join the multicast host group failed.
9	<i>"LAN system-software fault; resuming"</i> An invalid timer identification value was detected. This is an internal software error.
b	<i>"LAN system-software fault; resuming"</i> Lock on the time server was lost. The module is no longer synchronized to any time servers
c	<i>"LAN system-software fault; resuming"</i> An internal time computation error was detected.
10	<i>"LAN system-software fault; resuming"</i> An error occurred in an operating system request. This is an internal software error.
11	<i>"LAN system-software fault; resuming"</i> An error occurred in registering for configuration. This is an internal software error.
12	<i>"LAN system-software fault; resuming"</i> An error occurred in retrieving configuration. This is an internal software error.
13	<i>"LAN system-software fault; resuming"</i> Internal configuration error.
14	<i>"LAN system-software fault; resuming"</i> Internal messaging error.
15	<i>"LAN system-software fault; resuming"</i> Internal error processing a station manager request.
16	<i>"LAN system-software fault; resuming"</i> Error producing output for a station manager command
17	<i>"LAN system-software fault; resuming"</i> Error in producing station manager tally output.

Event Type 2a: Runtime Diagnostic Events

Event Type 2a indicates a runtime exception event.

Log Command Display for Event Type 2a

Most Runtime Diagnostic Events contain an optional Status Code (SCode) value. The LOG command display for Event Type 2a is shown below.

└── 2a = Run-Time Diagnostic Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	2aH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Runtime Diagnostic events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Runtime Diagnostic event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	"LAN System-Software Fault; Resuming" Run-time diagnostics startup error.
2	"LAN System-Software Fault; Resuming" Run-time diagnostic initialization failed.
3	"Module Software Corrupted; Requesting Reload" Run-time CRC verification failed. The module firmware must be reloaded.
7	"LAN System-Software Fault; Resuming" Runtime diagnostic operating system service error.
f	"LAN System-Software Fault; Resuming" Error detected during conversion of data.

Event Type 2b: Reliable Datagram Service (RDS) Events

Event Type 2b indicates a Reliable Datagram Service (RDS) exception event.

LOG Command Display for Event Type 2b

Most RDS events contain an optional Status Code (SCode) and exchange identifier values. The LOG command display for Event Type 2b is shown below.

└── 2b = Reliable Datagram Service (RDS) Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	2bH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Reliable Datagram Service events and corresponding PLC Fault Table entries. Entry 2 identifies the particular RDS event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<i>"LAN system-software fault; resuming"</i> RDS subsystem was not initialized after PLC powerup or Ethernet restart. EGD command client and server (which use RDS services) will not operate.
2	<i>"LAN system-software fault; resuming"</i> Error attempting to send a message to the network.
3	<i>"LAN system-software fault; resuming"</i> Error attempting to receive a message from the network.
4	<i>"LAN system-software fault; resuming"</i> Error allocating internal memory or taking an internal semaphore.
5	<i>"LAN system-software fault; resuming"</i> Error extracting reply data from a message received from the network.
6	<i>"LAN system-software fault; resuming"</i> Error obtaining an event descriptor.
7	<i>"LAN system-software fault; resuming"</i> Error receiving system notification events.
8	<i>"LAN system-software fault; resuming"</i> Error setting up client or server communication.
9	<i>"LAN system-software fault; resuming"</i> Client error attempting to process a reply datagram.
b	<i>"LAN system-software fault; resuming"</i> Client error attempting to process a request retry.
c	<i>"LAN system-software fault; resuming"</i> Server error attempting to process a query request.
d	<i>"LAN system-software fault; resuming"</i> Server error attempting to process an execute-once request.
e	<i>"LAN system-software fault; resuming"</i> A data callback function was not installed at RDS server.

Event Type 2b: Reliable Datagram Service (RDS) Events (continued)

Entry 2	Description
f	<i>“LAN system-software fault; resuming”</i> An error reply callback function was not installed at RDS server.
10	<i>“LAN system-software fault; resuming”</i> Server error processing a reply datagram.
11	<i>“LAN system-software fault; resuming”</i> Server error processing an error reply datagram.
12	<i>“LAN system-software fault; resuming”</i> Reply datagram received at the client is too small.
14	<i>“LAN system-software fault; resuming”</i> Error using an operating system service. The service is identified in the SCode value.
15	<i>“LAN system-software fault; resuming”</i> Error attempting to output data to the Station Manager.
16	<i>“LAN system-software fault; resuming”</i> Error during the client reply callback notification.
17	<i>“LAN system-software fault; resuming”</i> Error starting the client request timeout timer.
18	<i>“LAN system-software fault; resuming”</i> Error converting an IP address into character string for Station Manager output.
19	<i>“LAN system-software fault; resuming”</i> Error accessing the server’s pending request queue.
1a	<i>“LAN system-software fault; resuming”</i> Error accessing the server’s execute-once request queue.
1b	<i>“LAN system-software fault; resuming”</i> Error obtaining a client session record.
1c	<i>“LAN system-software fault; resuming”</i> Invalid task priority level.
1d	<i>“LAN system-software fault; resuming”</i> Server task registration failed.
1e	<i>“LAN system-software fault; resuming”</i> Error reading AUP file content.
1f	<i>“LAN system-software fault; resuming”</i> Error closing an established RDS session.

Event Type 2c: Web Server Events

Event Type 2c indicates a Web Server exception event.

LOG Command Display for Event Type 2c

Most Web Server events contain an optional Status Code (SCode), remote end point, and local end point values. The LOG command display for Event Type 2c is shown below.

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	2cH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

2c = Web Server Event

The table below shows the Web Server events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Web Server event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<i>"LAN System-Software Fault; Resuming"</i> Web server subsystem was not initialized after PLC powerup or Ethernet restart. Servicing web requests will fail.
2	<i>"LAN System-Software Fault; Resuming"</i> Error requesting an operating system service.
3	<i>"LAN System-Software Fault; Resuming"</i> Unable to read a file from the file system required to service a web request.
4	<i>"LAN System-Software Fault; Resuming"</i> An attempt to allocate a resource failed.
5	<i>"LAN System-Software Fault; Resuming"</i> An attempt to free a resource failed. Entry 3: Internal code to help identify the resource that failed
6	<i>"LAN System-Software Fault; Resuming"</i> Unable to send response data to the web client.
7	<i>"LAN System-Software Fault; Resuming"</i> Unable to process an HTTP request received from a web client.
8	<i>"LAN System-Software Fault; Resuming"</i> Unable to register an HTTP transaction with the web server connection manager. This may be due to insufficient web server connection resources.
9	<i>"LAN System-Software Fault; Resuming"</i> Unable to get data from the internal HTTP server needed to process a request.

Event Type 2c: Web Server Events (continued)

Entry 2	Description
a	<p><i>“LAN System-Software Fault; Resuming”</i> Error detected while parsing a web page to identify GE function tags. PLC data not available in the served web page.</p>
b	<p><i>“LAN System-Software Fault; Resuming”</i> Unable to collect data from the PLC. PLC data not available in the served web page.</p>
c	<p><i>“LAN System-Software Fault; Resuming”</i> Invalid state of an HTTP transaction detected. Entry 3: State of the HTTP transaction</p>
d	<p><i>“LAN System-Software Fault; Resuming”</i> Unable to flush an HTTP transaction.</p>
e	<p><i>“LAN System-Software Fault; Resuming”</i> Unable to de-register an HTTP transaction with the web server connection manager.</p>
f	<p><i>“LAN System-Software Fault; Resuming”</i> Loss of resource detected due to an internal processing error.</p>
10	<p><i>“LAN System-Software Fault; Resuming”</i> Invalid handle for an HTTP transaction detected.</p>
11	<p><i>“LAN System-Software Fault; Resuming”</i> Error while processing a response mailbox message from the PLC. Entry 3: PLC Driver (BPD) user task number of the request that failed Entry 4: PLC Driver (BPD) transfer identification number of the request that failed.</p>
12	<p><i>“LAN System-Software Fault; Resuming”</i> An unexpected unsolicited mailbox message was received from the PLC.</p>
13	<p><i>“LAN System-Software Fault; Resuming”</i> An unexpected request was received from the PLC. Entry 3: PLC Driver (BPD) user task number and the transfer identification number of the unexpected request</p>
14	<p><i>“LAN System-Software Fault; Resuming”</i> Unable to flush a request that has already been sent to the PLC.</p>
15	<p><i>“LAN System-Software Fault; Resuming”</i> Unable to flush a collector used to collect data from the PLC.</p>
16	<p><i>“LAN System-Software Fault; Resuming”</i> Error detected while attempting to empty garbage in a PLC data collector.</p>
17	<p><i>“LAN System-Software Fault; Resuming”</i> Invalid type of garbage detected in a PLC data collector. Entry 3: Internal value used to identify the invalid garbage</p>
18	<p><i>“LAN System-Software Fault; Resuming”</i> Unable to close a file in the file system.</p>

Event Type 2c: Web Server Events (continued)

Entry 2	Description
19	<i>"LAN System-Software Fault; Resuming"</i> Error detected while processing fault data received from the PLC.
1a	<i>"LAN System-Software Fault; Resuming"</i> An attempt to increment a web server tally failed. Entry 3: ID of the tally that failed to be incremented
1b	<i>"LAN System-Software Fault; Resuming"</i> An attempt to cleanup a Service Request Processor (SRP) user failed. Entry 3: PLC Driver (BPD) user task number of the request that failed Entry 4: PLC Driver (BPD) transfer identification number of the request that failed.
1c	<i>"LAN System-Software Fault; Resuming"</i> An attempt to get soft switch configuration data failed.
1d	<i>"LAN System-Software Fault; Resuming"</i> Error detected while setting up Station Manager trace output. There will be no trace output from the Web server.
1e	<i>"LAN System-Software Fault; Resuming"</i> Error attempting to generate a single trace output message.

Event Type 2d: FTP Server Events

Event Type 2d indicates an FTP Server exception event.

LOG Command Display for Event Type 2d

Most FTP Server events contain an optional Status Code (SCode). The LOG command display for Event Type 2d is shown below.

2d = FTP Server Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	2dH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the FTP Server events and corresponding PLC Fault Table entries. Entry 2 identifies the particular FTP Server event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	“LAN System-Software Fault; Resuming” FTP server subsystem was not initialized after PLC powerup or Ethernet restart. Servicing FTP requests will fail.
2	“LAN System-Software Fault; Resuming” Error requesting an operating system service.
3	“LAN System-Software Fault; Resuming” The FTP server task that processes FTP requests failed to start.
4	“LAN System-Software Fault; Resuming” An attempt to increment an FTP server tally failed. Entry 3: ID of the tally that failed to be incremented
5	“LAN System-Software Fault; Resuming” An attempt to get Advanced User Parameters (AUP) failed.
6	“LAN System-Software Fault; Resuming” Invalid soft switch configuration data received. Entry 3: Maximum number of FTP connections in the soft switch configuration
7	“LAN System-Software Fault; Resuming” An attempt to get soft switch configuration data failed.
8	“LAN System-Software Fault; Resuming” An internal error was detected while attempting to receive an event notification.

Event Type 2e: Flash File System Events

Event Type 2e indicates a Flash File System (FFS) exception event.

LOG Command Display for Event Type 2e

Most Flash File System events contain an optional Status Code (SCode). The LOG command display for Event Type 2e is shown below.

2e = Flash File System Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	2eH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Flash File System events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Flash File System event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>"LAN System-Software Fault; Resuming"</i></p> <p>Flash File System was not initialized after PLC powerup or Ethernet restart. Servicing FTP requests will fail.</p>
2	<p><i>"LAN System-Software Fault; Resuming"</i></p> <p>Error requesting an operating system service.</p>
3	<p><i>"LAN System-Software Fault; Resuming"</i></p> <p>An attempt to increment a Flash File System tally failed. Entry 3: ID of the tally that failed to be incremented</p>

Event Type 2f: Modbus/TCP Server Events

Event Type 2f indicates a Modbus/TCP Server exception event.

LOG Command Display for Event Type 2f

The LOG command display for Event Type 2f is shown below.

2f = Modbus/TCP Server Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2005	00:00:00.0	2fH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

Entry 2	Description
202	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred while processing a message from the CPU module.
203	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred while processing a message from the CPU module.
204	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred when attempted to send a message to the CPU module.
205	<i>"LAN System-Software Fault; Resuming"</i> Failed to initialize communications with the CPU module. Modbus server off-line.
206	<i>"LAN System-Software Fault; Resuming"</i> Internal error while processing an unexpected message from the CPU module.
207	<i>"LAN System-Software Fault; Resuming"</i> Internal error detected by the Modbus/TCP server.
208	<i>"LAN System-Software Fault; Resuming"</i> TCP connection with the remote device timed-out. Entry 3: Endpoint number where timeout occurred.
209	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred when deleting a Modbus/TCP server task.
20a	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred during timer processing.
20b	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred while updating a Modbus/TCP tally. Tallies may not be accurate.
20c	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred while processing a Modbus/TCP server Station Manager command.

Event Type 2f: Modbus/TCP Events (continued)

Entry 2	Description
20d	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred when processing a message from the CPU module.
20e	<i>"LAN System-Software Fault; Resuming"</i> An error occurred while closing a TCP connection.
20f	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred when processing a fault on a Modbus/TCP connection.
210	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred while processing configuration data stored from the programming device.
211	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred in a Modbus/TCP connection's state machine.
212	<i>"LAN System-Software Fault; Resuming"</i> Internal connection numbering error.
213	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred that causes a Modbus/TCP response to not be sent.
214	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred when starting a Modbus/TCP task. This could prevent all Modbus/TCP communications or just a failure on a single connection.
215	<i>"LAN System-Software Fault; Resuming"</i> An error during a Redundant CPU role-switch from active to backup prevented the closing of a connection that was using the Redundant IP address.
216	<i>"LAN System-Software Fault; Resuming"</i> An error prevents the Modbus/TCP server from listening for incoming TCP connection requests. The server will not respond to any connection requests.
217	<i>"LAN System-Software Fault; Resuming"</i> An internal error prevents the Modbus/TCP server from sending inter-task events.
218	<i>"LAN System-Software Fault; Resuming"</i> An error prevents a Modbus/TCP task from running.
219	<i>"LAN System-Software Fault; Resuming"</i> Internal error in the server's connection state machine.
21a	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred when starting a Modbus/TCP task.
21b	<i>"LAN System-Software Fault; Resuming"</i> Internal error prevented processing of requests on a particular connection.
21c	<i>"LAN System-Software Fault; Resuming"</i> An internal error prevents the server from receiving inter-task events.

Event Type 2f: Modbus/TCP Events (continued)

Entry 2	Description
21d	<i>"LAN System-Software Fault; Resuming"</i> Internal operating system error occurred.
21e	<i>"LAN System-Software Fault; Resuming"</i> An inconsistent condition exists that prevents a connection from processing additional Modbus/TCP requests. Entry 3: Modbus function code being processed when error was detected.
21f	<i>"LAN System-Software Fault; Resuming"</i> An error occurred while attempting to translate a Modbus/TCP request into a data request for the CPU module. Entry 3: Connection where the Modbus/TCP request was received. Entry 4: Modbus function code being processed when error was detected.
220	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred when applying new AUP configuration parameters.
221	<i>"LAN System-Software Fault; Resuming"</i> Internal error occurred during Modbus/TCP request processing. Entry 4: Modbus function code in the request.
222	<i>"LAN System-Software Fault; Resuming"</i> An error occurred when attempting to receive inter-process events.
223	<i>"LAN System-Software Fault; Resuming"</i> An error occurred while attempting to read a Modbus/TCP request from the network. Entry 3: Connection endpoint where the error occurred.
224	<i>"LAN System-Software Fault; Resuming"</i> An internal error prevents the Modbus/TCP server from accepting connections from clients on the network.
225	<i>"LAN System-Software Fault; Resuming"</i> An internal error occurred that may cause the Modbus/TCP server to stop accepting connections from clients on the network.
226	<i>"LAN System-Software Fault; Resuming"</i> An error prevents the sending of a Modbus/TCP response and may cause the TCP connection with the client to be closed.
227	<i>"LAN System-Software Fault; Resuming"</i> An internal error prevented the server from shutting down a connection to a client.
228	<i>"LAN System-Software Fault; Resuming"</i> An error is preventing tracing of Modbus/TCP data.

Event Type 2f: Modbus/TCP Events (continued)

Entry 2	Description
229	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An internal error prevented the startup of the Modbus/TCP server or prevented the startup of a connection with a single client.</p>
22a	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An internal error occurred during the closing of a TCP connection that prevented inter-task event notification.</p>
22b	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>The Modbus/TCP server received an unexpected message from the CPU module.</p>
22c	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>A PDU received by the Modbus/TCP server specified a non-Modbus protocol in its MBAP header’s Protocol ID field. The connection with the client is closed.</p> <p style="padding-left: 40px;">Entry 3: Connection number Entry 4: Protocol ID</p>
22d	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An unexpected error type was received from the CPU module in response to a request to read or write data to service a Modbus/TCP request.</p> <p style="padding-left: 40px;">Entry 3: CPU Major Error Code Entry 4: CPU Minor Error Code</p>
230	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An unexpected event occurred during the store of configuration data.</p>
231	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An unknown event occurred during the store of configuration data.</p>
232	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An operating system error prevents network communications with a remote device.</p>
233	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An operating system error prevents network communications with a remote device.</p>
234	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>An unrecognized inter-process event was received.</p>
235	<p><i>“LAN System-Software Fault; Resuming”</i></p> <p>The length field in a Modbus/TCP request’s MBAP header contained an illegal value. An exception response is sent to the client and the connection is closed.</p> <p style="padding-left: 40px;">Entry 3: Connection number Entry 4: The data length specified in the header.</p>

Event Type 31: Common SRTP Events

Event Type 31 indicates a Common SRTP exception event. These exception codes may be used by both the SRTP Server and the SRTP Client.

LOG Command Display for Event Type 31

Most Common SRTP events contain an optional Status Code (SCode). The LOG command display for Event Type 31 is shown below.

31 = Common SRTP Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	31H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Common SRTP events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Common SRTP event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<p><i>"LAN system-software fault; resuming"</i></p> <p>A PDU arrived with a version field number higher than the SRTP protocol version supported by SRTP Server</p> <p>Entry 3: The version number of the PDU</p> <p>Entry 4: The SRTP version supported by the SRTP Server</p>
2	<p><i>"LAN system-software fault; resuming"</i></p> <p>A PDU arrived with an invalid pdu_type field code.</p> <p>Entry 3: Code indicating the PDU type as listed above for Entry 2 = 21.</p>
3	<p><i>"LAN system-software fault; resuming"</i></p> <p>A PDU arrived with a non-zero data_length field, but was of a class of PDUs which must have zero (0) in this field.</p> <p>Entry 3: Code indicating the PDU type as listed above for Entry 2 = 21</p> <p>Entry 4: The lower 16 bits of the data_length field</p>
4	<p><i>"LAN system-software fault; resuming"</i></p> <p>Unknown internal data or message type.</p>
5	<p><i>"LAN system-software fault; resuming"</i></p> <p>SRTP startup error. Either SRTP client, server, or both, will be unavailable.</p>
6	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred receiving events.</p>

Event Type 31: Common SRTP Events (continued)

Entry 2	Description
8	<i>"LAN system-software fault; resuming"</i> Error installing module configuration data to SRTP subsystem components.
9	<i>"LAN system-software fault; resuming"</i> An error occurred closing an event descriptor.
a	<i>"LAN system-software fault; resuming"</i> An error occurred allocating a common resource such as a transaction record.
b	<i>"LAN system-software fault; resuming"</i> An error occurred freeing a common resource such as a transaction record.
c	<i>"LAN system-software fault; resuming"</i> An error occurred processing a Station Manager command. Entry 3: Internal code for the attempted Station Manager command
d	<i>"LAN system-software fault; resuming"</i> Unable to locate the appropriate transaction record. Entry 3 optionally specifies an individual service request in the format UUSS where UU and SS specify BPD task number and sequence number, respectively.
e	<i>"LAN system-software fault; resuming"</i> Error processing response mail received from the PLC CPU. Entry 3 optionally specifies an individual service request in the format UUSS where UU and SS specify BPD task number and sequence number, respectively.

Event Type 32: Channel Framework Events

Event Type 32 indicates a Channel Framework exception event. These events can be generated by any channels protocol.

LOG Command Display for Event Type 32

Most Channel Framework events contain an optional Status Code (SCode). The LOG command display for Event Type 32 is shown below.

32 = Channel Framework Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	32H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Channel Framework events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Channel Framework event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	"LAN system-software fault; resuming" Error occurred during framework startup
2	"LAN system-software fault; resuming" Error occurred requesting an operating system service
3	"LAN system-software fault; resuming" Internal error occurred while creating an event
4	"LAN system-software fault; resuming" Internal error occurred while processing a station manager command
5	"LAN system-software fault; resuming" Runtime error occurred while processing a station manager command
6	"LAN system-software fault; resuming" Internal runtime error occurred
7	"LAN system-software fault; resuming" Error occurred while unregistering a channel
8	"LAN system-software fault; resuming" Internal error occurred while registering for channel addition/removal notification
9	"LAN system-software fault; resuming" An error occurred while queuing an event to a channel. Generating channel events faster than they can be processed is the usual cause.
a	"LAN system-software fault; resuming" Internal error occurred while registering the local connection

Entry 2	Description
b	<i>"LAN system-software fault; resuming"</i> Internal error occurred while registering the remote connection
c	<i>"LAN system-software fault; resuming"</i> Internal error while registering with the connection watcher (Duplicate registration)
d	<i>"LAN system-software fault; resuming"</i> Internal error while registering with the connection watcher (Other registration error)
e	<i>"LAN system-software fault; resuming"</i> Internal runtime error within the connection watcher
f	<i>"LAN system-software fault; resuming"</i> Internal initialization error within the connection watcher
10	<i>"LAN system-software fault; resuming"</i> Internal error due to an invalid file handle
11	<i>"LAN system-software fault; resuming"</i> Internal error while clearing a connection watcher entry
12	<i>"LAN system-software fault; resuming"</i> Internal error due to an unexpected NULL pointer
13	<i>"LAN system-software fault; resuming"</i> Internal error occurred while abruptly shutting down a channel
14	<i>"LAN system-software fault; resuming"</i> Internal error occurred while processing channel events
15	<i>"LAN system-software fault; resuming"</i> Internal error occurred while queuing event to channel
16	<i>"LAN system-software fault; resuming"</i> Internal error occurred while updating channel status bits
17	<i>"LAN system-software fault; resuming"</i> Internal error occurred while copying channel status bits to shared memory
18	<i>"LAN system-software fault; resuming"</i> Internal error occurred while unregistering from input scan notification
19	<i>"LAN system-software fault; resuming"</i> Internal error occurred while attempting data transfer with local PLC CPU.
1a	<i>"LAN system-software fault; resuming"</i> Unable to fetch PLC state; channel cannot be established.

Event Type 33: OS Abstraction Events

Event Type 33 indicates an OS Abstraction exception event.

LOG Command Display for Event Type 33

Most OS Abstraction events contain an optional Status Code (SCode). The LOG command display for Event Type 33 is shown below.

33 = OS Abstraction Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	33H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the OS Abstraction events and corresponding PLC Fault Table entries. Entry 2 identifies the particular OS Abstraction event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<i>"LAN system-software fault; resuming"</i> Network error occurred
2	<i>"LAN system-software fault; resuming"</i> Error allocating memory
3	<i>"LAN system-software fault; resuming"</i> Internal error occurred due to an invalid parameter
4	<i>"LAN system-software fault; resuming"</i> Internal error occurred due to an unsupported operation
5	<i>"LAN system-software fault; resuming"</i> Internal general runtime error occurred
6	<i>"LAN system-software fault; resuming"</i> Internal runtime error occurred due to a bad cast exception
7	<i>"LAN system-software fault; resuming"</i> Internal runtime error occurred due to a NULL pointer
8	<i>"LAN system-software fault; resuming"</i> Internal error occurred due to a timer issue
9	<i>"LAN system-software fault; resuming"</i> Internal thread error
a	<i>"LAN system-software fault; resuming"</i> Internal error occurred while updating available connection pool information
b	<i>"LAN system-software fault; resuming"</i> Internal error occurred within IPC abstractions

Event Type 34: General Ethernet System Events

Event Type 34 indicates a General Ethernet System exception event.

LOG Command Display for Event Type 34

Most General Ethernet System events contain an optional Status Code (SCode). The LOG command display for Event Type 34 is shown below.

34 = General Ethernet System Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-APR-2000	00:00:00.0	34H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the General Ethernet System events and corresponding PLC Fault Table entries. Entry 2 identifies the particular General Ethernet System event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
1	<i>"LAN system-software fault; resuming"</i> Internal error occurred while processing a station manager command
2	<i>"LAN system-software fault; resuming"</i> Runtime error occurred while processing a station manager command
3	<i>"LAN system-software fault; resuming"</i> Internal error indicating memory tracking issue
4	<i>"LAN system-software fault; resuming"</i> General Ethernet System not initialized after PLC powerup or Ethernet restart
5	<i>"LAN system-software fault; resuming"</i> Internal error within mailbox abstraction
6	<i>"LAN system-software fault; resuming"</i> Null pointer encountered during execution
7	<i>"LAN system-software fault; resuming"</i> Internal error indicating insufficient data
8	<i>"LAN system-software fault; resuming"</i> Internal error indicating an invalid parameter
e	<i>"LAN system-software fault; resuming"</i> Internal error indicating too much data in a response
f	<i>"LAN system-software fault; resuming"</i> Invalid sub-function code specified
10	<i>"LAN system-software fault; resuming"</i> Invalid function code specified

Event Type 35: Modbus/TCP Client (Channels) Events

Event Type 35 indicates a Modbus/TCP Client (Channels) exception event.

LOG Command Display for Event Type 35

Most Modbus/TCP Client (Channels) events contain an optional Status Code (SCode), remote end point, and local end point values. Remote and local endpoint values are displayed as *IP Address: TCP port*. The LOG or LOG Z command display for Event Type 1c is shown below.

1c = SRTP Channels Event

Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12-OCT-2005	00:00:00.0	35H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

The table below shows the Modbus/TCP Client (Channels) events and corresponding PLC Fault Table entries. Entry 2 identifies the particular Modbus/TCP Client (Channels) event. Entries 3 and 4 may vary according to each particular event. Entries 5 and 6 contain an internal location identification code.

Entry 2	Description
9	<p><i>"LAN system-software fault; resuming"</i></p> <p>An error occurred processing a Modbus/TCP CommReq.</p>
a	<p><i>"LAN system-software fault; resuming"</i></p> <p>An internal error occurred processing a Station Manager command. The command was not completed.</p> <p>Entry 3: Internal processing identifier</p>
c	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error registering to receive a Modbus/TCP CommReq command code. CommReqs containing this command cannot be recognized.</p> <p>Entry 3: CommReq command code</p>
d	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error deregistering a Modbus/TCP CommReq command code.</p> <p>Entry 3: CommReq command code</p>
e	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error sending a CommReq Status value to the PCL CPU. The CommReq Status value was not delivered.</p>

Event Type 35: Modbus/TCP Client (Channels) Events (continued)

<i>Entry 2</i>	<i>Description</i>
f	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error registering with Backplane Driver subsystem. The Modbus/TCP client cannot transfer data to/from PLC reference memory.</p>
11	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error : An unexpected Null pointer was encountered.</p>
12	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error : An unexpected exception was encountered.</p>
13	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal state machine failure.</p> <p style="padding-left: 40px;">Entry 3: Zero or CommReq command code</p>
14	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error: No state machine transition defined.</p>
15	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error processing a state machine state change.</p>
16	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error executing a Station Manager command. The Modbus/TCP client cannot complete the command.</p>
17	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error receiving a service request response from the PLC CPU.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver transfer ID</p>
18	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error: Attempting to close a Modbus/TCP connection when none are open.</p>
19	<p><i>"LAN system-software fault; resuming"</i></p> <p>Internal error: Service request transfer ID already in use.</p> <p style="padding-left: 40px;">Entry 3: Backplane Driver transfer ID</p>
1a	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error sending service request to PLC CPU.</p>
1b	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error receiving PDU from remote server.</p> <p style="padding-left: 40px;">Entry 3: Function code (occurs when PDU contains too much data) or zero (= internal error)</p>
1c	<p><i>"LAN system-software fault; resuming"</i></p> <p>Error flushing pending CommReq Status updates when abruptly closing a Modbus/TCP channel.</p> <p style="padding-left: 40px;">Entry 3: Zero or internal event type</p>

Event Type 35: Modbus/TCP Client (Channels) Events (continued)

Entry 2	Description
1d	<p><i>“LAN system-software fault; resuming”</i></p> <p>Unexpected mail received from PLC CPU. Entry 3: XXYY, where XX = BPD user ID, YY = BPD transfer ID</p>
1e	<p><i>“LAN system-software fault; resuming”</i></p> <p>Unrecognized CommReq command code. Entry 3: CommReq command code</p>
1f	<p><i>“LAN system-software fault; resuming”</i></p> <p>Modbus/TCP response is too large. Entry 3: Response length</p>
20	<p><i>“LAN system-software fault; resuming”</i></p> <p>Modbus/TCP response contains invalid Protocol ID value. Entry 3: Protocol ID</p>
21	<p><i>“LAN system-software fault; resuming”</i></p> <p>An unexpected Modbus/TCP request or response was received. Entry 3: Function code</p>
22	<p><i>“LAN system-software fault; resuming”</i></p> <p>Error writing data to local PLC CPU. Entry 3: CommReq command code, or XXYY where XX = num units and YY = response length</p>
23	<p><i>“LAN system-software fault; resuming”</i></p> <p>Invalid response length. Entry 3: XXYY where XX = num units and YY = response length</p>

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