
SocketEthernet™ IP

MTXCSEM

**Command Line Interface
and
Software Applications**

Reference Guide



SocketEthernet™ IP Reference Guide
MTXCSEM
PN S000278G, Version G

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Revisions

Revision Level	Date	Description
A	11/06/02	First release.
B	12/19/02	Revised Chapter 5 - SocketEthernet IP Command Line Interface
C	03/13/03	New and modified error messages. Additional commands added. New Auto-Discovery Manager section. Replaced the Main Board Filtering diagram with new diagram (see Hardware Considerations).
	05/19/03	Included a new mechanical drawing to correct an incorrect measurement in the old one.
D	06/26/03	Three new AT Commands sections: HTTP Server commands, SMTP Client commands, and POP3 Client commands. A new PPP configuration chapter. Two new PPP commands. All new connectivity examples.
E	10/21/03	Correct the Pin Configuration drawing (RX- and RX+) in Chapter 2 and Appendix H. Correct the Hardware Considerations drawing in Appendix I.
F	06/15/04	Create separate Universal Socket Hardware Guide and a separate Command Line Interface Reference Guide.
G	09/20/04	Updated details related to new features (FTP client, SNMPv1 agent, SNTP client, MCSI AG server, HTTP server, Raw TCP/UDP socket interface). Add new material originating on 9/3/04.

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Chapter 1 – Managing and Configuring the SocketEthernet IP

Internet Applications

DHCP Client

- Request IP address for Ethernet Interfaces

Telnet Server

- Command Line Configuration
- Auto Dialout Feature
- Command line via custom port (other than standard port 23)

Telnet Client

- Connect to remote Telnet Server
- Serial Auto Dial-in Feature

UDP Server

- Auto Dialout Feature with UDP Server support.

UDP Client

- Serial Auto Dial-in Feature with UDP Client support.

Terminal Server

- Network to Serial Connectivity
- Serial to Network Connectivity

TFTP Server

- Flash Upgrade

Command Line Configuration over Serial or Ethernet

- Serial - TTY
- Ethernet – Telnet, HTTP, SNMP

Username and Password Authentication Using Local Database

- The Username and Password can be created using commands.
- The User database authenticates the Users before access to command mode of the SocketEthernet IP module is enabled.

Remote Transparent Bridging

- Ethernet to Serial Bridging

Point-to-Point Protocol (PPP)

- Negotiations Bridging Control Protocol
 - 802.3 MAC Type
- CCP Compression

HTTPv1.0 Server

- SocketEthernet IP Module Configuration, viewing configuration or statistics support.
- To host Web pages on behalf of the serial device for monitoring and configuration of the serial device.

SMTP Client

- The email client embedded in the SocketEthernet IP module sends email to the configured recipients.

POP3 Client

- The email client embedded in the SocketEthernet IP module receives email from the POP3 Server. This feature is useful for field upgrades. Firmware upgrades can be sent as attachments.

FTP Client

- FTP Client embedded in the SocketEthernet IP module list the contents of directory or sends/receives text/binary files to/from a remote server respectively. This feature is useful for field upgrades etc. Firmware upgrades can be sent or received via FTP transfer. It also supports passive mode connection.

SNTP Client

- The SNTP client embedded in the SocketEthernet IP module to update the module time.
- Day light savings mode feature.

SNMP Agent

- The SNMPv1 Agent supports to configure SocketEthernet IP module or view the configuration or statistics of IP module using SNMP manager compiled with proprietary MIB.

Raw UDP/TCP Socket Support via Serial

- Commands to simulate the BSD system calls of UDP and TCP which be used to build proprietary protocol on the serial device. Also to switch between the sockets in a single session.
- Supports to open, flush, send, receive, close, view statistics of TCP and UDP sockets via Serial
- Supports both Client and Server modes for TCP and UDP.

Discovery Support and IP Module Port Capture Using WinMCSI Port Redirector

- SocketEthernet IP modules can be discovered by new WinMCSI Port Redirector software on windows and the serial status can be viewed using WinMCSI Client.
- SocketEthernet IP Module serial port can be captured using any terminal application after creating and mapping a virtual port.

Login Using Telnet Client

Use Telnet Client to configure the SocketEthernet IP module for the first time. Type the default IP address of the module: **192.168.2.1**.

Note: The workstation must be on the same subnet.

Type **admin** at the **Login** prompt.

Type **admin** at the **Password** prompt.

Important: The User Name and Password are case-sensitive. They must be typed in lowercase letters.

Login Using TTY

Use TTY to configure your module for the first time. Configure the workstation's serial port to these defaults:

Baud: 115.2K
Data: 8
Parity: N
Stop: 1
Flow-Control: None

Type **admin** at the **Login** prompt.

Type **admin** at the **Password** prompt.

Important: The User Name and Password are case-sensitive. They must be typed in lowercase letters.

About Data Mode and Command Mode

- In **Command Mode**, a # sign designates the prompt. **Help**, at the command prompt, accesses a complete list of commands supported.
- **Usage**, at the command prompt, provides the semantics of the commands.
- In **Data Mode**, the # sign is not displayed.
- To end Command Mode, exit your terminal or Telnet session or invoke **Exit** at the command prompt.
- See the Restore command, serial Escape String command, and IP Escape String command.

Chapter 2 – SocketEthernet IP Command Line Interface

The commands of SocketEthernet IP are grouped based on the functionality.

- **General Setup Commands**
- **IP Setup Commands**
- **Serial Setup Commands**
- **Bridging Setup Commands**
- **PPP Setup Commands**
- **HTTP Setup Commands**
- **SMTP Setup Commands**
- **POP3 Setup Commands**
- **FTP Setup Commands**
- **SNTP Setup Commands**
- **SNMP Setup Commands**
- **MCSI AG Server Setup Commands**
- **Raw TCP/UDP Socket Support Setup Commands**

General Notes

- Required command parameters are indicated between < >.
- Optional command parameters are indicated between [].
- Parameter choices are delineated by /.
- On successful execution of a command, "OK" string is echoed to the client.
- On an unsuccessful command execution, an appropriate error message is displayed followed by "ERROR" string.
- If bridging is enabled, PPP should also be enabled.
- If you enable bridging and PPP, you cannot use serial-to-Ethernet or Ethernet-to-serial applications.
- All the commands are case sensitive (lower case).

General Setup Commands

The general setup is port (physical eth0, S0, etc.) independent. The following command set is used to set the global configuration of SocketEthernet IP.

General Setup Commands – Basic Commands

Command Syntax	dialout serial s0
Description	Manual telnet dialout (ethernet-to-serial connectivity) Invoked from the command shell
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: dialout serial <serial port> Type 'dialout ?' for more information" Invalid argument Possible argument(s) are: Serial <ol style="list-style-type: none"> When invoked from Serial Shell This command is not supported through serial dial-in

Command Syntax	exit
Description	Exits the command parser, unlocks the configurations, terminates session
Default Value	NA
Success	OK

Command Syntax	help
Description	Provides the first level of commands in IPModule
Default Value	NA
Success	OK

Command Syntax	restore default-config
Description	Restores the factory defaults. Note: All the previous configurations will be lost on invoking this command. The changes are made permanent only if "save config" command is invoked.
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Possible arguments are: default-config session" Invalid argument Invalid argument "invalid string" Valid arguments are default-config session

Command Syntax	restore session
Description	On telnet dialout, the control is transferred to the command parser passing the escape sequence "+++ inet". Invoking "restore session" would resume the telnet dialout exiting the command parser.
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible arguments are default-config session ERROR: Session not opened

Command Syntax	save
Description	Command to Save the configuration to the flash and reboot
Default Value	NA
Success	OK

Command Syntax	telnet <dial-ip-addr> [<port>]
Description	Manual serial dial-in (serial-to-ethernet connectivity) Invoked from the command shell
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Invalid IP address/Port “(Error: hostp = “configured host“. Error: hostp=“configured IP address“ When invoked from Command shell connected through TELNET This command is not supported through TELNET

Command Syntax	usage
Description	Provides the command semantics for all the commands
Default Value	NA
Success	OK

Command Syntax	user add <user-name> [<passwd>]
Description	Command to add the username and the password to the group Notes: Default Groups: admin, users Default Users: admin, ipmodule Only Admin can configure the SocketEthernet IP
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Too few arguments. Possible value(s) are username followed by password“ Unable to add the user name “user ‘username’ exists“

Command Syntax	user delete <user-name>
Description	Command to delete the username from the group
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Too few arguments. Possible value(s) are username followed by password“ Unable to delete the user name “user ‘username’ does not exist“

Command Syntax	user password <username> <new password>
Description	Command to change the password for a user
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Too few arguments. Possible value(s) are username followed by password“ Unable to change the password “Password does not match Unable to change user <username> password“

Command Syntax	set auto-discovery <enable/disable>
Description	Enables the auto-discovery application to broadcast (MAC Level), the MAC-address, IP address and DHCP information to server port configured. The default server port to send is '1020'. The server port is configurable.
Default Value	Enable
Success	OK
Error	1. Too few arguments "Usage: set auto-discovery <enable/disable> Type 'set auto-discovery ?' for more information" 2. Invalid string "error: set auto-discovery <enable/disable>"

Command Syntax	set auto-discovery broadcast-timer <timer-value>
Description	Sets the granularity of periodic Broadcast
Default Value	10 Seconds
Success	OK
Error	1. Too few arguments "Usage: set auto-discovery broadcast-timer <timer-value> Type 'set auto-discovery broadcast-timer ?' for more information" 2. Range check "error: Broadcast-timer range supported: [0 - 300] sec"

Command Syntax	set auto-discovery server-port <portnum>
Description	Sets auto-discovery of the server port
Default Value	1020
Success	OK
Error	1. Too few arguments "Usage: set auto-discovery server-port <portnum> Type 'set auto-discovery server-port ?' for more information" 2. Invalid port number "error: portnum range supported: [1020 - 65535]"

Command Syntax	set boot-messages <enable/disable>
Description	enable - Print the boot-messages during module boot-up disable - Suppress the boot-messages during module boot-up
Default Value	enable
Success	OK
Error	1. Too few arguments "Too few arguments. Possible argument(s) are disable enable 2. Invalid string "Invalid argument "string" Valid argument(s) are disable enable

Command Syntax	set serial <s0> host-interaction-mode <enable/disable>
Description	This parameter is set by the host to enable the host-interactive-mode. When set, the host/serial device can use SMTP client, POP3 client, and HTTP server. Note: Telnet Auto-Dialout and PPP cannot be enabled when this mode is enabled.
Default Value	Disable
Success	OK
Error	1. Too few arguments "Usage: set serial <s0> host-interaction-mode <enable/disable> Type set serial S0 host-interaction-mode ?" 2. Invalid string Type set serial S0 host-interaction-mode ?" 3. Port used by Auto-dialout "ERROR: Port used by Auto-dialout"

Command Syntax	set date <DD/MM/YYYY>
Description	Sets the system date
Default Value	Jan 1 1970
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set date DD/MM/YYYY Type 'set date ?' for more information Invalid argument Date in DD/MM/YYYY format. Type 'set date ?' for more ERROR

Command Syntax	set login
Description	This command prompts the Login for the command shell when enabled and doesn't when disabled
Default Value	Enable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set login <enable/disable> Type 'set login ?' for more information" Invalid string "error: set login <enable/disable>"

Command Syntax	set login auto-dialout-login <enable/disable>
Description	Enable/Disable authentication for Telnet auto-dialout
Default Value	Disable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set login auto-dialout-login <enable/disable> Type 'set login auto-dialout-login ?' for more information" Invalid string "error: set login auto-dialout-login <enable/disable>"

Command Syntax	set time <HH:MM:SS>
Description	Sets the system time
Default Value	00:00:00
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set time HH:MM:SS Type 'set time ?' for more information Invalid argument Time in HH:MM:SS format. Type 'set time ?' for more ERROR

Command Syntax	set watchdog <enable/disable>
Description	<p>Enables/Disables the watchdog timer. The timer value is set to 6.5 seconds. This is the upper threshold value.</p> <p>Note: Watchdog timer comes into effect only after reboot. Hence invoking this command calls for a reboot on save.</p>
Default Value	Enable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set watchdog <enable/disable> Type 'set watchdog <enable/disable> ?' for more information" Invalid string "error: set watchdog <enable/disable>"

Command Syntax	show buildrun
Description	Command Line Configuration - History. On invoking any command, either through Telnet or Serial TTY, the command is added to the buildrun file. This is very useful in case of version updates.
Default Value	NA
Success	OK
Error	1. Too few arguments "Too few arguments. Possible argument(s) are bridge snmp-agent http configuration statistics recv-mail device-parameter time serial ip buildrun snmp-client ppp date sys-info send-mail ftp users ERROR" 2. Invalid argument Invalid argument "string". Valid arguments are bridge snmp-agent http configuration statistics recv-mail device-parameter time serial ip buildrun snmp-client ppp date sys-info send-mail ftp users ERROR"

Command Syntax	show configuration
Description	Display SocketEthernet IP configuration
Default Value	NA
Success	OK

Command Syntax	show date
Description	Show system date
Default Value	NA
Success	OK
Error	1. Too few arguments "Too few arguments. Possible argument(s) are bridge snmp-agent http configuration statistics recv-mail device-parameter time serial ip buildrun snmp-client ppp date sys-info send-mail ftp users ERROR" 2. Invalid argument Invalid argument "string". Valid arguments are bridge snmp-agent http configuration statistics recv-mail device-parameter time serial ip buildrun snmp-client ppp date sys-info send-mail ftp users ERROR"

Command Syntax	show statistics																																				
Description	Display SocketEthernet IP statistics																																				
Default Value	NA																																				
Success	OK																																				
Error	<div>1. Too few arguments</div> <div>"Too few arguments. Possible argument(s) are</div> <table><tr><td>bridge</td><td>snmp-agent</td><td>http</td></tr><tr><td>configuration</td><td>statistics</td><td>recv-mail</td></tr><tr><td>device-parameter</td><td>time</td><td>serial</td></tr><tr><td>ip</td><td>buildrun</td><td>sntp-client</td></tr><tr><td>ppp</td><td>date</td><td>sys-info</td></tr><tr><td>send-mail</td><td>ftp</td><td>users</td></tr></table> <div>ERROR"</div> <div>2. Invalid argument</div> <div>Invalid argument "string". Valid arguments are</div> <table><tr><td>bridge</td><td>snmp-agent</td><td>http</td></tr><tr><td>configuration</td><td>statistics</td><td>recv-mail</td></tr><tr><td>device-parameter</td><td>time</td><td>serial</td></tr><tr><td>ip</td><td>buildrun</td><td>sntp-client</td></tr><tr><td>ppp</td><td>date</td><td>sys-info</td></tr><tr><td>send-mail</td><td>ftp</td><td>users</td></tr></table> <div>ERROR"</div>	bridge	snmp-agent	http	configuration	statistics	recv-mail	device-parameter	time	serial	ip	buildrun	sntp-client	ppp	date	sys-info	send-mail	ftp	users	bridge	snmp-agent	http	configuration	statistics	recv-mail	device-parameter	time	serial	ip	buildrun	sntp-client	ppp	date	sys-info	send-mail	ftp	users
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ip	buildrun	sntp-client																																			
ppp	date	sys-info																																			
send-mail	ftp	users																																			

Command Syntax	show sys-info																																				
Description	Display the system related information. <ul style="list-style-type: none">• Hardware information• System Uptime• Memory Utilization• Flash Memory Map																																				
Default Value	NA																																				
Success	OK																																				
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send-mail	ftp	users																																			
bridge	snmp-agent	http																																			
configuration	statistics	recv-mail																																			
device-parameter	time	serial																																			
ip	buildrun	sntp-client																																			
ppp	date	sys-info																																			
send-mail	ftp	users																																			

Command Syntax	show users																																				
Description	Display the configured users																																				
Default Value	NA																																				
Success	OK																																				
Error	<div>1. Too few arguments</div> <div>"Too few arguments. Possible argument(s) are</div> <table><tr><td>bridge</td><td>snmp-agent</td><td>http</td></tr><tr><td>configuration</td><td>statistics</td><td>recv-mail</td></tr><tr><td>device-parameter</td><td>time</td><td>serial</td></tr><tr><td>ip</td><td>buildrun</td><td>sntp-client</td></tr><tr><td>ppp</td><td>date</td><td>sys-info</td></tr><tr><td>send-mail</td><td>ftp</td><td>users</td></tr></table> <div>ERROR"</div> <div>2. Invalid argument</div> <div>Invalid argument "string". Valid arguments are</div> <table><tr><td>bridge</td><td>snmp-agent</td><td>http</td></tr><tr><td>configuration</td><td>statistics</td><td>recv-mail</td></tr><tr><td>device-parameter</td><td>time</td><td>serial</td></tr><tr><td>ip</td><td>buildrun</td><td>sntp-client</td></tr><tr><td>ppp</td><td>date</td><td>sys-info</td></tr><tr><td>send-mail</td><td>ftp</td><td>users</td></tr></table> <div>ERROR"</div>	bridge	snmp-agent	http	configuration	statistics	recv-mail	device-parameter	time	serial	ip	buildrun	sntp-client	ppp	date	sys-info	send-mail	ftp	users	bridge	snmp-agent	http	configuration	statistics	recv-mail	device-parameter	time	serial	ip	buildrun	sntp-client	ppp	date	sys-info	send-mail	ftp	users
bridge	snmp-agent	http																																			
configuration	statistics	recv-mail																																			
device-parameter	time	serial																																			
ip	buildrun	sntp-client																																			
ppp	date	sys-info																																			
send-mail	ftp	users																																			
bridge	snmp-agent	http																																			
configuration	statistics	recv-mail																																			
device-parameter	time	serial																																			
ip	buildrun	sntp-client																																			
ppp	date	sys-info																																			
send-mail	ftp	users																																			

IP Setup Commands

Command Syntax	set ip auto-dialout <enable/disable>
Description	Enables ethernet-to-serial connectivity through Auto Dialout. This is a global setting. This flag would enable/disable the Auto dialout globally
Default Value	Enabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip auto-dialout <enable/disable> Type ‘set ip auto-dialout ?’ for more information” Invalid argument Type ‘set ip auto-dialout ?’ for more information”

Command Syntax	set ip dns <enable/disable>
Description	Set dns client enabled/disabled
Default Value	Enabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip dns <enable/disable> Type ‘set ip dns ?’ for more information” Invalid string Type ‘set ip dns ?’ for more information”

Command Syntax	set ip def-gway <gway-addr>
Description	Set the IP default gateway address
Default Value	0.0.0.0
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip def-gway <gway-addr> Type ‘set ip def-gway ?’ for more Information” Invalid IP address “error: Invalid IP address Type ‘set ip def-gway ?’ for more Information”

Command Syntax	set ip eth0 dhcp-client <enable/disable>
Description	By default DHCP Client is enabled. If the DHCP Client fails to contact the DHCP Server after a finite number of retries, eth0 is initialized with the default static IP address value described below. Note: The DHCP Client checks periodically and retries to obtain an IP address from a DHCP server if there is any error.
Default Value	Enable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip eth0 dhcp-client <enable/disable> Type ‘set ip eth0 dhcp-client ?’ for more information” Invalid string Type ‘set ip eth0 dhcp-client ?’ for more information

Command Syntax	set ip eth0 ip-address <ip-addr> mask <mask>
Description	Set the IP address and the mask of eth0.
Default Value	192.168.2.1 255.255.255.0
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip eth0 ip-address <ip-address> mask <mask> Type ‘set ip eth0 ip-address ? for more Information” Invalid IP address/Mask “error: Invalid IP address/Mask Type ‘set ip eth0 ip-address ?’ for more information”

Command Syntax	set ip hostname <hostname>
Description	Hostname of the IP Module
Default Value	"SocketEthernet IP"
Success	OK
Error	1. Too few arguments "Usage: set ip hostname <hostname> Type 'set ip hostname ?' for more information"

Command Syntax	set ip pri-dns <ip addr>
Description	Set primary DNS IP address to 0.0.0.0
Default Value	0.0.0.0
Success	OK
Error	1. Too few arguments "Usage: set ip pri-dns <ip addr> Type 'set ip pri-dns ?' for more information" 2. Invalid IP Address "error: Invalid IP address Type 'set ip pri-dns ?' for more information"

Command Syntax	set ip sec-dns <ip addr>
Description	Set secondary DNS IP address to 0.0.0.0
Default Value	0.0.0.0
Success	OK
Error	1. Too few arguments "Usage: set ip sec-dns <ip addr> Type 'set ip sec-dns ?' for more information" 2. Invalid IP Address "error: Invalid IP address Type 'set ip sec-dns ?' for more information"

Command Syntax	set ip syslogd <enable/disable>
Description	Enable/Disable syslogd
Default Value	disable
Success	OK
Error	1. Too few arguments "Usage: set ip syslogd <enable/disable> Type 'set ip syslogd ?' for more information"

Command Syntax	set ip syslogd-server <ip addr>
Description	Set the remote syslog server's IP address
Default Value	0.0.0.0
Success	OK
Error	1. Too few arguments "Usage: set ip syslogd-server <ipaddr> Type 'set ip syslogd-server ?' for more information" 2. Invalid IP address "error: Invalid IP address Type 'set ip syslogd-server ?' for more information"

Command Syntax	set ip tcp-keepalive [3-120] mins
Description	Sets the TCP session timeout globally for the IP Module.
Default Value	3
Success	OK
Error	1. Too few arguments Usage : set ip tcp-keepalive [3-120] mins Type 'set ip tcp-keepalive ?' for more information. ERROR 2. Invalid String Type 'set ip tcp-keepalive ?' for more information"

Command Syntax	set ip telnet <enable/disable>
Description	Telnet Server enable/disable. This is a global setting, which will enable/disable the Telnet Server in the SocketEthernet IP. Note: Upon disabling the Telnet server, the administrator cannot configure the IP Module over Ethernet. The only option is to connect through a terminal application over the Serial port
Default Value	Enabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Too few arguments. Possible argument(s) are set ip telnet<enable/disable> Type: set ip telnet ? for more information" Multiple matches telnet telnet-port Invalid String Invalid argument "invalid string" Valid arguments are auto-dialout escape-monitor inactivity-timeout inactivity escape-string raw-mode Possible value(s) are enable or disable

Command Syntax	set ip telnet escape-string <string>
Description	The Telnet Server scans for this escape sequence and transfers the control to the command parser. By default, the Telnet Server scans for "+++inet".
Default Value	+++ inet
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip telnet escape-string <string> Type 'set ip telnet escape-string ?' for more information" Multiple matches escape-monitor escape-string

Command Syntax	set ip telnet escape-monitor <enable/disable>
Description	A "monitor" flag which enables/disables the scanning of escape sequence.
Default Value	Enabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip telnet escape-monitor <enable/disable> Type 'set ip telnet escape-monitor ?' for more information" Multiple matches escape-monitor escape-string Invalid String Type 'set ip telnet escape-monitor ?' for more information"

Command Syntax	set ip telnet inactivity <enable/disable>
Description	The inactivity functionality is enabled/disabled.
Default Value	Disable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip telnet inactivity <enable/disable> Type ‘set ip telnet inactivity ?’ for more information” Multiple matches inactivity inactivity-timeout Invalid String Type ‘set ip telnet inactivity ?’ for more information”

Command Syntax	set ip telnet inactivity-timeout <t secs>
Description	If the Telnet session is inactive for ‘t’ secs, the connection is terminated. This functionality is applicable only if “set telnet inactivity” is enabled. (Refer ‘set ip telnet inactivity’ command)
Default Value	5 min
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip telnet inactivity-timeout <t secs> Type ‘set ip telnet inactivity-timeout ?’ for more information” Multiple matches inactivity inactivity-timeout Invalid timeout value “error: ‘t secs range : 0 – 300 Type ‘set ip telnet inactivity-timeout ?’ for more information”

Command Syntax	set ip telnet-port <port_num >
Description	<p>This Telnet-port corresponds to the port number “IP Module” would wait on for configuring the box. By default the port number is TCP 23. The user is given an option to change this port number.</p> <p>Notes: Telnet application is associated with "inetd" application. Modification to the telnet-port calls for a re-initialization of "inetd". This, in-turn, closes the current session that is associated with "inetd". The other application(s) that are associated with "inetd" are</p> <ul style="list-style-type: none"> • TFTP Server <p>Hence, invoking this command would terminate the telnet session.</p>
Default Value	23
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip telnet-port <port-num> Type ‘set ip telnet-port ?’ for more information” Invalid port-num “error: Invalid port number Type ‘set ip telnet-port ?’ for more information”

Command Syntax	set ip telnet raw-mode <enable/disable>
Description	This is a global setting of raw-mode for the Telnet application. This setting is applicable for both Telnet auto-dialout, serial auto-dial-in.
Default Value	Disabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip telnet raw-mode <enable/disable> Type ‘set ip telnet raw-mode ?’ for more information” Invalid String ERROR

Command Syntax	set ip tftp <enable/disable >
Description	TFTP Server enable/disable. On enabling the TFTP Server, the network administrator can upload the firmware to the flash. Notes: TFTP application is associated with "inetd" application. Enabling/Disabling the TFTP service calls for a re-initialization of "inetd", eventually closes all the current session that are associated with "inetd". The other application(s) that are associated with "inetd" are <ul style="list-style-type: none"> • Telnet Server Hence, enabling/disabling TFTP through a Telnet configuration would terminate the telnet session.
Default Value	Enabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip tftp <enable/disable> Type 'set ip tftp ?' for more information" Invalid string error: Invalid string Type 'set ip tftp ?' for more information"

Command Syntax	set ip udp inactivity <enable/disable>
Description	Enables/disables udp inactivity support.
Default Value	Enabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip udp inactivity <enable/disable> Type 'set ip udp inactivity ?' for more information" Multiple matches inactivity inactivity-timeout Invalid argument "Type 'set ip udp inactivity ?' for more information"

Command Syntax	set ip udp inactivity-timeout <t secs>
Description	If the UDP session is inactive for 't' secs, the connection is terminated. This functionality is applicable only if "set udp inactivity" is enabled. (Refer 'set ip udp inactivity' command).
Default Value	300
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip udp inactivity-timeout <t secs> Type 'set ip udp inactivity-timeout ?' for more information" Multiple matches inactivity inactivity-timeout Invalid argument "error: 't secs range : 1 – 18000 Type 'set ip udp inactivity-timeout ?' for more information"

Command Syntax	set ip udp terminate-monitor <enable/disable>
Description	"Monitor" flag enables/disables scanning of terminate sequence by the UDP server.
Default Value	Enabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip udp terminate-monitor <enable/disable> Type 'set ip udp terminate-monitor ?' for more information" Multiple matches terminate-monitor terminate-string Invalid argument Type 'set ip udp terminate-monitor ?' for more information"

Command Syntax	set ip udp terminate-string <string>
Description	The UDP Server scans for this terminate sequence and terminates UDP auto-dialout session. By default, the UDP Server scans for “+++inet”.
Default Value	+++ inet
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ip udp terminate-string <string> Type ‘set ip udp terminate-string ?’ for more information” Multiple matches terminate-monitor terminate-string Invalid argument Type ‘set ip udp terminate-string ?’ for more information”

IP Setup Commands – Show Commands

Command Syntax	show ip eth0 configuration
Description	Display eth0 configuration
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible value(s) are statistics or configuration invalid argument Invalid argument “Invalid string” Valid arguments are configuration statistics

Command Syntax	show ip eth0 statistics
Description	Displays Ethernet statistics.
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible value(s) are statistics or configuration invalid argument invalid argument “Invalid string” Valid arguments are configuration statistics

Serial Setup Commands

Command Syntax	set serial auto-dialin <enable/disable>
Description	This command globally enables serial auto-dial-in support. Note: This feature provides a serial-to-ethernet connectivity.
Default Value	Disabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial auto-dialin <enable/disable> Type 'set serial auto-dialin ?' for more information" Invalid string error: Invalid string Type 'set serial auto-dialin ?' for more information

Command Syntax	set serial escape-monitor <enable/disable>
Description	Set a "monitor" flag which enables/disables the scanning of escape sequence.
Default Value	Enable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial escape-monitor <enable/disable> Type 'set serial escape-monitor ?' for more information" Multiple matches escape-monitor escape-string Invalid string error: Invalid string Type 'set serial escape-monitor ?' for more information"

Command Syntax	set serial escape-string <string>
Description	The Telnet Server scans for this escape sequence and transfers the control to the command parser. By default, the Telnet Server scans for "+++inet".
Default Value	+++ inet
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial escape-string <string> Type 'set serial escape-string ?' for more information" Multiple matches escape-monitor escape-string

Command Syntax	set serial s0 auto-dialin <enable/disable>								
Description	Enable/disable the serial-to-ethernet connectivity for the serial port S0								
Default Value	Disabled								
Success	OK								
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial s0 auto-dialin <enable/disable> Type 'set serial s0 auto-dialin ?' for more information" Multiple matches <table border="0"> <tr> <td>auto-dialin</td> <td>auto-dialout</td> </tr> <tr> <td>auto-dialin-ipaddress</td> <td>auto-dialout-port</td> </tr> <tr> <td>auto-dialin-port</td> <td>auto-dialout-protocol</td> </tr> <tr> <td>auto-dialin-protocol</td> <td></td> </tr> </table> Invalid string "error: Invalid string Type 'set serial s0 auto-dial-in ?' for more information" 	auto-dialin	auto-dialout	auto-dialin-ipaddress	auto-dialout-port	auto-dialin-port	auto-dialout-protocol	auto-dialin-protocol	
auto-dialin	auto-dialout								
auto-dialin-ipaddress	auto-dialout-port								
auto-dialin-port	auto-dialout-protocol								
auto-dialin-protocol									

Command Syntax	set serial s0 auto-dialin-ipaddress <ipaddr>								
Description	Command to specify the auto dial-in IP address. Note: On connection establishment from serial, a session is established to the IP address mentioned above.								
Default Value	NULL								
Success	OK								
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 auto-dialin-ipaddress <ipaddr> Type ‘set serial s0 auto-dialin-ipaddress ? for more information” Multiple matches <table> <tr> <td>auto-dialin</td><td>auto-dialout</td></tr> <tr> <td>auto-dialin-ipaddress</td><td>auto-dialout-port</td></tr> <tr> <td>auto-dialin-port</td><td>auto-dialout-protocol</td></tr> <tr> <td>auto-dialin-protocol</td><td></td></tr> </table> Invalid IP Address “error: Invalid IP address Type ‘show serial s0 auto-dialin-ipaddress ? for more information” 	auto-dialin	auto-dialout	auto-dialin-ipaddress	auto-dialout-port	auto-dialin-port	auto-dialout-protocol	auto-dialin-protocol	
auto-dialin	auto-dialout								
auto-dialin-ipaddress	auto-dialout-port								
auto-dialin-port	auto-dialout-protocol								
auto-dialin-protocol									

Command Syntax	set serial s0 auto-dialin-port [port_num]								
Description	Command to specify the auto dial-in port number. Note: [port_num] is optional here. If port_num is not specified, the standard port 23 of the telnet protocol shall be used.								
Default Value	23								
Success	OK								
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 auto-dialin-port [port_num] Type ‘set serial s0 auto-dialin-port ? for more information” Multiple matches <table> <tr> <td>auto-dialin</td><td>auto-dialout</td></tr> <tr> <td>auto-dialin-ipaddress</td><td>auto-dialout-port</td></tr> <tr> <td>auto-dialin-port</td><td>auto-dialout-protocol</td></tr> <tr> <td>auto-dialin-protocol</td><td></td></tr> </table> Invalid port “error: Invalid port number Type ‘set serial s0 auto-dialin-port ? for more information” 	auto-dialin	auto-dialout	auto-dialin-ipaddress	auto-dialout-port	auto-dialin-port	auto-dialout-protocol	auto-dialin-protocol	
auto-dialin	auto-dialout								
auto-dialin-ipaddress	auto-dialout-port								
auto-dialin-port	auto-dialout-protocol								
auto-dialin-protocol									

Command Syntax	set serial s0 auto-dialin-protocol <telnet/udp>								
Description	By default, telnet is the protocol used to establish the serial-to-ethernet connectivity. Note: This syntax provides for future extensibility (SSH Client, etc.)								
Default Value	telnet								
Success	OK								
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 auto-dialin-protocol telnet/udp Type ‘set serial s0 auto-dialin-protocol ? for more information” Multiple matches <table> <tr> <td>auto-dialin</td><td>auto-dialout</td></tr> <tr> <td>auto-dialin-ipaddress</td><td>auto-dialout-port</td></tr> <tr> <td>auto-dialin-port</td><td>auto-dialout-protocol</td></tr> <tr> <td>auto-dialin-protocol</td><td></td></tr> </table> Invalid protocol selected “error: Selected protocol not supported Type ‘set serial s0 auto-dialin-protocol ? for more information” 	auto-dialin	auto-dialout	auto-dialin-ipaddress	auto-dialout-port	auto-dialin-port	auto-dialout-protocol	auto-dialin-protocol	
auto-dialin	auto-dialout								
auto-dialin-ipaddress	auto-dialout-port								
auto-dialin-port	auto-dialout-protocol								
auto-dialin-protocol									

Command Syntax	set serial s0 auto-dialin trig-mode <char/ dtr/ dtr-char/ none>
Description	<p>This mode is applicable only when auto dial-in is enabled on the serial port s0.</p> <p>Parameter Description</p> <p>char Initiate a session (Telnet) to the auto-dialin-ipaddress, only on a reception of a character on the serial port s0.</p> <p>dtr Initiate a session (Telnet) to the auto-dialin-ipaddress, only on seeing a DTR signal on the serial port s0</p> <p>dtr-char Initiate a session (Telnet) to the auto-dialin-ipaddress, either on reception of a character (OR) seeing the DTR signal on the serial port s0.</p> <p>none Initiate a Telnet session to the auto-dialin-ipaddress on module boot-up.</p>
Default Value	dtr-char
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Too few arguments. Possible argument(s) are char dtr dtr-char none Invalid string "Invalid string "string" Valid arguments are char dtr dtr-char none

Command Syntax	set serial s0 auto-dialin message <enable/disable>
Description	<p>Enable: Displays Telnet client (Manual and Auto-dialin) connect messages on the serial port s0.</p> <p>Disable: Doesn't Display Telnet client connect messages on the serial port s0.</p>
Default Value	disable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set serial s0 auto-dialin message <enable/disable> Type 'set serial s0 auto-dialin message ?' for more information. ERROR Invalid argument Type 'set serial s0 auto-dialin message ?' for more information. ERROR

Command Syntax	set serial s0 auto-dialout <enable/disable>								
Description	Enable/disable the ethernet-to-serial connectivity for the serial port S0.								
Default Value	Enabled								
Success	OK								
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial s0 auto-dialout <enable/disable> Type 'set serial s0 auto-dialout ?' for more information" Multiple matches <table> <tr> <td>auto-dialin</td><td>auto-dialout</td></tr> <tr> <td>auto-dialin-ipaddress</td><td>auto-dialout-port</td></tr> <tr> <td>auto-dialin-port</td><td>auto-dialout-protocol</td></tr> <tr> <td>auto-dialin-protocol</td><td></td></tr> </table> Invalid string error: Invalid string Type 'set serial s0 auto-dialout ?' for more information" 	auto-dialin	auto-dialout	auto-dialin-ipaddress	auto-dialout-port	auto-dialin-port	auto-dialout-protocol	auto-dialin-protocol	
auto-dialin	auto-dialout								
auto-dialin-ipaddress	auto-dialout-port								
auto-dialin-port	auto-dialout-protocol								
auto-dialin-protocol									

Command Syntax	set serial s0 auto-dialout-port <port_num>								
Description	If auto-dialout is enabled, specify the auto-dialout-port on which client can connect. By default it is 5000. Note: The port number should be other than standard TCP ports.								
Default Value	5000								
Success	OK								
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 auto-dialout-port <port_num> Type ‘set serial s0 auto-dialout-port ? for more information” Multiple matches <table> <tr> <td>auto-dialin</td><td>auto-dialout</td></tr> <tr> <td>auto-dialin-ipaddress</td><td>auto-dialout-port</td></tr> <tr> <td>auto-dialin-port</td><td>auto-dialout-protocol</td></tr> <tr> <td>auto-dialin-protocol</td><td></td></tr> </table> Invalid Port Number “error: Invalid port number Type ‘set serial s0 auto-dialout-port ? for more information” 	auto-dialin	auto-dialout	auto-dialin-ipaddress	auto-dialout-port	auto-dialin-port	auto-dialout-protocol	auto-dialin-protocol	
auto-dialin	auto-dialout								
auto-dialin-ipaddress	auto-dialout-port								
auto-dialin-port	auto-dialout-protocol								
auto-dialin-protocol									

Command Syntax	set serial s0 auto-dialout-protocol <telnet/udp/all>								
Description	Sets the protocol through which the client can connect. If all is selected, client can connect through all the specified protocols.								
Default Value	telnet								
Success	OK								
Error	<ol style="list-style-type: none"> Too few arguments Too few arguments. Possible argument(s) are telnet udp all Multiple matches <table> <tr> <td>auto-dialin</td><td>auto-dialout</td></tr> <tr> <td>auto-dialin-ipaddress</td><td>auto-dialout-port</td></tr> <tr> <td>auto-dialin-port</td><td>auto-dialout-protocol</td></tr> <tr> <td>auto-dialin-protocol</td><td></td></tr> </table> Invalid string Invalid string "string" Valid arguments are all telnet udp 	auto-dialin	auto-dialout	auto-dialin-ipaddress	auto-dialout-port	auto-dialin-port	auto-dialout-protocol	auto-dialin-protocol	
auto-dialin	auto-dialout								
auto-dialin-ipaddress	auto-dialout-port								
auto-dialin-port	auto-dialout-protocol								
auto-dialin-protocol									

Command Syntax	set serial s0 baud-rate <baud>
Description	Command to set the serial baud
Default Value	115200
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 baud-rate <baud> Type ‘set serial s0 baud-rate ?’ for more information” Invalid baud-rate “error: baud-rate range : [300,, 921600] Type ‘set serial s0 baud-rate ?’ for more information”

Command Syntax	set serial s0 buffer-datasize <0/255 bytes>
Description	This command primarily buffers the data sent from serial-to-ethernet.
Default Value	0 – No buffering.
Success	OK
Error	<div><div>1. Too few arguments</div><div>“Usage: set serial s0 buffer-datasize <0/255 bytes> Type ‘set serial s0 buffer-datasize ?’ for more information”</div><div>2. Multiple matches</div><div>buffer-datasize buffer-time</div><div>3. Datasize range</div><div>“error: Buffer data-size range : [0 – 255] bytes Type ‘set serial s0 buffer-datasize ?’ for more information”</div></div>

Command Syntax	set serial s0 buffer-time <0/255 deci-seconds>
Description	<p>This command is related to the 'set serial s0 buffer-datasize' command. The buffering of data shall either wait for the datasize configured (in the previous command) or the time t deci-secs.</p> <p>Example:</p> <pre> SI Buffer-datasize Buffer-time (deci-secs) Descriptions 1 0 – Default 0 – Default No buffering. Pass the data to the serial application on the reception of a character on the serial. 2 10 0 Buffer until it reaches buffer-datasize (10); then pass it to the serial application. 3 0 10 No buffering. Pass the data to the serial application on the reception of a character on the serial. 4 10 10 Buffer the characters until it reaches the buffer-datasize (10) (OR) wait for the buffer-time (10dec-secs). The data is passed on to the serial application depending on which condition is satisfied first.</pre>
Default Value	0 – No buffering
Success	OK
Error	<p>1. Too few arguments "Usage: set serial s0 buffer-time <0/255 deci-seconds> Type 'set serial s0 buffer-time ?' for more information"</p> <p>2. Multiple matches buffer-datasize buffer-time</p> <p>3. Time limit "error: Time limit supported : <0 – 255 deci-seconds> Type 'set serial s0 buffer-time ?' for more information"</p>

Command Syntax	set serial s0 chat-script <line-num> <expect-string> <send-string>
Description	<p>Sets <i>expect</i> and <i>send</i> strings for the chat script to act on the modem. Triggers for a reboot upon save.</p> <p>Important Note: Use double quotes if more than one word is used in the <expect-string>/<send-string>.</p>
Default Value	NA
Success	OK
Error	<p>1. Too few arguments "Usage: set serial s0 chat-script <line-num> <expect-string> <send-string> Type 'set serial s0 chat-script ?' for more information"</p>

Command Syntax	set serial s0 connect-state <dialing/answering>
Description	Sets the connect state of the serial port to dialing/answering. Triggers a reboot upon save
Default Value	Dialing
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial s0 connect-state <dialing/answering> Type 'set serial s0 connect-state ?' for more information" Invalid string "error: Invalid string Type 'set serial s0 connect-state ?' for more information"

Command Syntax	set serial s0 connect-type <direct/modem>
Description	Sets the connect type of the serial port to direct/modem connect Triggers a reboot upon save
Default Value	Direct
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial s0 connect-type <direct/modem> Type 'set serial s0 connect-type ?' for more information" Invalid string "error: Invalid string Type 'set serial s0 connect-type ?' for more information"

Command Syntax	set serial s0 data-bits <7/8>
Description	Command to set the data-bits
Default Value	8
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set serial s0 data-bits <7/8> Type 'set serial s0 data-bits ?' for more information" Invalid data-bit setting "error: Data-bits range supported: [7/8] Type 'set serial s0 data-bits ?' for more information"

Command Syntax	set serial s0 dialout-monitor <dtr/none>
Description	The dtr setting enables monitoring the DTR on s0 and terminates the dialout (manual or auto) session upon toggle of DTR from HIGH to LOW.
Default Value	none
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set serial s0 dialout-monitor <dtr/none> Type 'set serial s0 dialout-monitor ?' for more information. ERROR Invalid argument Type 'set serial s0 dialout-monitor ?' for more information"

Command Syntax	set serial s0 echo-command <enable/disable>
Description	Enables/disables the command echo during configuration from TTY or telnet client.
Default Value	enable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set serial s0 echo-command <enable/disable> Type 'set serial s0 echo-command ?' for more information. ERROR Invalid argument Type 'set serial s0 echo-command ?' for more information"

Command Syntax	set serial s0 flow-control <none/rts-cts>
Description	Set the flow-control of the serial port. By default flow-control is disabled on the serial port.
Default Value	rts-cts
Success	OK
Error	1. Too few arguments "Usage: set serial s0 flow-control <none/rts-cts> Type 'set serial s0 flow-control ?' for more information" 2. Invalid flow-control setting "error: flow-control supported: [none/rts-cts] Type 'set serial s0 flow-control ?' for more information"

Command Syntax	set serial s0 login-string <string>
Description	This is applicable only when trig-mode is set to char mode. The configured string is used to authenticate the user on the tty side to display the login prompt/shell on terminal.
Default Value	NULL
Success	OK
Error	1. Too few arguments "Usage: set serial s0 login-string <string> Type 'set serial s0 login-string ?' for more information" 2. Invalid flow-control setting "Type 'set serial s0 login-string ?' for more information"

Command Syntax	set serial s0 modem connect-string <connect-str>
Description	Sets the Modem Connect string. Triggers for a reboot upon save.
Default Value	CONNECT
Success	OK
Error	1. Too few arguments "Usage: set serial s0 modem connect-string <connect-str> Type 'set serial s0 modem connect-string ?' for more information"

Command Syntax	set serial s0 modem dial-number <phone-num>
Description	Sets the dial-number to be dialed.
Default Value	NA
Success	OK
Error	1. Too few arguments "Usage: set serial s0 modem dial-number <phone-num> Type 'set serial s0 modem dial-number ?' for more information"

Command Syntax	set serial s0 modem dial-prefix <dialprefix>
Description	Sets the Modem Dial-Prefix. Triggers for a reboot upon save.
Default Value	ATDT
Success	OK
Error	1. Too few arguments "Usage: set serial s0 modem dial-prefix <dialprefix> Type 'set serial s0 modem dial-prefix ?' for more information"

Command Syntax	set serial s0 modem dial-suffix <dialsuffix>
Description	Sets the Modem Dial-suffix. Triggers for a reboot upon save.
Default Value	^M
Success	OK
Error	1. Too few arguments "Usage: set serial s0 modem dial-suffix <dialsuffix> Type 'set serial s0 modem dial-suffix ?' for more information"

Command Syntax	set serial s0 modem dialing-method <configuration/chat-script>
Description	Set the modem dialing method. <ol style="list-style-type: none"> 1. Configuration method: The user shall provide only the dial-number to reach. 2. Choosing the 'chat' as the dialing-method, the user can write his/her own script by providing an "Expect" and a "Send" sequence Refer to: 'set serial s0 chat-script ?' for an "Expect" and a "Send" sequence. Triggers for a reboot upon save
Default Value	Configuration
Success	OK
Error	<ol style="list-style-type: none"> 1. Too few arguments "Usage: set serial s0 modem dialing-method <configuration/chat-script> Type 'set serial s0 modem dialing-method ?' for more information"

Command Syntax	set serial s0 modem hangup-string <hangup-str>
Description	Sets the Modem hang-up string. Triggers for a reboot upon save.
Default Value	+++ATH0
Success	OK
Error	<ol style="list-style-type: none"> 1. Too few arguments "Usage: set serial s0 modem hangup-string <hang-str> Type 'set serial s0 modem hangup-string ?' for more information"

Command Syntax	set serial s0 modem init-string <init-num> <init-str>
Description	Configure the Modem init strings. Init-num can range from 1-5. Triggers for a reboot upon save. Example: Set serial s0 modem init-string 1 ATZ Set serial s0 modem init-string 1 "ATZ AT&F" Important Note: Use double quotes if more than one word is used in the <init-str>. Refer example 2 above. This holds true for all the following commands that need a string as a parameter.
Default Value	Init-string 1 is set to 'ATZ' Init-string 2 is set to '' Init-string 3 is set to '' Init-string 4 is set to '' Init-string 5 is set to ''
Success	OK
Error	<ol style="list-style-type: none"> 1. Too few arguments "Usage: set serial s0 modem init-string <init-num> <init-str> Type 'set serial s0 modem init-string ?' for more information" Invalid init-num "ERROR: init-num range supported: [1-5]"

Command Syntax	set serial s0 modem ok-string <ok-str>
Description	Sets the Modem OK string. Triggers for a reboot upon save.
Default Value	OK
Success	OK
Error	<ol style="list-style-type: none"> 1. Too few arguments "Usage: set serial s0 modem ok-string <ok-str> Type 'set serial s0 modem ok-string ?' for more information"

Command Syntax	set serial s0 modem ring-string <ring-str>
Description	Sets the Modem Ring string. Triggers for a reboot upon save.
Default Value	RING
Success	OK
Error	<ol style="list-style-type: none"> 1. Too few arguments "Usage: set serial s0 modem ring-string <ring-str> Type 'set serial s0 modem ring-string ?' for more information"

Command Syntax	set serial s0 parity <even/odd/none>
Description	Command to set the parity.
Default Value	None
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 parity <even/odd/none> Type ‘set serial s0 parity ?’ for more information” Invalid parity setting “error: parity supported: [even/odd/none] Type ‘set serial s0 parity ?’ for more information”

Command Syntax	set serial s0 raw-dialin <enable/disable>
Description	Enable/disable raw mode support for serial auto dial-in on the serial port s0.
Default Value	Disabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 raw-dialin <enable/disable> Type ‘set serial s0 raw-dialin ?’ for more information” Multiple matches raw-dialin raw-dialout Invalid string “ERROR: Invalid string Type ‘set serial s0 raw-dialin ?’ for more information”

Command Syntax	set serial s0 raw-dialout <enable/disable>
Description	Enable/disable the raw mode support for auto-dialout on the serial port s0.
Default Value	Disabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 raw-dialout <enable/disable> Type ‘set serial s0 raw-dialout ?’ for more information” Multiple matches raw-dialin raw-dialout Invalid string “error: Invalid string Type ‘set serial s0 raw-dialout ?’ for more information”

Command Syntax	set serial s0 stop-bits <1/1.5/2>
Description	Command to set the stop bits.
Default Value	1
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set serial s0 stop-bits <1/1.5/2> Type ‘set serial s0 stop-bits ?’ for more information” Invalid stop-bit setting “ERROR: Stop-bit supported : [1, 1.5, 2] Type ‘set serial s0 stop-bits ?’ for more information”

Command Syntax	show serial s0 chat-script
Description	Displays the "Expect" and "Send" sequence for the serial port 's0'.
Default Value	NA
Success	OK
Error	1. Too few arguments Possible value(s) are statistics modem-configuration configuration chat-script

Command Syntax	show serial s0 configuration
Description	Display Serial s0 Configuration.
Default Value	-
Success	OK
Error	1. Too few arguments Possible value(s) are statistics modem-configuration configuration chat-script

Command Syntax	show serial s0 modem-configuration
Description	Displays the modem related configuration for the serial port 's0'.
Default Value	NA
Success	OK
Error	1. Too few arguments Possible value(s) are statistics modem-configuration configuration chat-script

Command Syntax	show serial s0 statistics
Description	Displays Serial Statistics. <ul style="list-style-type: none"> • Status (If serial is used by any application) • Rx Bytes • Rx Errors • Tx Bytes • Tx Errors • Status of EIA signals (CTS, DSR, DCD, RTS, DTR). Important Note: Serial statistics are only for the current session. Rx Bytes, Tx Bytes will be reset for every session opened on the serial.
Default Value	-
Success	OK
Error	1. Too few arguments Possible value(s) are statistics modem-configuration configuration chat-script

Bridging Setup Commands

Command Syntax	set bridge <enable/disable>
Description	Enable remote transparent bridging between Ethernet and serial interface.
Default Value	Disabled Bridge Name - 'ipmodule' Interfaces attached to the bridge – 'eth0' and 'ppp0'
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set bridge <enable/disable/ipmodule> Type 'set bridge ?' for more information" Invalid string "error: Invalid string Type 'set bridge ?' for more information"

Command Syntax	set bridge [bridge name] ip-address <ip-addr> mask <ip-mask>
Description	Configure IP address for bridge.
Default Value	Default BridgeName: 'ipmodule' 192.168.2.1 255.255.255.0 Example: set bridge ipmodule ip-address 192.168.2.1
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible argument(s) are ip-address Invalid IP address/Mask Invalid argument Valid arguments are: ip-address The IP address/Mask is wrong Invalid IP address/Mask Type set bridge ipmodule ip ? for more information

Bridging Setup Commands – Show Commands

Command Syntax	show bridge configuration
Description	Display Bridging Status (enable/disable), Bridge IP Address, etc.
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible argument(s) are: configuration statistics Invalid argument Valid argument(s) are: configuration statistics

Command Syntax	show bridge statistics
Description	Display Bridge Statistics. <ul style="list-style-type: none"> Bridge Information MACS learned by the bridge
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible argument(s) are: configuration statistics Invalid argument Valid argument(s) are: configuration statistics

PPP Setup Commands

Command Syntax	set ppp <interface> <enable/disable>
Description	Enable/Disable PPP for the interface. Note: PPP can be enabled only if bridging is enabled. Example: set ppp ppp0 enable
Default Value	Disabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Too few argument(s). Possible argument(s) are: <div style="display: flex; justify-content: space-around;"> authentication compression enable username </div> <div style="display: flex; justify-content: space-around;"> auth-type disable password </div> Invalid interface Possible values are ppp interface (ppp0) Invalid String "Invalid argument 'string' " Valid argument(s) are <div style="display: flex; justify-content: space-around;"> authentication compression enable username </div> <div style="display: flex; justify-content: space-around;"> auth-type disable password </div>
Note	When Bridge is disabled, PPP is also disabled.

Command Syntax	set ppp <interface> authentication <enable/disable>
Description	Enable/Disable PPP Authentication
Default Value	Disabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible argument(s) are: <div style="display: flex; justify-content: space-around;"> disable enable </div> Invalid string Invalid argument. Valid argument(s) are: <div style="display: flex; justify-content: space-around;"> disable enable </div> Multiple matches auth-type authentication

Command Syntax	set ppp <interface> auth-type <pap/chap/pap-chap>
Description	Protocols to authenticate the remote peer – PAP/CHAP/PAP-CHAP
Default Value	PAP
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Too few argument(s). Possible argument(s) are: <div style="display: flex; justify-content: space-around;"> chap pap pap-chap </div> Invalid authentication type Invalid argument. Valid argument(s) are <div style="display: flex; justify-content: space-around;"> chap pap pap-chap </div> Multiple matches auth-type authentication

Command Syntax	set ppp <interface> compression <enable/disable>
Description	Enable/Disable CCP compression
Default Value	Disabled
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible argument(s) are: <div style="display: flex; justify-content: space-around;"> disable enable </div> Invalid string Invalid argument. Valid argument(s) are: <div style="display: flex; justify-content: space-around;"> disable enable </div>

Command Syntax	set ppp <interface> comp-type <both/bsd/deflate>
Description	Set the compression type to BSD, DEFLATE or BOTH. In case of NON-RAWMODE: When "both" is configured as the compression type, the module tries to negotiate DEFLATE first. In the event of failure, the BSD is negotiated. In case of RAW-MODE: Compression type "both" is not supported in RAW-MODE, since there is no negotiation between SocketEthernet IP Modules.
Default Value	Deflate
Success	OK
Error	1. Too few arguments Too few argument(s). Possible argument(s) are: both bsd deflate 2. Invalid string Invalid argument "string" Valid argument(s) are: both bsd deflate

Command Syntax	set ppp <interface> password <password >
Description	Password – with which remote peer will authenticate us.
Default Value	ipmodule
Success	OK
Error	1. Password Length Password should have minimum of 8 characters

Command Syntax	set ppp <interface> raw-mode <enable/disable>
Description	Enable simple AHDLC framing on the Serial side. Notes: NO PPP negotiations done on the serial. The ethernet data is encapsulated with 7E delimiters. FCS is part of the AHDLC frame header.
Default Value	Disable
Success	OK
Error	1. Too few arguments Too few argument(s). Possible argument(s) are: disable enable 2. Invalid string Invalid argument "string" Valid argument(s) are: disable enable

Command Syntax	set ppp <interface> username <username>
Description	Username – with which remote peer will authenticate us.
Default Value	ipmodule
Success	OK
Error	1. Too few arguments Possible value(s) are valid user name

Command Syntax	show ppp <ppp0> configuration
Description	Displays: PPP Status (enabled/disabled) Authentication status Authentication type Username and password for authentication
Default Value	NA
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible argument(s) are configuration statistics Invalid argument Invalid argument Valid argument(s) are: configuration statistics

Command Syntax	show ppp <ppp0> statistics
Description	Displays PPP Statistics.
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible argument(s) are configuration statistics Invalid argument Invalid argument Valid argument(s) are: configuration statistics

HTTP Server Commands

The commands in this section are listed in the order in which they might be used.

Command Syntax	set ip http <enable/disable>
Description	This enables the http server on the IP Module to listen on Port 80.
Default Value	Disable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip http <enable/disable> Type set ip http ?" for more information" Invalid string "ERROR: Invalid string Type set ip http ?" for more information"

Command Syntax	set ip http-banner <string>
Description	This string is displayed as a banner string on every IP Module configuration page hosted by the IP Module.
Default Value	Default
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip http-page <default/serial> Type set ip http-banner ?" Invalid string Type set ip http-banner ?"

Command Syntax	set ip http-page <default/serial>
Description	This parameter is used by the http server to host the default index.html or host-defined http-serial-s0.html page.
Default Value	Default
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip http-page <default/serial> Type set ip http-page ?" Invalid string Type set ip http-page ?"

Command Syntax	set ip http-port <port>
Description	Sets the HTTP server to listen on the specified port.
Default Value	80
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set ip http-port <port> Type set ip http-port ? for more information" Invalid port number "ERROR: Invalid port number Type set ip http-port ? for more information"

Command Syntax	set device-parameter P<n> <value> where n = 0 to 99.
Description	Sets the value of the parameter from the host/serial device.
Default Value	Value in the Default parameter list file uploaded through TFTP.
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set device P<n> <value> Type set device P<n> ? for more information" Invalid string "ERROR: Invalid string Type set device P<n> ? for more information"

Command Syntax	save param
Description	Invoking this command will save the host parameters into the flash. The “/var/apps” directory is gun zipped to apps.tar.gz and written into flash. (APPS_SECTOR)
Default Value	-
Success	OK
Error	1. Too few arguments “ERROR: Too few arguments Type save ? for more information”

Command Syntax	show http configuration
Description	Displays the HTTP related configurations.
Default Value	-
Success	OK
Error	1. Too few arguments “ERROR: Too few arguments Type show http configuration ? for more information”

Command Syntax	show device-parameter P<n> where n = 0 to 99.
Description	Displays the value of the requested parameter from IP Module.
Default Value	-
Success	OK
Error	1. Too few arguments “ERROR: Too few arguments Type show device-parameter ? for more information”

Command Syntax	show device-parameter modified
Description	Displays the status of the host parameters; i.e., tells whether they are changed by the browser. Returns “Device parameters changed” when values are changed by the remote browser. Returns “Device parameters not changed” when values are not changed.
Default Value	-
Success	OK
Error	1. Too few arguments “ERROR: Too few arguments Type show device-parameter ? for more information”

SMTP Client Commands

The commands in this section are listed in the order in which they might be used.

Command Syntax	set send-mail smtp-server-name <name/ip-address>
Description	Sets the SMTP Server name or IP address. Server names are to be resolvable by the DNS.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail smtp-server-name <name/ip-address> Type set send-mail smtp-server-name ? for more information" Invalid name/IP address "ERROR: Invalid SMTP Server Name/IP Address"

Command Syntax	set send-mail smtp-server-port <port>
Description	Sets the SMTP Server port.
Default Value	25
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail smtp-server-port <port> Type set send-mail smtp-server-port ? for more information"

Command Syntax	set send-mail host-name <host name>
Description	Sets the SMTP Client host name.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail host-name <host name> Type set send-mail host-name ? for more information"

Command Syntax	set send-mail from-address-identity <name>
Description	Sets the 'From:' description in the email header as <name>.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail from-address-identity <name> Type set send-mail from-address-identity ? for more information"

Command Syntax	set send-mail from-address <email-address>
Description	Sets the email-address as the Default From address information.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail from-address <email-address> Type set send-mail from-address ? for more information"

Command Syntax	set send-mail to-address <n> <email-address> where n = 1 to 5.
Description	Sets the email-address as one of the primary addressee. This is the default email address to which email messages are sent.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail to-address <n> <email-address> Type set send-mail to-address <n> ? for more information" Invalid to-address number "ERROR: to-address numbers supported: [1 to 5] Type set send-mail to-address <n> ? for more information"

SMTP Client Commands – Set Commands

Command Syntax	set send-mail cc-address <n> <email-address> where n = 1 to 5.
Description	Sets the email-address as the alternate addressee (carbon copy). This is the default Email address to which Email messages sent to primary addressee are copied.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail cc-address <n> <email-address> Type set send-mail cc-address <n> ? for more information" Invalid to-address number "ERROR: cc-address numbers supported: [1 to 5] Type set send-mail cc-address <n> ? for more information"

Command Syntax	set send-mail reply-to-address <email-address>
Description	Sets the email-address to be used when the recipient uses the reply-to button.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail reply-to-address <email-address> Type set send-mail reply-to-address ? for more information"

Command Syntax	set send-mail subject <data>
Description	Sets the email header subject field to the given data.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set send-mail subject <data> Type set send-mail subject ? for more information"

Command Syntax	send-mail [-b] [-t <email-address1, email-address2, ...>] [-c <email-address1, email-address2, ...>] [-s <data>] [-d <msg body>]
Description	<p>Triggers the SMTP Client application. The application enters into interactive mode or send the mail according to the command arguments.</p> <p>Note: All the arguments are optional. This implies that a mail can be sent by specifying the parameter(s) in the command line (or) entering them in the order prompted by SocketEthernet IP Module.</p> <p>Usage:</p> <ul style="list-style-type: none"> -b : binary mode {default is text mode} -t : To addresses -c : CC addresses -s : Subject Data -d : Message Body
Default Value	-
Success	Email Sent Successfully OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: send-mail [<-b>] [-t <email-address, ...>] [-c <email-address, >] [-s <data>] [-d <msg body>] ... Type send-mail ? for more information"

SMTP Client Commands – Show Commands

Command Syntax	show send-mail configuration
Description	Displays the SMTP configuration.
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: show send-mail configuration Type show send-mail ? for more information"

POP3 Client - Commands

Command Syntax	set recv-mail server-name <server-name>
Description	This parameter is set by the host to establish the POP3 connection for receiving the email from the remote server. This also needs DNS to be enabled on IP Module.
Default Value	None
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set recv-mail server-name <server-name> Type 'set recv-mail server-name ?' for more information Invalid string Type 'set recv-mail server-name ?' for more information

Command Syntax	set recv-mail server-port <server-port>
Description	This parameter is set by the host to establish the POP3 connection for receiving the email from the remote server.
Default Value	110
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set recv-mail server-port <server-port> Type 'set recv-mail server-port ?' for more information Invalid string Type 'set recv-mail server-port ?' for more information

Command Syntax	set recv-mail mailbox-name <mailbox-name>
Description	Sets the mail box user name for POP3 server authentication.
Default Value	None
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set recv-mail mailbox-name <mailbox-name> Type 'set recv-mail mailbox-name ?' for more information Invalid string Type 'set recv-mail mailbox-name ?' for more information

Command Syntax	set recv-mail mailbox-password <mailbox-password>
Description	Sets the mail box password for POP3 server authentication.
Default Value	None
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Usage: set recv-mail mailbox-password <mailbox-password> Type 'set recv-mail mailbox-password ?' for more information Invalid string Type 'set recv-mail mailbox-password ?' for more information

PCCommand Syntax	set recv-mail leave-on-server <enable/disable>
Description	This parameter is used to set the variable "leave a copy of message on server" flag, which tells the POP3 server not to delete the mails from it once the mails are received.
Default Value	Disable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments

Command Syntax	recv-mail list [index]
Description	This command retrieves list of emails from the mailbox. Displays the list of emails in the order below: <index of the mail> <size in bytes> or Mailbox is empty
Default Value	-
Success	OK
Error	1. Too few arguments Usage: recv-mail list [index] Type 'recv-mail ?' for more information

Command Syntax	recv-mail header [index]
Description	This command receives the header information of all the mails present in the mailbox if index is not issued. If index is issued, the mail header corresponding to the index is retrieved.
Default Value	-
Success	OK
Error	1. Too few arguments Usage: recv-mail header [index] Type 'recv-mail ?' for more information

Command Syntax	recv-mail mail [index]
Description	This command retrieves all the pending mails present in the mailbox if index is not given. If index is issued, the mail corresponding to the index is retrieved.
Default Value	-
Success	OK
Error	1. Too few arguments Usage: recv-mail mail [index] Type 'recv-mail ?' for more information

Command Syntax	recv-mail delete <index>
Description	Deletes the mail corresponding to the index. The emails will not be deleted until the “ recv-mail quit ” command is executed.
Default Value	-
Success	OK
Error	1. Too few arguments Usage: recv-mail delete <index> Type 'recv-mail ?' for more information

Command Syntax	recv-mail top <index> <n>
Description	Displays the first <n> lines of the mail corresponding to index. If n is greater the mail size then the whole message is displayed.
Default Value	-
Success	OK
Error	1. Too few arguments Usage: recv-mail top [index] Type 'recv-mail top' for more information

Command Syntax	recv-mail unique-id-listing [index]
Description	Displays the unique id listing from the server in the order below: <index of the mail> <unique id>. If index is specified, only the corresponding unique id is displayed. If index is not specified, all unique ids in the mail box are displayed.
Default Value	-
Success	OK
Error	1. Too few arguments Usage: recv-mail unique-id-listing [index] Type 'recv-mail ?' for more information

Command Syntax	recv-mail stat [index]
Description	Displays the statistics of an email or emails for a given index.
Default Value	-
Success	OK
Error	1. Too few arguments Usage: recv-mail stat [index] Type 'recv-mail ?' for more information

Command Syntax	show recv-mail configuration
Description	Displays the recv-mail related configuration
Default Value	-
Success	OK
Error	1. Too few arguments Possible value(s) are configuration

FTP Client Setup Commands

Command Syntax	Set ftp machine [<default/ip-address/host-name (1-40) login <username (1-20) [password <password (1-20) [account <account password (1-20)>]]]
Description	Sets the machine, login name, password and account password details that will be used by FTP for automatic authentication. Password and Account Password are optional parameters and can be configured with machine and login names only. IP Module prompts for login name and password if these details are NULL. Note: “set ftp machine” resets all these parameters to null.
Default Value	NULL
Success	OK FTP login options deleted successfully.
Error	<ol style="list-style-type: none"> Invalid arguments error in arguments Type 'set ftp machine ?' for more information Too few arguments Possible argument(s) are Machine Filesize Filename Directory Too few arguments error: 'Type set ftp machine ?' for more information

Command Syntax	set ftp filename <filename>
Description	Sets the name of the file to be transferred or retrieved during ftp session.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ftp filename <filename> 'set ftp filename ?' for more information

Command Syntax	set ftp filesize <filesize>
Description	Sets the size of the file to be transferred during ftp session.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ftp filesize <filesize> 'set ftp filesize ?' for more information Invalid Filesize Error: type 'set ftp filesize ?' for more information

Command Syntax	set ftp directory <directory>
Description	Sets the path from which the file(s) can be listed/transmitted or retrieved.
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments “Usage: set ftp directory <directory> 'set ftp directory ?' for more information

Command Syntax	ftp < [-l [-d <directory>]] [-t [-n <filename>] [-s <filesize>]] [-a [-n <filename>] [-s <filesize>]] [-r [-d <directory>] [-n <filename>]] > [-p] <ip-address/host-name>
Description	<p>Triggers the ftp client to establish the ftp session with the remote server and to perform the required action according to the specified option.</p> <ul style="list-style-type: none"> -l : Requests the directory and lists the contents of the specified directory in the server. -t : Requests the filename and file size to be transmitted and reads the data from the host device and transmits to the server. -a : Requests the filename and file size to be appended and reads the data from the host device and transmits to the server -r : Requests the remote filename to be received. It informs the host device about the size of the file and retrieves the data from the server when serial device is ready. -p : Opens the Data connection in Passive mode. (If this option is not given, the data connection will be opened in Active mode by default). <p>Note: An FTP session can be aborted by issuing Ctrl+C at any given time.</p>
Default Value	-
Success	OK: FTP session closed
Error	1. Too many parameters Type ftp ? for more information

FTP Client - Show Commands

Command Syntax	show ftp configuration
Description	Displays the FTP configuration.
Default Value	-
Success	OK.
Error	1. Too few arguments Possible value(s) are configuration

SNTP Client Setup Commands

Command Syntax	set sntp-client <enable/disable>
Description	Starts the SNTP Client to contact the configured server on UDP port 123 and sets the local time.
Default Value	disable
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments. Possible argument(s) are daylight-saving time-zone ntp-server-name time-zone-offset polling-time Possible value(s) are enable or disable SNTP Already running Error: sntp already running Reserved IP numbers cannot be used Error: Reserved IP numbers cannot be used Unable to sent NTP packets Error: Unable to sent NTP packets

Command Syntax	set sntp-client ntp-server-name <ip-address>
Description	Sets the NTP server IP address to which the SNTP Client has to contact to update the time.
Default Value	127.0.0.1
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments "Usage: set sntp-client ntp-server-name <ip-address> Type set sntp-client ntp-server-name ? for more information" Invalid IP-address Error: Invalid IP-address Type set sntp-client ntp-server-name ? for more information"

Command Syntax	set sntp-client time-zone <string (0-3)>
Description	Sets the time zone.
Default Value	UTC
Success	OK
Error	<ol style="list-style-type: none"> Invalid string Error : Type 'set sntp-client time-zone ?' for more information Too few arguments "Usage: set sntp-client time-zone <string (0-3)> Type set sntp-client time-zone ? for more information" Multiple matches Error: multiple matches Time-zone Time-zone Offset

Command Syntax	set sntp-client time-zone-offset <+/-hh:mm> where hh = 00 to 23 mm = 00 to 59
Description	Sets the offset time from UTC.
Default Value	+00:00
Success	OK.
Error	<ol style="list-style-type: none"> Invalid arguments "error: Invalid Offset" Too few arguments "Usage: set sntp-client time-zone-offset <+/-hh:mm> Type set sntp-client time-zone-offset ? for more information" Multiple Matches Time-Zone Time-Zone Offset

Command Syntax	set sntp-client polling-time <value> where value = 2 to 1440 minutes
Description	Sets the polling time at which SNTP client requests the server to update the time.
Default Value	300
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid Polling time" Too few arguments "Usage: set sntp-client polling-time <value> Type set sntp-client polling-time ? for more information"

Command Syntax	set sntp-client daylight-saving <enable/disable>
Description	Enables/disables Day Light Saving Mode.
Default Value	enable
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid parameter" Too few arguments "Usage: set sntp-client daylight-saving <enable/disable> Type set sntp-client daylight-saving ? for more information"

Command Syntax	set sntp-client daylight-saving offset <+/-value> where value = 0 to 120 minutes
Description	Sets the offset to use during Day Light Saving Mode.
Default Value	+60
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid offset value" Too few arguments "Usage: set sntp-client daylight-saving offset <value> Type set sntp-client daylight-saving offset ? for more information"

Command Syntax	set sntp-client daylight-saving start-ordinal <string> where string = first/second/third/forth/last
Description	Sets the start ordinal to use during Day Light Saving Mode.
Default Value	first
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid start ordinal" Too few arguments "Usage: set sntp-client daylight-saving start-ordinal <string> Type set sntp-client daylight-saving start-ordinal ? for more information"

Command Syntax	set sntp-client daylight-saving start-weekday <dayofweek> where dayofweek = sunday, monday ... Saturday
Description	Sets the start weekday to use during Day Light Saving Mode.
Default Value	Sunday
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid start day of the week" Too few arguments "Usage: set sntp-client daylight-saving start-weekday<dayofweek> Type set sntp-client daylight-saving start-weekday ? for more information"

SNTP Client Commands - Setup Commands

Command Syntax	set snntp-client daylight-saving start-month <month> where month = January, February.... December
Description	Sets the start month to use during Day Light Saving Mode.
Default Value	April
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid start month" Too few arguments "Usage: set snntp-client daylight-saving start-month <month> Type set snntp-client daylight-saving start-month ? for more information"

Command Syntax	set snntp-client daylight-saving start-time <hh:mm> where hh = 00 to 23 mm = 00 to 59
Description	Sets the start time to use during Day Light Saving Mode.
Default Value	02:00
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid start time" Too few arguments "Usage: set snntp-client daylight-saving start-time <hh:mm> Type set snntp-client daylight-saving start-time ? for more information"

Command Syntax	set snntp-client daylight-saving end-ordinal <string> where string = first/second/third/forth/last
Description	Sets the end ordinal to use during Day Light Saving Mode.
Default Value	last
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid end ordinal" Too few arguments "Usage: set snntp-client daylight-saving end-ordinal <string> Type set snntp-client daylight-saving end-ordinal ? for more information"

Command Syntax	set snntp-client daylight-saving end-weekday <dayofweek> where dayofweek = sunday, monday ... saturday
Description	Sets the end weekday to use during Day Light Saving Mode.
Default Value	sunday
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid end day of the week" Too few arguments "Usage: set snntp-client daylight-saving end-weekday <dayofweek> Type set snntp-client daylight-saving end-weekday ? for more information"

Command Syntax	set snntp-client daylight-saving end-month <month> where month = January, ...December
Description	Sets the end month to use during Day Light Saving Mode.
Default Value	October
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid end month" Too few arguments "Usage: set snntp-client daylight-saving end-month <month> Type set snntp-client daylight-saving end-month ? for more information"

SNTP Client Commands - Setup Commands

Command Syntax	set sntp-client daylight-saving end-time <hh:mm> where hh = 00 to 23 and mm = 00 to 59
Description	Sets the end time to use during Day Light Saving Mode.
Default Value	02:00
Success	OK
Error	<ol style="list-style-type: none"> Invalid arguments "Error: Invalid end time" Too few arguments "Usage: set sntp-client daylight-saving end-time <hh:mm> Type set sntp-client daylight-saving end-time ? for more information"

SNTP Client Commands - Show Command

Command Syntax	show sntp-client configuration
Description	Displays SNTP configuration.
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Too few arguments Possible value(s) are configuration

SNMP Agent Setup Commands

Command Syntax	set snmp-agent <enable/disable>
Description	Starts the SNMP Agent to which the manager has to contact to get/set the IP Module configuration parameters.
Default Value	Disable
Success	OK
Error	1. Too few arguments. Possible argument(s) are Port community Possible value(s) are enable or disable

Command Syntax	set snmp-agent port <port-number>
Description	Sets the SNMP Agent to bind to the specified port.
Default Value	161
Success	OK
Error	1. Too few arguments. “Usage: set snmp-agent port <port-number> Type set snmp-agent port ? for more information”

Command Syntax	set snmp-agent community <community-string>
Description	Sets the community string so that it responds only to a particular community of managers. The managers indicate to which community they belong in the request message.
Default Value	public
Success	OK
Error	1. Too few arguments “Usage: set snmp-agent community <community-string> Type set snmp-agent community ? for more information”.

SNMP Agent Commands – Show Commands

Command Syntax	show snmp-agent configuration
Description	Displays the SNMP configuration.
Default Value	-
Success	OK
Error	1. Too few arguments Possible value(s) are configuration

MCSI AG Server Setup Command

Command Syntax	set ag-server <enable/disable>
Description	Starts the UDP server on port 526. Starts a TCP server on port 599. UDP server - This server responds with a UDP unicast packet to the UDP broadcast packet from MCSI. TCP server - This server responds to the Status Request packet from the MCSI client.
Default Value	disable
Success	OK
Error	1. Too few arguments "Usage: set ag-server <enable/disable> Type set ag-server ? for more information"

RAW TCP/UDP Socket Support Setup Commands

Command Syntax	socket tcp <remote-ip> <remote-port>
Description	Opens a TCP client socket and attempts to connect it to the specified remote port on a specified remote server. The remote server should be set with a DNS resolvable name or IP address. Upon successful connection, a socket handle is returned for future socket transactions.
Default Value	-
Success	<socket handle > OK
Error	<ol style="list-style-type: none"> Too few arguments Type socket tcp ? for more information Connection refused connect: Connection refused

Command Syntax	socket tcplisten <local-port> [backlog]
Description	Opens a TCP Listen socket on the local port. The backlog specifies the maximum number of remote connections allowed through the listen socket at any given time. The listen socket automatically accepts remote connection requests (<=backlog) and spawns a new TCP socket which can send or receive data. The tcplisten command, upon success, returns a server socket handle. The listen sockets are created when a remote host tries to connect and the connections are accepted.
Default Value	-
Success	TCP Listen socket handle <server socket handle> OK
Error	<ol style="list-style-type: none"> Too few arguments Type socket tcplisten ? for more information Address already in use bind: Address already in use.

Command Syntax	socket udp <remote_ip> <remote_port> [local_port]
Description	If the host is given as 0.0.0.0, it opens a non-connected UDP listen socket and automatically latches to the IP address of the first UDP packet received. If the remote-port is set to 0, it opens a non-connected UDP listen socket and automatically latches to the port of the first UDP packet received. If the remote-host and remote-port are nonzero values, the IP Module acts as a UDP client sending/receiving data to the specified host and port. If the optional local-port is mentioned, the socket is bound to this port instead of taking the port from internal pool. Returns the corresponding socket handle for future socket transactions.
Default Value	-
Success	<socket handle> OK
Error	<ol style="list-style-type: none"> Too few arguments Type socket udp ? for more information Address already in use bind: Address already in use.

Command Syntax	socket listlisten [-s] [-d]
Description	<p>-s : When the socket-only option is specified, it displays the TCP server socket handle, local port, backlog and TCP listen socket handles.</p> <p>-d : When the socket-detail option is specified, it displays all socket-only option information along with the TCP listen socket's Local IP address, Local Port, Remote IP address, Remote Port, etc.</p> <p>The displayed handles are limited to backlog specified in "socket tcplisten <listen-port> <backlog>" command.1. If no options are specified, it displays all information as listed in -d option.</p> <p>The handles are displayed in ascending order with respect to their connect-times.</p>
Default Value	NULL
Success	OK
Error	<ol style="list-style-type: none"> Invalid argument Type socket listlisten ? for more information Multiple matches listall listlisten

Command Syntax	socket listall [-s] [-d]
Description	<p>-s : When the socket-only option is specified, it displays information about all the active sockets opened by the host device.</p> <p>-d : When the socket-detail option is specified, it displays all socket-only option information along with all the active sockets Local IP address, Local Port, Remote IP address, Remote Port, etc.</p> <p>The displayed handles are limited to backlog specified in "socket tcplisten <listen-port> <backlog>" command.</p> <p>Note: If no options are specified, it displays all -d option information.</p>
Default Value	-
Success	OK.
Error	<ol style="list-style-type: none"> Invalid argument Type socket listall ? for more information Multiple matches listall listlisten

Command Syntax	socket send [-s <size>] [-d <delimiter>]> [-m <MTU>] <socket_handle>
Description	<p>Validates the specified socket handle (corresponds to TCP or UDP socket) and waits for the data stream. .</p> <p>If delim parameter (char) is specified, the host can enter the data and the IP Module flushes the data as soon as it detects the specified delimiter character.</p> <p>If the size parameter is specified, the IP Module waits for the specified size bytes to send to the socket's output buffer.</p> <p>If the optional mtu parameter is not specified, the data is flushed immediately.</p> <p>If the mtu parameter is specified, the data stream is flushed in integral multiples of specified value (Maximum value being MTU size).</p> <p>Notes:</p> <ol style="list-style-type: none"> Either delim or size should be specified by the host device. If the mtu pktlen is given more than the data stream sent, it waits until <ol style="list-style-type: none"> it reaches the mtu size or the delim matches or the size specified by the user to flush the socket bufferis reached.
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Invalid Socket handle Option missing Connection refused Send: Connection refused 0-bytes sent.

Command Syntax	socket recv [-s <max_size>] <socket_handle>
Description	Retrieves the exact size of data received followed by data stream from the specified socket handle (corresponds to TCP or UDP socket). The data is valid only if it's already in the socket's input buffer. If the max-size is not specified, all the data in the input buffer is retrieved. If the max-size is specified, only the specified size is retrieved and the rest is left out in the buffer. If the socket buffer is empty, "0" is returned.
Default Value	-
Success	<data> <bytes read> OK.
Error	<ol style="list-style-type: none"> Invalid socket handle Too few arguments Type socket recv ? for more information Socket handle not specified Type socket recv ? for more information

Command Syntax	socket stat [-s] [-d] <socket_handle>
Description	When the socket-only option is specified, it displays the number of bytes present in the corresponding TCP/UDP socket's input buffer. When the socket-detail option is specified, it lists all the connect details like Local IP address, Local Port, Remote IP address, Remote Port etc. Note: Socket detail is considered the default
Default Value	-
Success	OK.
Error	<ol style="list-style-type: none"> Too few arguments Type 'socket stat ?' for more information Invalid socket handle

Command Syntax	socket flush <socket_handle>
Description	Flushes all the buffered data currently accumulated in the corresponding TCP/UDP socket's input buffer. The socket remains open.
Default Value	-
Success	OK.
Error	<ol style="list-style-type: none"> Invalid Socket Handle Type socket flush ? for more information Argument required Type socket flush ? for more information

Command Syntax	socket flushall
Description	Flushes all the buffered data currently accumulated in the active TCP/UDP socket's entire input buffer. The socket remains open.
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Invalid Argument Error: type 'socket flushall ?' for more information

Command Syntax	socket close <socket_handle>
Description	Closes the corresponding TCP/UDP socket after flushing off its buffers.
Default Value	-
Success	OK
Error	<ol style="list-style-type: none"> Argument required Error: type 'socket close ?' for more information Invalid socket handle

Command Syntax	socket closeall
Description	Closes all the active TCP/UDP sockets after flushing off their buffers.
Default Value	-
Success	All sockets closed OK
Error	<ol style="list-style-type: none"> Invalid Argument Error: type 'socket closeall ?' for more information

Appendix A – HTTP Server

Introduction

The HTTP Server on the SocketEthernet IP module supports hosting of embedded Web pages of IP Module as well as pages on behalf of the host. The host-defined embedded pages support live host parameter monitoring and configuration update through a remote browser.

In addition to serving HTML Web pages, the HTTP Server also features:

- Dual configuration modes
 - ♦ Host Device Configuration
 - Remote configuration of the Host Device using a Web browser
 - Monitoring of the Host Device remotely
 - Supports live parameter updates on the Web browser.
 - ♦ IP Module Configuration
 - SocketEthernet IP Module configuration
 - Supports viewing IP Module configuration for all users
 - Supports viewing statistics of IP Module for all users
 - Supports executing CLI commands
 - Supports saving the configuration into flash
 - Supports restoring factory defaults
 - Supports *Help* for every page
- Flexibility to design embedded home pages by the OEMs using normal ASCII text HTML code.
- Supports downloading of a home page using TFTP.
- Access Authentication
- Support for configuring either Default or Serial Page display.

The SocketEthernet IP Module can act as a proxy between the Host-Serial Device and the Web Browser.

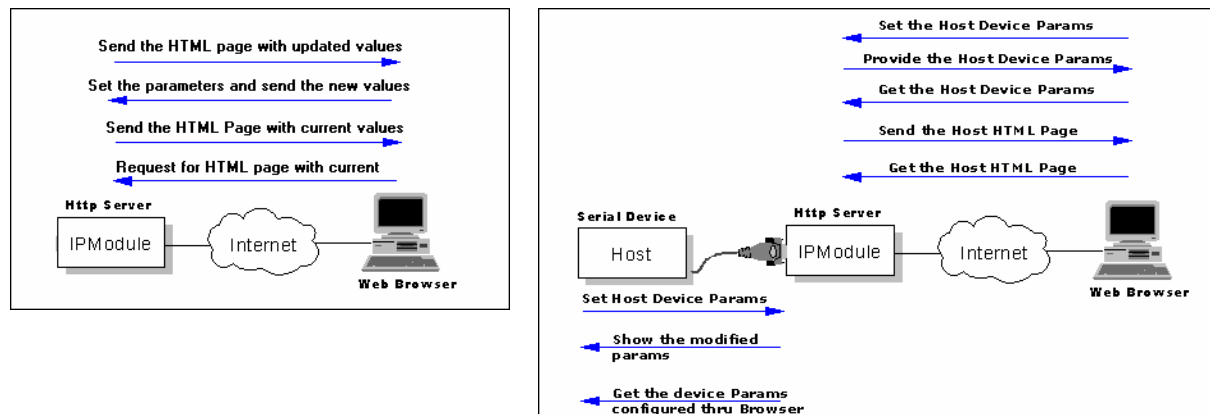


Figure 1: Typical Functions Supported by the HTTP Server

Setup and Configuration

Prerequisite – Enabling the HTTP Server

Before being able to access the SocketEthernet IP Module or the serial host through the Web browser, the HTTP support on the SocketEthernet IP Module needs to be enabled and configured.

The following configuration is mandatory and can be configured using CLI either through serial or through telnet or SNMP Agent.

Mandatory Setup for HTTP Server

set ip http enable

Successful execution of this command starts the HTTP daemon thus enabling the HTTP server.

set ip http-port <port-number>

By default the HTTP server listens on port 80. However, the default port number can be changed.

set ip http-banner <banner-string>

By default the HTTP server sets the banner to SocketEthernetIP Module.

set ip http-page <default/serial>

This command basically decides the Web page that will be displayed when the module is accessed through the browser.

- Note:** The default Index.html is displayed when
- The http-page is set to **default** and
 - The SocketEthernet IP module is accessed through the Web.

Authentication to IP Module

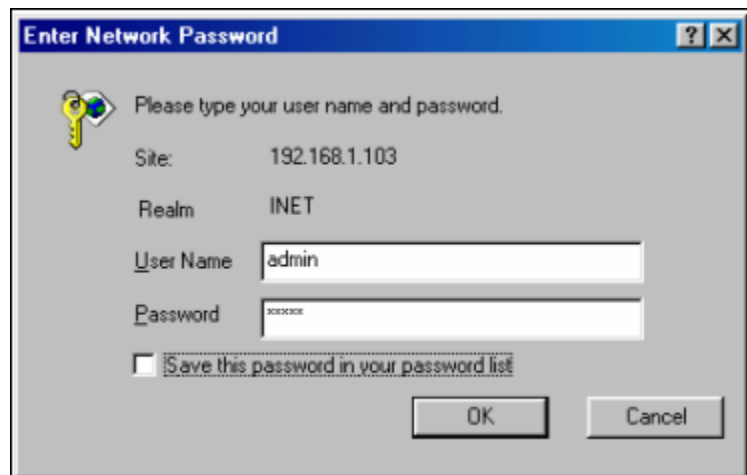


Figure 2: Authentication to the IP Module

Only the **admin** user can configure the IP Module. All non-admin users can view or monitor the configuration and statistics respectively.

Hosting Default index.html Page

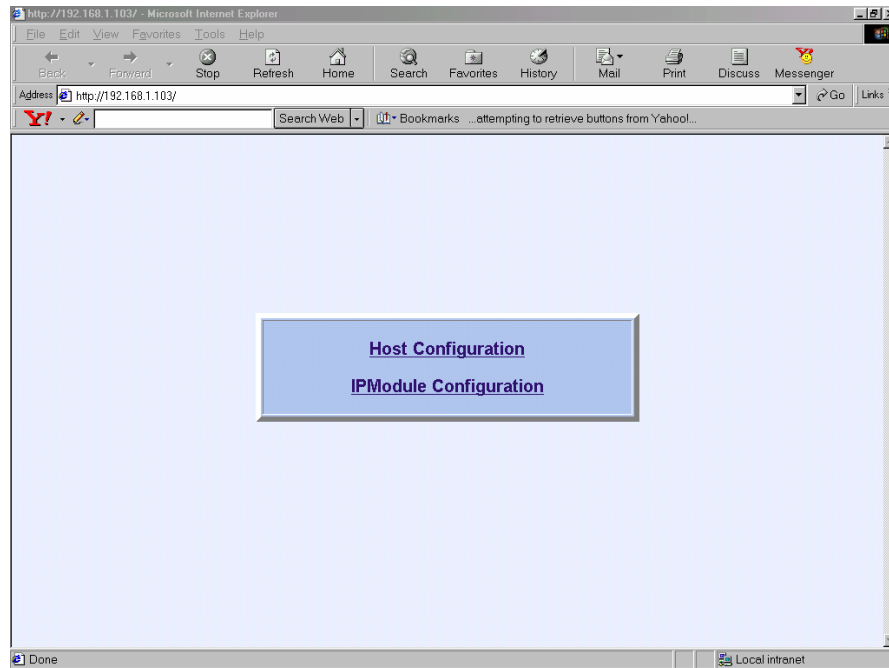


Figure 3: Index.html (Default Index Page)

The default HTML page contains two links, one for the host configuration and the other for the IP module configuration. Both modes are described in subsequent sections.

Hosting http-s0.html Page

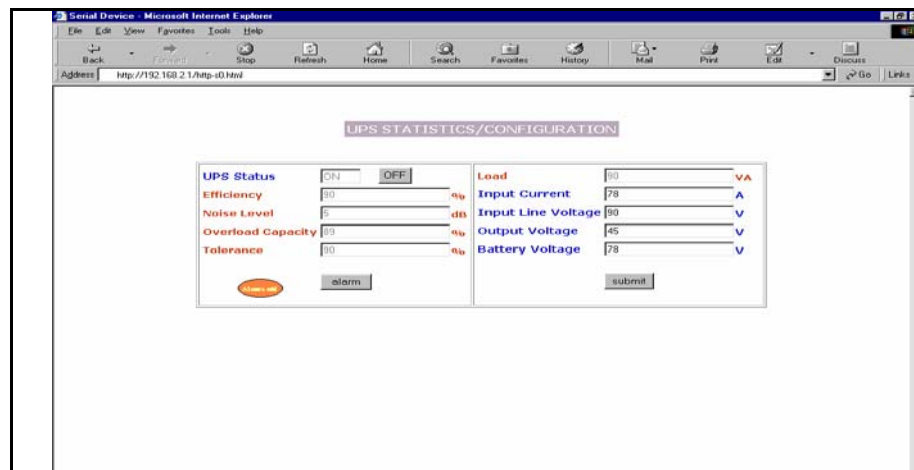


Figure 4: http-s0.html (Demo Page)

In the event that the http-page is set to **serial**, the **http-s0.html** Web page will be displayed upon accessing the SocketEthernet IP module through the browser. (The Index.htm will not be accessible).

This page can be replaced by the OEM home page specific to the product. More details regarding design conventions, procedure for uploading, and hosting this page are explained later in this chapter.

Configuration Modes

The embedded HTTP Server on the SocketEthernet IP module supports two modes for configuration. This option is available when the http-page is set to **serial** (see **Mandatory Setup** instructions).

- **Host Configuration Mode**
- **IP Module Configuration Mode**

In the **Host Configuration Mode**, the OEM's embedded home page is sent to the remote browser. The page serves as a means of monitoring the host parameters live remotely. Further, the host parameters can be updated or configured through the browser.

The **IP Module Configuration Mode** enables the configuration of the SocketEthernet IP module remotely through any standard Web browser. All parameters can be configured or their status can be viewed remotely through the interactive GUI provided. Further, vital statistics of the SocketEthernet IP Module can be viewed remotely.

Host Configuration Mode

The **Host Configuration Mode** provides the OEM flexibility to design and implement a product-specific embedded Web page, which is stored, managed, and hosted by the SocketEthernet IP module's HTTP server on behalf of the host device.

The OEM can design the Web page to contain the host parameters that will display live values for monitoring and for providing options for setting and configuring the host parameters remotely.

The three essential components of host configuration are the:

- **Parameter List**
- **HTML Page**
- **CGI Scripts**

Notes:

- All users can modify/access the Host device pages.
- Certain **File naming and size** conventions are to be strictly adhered to and followed by the Web developer. See details later in this chapter.

The Parameter List

The OEM's customized host HTML page, which is uploaded, may contain parameters (for Configuration or for Monitoring). All these parameters must be available in the **Serial Device Parameter List**, which must be loaded onto the SocketEthernet IP Module.

The format of the Serial device parameter list is shown here:

P<n>:Description:Type:Minimum:Maximum:<Data>

n ranges from **0** to **99**

Description = Name of the parameter

Type = **I**: Integer

S: String

Minimum = If the **Type** is integer corresponds to Minimum value

If the **Type** is String, corresponds to Minimum no of characters.

Maximum = If the **Type** is integer corresponds to Maximum value

If the **Type** is String, corresponds to Maximum no of characters.

Data = The parameter value to be contained

Example

P0:temperature:I:1:65535:100
P1:username:S:8:50:SocketEthernet IP

Here, **P0** and **P1** are two **parameters**, which correspond to the names like **Temperature** & **username** specified in the HTML page.

I/S represents **Integer** and **String** respectively.

1 is the **minimum value** for the parameter P0

65535 is the **maximum value** for the parameter P0.

8 is the **minimum** number of **characters** for the parameter P1.

50 is the **maximum** number of **characters** for the parameter P1.

100: in P0 is an **integer Data**

SocketEthernet IP: in P1 is a **string Data**.

The serial device parameter list file (http-host-param) for the demo Web page, which is included with the default setup, (see Figure 4) uses the following parameters and values:

P0:UPSstatus:S:0:5:ON

P1:Efficiency:I:0:100:90

P2:NoiseLevel:I:0:100:5

P3:OverloadCapacity:I:0:100:89

P4:Tolerance:I:0:100:90

P5:InputCurrent:I:0:100:78

P6:InputLineVoltage:I:0:100:90

P7:OutputVoltage:I:0:100:45

P8:BatteryVoltage:I:0:100:78

P9:Load:S:0:100:90

P10:Alarm:S:0:10:silence

The Embedded HTML Page

The **embedded Web page** stored on the SocketEthernet IP module consists of normal ASCII text HTML code, which can be generated using any HTML editing tool. The page can include scripts, links to remote Web sites, graphic images, text files, etc.

A maximum 30 KB (uncompressed) of flash space for the OEM's Home Page and an additional 10 KB maximum memory is reserved for the device parameter list.

The OEM Web page must contain the **Parameter Tags**, which are the placeholders in HTML files. These tags are replaced on the fly with real-time values when the page is sent to the browser. The value of the parameter tags also can be changed through the browser in order to configure the host through the SocketEthernet IP module.

The developer should ensure that the parameter values, which are to be replaced, are qualified with %P<n>%.

```
Example:
<HTML>
--
--
--
--
Efficiency <input type="text" name = "P1" value = "%P1%">
--
--
</HTML>
```

In the above sample code segment, when the browser requests a page, the **%P1%** is replaced with Parameter P1's value. This value is extracted from the serial device parameter file.

CGI Scripts

- **post-query** is a built-in CGI script which will parse the new values set by the browser and replace them in the **http-host-param** file.

To update a parameter from the browser, key in the new values and click the **Submit** button [{Refer to http-s0.html for a complete html source code}](#). The **Submit** button in turn invokes the **POST** command as shown below.

```
<form method = "POST" name= "formUPS" ACTION="/cgi-bin/post-query">
```

Should you need to update the newly set parameters in the **http-host-param** file, include the **/cgi-bin/post-query** path in the **ACTION** field of your HTML file. The post-query script sets the rest.

- **"post-query" CGI-script working:**

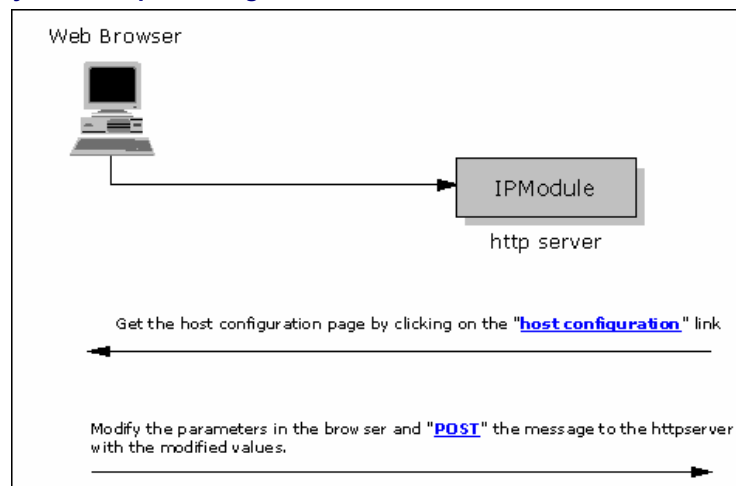


Figure 5: post-query CGI script working

At the http server of IP Module, the POST is serviced. The **post-query** cgi-script is called with the following input as **stdin**: **P0=11&P1=22&P2=33&P3=44**

- Notes:**
1. '&' is the delimiter
 2. P0, P1, P2 are the variables
 3. 11, 22, 33 are the values configured/modified by the web browser

The post-query parses these values and updates the [http-host-param](#) file accordingly.

- **User defined CGI script ?**

The SocketEthernet IP module supports a **user-defined CGI script**, which performs host-specific processing to the parameters configured by the remote Web browser.

Important: The user-defined CGI-script **MUST** be a shell script.

Steps to follow to create a user defined CGI-Script

1. Write your own CGI-script, which is a SHELL Script.
2. This CGI-script should have the file-name convention starting with **cgi-**
Example: "**cgi-http.sh**"
3. Include the path **/cgi-bin/cgi-http.sh** at an appropriate place in the html page that you design.
In the "http-s0.html" page attached, refer to
<form method = "POST" name= "formUPS" ACTION="/cgi-bin/cgi-http.sh">
4. Upload the html page and cgi script on to the IP Module using TFTP client
 - Use TFTP client with binary mode set.
 - Upload HTML files, the default serial device parameter list, and the CGI bin files individually using the following commands:

```
tftp 192.168.2.1 (IP-Address of the IP-Module)
tftp>verbose
tftp>binary
tftp>trace
tftp>put http-host-param
tftp>put http-s0.html
tftp>put cgi-http.sh
```
5. Now the module is ready for host configuration
6. Connect to the IP Module using a Web browser and click on the **Host Configuration** link. Modify the parameters shown on the html page and click on the SUBMIT button provided. This **Submit** button should have the following line.
<form method = "POST" name= "formUPS" ACTION="/cgi-bin/cgi-http.sh">
7. The POST is sent to the http server of the IP Module. At the IP Module, the http server invokes the "**cgi-http.sh**" with the following line as a standard input to the "**cgi-http.sh**" shell script.
P0=11&P1=22&P2=33&P3=44
8. It is up to the "**cgi-http.sh**" to act upon the standard input and update the "**http-host-param**" file.

Notes:

If the operating system in IP Module is **uClinux**, the following shell commands can be used in the user-defined CGI shell scripts. The commands should be prefixed with their respective directories when used.

1. **/bin/** directory – cat, cp, echo, mkdir, mv, pwd, rmdir, ls, sh, ln, rm.
2. **/sbin/** directory – tar, sleep, user, gzip.

File Naming and File Size Conventions

The following file naming conventions and file size constraints must be followed by the OEM Web page developer.

File Name(s)	Description
http-s0.html	Serial Device Main Page
http-host-param	Default Serial Device Parameter List
http-*.html	Any HTML file, should have the filename prefixed with "http-"
cgi-*.sh	Any cgi script should have the filename prefixed with "cgi-" and suffixed with ".sh"
Constraints	
The HTML file size cannot exceed 30KB Max.	
The Parameter list file cannot exceed 10KB Max.	
The Parameter tags <P1, P2, ...> should be contained in the parameter list.	
The URL for Host Configuration is http-s0.html . Therefore, the main page must have the filename http-s0.html when the host device's HTML page is uploaded to the SocketEthernet IP Module.	

Uploading the Web Page and Parameter List

The Host Device Files (.html, default parameter List....) can be uploaded to the SocketEthernet IP Module using TFTP CLIENT.

It is possible to upload these files in two different ways.

- **Compressed** and **Zipped** formats (tar.gz) or
- **Uncompressed** individual files.

In either case, the file naming and file size conventions described previously must be followed.

Upload Compressed and Zipped Files (http.tar.gz)

In order to load files in the compressed (http.tar.gz) format, the following directory structure has to be strictly followed.

```
http/
  html/
    http-s0.html
    http-host-param
    http-*.html
  cgi-bin/
    cgi-* (Supports only Shell scripts)
```

- Place the html files and the default serial device parameter list in the **/http/html** directory. All the html file-names should be prefixed with **http-**.
- Place the CGI scripts in the **/http/cgi-bin** directory. All the CGI scripts should be prefixed with **cgi-**.
- Create an **http.tar.gz** from the source directory (http/). This file should be in the GZIP format only.
- Upload **http.tar.gz** using any TFTP Client with binary mode set.
- Use the following commands to upload **http.tar.gz** to the SocketEthernet IP Module.


```
[root@admin /root]# tftp 192.168.2.1 (Address of the IPModule)
tftp>trace
tftp>binary
tftp>verbose
tftp>put http.tar.gz
tftp>quit
```

Upload Uncompressed Files Individually

- Use TFTP client with binary mode set.
- Upload html files, the default serial device parameter list, and the CGI bin files individually using the following commands:


```
tftp 192.168.2.92 (IP-Address of the IP-Module)
tftp>verbose
tftp>binary
tftp>trace
tftp>put http-host-param
tftp>put http-s0.html
```
- Upload all the files using the similar command.

Host Device Monitoring and Configuration through a Browser

If you have successfully completed the preceding configuration sections and completed the uploading, you are now ready to View, Monitor, and Configure the Host through the Web browser.

In order to view the device home page, enter the IP Address of the SocketEthernet IP module in the URL Address bar.

Example: <http://192.168.2.1>

The IP address 192.168.2.1 corresponds to the IP address of SocketEthernet IP Module.

Depending upon the configuration selected under **set ip http-page <default/serial>**, the appropriate page is displayed.

- If the http-page is set to **default**, the **index.html** page displays (see Figure 3) or
- If the http-page is set to **serial**, the OEM's customized Web page **http-s0.html** displays (see Figure 4).

Technical Information

This section describes additional details and implementation suggestions related to the SocketEthernet IP Module.

Parameter Value Display on the Fly

The HTML file can be any valid HTML file. However, it should be ensured that the parameter values, which are to be replaced, are qualified with **%P<n>%**.

Example:

```
<HTML>
-----
-----
Efficiency <input type="text" name = "P1" value = "%P1%">
-----
</HTML>
```

In the above code segment, when the browser requests a page, the **%P1%** is replaced with Parameter P1's value. This value is extracted from the serial device parameter file (**http-host-param**).

Parameter Value Manipulation from the Browser

To update a parameter from the browser, key in the new values and click the **Submit** button.

The **Submit** button in turn invokes the **POST** command as shown below.

```
<form method = "POST" name= "formUPS" ACTION="/cgi-bin/post-query">
```

Post-Query is a built-in CGI script, which will parse the new values set by the browser and replace them in the **http-host-param** file.

Should you need to update the newly set parameters in the **http-host-param** file, include the **/cgi-bin/post-query** path in the **ACTION** field of your HTML file. The Post-Query script sets the rest.

Serial Device Parameter Updating Process

The serial device probes/polls the SocketEthernet IP Module for newly configured parameter values from the browser using

```
show device-parameter modified
show device-parameter P<n>
```

When the serial device completes validation of modified parameters and values by the browser, then it has to use

```
set device-parameter P<n> <value>
```

After the serial device sets the parameter, the page is refreshed with the new value set by the serial device. Till then it will be refreshed with the old value only.

After synchronization on browser and serial device settings, the serial device can issue "**save param**" command to save the current modified serial parameters to be launched even after reboot.

Example:

In the given demo `http-s0.html` page if the browser modifies Input Current value (P5) to 20, Input Line Voltage (P6) to 50 and submits the page to the IP Module.

The serial device has to issue:

#1.

```
show device-parameter modified
Param: P5, P6
OK
```

This command shows all the modified parameters separated by a COMMA and SPACE. If there are no parameters modified, the command responds as below:

```
Param:
OK
```

#2.

```
show device-parameter P5
20 (value set by the browser)
OK
```

Note: The above command shows the modified parameters until the serial device issues a set command on this device-parameter as below.

#3.

```
set device-parameter P5 20 (Value set by the browser or any value after serial device
validation)
OK
```

Now, when the page is refreshed in the browser, the new values are updated.

IP Module Configuration Mode

The **IP Module Configuration Mode** provides the product-specific embedded Web pages, which are stored, managed, and hosted by the SocketEthernet IP module's HTTP server.

The Web pages contain the IP Module parameters that will display values for monitoring and provide options for setting and configuring the IP Module parameters remotely.

When the user enters the URL in the address bar of the browser,

1. IP Module probes the user for authentication as in Figure 2.
2. After authentication, IP Module hosts the default `index.html` page as in Figure 3.
3. When the user clicks on the **IPModule Configuration** link, the IP Module hosts the `generalconfiguration.html` page by default. Using the *top-menu* and *left-menu*, the other pages can be accessed.
4. After modification, when the user clicks the **PROCESS** button, `/cgi-bin-web/post-query-ip` is executed in the IP Module to update the configuration details.

Notes:

- **Access permissions** to modify the IP Module parameters are given depending upon how the user is logged in; i.e., as *admin* or *non-admin*. (explained later)
- By using the *top menu* and *left-hand menu*, users can navigate through the other pages.
- Pages are hosted with the current configuration. Users can change the values in the page and click the **Submit** button.
- A **post-request** message with the modified values is sent to the IP Module. The IP Module updates the configuration and launches the page with latest values. In case of error configuration, the IP module will host an error page.

Log in as “admin”

When the user is logged in as *admin*, he will be able to modify/view the parameters. The IP Module hosts the pages as below:

The screenshot shows the 'SocketEthernetIP Module' interface. The top navigation bar includes 'General', 'Device', 'Bridge', 'PPP', 'IP', 'View', 'Command', 'Save', 'Restore Defaults', and 'Help'. The left sidebar has 'General Configuration' and 'User Configuration'. The main content area is titled 'General -> GeneralConfiguration' and 'General Configuration'. It displays the following settings:

Date	01/1/1970	
Time	00:55:55	
Authentication	<input checked="" type="radio"/> enable	<input type="radio"/> disable
Autodialout Login	<input checked="" type="radio"/> enable	<input type="radio"/> disable
Boot message	<input checked="" type="radio"/> enable	<input type="radio"/> disable
Watch Dog	<input checked="" type="radio"/> enable	<input type="radio"/> disable

At the bottom of the configuration area are 'RESET' and 'PROCESS' buttons.

Figure 6: generalconfiguration.html

User Logged in as “non-admin”

When the user is logged in as *non-admin*, he will be able to only view the parameters but cannot modify any IP Module parameters. The IP Module hosts the pages as below:

The screenshot shows the 'SocketEthernetIP Module' interface for a non-admin user. The layout is identical to the admin view, but the 'Authentication', 'Autodialout Login', 'Boot message', and 'Watch Dog' settings are displayed as read-only, each with a radio button icon next to the 'enable' option. The settings are:

Date	02/1/1970	
Time	02:03:25	
Authentication	<input checked="" type="radio"/> enable	<input type="radio"/> disable
Autodialout Login	<input checked="" type="radio"/> enable	<input type="radio"/> disable
Boot message	<input checked="" type="radio"/> enable	<input type="radio"/> disable
Watch Dog	<input checked="" type="radio"/> enable	<input type="radio"/> disable

The 'RESET' and 'PROCESS' buttons are still present at the bottom.

Figure 6: generalconfiguration.html

IP Module Configuration through the Browser:

When the user clicks on the **IP** link in the *top-menu*, the IP Module launches the **IP General** page as below:

Figure 7: *lpgeneral.html*

When user modifies the IP Address, the page is redirected to the new IP address and the **index** page is displayed. **Note:** If DHCP is enabled, the corresponding error message is displayed.

When the user enables the DHCP-client, a message appears as shown below:

Figure 8: *lpgeneral.html*

After clicking **OK**, the browser should be closed and then re-opened with the correct IP Address.

The user can use the **left-hand** and **top menus** to view the other configuration pages (General, Device, Bridge, PPP, IP) and configure the respective parameters depending on the requirement.

Monitoring the Statistics and System Information through the Browser

When the user clicks on the **View** link on the *top-menu*, the IP Module launches the Ethernet statistics page by default as below:



Figure 9: eth0stat.html

The user can use the **left-hand menu**, to view the other pages (Bridge, PPP, serial, users, and system information).

Execution of Command through the Browser

When the user clicks on the **Command** link on the *top-menu*, The IP Module launches the Command page as below:



Figure 10: command.html

The user can execute any valid **set** command. If invalid command is entered, the IP Module hosts an error page with error messages and a link **Previous** to the previous page.

Saving Configuration through the Browser

When the user clicks on the **Save** link on the *top-menu*, the IP Module launches the **save** page with **alert box** that asks if you are sure you want to save. Click **OK** to save. Click **Cancel** if you decide you do not want to save this configuration.

What Happens When You Click Save

Case 1: When you click **OK**, the following messages displays:

Connecting to IPAddress 192.168.1.133...

You are then redirected to the *index* page.

Notes:

- IP Module will **reboot** when the configuration is saved through the browser. Time and Date will be set to default values unless SNTP is enabled.
- In case, if **Save** is done after **Restore Defaults**, check the status of HTTP and DHCP status and then connect again. A message will display telling you:
If you don't get connected in a few seconds, check for the new IP address and HTTP status and then try again.

Case 2: When you click **Cancel**, the following message displays:

Page redirected to generalconfiguration

Clicking **OK** causes the **General Configuration** page to be hosted.

Case 3: When the user is a **non-admin** user, the following message displays for the **Save** and **Restore** functions:

Non-admin cannot perform this action!

Or

Access Denied!

Clicking **OK** causes the **General Configuration** page to be displayed.

Restoring Configuration through the Bowser:

When the user clicks on the **Restore Defaults** link on the top menu, the **Restore Defaults** page with the alert box displays:

Restore Defaults?

What Happens When You Click OK

Case 1: When you click **OK**, a message displays indicating that the defaults have been restored.

Restored

You are then redirected to the *generalconfiguration* page.

Case 2: When you click **Cancel**, the following message displays

Restore cancelled!

You are then redirected to the *generalconfiguration* page after clicking **OK**.

Help Pages to Configure IP Module through the Browser

When the user clicks on the **Help** link on the top menu, the Help page containing the index of help topics displays.



Figure 11: help.html

Error Pages during IP Module Configuration through the Browser

When any invalid parameter is entered in any of the fields and submitted, an error page with a corresponding error message displays.



Uploading the Web Page and Parameter List

The Host Device Files (.html, default parameter List....) can be uploaded to the SocketEthernet IP Module using TFTP CLIENT.

It is possible to upload these files in two different ways.

- **Compressed** and **Zipped** formats (tar.gz) or
- **Uncompressed** individual files.

In either case, the file naming and file size conventions described previously must be followed.

Uploading Compressed and Zipped Files (apps.tar.gz)

In order to load files in the compressed (apps.tar.gz) format, the following directory structure has to be strictly followed.

```
apps/
  http/
    html/
      http-s0.html
      http-host-param
      http-*.html
    cgi-bin/
      cgi-* (Supports only Shell scripts)
  web/
    web-pages/
      js/*.js
      images/*.gif
      *.html
    cgi-bin-web/
      post-queryip
```

- Create **apps.tar.gz** from the source directory (apps/). This file should be in the GZIP format only.
- Upload **apps.tar.gz** using any TFTP Client with binary mode set.
- Use the following commands to upload **apps.tar.gz** to the SocketEthernet IP Module.

```
[root@admin /root]# tftp 192.168.2.1 (Address of the IPModule)
tftp>trace
tftp>binary
tftp>verbose
tftp>put apps.tar.gz
tftp>quit
```

Appendix B – SMTP Client

Introduction

SMTP Client is used to establish a TCP session on an SMTP server running on port 25.

SMTP Client supports sending ASCII text or MIME-encoded binary attachment emails with different media types and subtypes from the host/serial device through commands to the IP Module.

SMTP Client supports the following methods for sending emails:

- To the hosts/email addresses specified in the **command prompt**.
- To the hosts/email addresses **pre-configured**.
- To the hosts/email addresses entered in **interactive mode**.

Commands for sending emails:

```
send-mail [-b]
          [-t "<Email-Id#1, Email-Id#2..>"]
          [-c "<Email-Id#3, Email-Id#4..>"]
          [-s "<subject>"]
          [-d "<message-body>"]
```

Note: All of these commands are optional. The **send-mail** command prompts for the details required if they are neither given as options nor pre-configured. Various scenarios are covered later in this chapter.

Setup and Configuration Prerequisites

The following details are **mandatory** for configuration and have to be validated before sending an email:

- Host Interaction Mode enabled to restrict Telnet-Dialout and PPP.
Command: **set serial <s0> host-interaction-mode enable**
- Set SMTP server name or IP address of maximum length 64 characters.
Command: **set send-mail smtp-server-name <ipaddress/servername>**
- Set SMTP server port.
Command: **set send-mail smtp-server-port <25>**
- Set Host name of maximum length 64 characters.
Command: **set send-mail host-name <hostname>**
- Set From address identity of maximum length 64 characters.
Command: **set send-mail from-address-identity <hostnameidentity>**
- Set From address of maximum length 64 characters.
Command: **set send-mail from-address <email-id>**

- Notes:**
1. The **send-mail** command prompts for the ERROR message if any of the above details are not configured or not valid.
 2. The following configuration suggestions are **optional**:
 - Set reply-to address of maximum length 64 characters. By default the server takes the **from address** as the reply-to-address.
 - If this is configured, this address is taken as the reply to address.
set send-mail reply-to-address <email-ID>

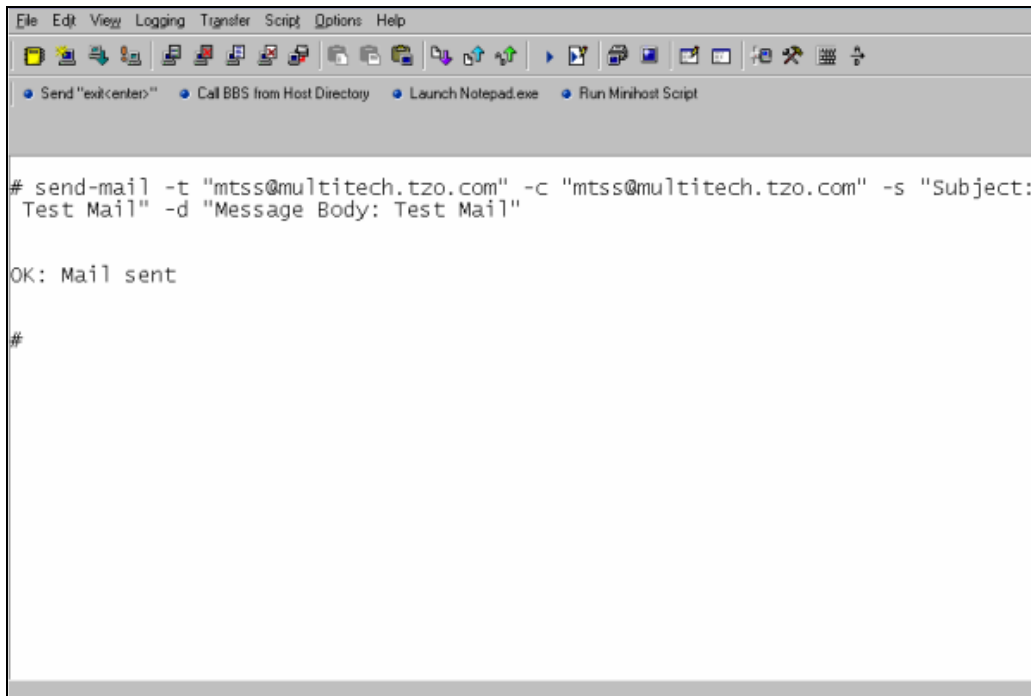
Configuration Scenario 1

Sending a Text Email from the Command Prompt

Issue the following command:

```
send-mail
  -t "<email #1>, <email #2>"
  -c "<email #3>, <email #4>"
  -s "subject data"
  -d "Messagebody"
```

A message is then given as shown in the figure below and the email is sent only to the **to-addresses** (if any) and the **cc-addresses** (if any) entered from the command prompt. The **subject** and **message body** are also taken from the command prompt.



```
File Edit View Logging Transfer Script Options Help
Send "exit:center" Call BBS from Host Directory Launch Notepad.exe Run Minihost Script

# send-mail -t "mtss@multitech.tzo.com" -c "mtss@multitech.tzo.com" -s "Subject:
Test Mail" -d "Message Body: Test Mail"

OK: Mail sent

#
```

Notes:

1. The email is **not** sent to addresses pre-configured using set commands.
2. At least one address, either the **to-address** or the **cc-address**, should be given as an alternative for sending email directly from command prompt.
3. If the **subject** option is not specified and is not pre-configured using set commands, SMNP enters into interactive mode and requests a subject to be entered.
4. Type **Ctrl+C** to quit the email at any given time.

Configuration Scenario 2

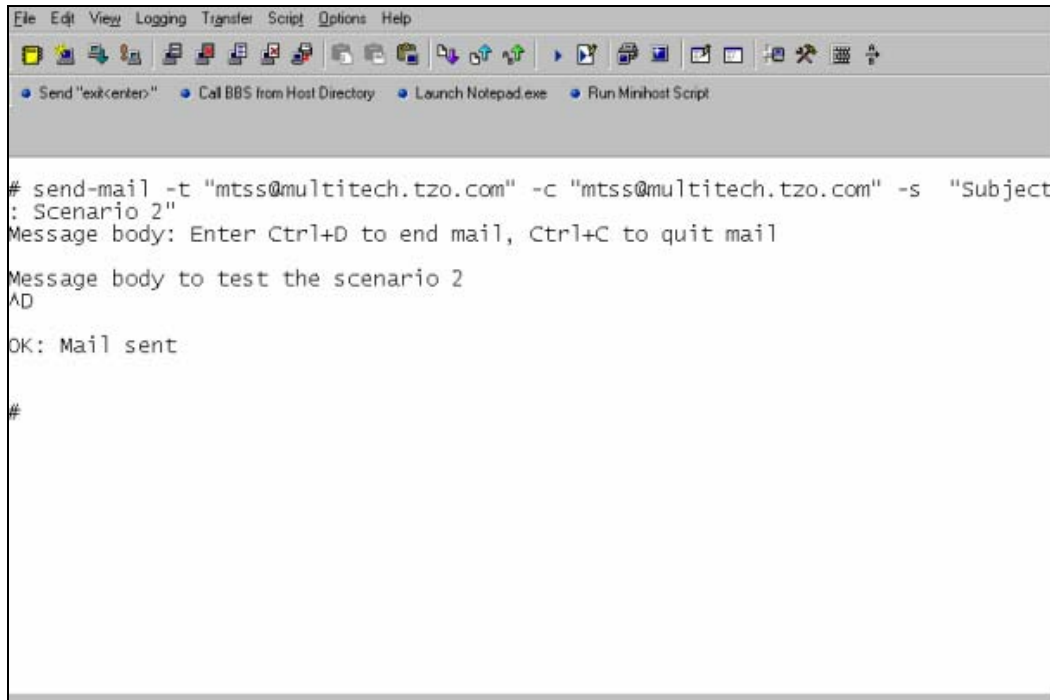
Sending a Text Email with the Message Body Entered in Interactive Mode

Issue the following command:

```
send-mail
-t "<email #1>, <email #2>"
-c "<email #3>, <email #4>"
-s "subject data"
```

The SMTP session then enters into interactive mode and requests that the **message body** be entered (see the figure below). After typing the message, type **Ctrl+D** to end the message.

The email is sent only to the **to-addresses** (if any) and the **cc-addresses** (if any) entered from the command prompt. The **subject** is taken from the command prompt.



```
File Edit View Logging Transfer Script Options Help
Send "exitcenter" Call BBS from Host Directory Launch Notepad.exe Run Minihost Script

# send-mail -t "mtss@multitech.tzo.com" -c "mtss@multitech.tzo.com" -s "Subject
: Scenario 2"
Message body: Enter Ctrl+D to end mail, Ctrl+C to quit mail
Message body to test the scenario 2
^D
OK: Mail sent
#
```

Notes:

1. The email is **not** sent to addresses pre-configured using set commands.
2. At least one address, either the **to-address** or the **cc-address**, should be given as an alternative to sending email directly from the command prompt.
3. If the **subject** option is not specified and is not pre-configured using set command, SNMP enters into interactive mode and requests a subject to be entered.
4. Type **Ctrl+C** to quit the email at any given time.

Configuration Scenario 3

Sending a Text Email Using Configuration and Interactive Mode:

- The to-addresses, cc-addresses, and subject taken from the configuration and
- The message body is entered in interactive mode.

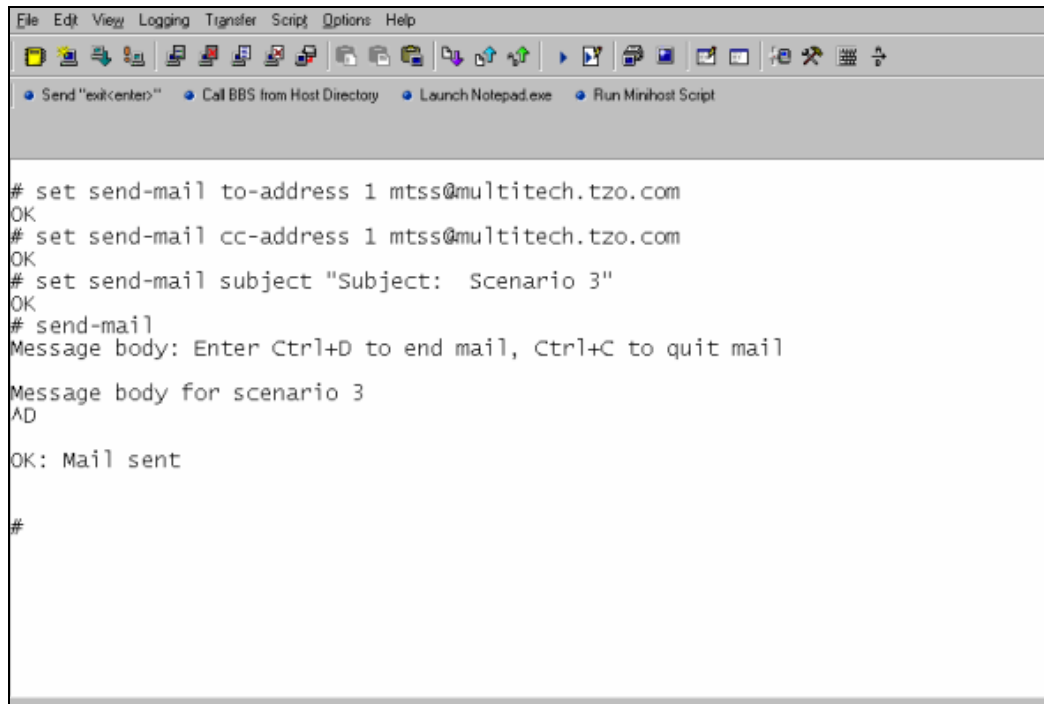
To support this scenario, you must configure the following details apart from the mandatory configuration:

- Set subject data of maximum length 255 characters.
Command: **set send-mail subject subject data**
- Set to-addresses of maximum length 64 characters.
Command: **set send-mail to-address 1 <email-id #1>**
set send-mail to-address 2 <email-id#2>
- Set cc-addresses of maximum length 64 characters.
Command: **set send-mail cc-address 1 <email-ID#3>**
set send-mail cc-address 2 <email-ID#4>

Issue the following command at the serial command prompt:

#send-mail

The SMTP session then enters into interactive mode and requests that the **message body** be entered as shown in the figure below. After completing the message, type **Ctrl+D** to end the message.



```

File Edit View Logging Transfer Script Options Help
Send "exit:center)" Call BBS from Host Directory Launch Notepad.exe Run Minihost Script

# set send-mail to-address 1 mtss@multitech.tzo.com
OK
# set send-mail cc-address 1 mtss@multitech.tzo.com
OK
# set send-mail subject "Subject: Scenario 3"
OK
# send-mail
Message body: Enter Ctrl+D to end mail, Ctrl+C to quit mail
Message body for scenario 3
^D
OK: Mail sent
#
  
```

The email is sent only to the recipients who are pre-configured. The subject is also taken from the configuration.

Notes:

1. The email is sent to addresses pre-configured using set commands.
2. At least one address, either the **to-address** or the **cc-address**, should be configured using set commands; otherwise, the SMTP session enters into interactive mode prompting you to enter the required details.
3. If the **subject** option is not specified or is not pre-configured using set commands, SMTP enters into interactive mode and requests a subject to be entered.
4. Type **Ctrl+C** to quit the email at any given time.

Configuration Scenario 4

Sending a Text Email in Interactive Mode

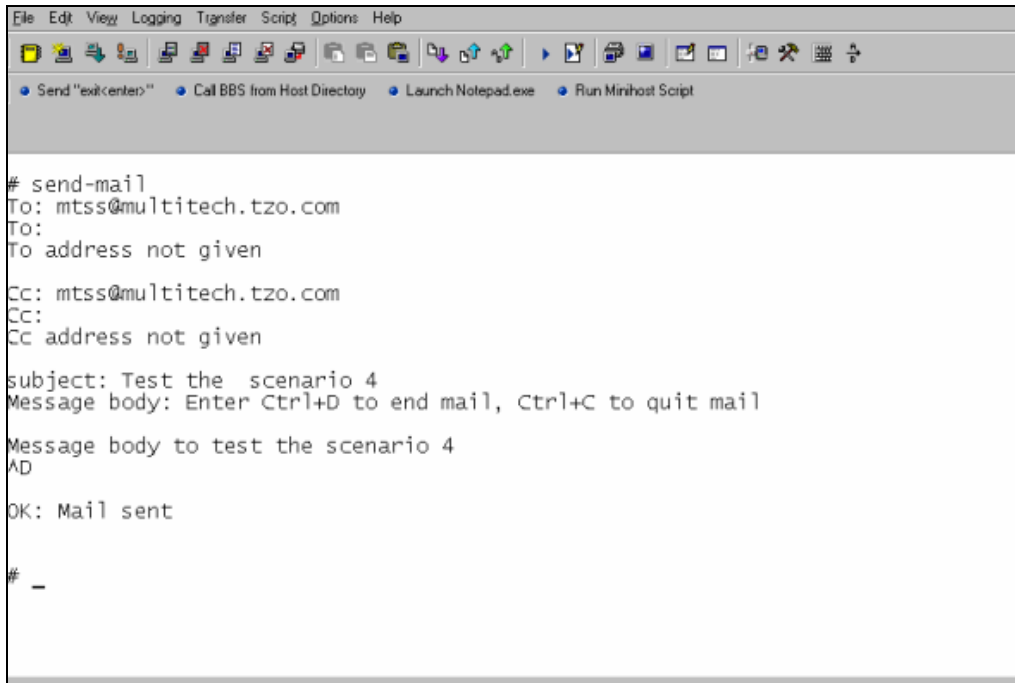
The **to-address**, **cc-address**, and **subject** are NOT configured in this example.

Issue the following command:

send-mail

The SMTP session then enters into interactive mode requesting the **to-address**, **cc-address**, **subject** and the **message body** to be entered. After entering a message, type **Ctrl+D** to end the message.

The email is sent only to the entered **to-addresses** (if any) and **cc-addresses** (if any). The **subject** and **message body** are taken as given in the interactive mode.



```

File Edit View Logging Transfer Script Options Help
Send "exit<enter>" Call BBS from Host Directory Launch Notepad.exe Run Minihost Script

# send-mail
To: mtss@multitech.tzo.com
To:
To address not given
Cc: mtss@multitech.tzo.com
Cc:
Cc address not given
subject: Test the scenario 4
Message body: Enter Ctrl+D to end mail, Ctrl+C to quit mail
Message body to test the scenario 4
^D
OK: Mail sent

# -

```

Notes:

1. The email is sent only to addresses entered in interactive mode.
2. If the **subject** is already configured using set command, it will be taken as the subject for the email.
3. Type **Ctrl+C** to quit the email at any given time.

Configuration Scenario 5

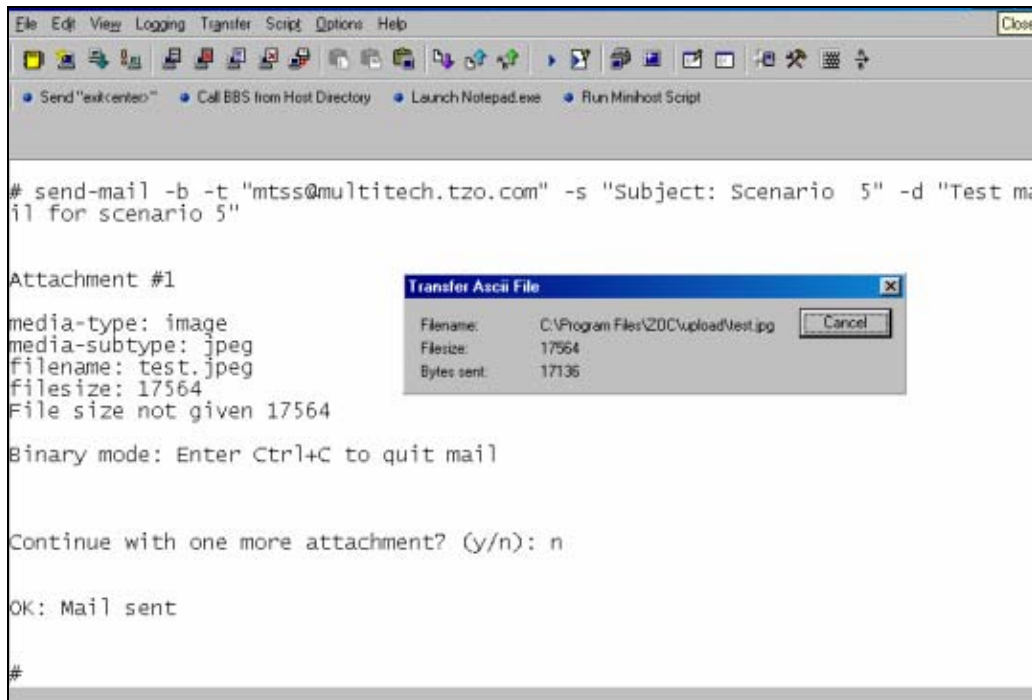
Sending a Mime Encoded Binary Attachment Using the Command Prompt

The email addresses, subject, and message body are taken from the command prompt.

Issue the following command:

```
send-mail
-b
-t "<email-id #1>, <email-id #2>"
-c "<email-id #3>, <email-id #4>"
-s "subject data"
-d "Message body"
```

The SMTP session then enters into interactive mode requesting media-type, media-subtype, filename, filesize, and the attachment body as shown in this figure.



When the attachment body reaches the filesize, another message is displayed asking whether to continue with one more attachment as shown in figure. Type **n** for **No**. The email with its attachment is sent only to the **to-addresses** (if any) and **cc-addresses** (if any) entered from the command prompt. The **subject** and **message body** are also taken from the command prompt.

Notes:

1. The email is not sent to addresses pre-configured using set commands.
2. At least one address, either the **to-address** or the **cc-address**, should be given as an alternative to sending email directly from command prompt.
3. If the **subject** option is not specified and is not configured using set commands, SMTP enters into interactive mode requesting the **subject** to be entered.
4. Type **Ctrl+C** to quit the email at any given time.
5. If the host wants to quit the email while sending the binary attachment body, type **Ctrl+C** and wait for 3 seconds without entering any character to quit the email.

Configuration Scenario 6

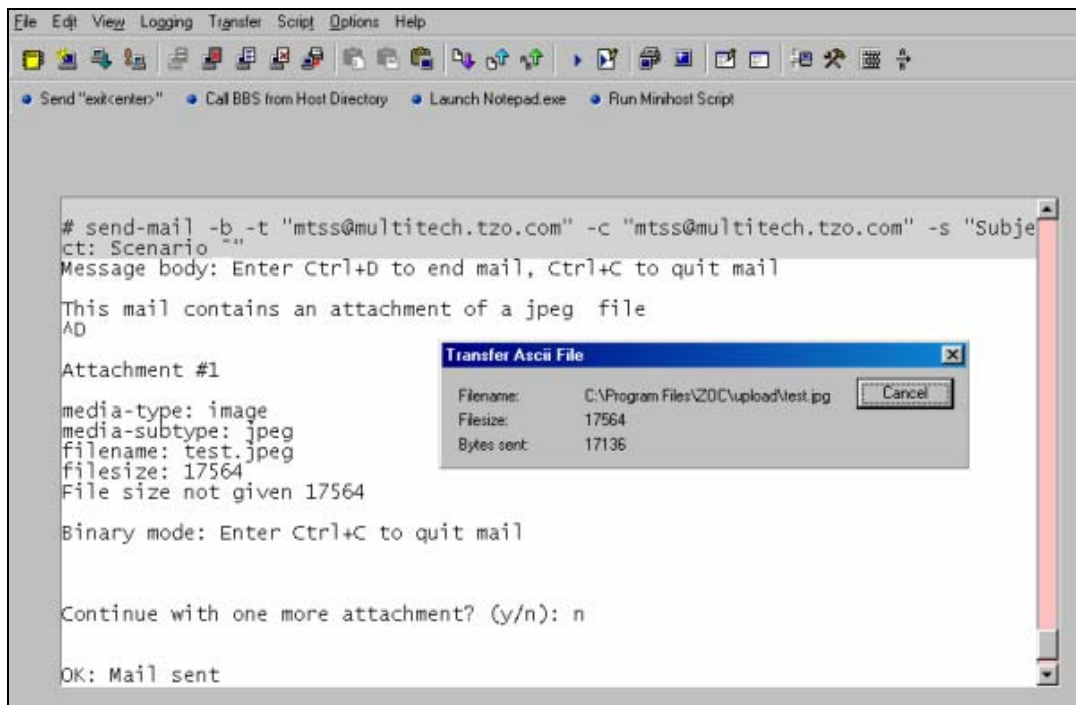
Sending a Mime Encoded Binary Attachment Using the Command Prompt and Interactive Mode

- The to-address, cc-address, and subject are entered through the command prompt
- The message body entered in the Interactive Mode

Issue the following command:

```
send-mail
-b
-t "<email-id#1>, <email-id#2>"
-c "<email-id#3>, <email-id#4>"
-s "subject data"
```

The SMTP session then enters into interactive mode requesting the **message body** as shown in the figure to be entered. After entering the message, type **Ctrl+D** to end the message.



The SMTP session then enters into interactive mode requesting media-type, media-subtype, filename, filesize, and the attachment body as shown in the figure.

When the attachment body reaches the filesize, another message displays asking whether to continue with one more attachment as shown in the figure. Type **n** for **No**. The email with its attachment is sent only to the **to-addresses** (if any) and **cc-addresses** (if any) entered from the command prompt. The **subject** is taken from the command prompt.

Notes:

1. The email is **not** sent to addresses pre-configured using set commands.
2. At least one address, either the **to-address** or the **cc-address**, should be given as an option from the command prompt.
3. If the **subject** option is not specified and is not configured using set commands, SMTP enters into interactive mode and requests the subject to be entered.
4. Type **Ctrl+C** to quit the email at any given time.
5. If the host wants to quit the email while sending the binary attachment body, type **Ctrl+C** and wait for 3 seconds without entering any character to quit the email.

Configuration Scenario 7

Sending a Mime Encoded Binary Attachment Pre-Configuration and Interactive Mode

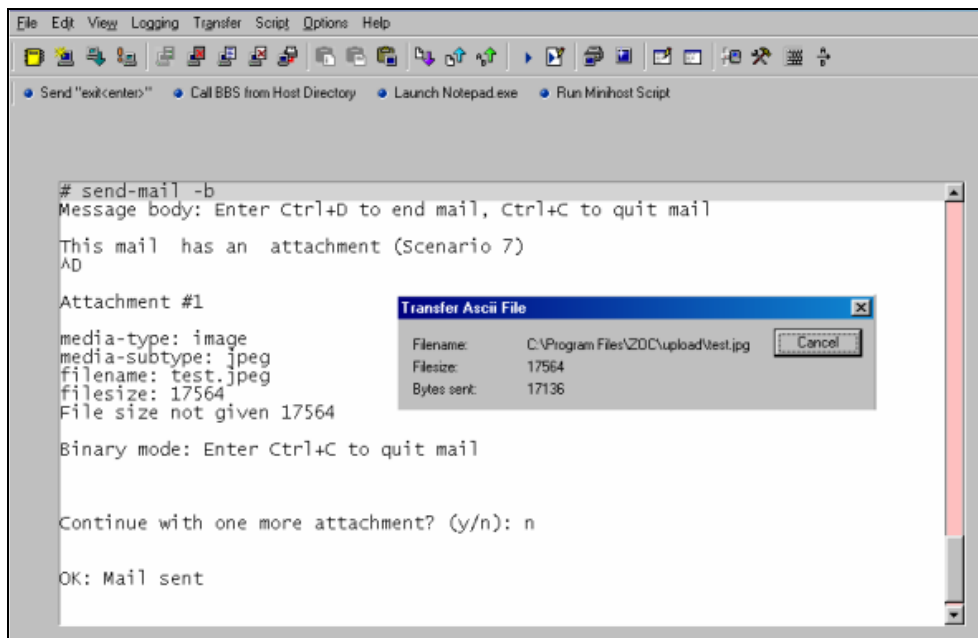
- The to-address, cc-address, and subject are pre-configured.
- The message body is entered in the Interactive Mode.

Configure the following details apart from the mandatory configuration:

- Set subject data of maximum length 255 characters.
Command: **set send-mail subject "subject data"**
- Set to-addresses of maximum length 64 characters.
Command: **set send-mail to-address 1 email-id#1**
set send-mail to-address 2 email-id#2
- Set cc-addresses of maximum length 64 characters.
Command: **set send-mail cc-address 1 email-id#3**
set send-mail cc-address 2 email-id#4

Issue the following command: **# send-mail -b**

The SMTP session then enters into interactive mode requesting the message body to be entered as shown in this figure. After entering the message, type **Ctrl+D** to end the message.



The SMTP session enters into interactive mode requesting media-type, media-subtype, filename, filesize, and the attachment body to be entered as shown in the figure above.

When the attachment body reaches the filesize, another message is displayed asking whether to continue with one more attachment. Type **n** for **No**. The email with its attachment is sent only to the pre-configured **to-addresses** (if any) and **cc-addresses** (if any). The **subject** is also taken from the configuration.

Notes:

1. The email is sent to addresses pre-configured using set commands.
2. At least one address, either the **to-address** or the **cc-address**, should be configured using set commands; otherwise, the SMTP session will enter into interactive mode prompting for the required details to be entered.
3. If the **subject** is not configured using set commands, SMTP will request the subject to be entered.
4. Type **Ctrl+C** to quit the email at any given time.
5. If the host wants to quit the email while sending the binary attachment body, type **Ctrl+C** and wait for 3 seconds without entering any character to quit the email.

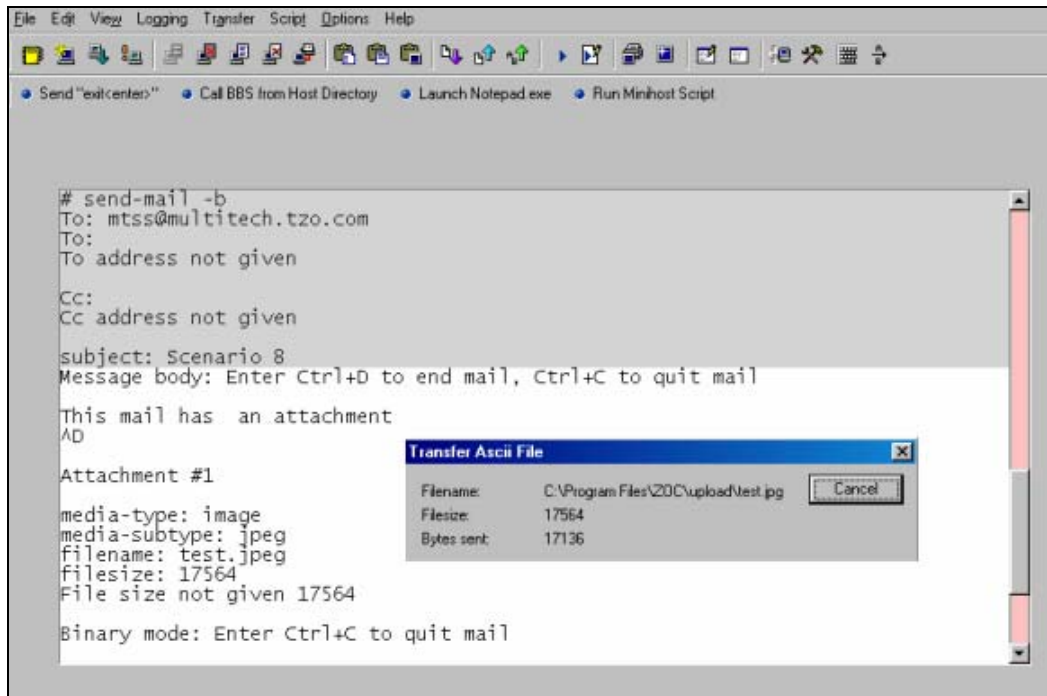
Configuration Scenario 8

Sending a Mime Encoded Binary Email with Attachment Using Interactive Mode

Issue the following command:

send-mail -b

The SMTP session then enters into interactive mode requesting the **to-address**, the **cc-address**, **subject**, and **message body** to be entered. After completion of the message, type **Ctrl+D** to end the message.



The SMTP session enters into interactive mode requesting media-type, media-subtype, filename, filesize, and the attachment body as shown in the figure.

When the attachment body reaches the filesize, another message is displayed asking whether to continue with one more attachment. Type **n** for **No**. The email with its attachment is sent only to the entered **to-addresses** (if any) and **cc-addresses** (if any). The **subject** and **message body** are used as entered in the interactive mode.

Notes:

1. The email is sent only to addresses entered in interactive mode.
2. If the **subject** is pre-configured using set commands, it will be used as the subject for the email.
3. Type **Ctrl+C** to quit the email at any given time.
4. If the host wants to quit the email while sending the binary attachment body, type **Ctrl+C** and wait for 3 seconds without entering any character to quit the email.

Appendix C – POP3 Client

Introduction

The SocketEthernet IP Module can be configured as a POP3 client to retrieve emails from a POP3 server. The POP3 client, available in SocketEthernet IP Module, can do the following:

- List the number of messages and message sizes
- Retrieve the header information of messages
- Retrieve the complete email
- Retrieve the top 'n' lines of a message
- Delete an email on the server
- Retrieve the unique email ID listing

Setup and Configuration Prerequisites

To fulfill the prerequisites for receiving/retrieving emails from the email server, configure the following parameters:

- pop3 server name/ip address
Command: **set rcv-mail server-name <server-name>**
- pop3 port number
Command: **set rcv-mail server-port <port-number>**
- pop3 account/user name
Command: **set rcv-mail mailbox-name <account/user name>**
- pop3 account/user password
Command: **set rcv-mail mailbox-password <account/user password>**

These commands need to be executed only to set the initial configuration. However, they must be executed whenever a parameter is changed.

Example

Assuming that the POP3 server is **192.168.2.10**, POP3 port is **110**, account/user name is **mtss**, and the account/user password is **mtsspass**, the following commands need to be executed to configure the SocketEthernet IP Module to retrieve emails.

```
set rcv-mail server-name 192.168.2.10
OK
set rcv-mail server-port 110
OK
set rcv-mail mailbox-name mtss
OK
set rcv-mail mailbox-password mtsspass
OK
```

Example of the *show recv-mail* configuration

Use the **show recv-mail** configuration to check the configuration.

```
+-----+
|                pop3 configuration                |
+-----+
| server-name       : 192.168.2.10 |
| server-port      : 110           |
| mailbox-name     : mtss         |
| mailbox-password : mtsspass     |
+-----+
```

If any of the above fields are missing, then the email cannot be retrieved.

Optional Configuration for Deleting Emails from the Server

An optional parameter that can be configured is:

```
# recv-mail leave-mail-on-server disable
OK
```

The command **recv-mail leave mail on server <enable/disable>** is used to indicate that email retrieved from the POP3 server should be deleted.

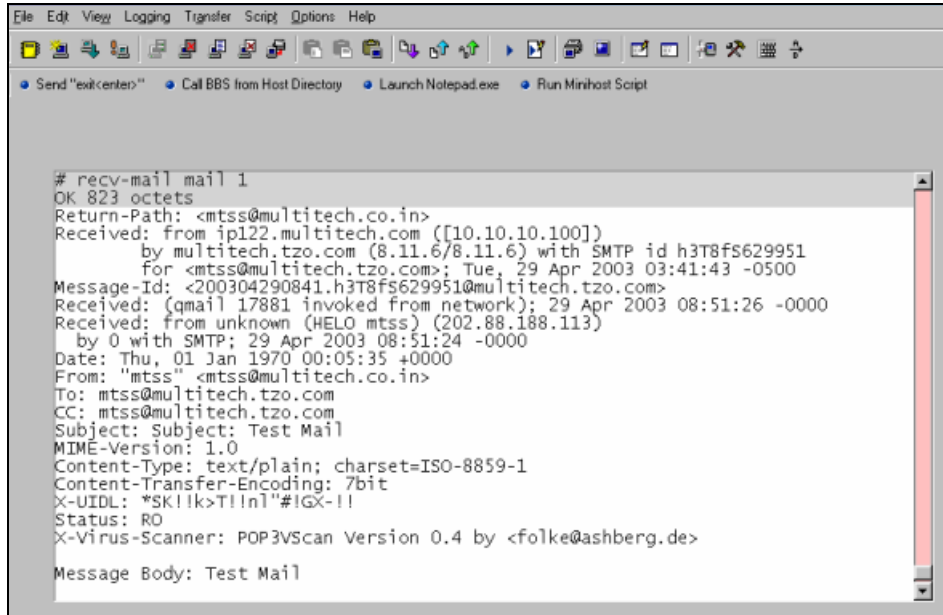
If **leave mail on server** is **disabled**, then an email retrieved from the POP3 server using the commands **recv-mail mail** or **recv-mail mail <n>**, where **n** is the message number, is deleted from the POP3 server. The default value is **enable**.

Configuration Scenario 1

Retrieving Emails

The command **recv-mail mail** can be used to retrieve all the emails from a POP3 server. This command will retrieve all the email with headers, message body, and attachments.

The command **recv-mail mail <n>**, where **n** is the message number, can be used to retrieve the **n**th message.



```

File Edit View Logging Transfer Scripts Options Help
Send "exit:center" Call BBS from Host Directory Launch Notepad.exe Run Minihost Script

# recv-mail mail 1
OK 823 octets
Return-Path: <mtss@multitech.co.in>
Received: from ip122.multitech.com ([10.10.10.100])
    by multitech.tzo.com (8.11.6/8.11.6) with SMTP id h3T8f5629951
    for <mtss@multitech.tzo.com>; Tue, 29 Apr 2003 03:41:43 -0500
Message-Id: <200304290841.h3T8f5629951@multitech.tzo.com>
Received: (qmail 17881 invoked from network); 29 Apr 2003 08:51:26 -0000
Received: from unknown (HELO mtss) (202.88.188.113)
    by 0 with SMTP; 29 Apr 2003 08:51:24 -0000
Date: Thu, 01 Jan 1970 00:05:35 +0000
From: "mtss" <mtss@multitech.co.in>
To: mtss@multitech.tzo.com
CC: mtss@multitech.tzo.com
Subject: Subject: Test Mail
MIME-Version: 1.0
Content-Type: text/plain; charset=ISO-8859-1
Content-Transfer-Encoding: 7bit
X-UIDL: *SK!!k>T!n! "#!GX-!!
Status: RO
X-Virus-Scanner: POP3VScan Version 0.4 by <folke@ashberg.de>

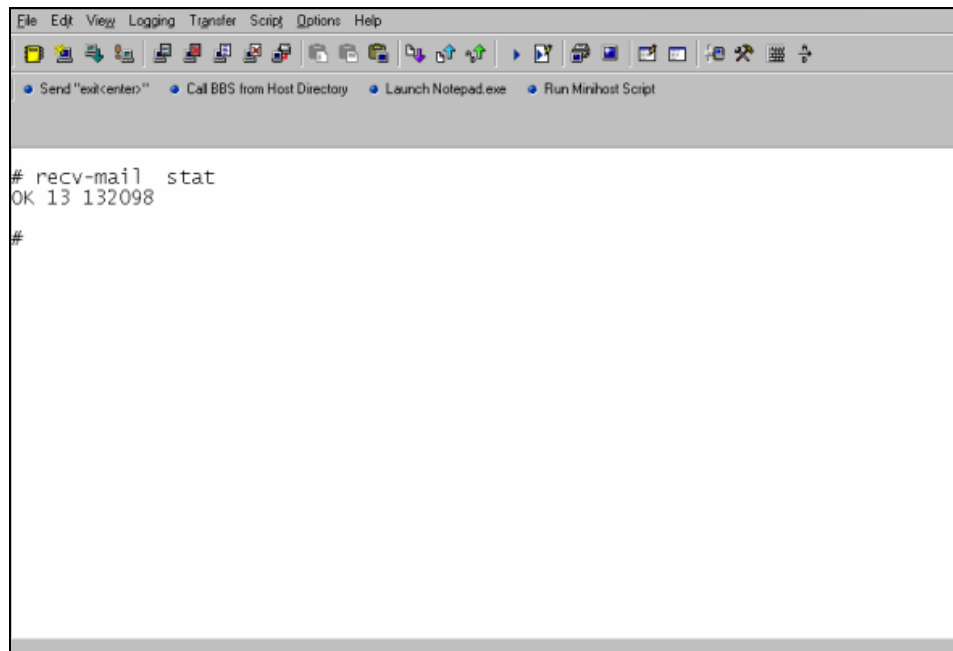
Message Body: Test Mail

```

Configuration Scenario 2

Retrieving the Number of Emails and the Total Email Size

Use the command **recv-mail stat** to retrieve the number of emails and the total email size in octets. The output is single line.



```

File Edit View Logging Transfer Scripts Options Help
Send "exit:center" Call BBS from Host Directory Launch Notepad.exe Run Minihost Script

# recv-mail stat
OK 13 132098
#

```

Configuration Scenario 3

Retrieving the Email List

Use the command **recv-mail list** to retrieve the email list containing the message number and the size of the individual messages (in octets). The output is multi-lined.

Use the command **recv-mail list <n>** to retrieve the message size of the **n**th message. The output is multi-lined.

```
# recv-mail list
OK 13 visible messages (132098 octets)
1 781
2 781
3 794
4 794
5 786
6 786
7 795
8 795
9 25188
10 25188
11 25134
12 25131
13 25145
#
-
```

Configuration Scenario 4

Retrieving Emails Headers

Use the command **recv-mail header** to retrieve the message header of all emails. The output is multi-lined.

Use the command **recv-mail header <n>** to retrieve the message header of the **n**th email. The output is multi-lined.

```
# recv-mail header 1
OK Message follows
Return-Path: <mtss@multitech.co.in>
Received: from ip122.multitech.com ([10.10.10.100])
        by multitech.tzo.com (8.11.6/8.11.6) with SMTP id h3T8fS629951
        for <mtss@multitech.tzo.com>; Tue, 29 Apr 2003 03:41:43 -0500
Message-Id: <200304290841.h3T8fS629951@multitech.tzo.com>
Received: (qmail 17881 invoked from network); 29 Apr 2003 08:51:26 -0000
Received: from unknown (HELO mtss) (202.88.188.113)
        by 0 with SMTP; 29 Apr 2003 08:51:24 -0000
Date: Thu, 01 Jan 1970 00:05:35 +0000
From: "mtss" <mtss@multitech.co.in>
To: mtss@multitech.tzo.com
CC: mtss@multitech.tzo.com
Subject: Subject: Test Mail
MIME-Version: 1.0
Content-Type: text/plain; charset=ISO-8859-1
Content-Transfer-Encoding: 7bit
X-UIDL: *SK!!k>T!!n!#!GX-!!
Status: R0
#
```

Configuration Scenario 5

Retrieving First *t* Lines

To retrieve the first few lines of an email, use the command **recv-mail top <n> <t>**, where **n** is the message number and **t** is the number of lines to be retrieved. This command shows the message headers and the first **t** number of lines. The output is multi-lined.

```
# recv-mail top 14 3
OK Message follows
Return-Path: <mtss@multitech.co.in>
Received: from ip122.multitech.com ([10.10.10.100])
    by multitech.tzo.com (8.11.6/8.11.6) with SMTP id h3TA4m630393
    for <mtss@multitech.tzo.com>; Tue, 29 Apr 2003 05:04:48 -0500
Message-Id: <200304291004.h3TA4m630393@multitech.tzo.com>
Received: (qmail 20968 invoked from network); 29 Apr 2003 10:14:46 -0000
Received: from unknown (HELO mtss) (202.88.188.113)
    by 0 with SMTP; 29 Apr 2003 10:12:54 -0000
Date: Thu, 01 Jan 1970 01:27:05 +0000
From: "mtss" <mtss@multitech.co.in>
To: mtss@multitech.tzo.com
Subject: Text Mail
MIME-Version: 1.0
Content-Type: text/plain; charset=ISO-8859-1
Content-Transfer-Encoding: 7bit
X-UIDL: &[g!IMod"l2-j"!h#-!!
Status: U

Message body to test the Text Mail
1.. send-mail can be tested with 8 different scenarios
2.. The scenarios are clearly mentioned in the HOWTO document
```

Configuration Scenario 6

Deleting an Email on the Server

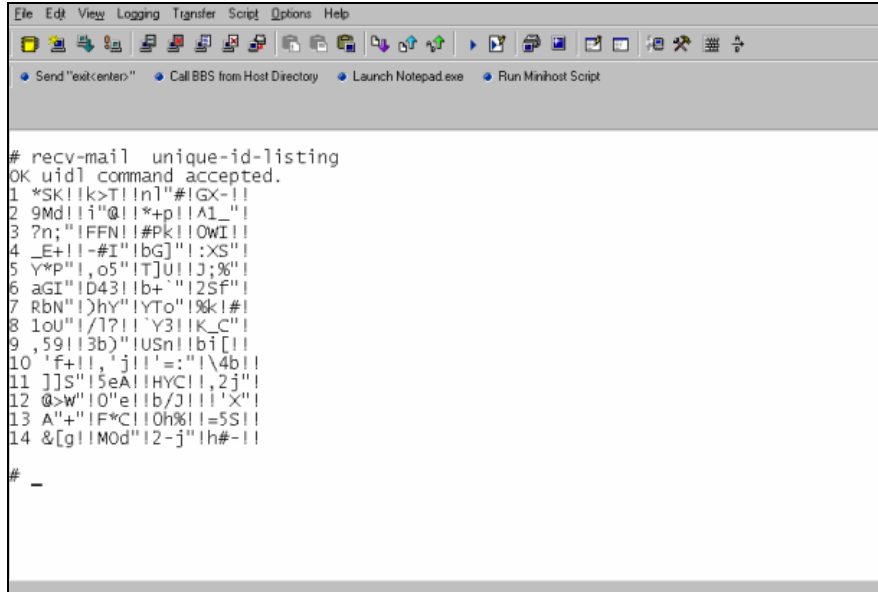
Use the command **recv-mail delete <n>**, where **n** is the message number of the email that should be deleted from the server.

```
# recv-mail delete 1
OK
```

Configuration Scenario 7

Retrieving the Unique Email ID

Use this command to retrieve the unique email ID of a message. The unique message ID is used to identify the message with a unique string.



```

File Edit View Logging Transfer Script Options Help
Send "exit:center" Call BBS from Host Directory Launch Notepad.exe Run Minihost Script

# recv-mail unique-id-listing
OK uidl command accepted.
1 *SK!!k>T!!n!!#!GX-!!
2 9Md!!i!@!!*+p!!A1_!!
3 ?n:!!FFN!!#Pk!!OWI!!
4 _E+!!-#I!!bG]!!:XS!!
5 Y*P!!o5!!T]U!!J;%!!
6 aGI!!D43!!b+!!I2Sf!!
7 RbN!!>hY!!YTo!!%k!#!
8 loU!!/!7!!Y3!!K_C!!
9 ,59!!3b)!!USn!!b![]!!
10 'f+!!,'j!!'='!!\4b!!
11 ]]S!!5eA!!HYC!!2j!!
12 @>w!!o"e!!b/J!!!'X!!
13 A"++!!F*C!!Oh%!!=5S!!
14 &[g!!Mod!!2-j!!h#-!!

#
  
```

Error Messages

- ERROR Invalid parameters. Check POP3 parameters**
 This error message is displayed if the POP3 parameters are not configured correctly. See prerequisites for POP3.
- ERROR: Set up failed**
 This error occurs if the server is not accessible or the POP3 client is not able to connect to the POP3 server on the configured port.
- ERROR: Unable to login**
 This error occurs if the POP3 client could not authenticate to the POP3 server. This could happen when the username or password is not valid.
- Other errors**
 Other errors might occur due to **timeout**, **none availability of resources**, etc.

Appendix D – FTP Client

Introduction

The FTP Client is used to establish a TCP session to the FTP server running on port 21. This chapter covers the FTP Client features and provides you with ten FTP Client scenarios.

FTP Client Features

- Supports automatic authentication to the FTP server depending on the configuration.
- Supports listing the contents of the specified directory of the FTP server
- Supports active and passive modes of data transfer.
- Supports sending files from the host/serial device to the FTP server.
- Supports receiving files from the FTP server to the host/serial device.

Command to List Directory Contents or to Send/Receive Files

The host/serial device can use the following command to list the contents of the directory or to send/ receive text/binary files to/from a remote server depending upon the requirement.

Syntax

```
ftp < [-l [-d <directory>]]
      [-t [-n <filename>] [-s <filesize>]]
      [-a [-n <filename>] [-s <filesize>]]
      [-r [-d <directory>] [-n <filename>]] >
      [-p] <ip-address/host-name>
```

- l : Requests the directory and lists the contents of the specified directory in the server.
- t : Requests the filename and file size to be transmitted and reads the data from the host device and transmits to the server.
- a : Requests the filename and file size to be appended and reads the data from the host device and transmits to the server
- r : Requests the remote filename to be received. It informs the host device about the size of the file and retrieves the data from the server when serial device is ready.
- p : Opens the Data connection in Passive mode. (If this option is not given, the data connection will be opened in Active mode by default).

The FTP command will prompt for the details required if these details were not configured previously.

Important:

1. The user must have access permission to perform the above functionality.
2. FTP Client cannot be accessed through a Telnet session.
3. By default, the data connection is in active mode. This can be optionally changed to passive mode by using the **-p** option in the command.
4. By default, the Format control is set to NON_PRINT, the structure type is set to FILE, and the Transmission mode is set to STREAM mode in the client.
5. The file transfer can be done only if the server supports BINARY/IMAGE data type.
6. The file can be received only if the server supports SIZE command.

Prerequisites

The host/serial device must ensure the validity of the following details before using FTP client:

1. If the host device wants to use domain names instead of an IP address for a remote server, then the following parameters must be set:
 - Default Gateway should be configured to a valid IP address.
`# set ip def-gway <ip-address>`
 - DNS should be enabled.
`# set ip dns <enable>`
 - DNS address should be configured to a valid ip-address.
`# set ip pri-dns <ip-address>`
2. If you want the host device to use automatic authentication to a particular FTP server, then set the following parameters:
 - **Mandatory:** The device name should be configured to a valid the IP address/host-name. The login name should be set to a valid user name.
`#set ftp machine <ip-address/host-name/default> login <user-name>`
 - **Optional:** The password can be optionally configured as the password corresponding to the user name.
`# set ftp machine <ip-address/host-name/default>
login <user-name> password <passwd>`
 - **Optional:** The account password can be optionally configured as the password corresponding to the user name. This is an extra authentication that can be used when an FTP server asks for an account password.
`# set ftp machine <ip-address/host-name/default>
login <user-name> password <passwd> account <passwd>`
 - **Optional:** The remote directory name can be optionally configured which will be used when “list” or “send” or “receive” commands are issued to work on the configured directory.
`# set ftp directory <directory-name>`
 - **Optional:** The remote file name can be optionally configured which will be used when “send” or “receive” commands are issued to use the configured filename.
`# set ftp filename <file-name>`
 - **Optional:** The file size can be optionally configured which indicates the number of bytes to be transferred for the specified file when “send” command is issued to transmit the file.
`# set ftp filesize <file-size>`

ERROR Messages

An ERROR message displays if any of the above details are not configured or are not valid.

How to Delete a Previous Configuration

The previous configuration can be deleted by specifying the following commands:

```
"set ftp machine" without any arguments.
"set ftp directory "" " with NULL argument.
"set ftp filename "" " with NULL argument.
"set ftp filesize "" " with NULL argument.
```

Notes:

- If a value is configured as the default, the FTP client tries to authenticate for every FTP server.
- If the above mandatory fields are not configured or if the configured device and the server specified in the command line are different, the SocketEthernet IP prompts the user to enter login name and password.
- If the above optional fields (directory, filename or filesize) are not configured or if the details are not specified in the command line, the SocketEthernet IP prompts the user to enter the details respectively.

Scenario 1 - Listing Directory Contents

This scenario describes how to list the contents of the specified directory of the FTP server without Automatic Authentication (default) and the data connection in ACTIVE mode.

When the user does not specify the directory name in the command line with the **-d** option, and an entry for the default directory name does not exist in the configuration, the user is prompted for the directory name. (Setting the default configuration is explained in the previous section).

Description	<p>The SocketEthernet IP establishes the control connection to the specified FTP server and prompts the host device to enter the login name, password:</p> <p>Name (ip-address:admin): mtss <CR> Password: **** <CR></p> <p>If successfully logged in, SocketEthernet IP sends a message and prompts the host device to enter the <i>remote directory</i>, the contents of which will then be displayed.</p> <p>Connected Remote directory: <CR> or <Directory-Path></p> <p>If the Host simply enters <CR> without specifying the directory, then the contents of the present working directory are listed. If the complete path of the directory is given, then the contents of that directory are listed.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p>
Configuration	None
Command	ftp -l [-d <directory>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 2 - Listing Directory Contents

This scenario describes how to list the contents of the specified directory of the FTP server without Automatic Authentication (default) and the data connection in PASSIVE mode.

When the user does not specify the directory name in the command line with the **-d** option, and an entry for the default directory name does not exist in the configuration, the user is prompted for the directory name. (Setting the default configuration is explained in the later section).

Description	<p>The SocketEthernet IP establishes the control connection to the specified FTP server and prompts the host device to enter the login name, password:</p> <p>Name (ip-address:admin): mtss <CR> Password: **** <CR></p> <p>If successfully logged in, SocketEthernet IP sends a message and prompts the host device to enter the <i>remote directory</i>, the contents of which will then be displayed.</p> <p>Connected Remote directory: <CR> or <Directory-Path></p> <p>If the Host simply enters <CR> without specifying the directory, then the contents of the present working directory are listed. If the complete path of the directory is given, then the contents of that directory are listed.</p> <p>The data connection is in passive mode due to the '-p' option. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p>
Configuration	None
Command	ftp -l [-d <directory>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 3 - Listing Directory Contents

This scenario describes how to list the contents of the specified directory of the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- When the user does not specify the directory name in the command line with the **-d** option, and an entry for the default directory name does not exist in the configuration, the user is prompted for the directory name. (Setting the default configuration is explained in the later section)
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message and prompts the host device to enter the <i>remote directory</i>, the contents of which are then displayed as follows:</p> <p>Connected Remote directory: <CR> or <Directory-Path></p> <p>If the Host simply enters <CR> without specifying the directory, then the contents of the present working directory are listed. If the complete path of the directory is given, then the contents of that directory are listed.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p> <p>Note: If the -p option is specified in the command, the data connection will be in passive mode</p>
Configuration	set FTP machine <ip-address/host-name> login <user-name> password <passwd> account <passwd>
Command	ftp -l [-d <directory>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 4 - Listing Directory Contents

This scenario describes how to list the contents of the specified directory in the default configuration of the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- If an entry for the default directory name does exist in the configuration, the user is not prompted for the directory name. The contents of the configured directory are automatically listed. (<directory-name> may be the path name with respect to the ftp root.)
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message as follows:</p> <p>Connected</p> <p>The contents of the configured directory are listed.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p> <p>Note: If the -p option is specified in the command, the data connection will be in passive mode</p>
Configuration	set FTP machine <ip-address/host-name> login <user-name> password <passwd> account <passwd> set ftp directory <directory-name>
Command	ftp -l [-d <directory>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 5 - Listing Directory Contents

This scenario describes how to list the contents of the directory specified in the command line:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- User can specify the directory name in the command line using the **-d** option. Command line parameters are given higher preference and hence this overrides the configuration for default directory name.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message as follows:</p> <p>Connected</p> <p>The contents of the specified directory are listed.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p> <p>Note: If the -p option is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd>
Command	ftp -l [-d <directory>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 6 - Listing Directory Contents

This scenario describes how to list the contents of the specified directory of the FTP server:

- With Automatic Authentication enabled by specifying a few authentication details: IP address of the device and a valid login name.
- When the user does not specify the directory name in the command line with the **-d** option, and an entry for the default directory name does not exist in the configuration, the user is prompted for the directory name. (Setting the default configuration is explained in the later section)
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If the user is a valid user, the host device is prompted to enter Password as shown here:</p> <p>Password: *** <CR></p> <p>If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter the <i>remote directory</i>, the contents of which are then displayed as follows:</p> <p>Connected</p> <p>Remote directory: <CR> or <Directory-Path></p> <p>If the Host simply enters <CR> without specifying the directory, then the contents of the present working directory are listed. If the complete path of the directory is given, then the contents of that directory are listed.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p> <p>Note: If the -p option is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name>
Command	ftp -l [-d <directory>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 7 - Listing Directory Contents

This scenario describes how to list the contents of the specified directory in the default configuration of the FTP server:

- With Automatic Authentication enabled by specifying a few authentication details: IP address of the device and a valid login name.
- If an entry for the default directory name does exist in the configuration, the user is not prompted for the directory name. The contents of the configured directory are automatically listed. (<directory-name> may be the path name with respect to the ftp root.)
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If the user is a valid user, the host device is prompted to enter Password as shown here:</p> <p> Password: *** <CR></p> <p>If successfully logged in, the SocketEthernet IP sends a message as follows:</p> <p> Connected</p> <p>The contents of the specified directory are listed.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	<pre>set ftp machine <ip-address/host-name> login <user-name> set ftp directory <directory-name></pre>
Command	<code>ftp -l [-d <directory>] [-p] <ip-address/host-name></code>
Result Response	OK: FTP session closed

Scenario 8 - Listing Directory Contents

This scenario describes how to list the contents of the directory specified in the command line:

- With Automatic Authentication enabled by specifying a few authentication details: IP address of the device and a valid login name.
- User can specify the directory name in the command line using the '-d' option. Command line parameters are given higher preference and hence this overrides the configuration for default directory name.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If the user is a valid user, the host device is prompted to enter Password as shown here:</p> <p> Password: *** <CR></p> <p>If successfully logged in, the SocketEthernet IP sends a message as follows:</p> <p> Connected</p> <p>The contents of the specified directory are listed.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'ASCII' to receive the list of contents of the directory.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	<code>set ftp machine <ip-address/host-name> login <user-name></code>
Command	<code>ftp -l [-d <directory>] [-p] <ip-address/host-name></code>
Result Response	OK: FTP session closed

Scenario 9 - Sending a File to the FTP Server

This scenario describes how to send a file to the FTP server:

- Without Automatic Authentication (default).
- When the user does not specify the file name in the command line with the **-n** option, and an entry for the default file name does not exist in the configuration, the user is prompted for the file name.
- Similarly user can avoid the prompting for file size by specifying file size with **-s** option in the command line.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection to the specified FTP server and prompts the host device to enter the login name and password as shown here:</p> <pre>Name (ip-address:admin): mtss <CR> Password: **** <CR></pre> <p>If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter Filename and Filesize and sends a message as shown here:</p> <pre>Connected Filename: filename <CR> Filesize: filesize <CR> Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer ----</pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	None
Command	ftp -t [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 10 - Sending a File to the FTP Server

This scenario describes how to send a file to the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- When you do not specify the file name in the command line with **-n**, and an entry for the default file name does not exist in the configuration, you are prompted for the file name.
- Similarly, you can avoid the prompting for file size by specifying file size with **-s** in the command line.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message and prompts the host device to enter Filename, Filesize, and then it sends a message as shown here:</p> <pre>Connected Filename: filename <CR> Filesize: filesize <CR> Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer ----</pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd>
Command	ftp -t [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 11 - Sending a File to the FTP Server

This scenario describes how to send a file to the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- If an entry for the default file name does exist in the configuration, you are not prompted for the file name. If the directory is also configured using set command, the directory-name is appended to the filename. The same is true for file size too (<directory-name/file-name> may be the path name with respect to the ftp root).
Note: If either filename or filesize are not configured, the SocketEthernet prompts for that parameter.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message and prompts for data as shown here:</p> <pre>Connected Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer -----</pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	<pre>set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd> set ftp filename <file-name> set ftp filesize <file-size> set ftp directory <directory-name></pre>
Command	<code>ftp -t [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name></code>
Result Response	OK: FTP session closed

Scenario 12 - Sending a File to the FTP Server

This scenario describes how to send a file to the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- User can specify the file name and file size in the command line using '-n' and '-s' respectively. Command line parameters are given higher preference; and, hence, this overrides the configuration for default file name and size.


```
ftp -t -n <file-name> <ip-address/hostname>
OR
ftp -t -s <filesize> <ip-address/hostname>
OR
ftp -t -n <file-name> -s <filesize> <ip-address/hostname>
```

Notes:

1. If either filename or filesize are not configured, SocketEthernet prompts for that parameter.
2. User can write to a specific directory in the remote host by giving the pathname in the <file-name> parameter in the command line.
3. Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message and prompts for data as shown here:</p> <pre>Connected Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer -----</pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	<pre>set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd></pre>
Command	<code>ftp -t [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name></code>
Result Response	OK: FTP session closed

Scenario 13 - Sending a File to the FTP Server

This scenario describes how to send a file to the FTP server:

- With Automatic Authentication enabled by specifying a few authentication details: IP address of the device and valid login name.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes the control connection to the specified FTP server, automatically checks for the configured values, and logs into the FTP server. If the user is valid, the SocketEthernet IP prompts the host device to enter the Password as below:</p> <p> Password: **** <CR></p> <p>If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter Filename and Filesize and sends a message as shown here:</p> <p> Connected Filename: filename <CR> Filesize: filesize <CR> Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer ----</p> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name>
Command	ftp -t [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 14 – Appending to a File in the FTP Server

This scenario describes how to send a file to the FTP server:

- Without Automatic Authentication (default).
- When the user does not specify the file name in the command line with the -n option, and an entry for the default file name does not exist in the configuration, the user is prompted for the file name.
- Similarly user can avoid the prompting for file size by specifying file size with -s option in the command line.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection to the specified FTP server and prompts the host device to enter the login name and password as shown here:</p> <p> Name (ip-address:admin): mtss <CR> Password: **** <CR></p> <p>If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter Filename and Filesize and sends a message as shown here:</p> <p> Connected Filename: filename <CR> Filesize: filesize <CR> Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer ----</p> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	None
Command	ftp -a [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 15 – Appending to a File in the FTP Server

This scenario describes how to send a file to the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- When the user does not specify the file name in the command line with the **-n** option, and an entry for the default file name does not exist in the configuration, the user is prompted for the file name.
- Similarly user can avoid the prompting for file size by specifying file size with **-s** option in the command line.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message and prompts the host device to enter Filename, Filesize, and then it sends a message as shown here:</p> <pre> Connected Filename: filename <CR> Filesize: filesize <CR> Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer ----- </pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd>
Command	ftp -a [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 16 - Appending to a File in the FTP Server

This scenario describes how to send a file to the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- If an entry for the default file name does exist in the configuration, the user is not prompted for the file name. If the directory is also configured using set command, the directory-name is appended to the filename. The same is true for file size too (<directory-name/file-name> may be the path name with respect to the ftp root).
- **Note: If either filename or filesize are not configured, SocketEthernet prompts for that parameter.**
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message and prompts for data as shown here:</p> <pre> Connected Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer ----- </pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd> set ftp filename <file-name> set ftp filesize <file-size> set ftp directory <directory-name>
Command	ftp -a [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 17 - Appending to a File in the FTP Server

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password..
- User can specify the file name and file size in the command line using the **-n** and **-s** options respectively. Command line parameters are given higher preference and hence this overrides the configuration for default file name and size

```
ftp -a -n <file-name> <ip-address/hostname>
OR
ftp -a -s <filesize> <ip-address/hostname>
OR
ftp -a -n <file-name> -s <filesize> <ip-address/hostname>
```

Notes:

1. If either filename or filesize are not configured, SocketEthernet prompts for that parameter.
2. User can write to a specific directory in the remote host by giving the pathname in the <file-name> parameter in the command line.
3. Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, it sends a message and prompts for data as shown here:</p> <pre>Connected Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer -----</pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd>
Command	ftp -a [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 18 - Appending to a File in the FTP Server

This scenario describes how to send a file to the FTP server:

- With Automatic Authentication enabled by specifying a few authentication details: IP address of the device and valid login name..
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes the control connection to the specified FTP server, automatically checks for the configured values, and logs into the FTP server. If the user is valid, the SocketEthernet IP prompts the host device to enter the Password as below:</p> <pre>Password: **** <CR></pre> <p>If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter Filename and Filesize and sends a message as shown here:</p> <pre>Connected Filename: filename <CR> Filesize: filesize <CR> Enter data. Enter ^C^D^Z with 3 seconds delay to abort session ----- File Transfer -----</pre> <p>When the specified filesize is reached, the FTP session responds with the OK message. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name>
Command	ftp -a [-n <filename>] [-s <filesize>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 19 - Receiving a File from the FTP Server

This scenario describes the receiving of a file from the FTP server:

- Without Automatic Authentication (default).
- When the user does not specify the file name in the command line with the **-n** option, and an entry for the default file name does not exist in the configuration, the user is prompted for the file name.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection to the specified FTP server and prompts the host device to enter the login name and password as shown here:</p> <pre>Name (ip-address:admin): mtss <CR> Password: **** <CR></pre> <p>If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter Filename and sends a message as shown here:</p> <pre>Connected Filename: filename <CR> size = <filesize from server> Press <CR> to receive file <CR> ----- File Transfer -----</pre> <p>When the complete file is received, the FTP session responds with OK.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	None
Command	ftp -r [-d <directory>] [-n <filename>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 20 - Receiving a File from the FTP Server

This scenario describes the receiving of a file from the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- When the user does not specify the file name in the command line with the **-n** option, and an entry for the default file name does not exist in the configuration, the user is prompted for the file name.
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter the Filename, and then it sends a message as shown here:</p> <pre>Connected Filename: filename <CR> size = <filesize from server> Press <CR> to receive file <CR> ----- File Transfer -----</pre> <p>When the complete file is received, the FTP session responds with OK.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd>
Command	ftp -r [-d <directory>] [-n <filename>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

Scenario 21 - Receiving a File from the FTP Server

This scenario describes the receiving of a file from the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- If an entry for the default file name does exist in the configuration, the user is not prompted for the file name. If the directory is also configured using set command, the directory-name is appended to the filename. (<directory-name/file-name> may be the path name with respect to the ftp root.)
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, the SocketEthernet IP sends a message as shown here:</p> <pre> Connected size = <filesize from server> Press <CR> to receive file <CR> ----- File Transfer ---- When the complete file is received, the FTP session responds with OK. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer. Note: If the '-p' option is specified in the command, the data connection will be in passive mode </pre>
Configuration	<pre> set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd> set ftp filename <file-name> set ftp directory <directory-name> </pre>
Command	<code>ftp -r [-d <directory>] [-n <filename>] [-p] <ip-address/host-name></code>
Result Response	OK: FTP session closed

Scenario 22 - Receiving a File from the FTP Server

This scenario describes the receiving of a file from the FTP server:

- With Automatic Authentication enabled by specifying all authentication details: IP address of the device, valid login name, valid password, and valid account password.
- Specifying filename and Directory name in the command line with **-n** and **-d** options respectively (<directory-name/file-name> may be the path name with respect to the ftp root).
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection, automatically checks for the configured values, and logs into the FTP server. If successfully logged in, the SocketEthernet IP sends a message as shown here:</p> <pre> Connected size = <filesize from server> Press <CR> to receive file <CR> ----- File Transfer ---- When the complete file is received, the FTP session responds with OK. By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer. Note: If '-p' is specified in the command, the data connection will be in passive mode </pre>
Configuration	<pre> set ftp machine <ip-address/host-name> login <user-name> password <passwd> account <passwd> </pre>
Command	<code>ftp -r [-d <directory>] [-n <filename>] [-p] <ip-address/host-name></code>
Result Response	OK: FTP session closed

Scenario 23 - Receiving a File from the FTP Server

This scenario describes the receiving of a file from the FTP server:

- With Automatic Authentication enabled by specifying a few authentication details: IP address of the device and a valid login name
- Data connection in ACTIVE mode.

Description	<p>The SocketEthernet IP establishes a control connection to the specified FTP server, automatically checks for the configured values, and logs into the FTP server. If the user is a valid user, the SocketEthernet IP prompts the host device to enter the Password shown here:</p> <p> Password: **** <CR></p> <p>If successfully logged in, the SocketEthernet IP sends a message and prompts the host device to enter a Filename, and then it sends a message as below:</p> <p> Connected Filename: filename <CR> size = <filesize from server> Press <CR> to receive file <CR></p> <p> ----- File Transfer -----</p> <p>When the complete file is received, the FTP session responds with OK.</p> <p>By default the data connection is in active mode. The client sets the data transfer mode as 'BINARY/IMAGE' during the file transfer.</p> <p>Note: If '-p' is specified in the command, the data connection will be in passive mode</p>
Configuration	set ftp machine <ip-address/host-name> login <user-name>
Command	ftp -r [-d <directory>] [-n <filename>] [-p] <ip-address/host-name>
Result Response	OK: FTP session closed

How to Close or Abort the FTP Session

The host can abort the FTP session by issuing **Ctrl+C** at any given time.

How to Abort a File Transfer Session

The host can abort the file transfer by issuing **Ctrl+C**, **Ctrl+D**, **Ctrl+Z** with a delay of 3 seconds. The file into which data was written will be deleted by the client, and the data connection will be closed.

Note About Read and Store

The serial device has to read and store the data received. It has to implement timeout mechanisms to come out in cases where the network is prone to errors.

Appendix E – SNTP Client

Introduction

SNTP Client is used to synchronize timekeeping among a set of distributed time servers and clients. It is built on the IP and UDP, which provide a connectionless transport mechanism.

Features

- Supports SNTP client built on UDP (port 123) to update the local time after booting and at periodic intervals.
- Supports to set Standard Name of Time Zone.
- Supports to set offset from UTC.
- Supports Daylight savings feature.
- Supports the configuration of Offset During Daylight Savings, Start of Daylight Savings Time, and End of Daylight Savings Time.

Command to Enable/Disable SNTP Client

The host/serial device can use the command below to enable/disable the SNTP client.

```
# set sntp-client <enable/disable>
```

Prerequisites

Mandatory Prerequisites: The following details are **mandatory** configuration and have to be validated before starting SNTP client:

- Set NTP server name or IP address.
set sntp-client ntp-server-name <ipaddress>
- Set the time-zone (Default is UTC).
set sntp-client time-zone <UTC>
- Set the time zone offset to be added
set sntp-client time-zone-offset <+00:00>
- Set the polling time.
set sntp-client polling-time <300>

ERROR Message

The *set sntp-client* command prompts for the ERROR message if any of the above details are not configured or not valid.

Optional Prerequisites: The following configurations are **optional** and can be used when you want the host device to enable daylight savings mode.

- Enable Daylight Savings Mode.
set sntp-client daylight-saving <enable>
- Set the Daylight Savings Offset value.
set sntp-client daylight-saving offset <+60>
- Set the Start Ordinal/week for Daylight Savings.
set sntp-client daylight-saving start-ordinal <First>
- Set the Start Weekday for Daylight Savings.
set sntp-client daylight-saving start-weekday <sunday>
- Set the Start Month for Daylight Savings.
set sntp-client daylight-saving start-month <april>
- Set the Start Time for Daylight Savings.
set sntp-client daylight-saving start-time <10:00>
- Set the End Ordinal/ week for Daylight Savings.
set sntp-client daylight-saving end-ordinal <Last>
- Set the End Weekday for Daylight Savings
set sntp-client daylight-saving end-weekday <sunday>
- Set the End Month for Daylight Savings.
set sntp-client daylight-saving end-month <october>
- Set the End Time for Daylight Savings.
set sntp-client daylight-saving end-time <10:00>

Scenario 1 - Updating Time from the NTP Server

This scenario describes the updating of time from the NTP server with Daylight Savings Mode disabled.

Description	The SocketEthernet IP time and date are updated with the time specified by the server and with the time-zone offset added to the time. SNTP client should send periodic requests to the server for the time update function depending on the polling time.
Configuration	1. Mandatory configuration.
Command	set snntp-client enable
Result Responses	Use "show date" or "show time" commands to check. Time and Date should be synchronized with the server. OK

Scenario 2 - Updating Time from the NTP Server

This scenario describes the updating of time from the NTP server with Daylight Savings Mode enabled.

Description	The SocketEthernet IP time and date are updated with the time specified by the server and with the daylight offset added to the time if the time falls between start and end configuration. SNTP client should send periodic requests to the server for the time update function depending on the polling time.
Configuration	1. Mandatory configuration. 2. Optional configuration.
Command	set snntp-client enable
Result Responses	Use "show date" or "show time" commands to check. Time and Date should be synchronized with the server. OK

Note:

When the server cannot be reach or is not running, the SNTP client tries to reach the server every 10 seconds for 6 times and waits for the polling time, and then it tries again to reach the server as before.

Appendix F – SNMPv1 Agent

Introduction

SNMP Agent is used to provide facility to configure the applications on the IP Module. It also facilitates the monitor/view functions of the statistics and configuration of various applications running over IP Module. It is built on IP and UDP. Thereby, it provides a connectionless transport mechanism.

Features

- Supports SNMPv1 agent built on UDP (port 161) to respond to requests from SNMP manager.
- Support to provide statistics of IP Module.
- Support to configure the IP Module.
- MIB-II compliant supporting groups like System, Interfaces, IP, ICMP, TCP and UDP.
- Multi-Tech Systems proprietary MIB under enterprise tree with IP Module configuration, status, and statistics objects.

Command to Enable/Disable SNMPv1 Agent

The host/serial device can use the command below to enable/disable the SNMP Agent.

```
# set snmp-agent <enable/disable>
```

Prerequisites

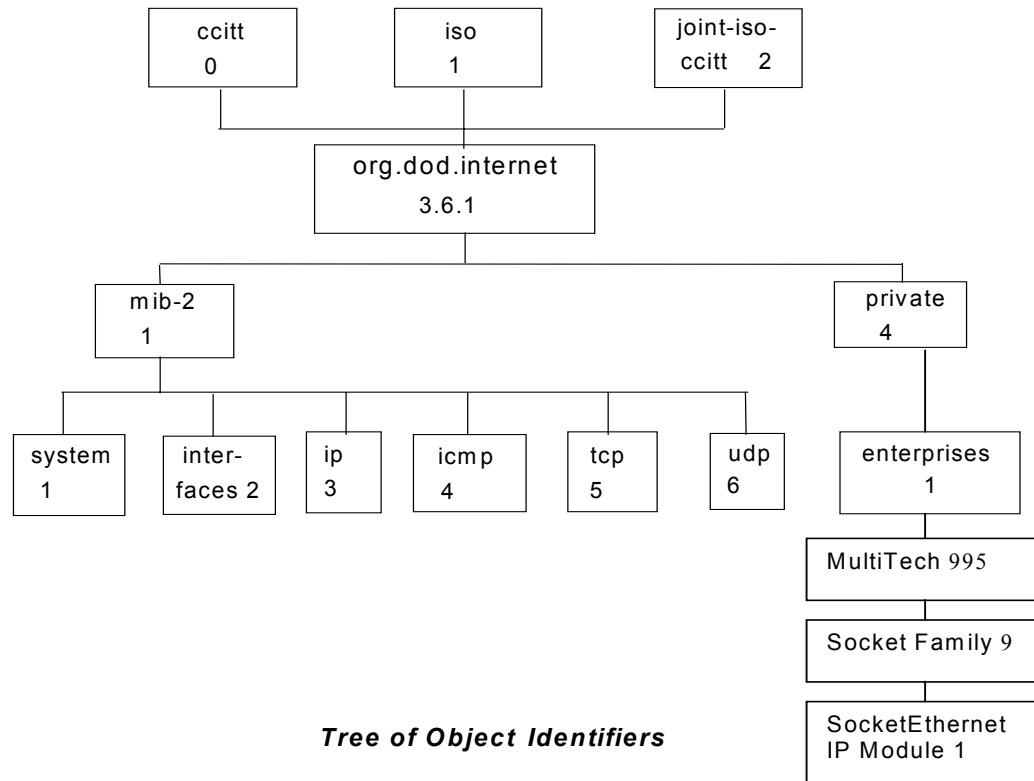
Mandatory Prerequisites: The following details are **mandatory** configuration and have to be validated before starting SNMP Agent:

- The SNMP agent must be enabled.
`set snmp-agent enable`
- It must be configured to run over UDP port 161 or any other configurable port.
`set snmp-agent port <port-number>`
- The community string is “public” by default.
`set snmp-agent community <string>`

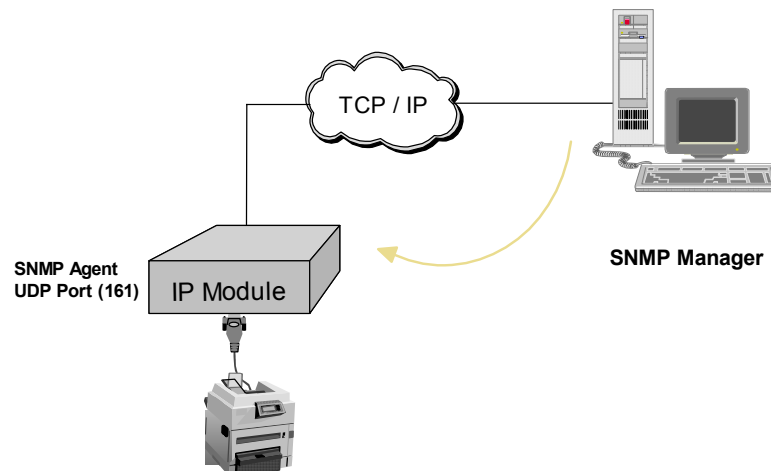
ERROR Message

The `set snmp-agent` command prompts for the ERROR message if any of the above details are not configured or not valid.

Management Information Base



Note: Refer to seip.mib for the complete MIB structure and Object Identifiers for each parameter



Scenario 1 – Getting Information about MIB-II Groups

This scenario describes how the SNMP manager can get information about the groups supporting MIB-II from the MIB-II Compliant SNMP Agent of a particular Object Identifier (OID).

When the Manager wants to get the contents of a variable, it issues a GET Request to an Agent to obtain the value. The Request packet has to specify the interface where the agent is listening along with the community string to identify itself (manager) to the agent. Also, it has to specify the Object ID of the variable to get its contents.

Upon receiving the GET Request from the Manager, the agent validates the interface, community string and identifies the manager. It validates the specified Object Identifier of the variable from MIB. Then it gets the contents of the requested variable and sends it as a GET Response along with the error status and the same Object ID.

Description	The SocketEthernet IP should send the value of the requested OID. These Objects belong to the MIB-II compliant supporting groups like system, interfaces, IP, ICMP, TCP and UDP respectively.
Configuration	1. Mandatory configuration.
Command	SNMP GET REQUEST OID
Result Responses	To get the information of the groups supporting MIB-II with a particular Object Identifier.

Scenario 2 – Getting Information about IP Module Enterprise-Specific MIBs

This scenario describes how the SNMP manager can get the information about enterprise-specific MIBs of the IP Module from the SNMP Agent with a particular Object Identifier (OID).

Description	The SocketEthernet IP should send the value of the requested OID. These Objects belong to the enterprise-specific MIB of the IP Module.
Configuration	1. Mandatory configuration.
Command	SNMP GET REQUEST OID
Result Responses	To get the information about the enterprise-specific MIB with a particular Object Identifier.

Scenario 3 – Getting Information from IP Module Using GETNEXT

This scenario describes how the SNMP manager can get information about the MIB groups supported by the IP Module from the SNMP Agent with a particular Object Identifier (OID).

With the Object ID returned in the GET/SET Response packet, the Manager can issue a GET-NEXT request to get the value of next object in the lexicographical sequence.

Upon receiving the GET-NEXT Request from the Manager, it validates the Manager as above and sends the parameter value as a GET Response along with the error status and the next Object ID in the lexicographical sequence as per MIB.

Description	The SocketEthernet IP should send the next available information of the groups supporting MIB-II with a particular Object Identifier. It should also support the snmp-walk feature of the SNMP Manager.
Configuration	1. Mandatory configuration.
Command	SNMP GET-NEXT REQUEST OID
Result Responses	To get the next available information of the supporting MIB with a particular Object Identifier.

Scenario 5 – Setting IP Module Parameters

This scenario describes how the SNMP manager can set the values of the enterprise-specific MIB of the IP Module through the SNMP Agent, with a particular Object Identifier (OID).

When the Manager wants to set the contents of a variable, it issues a SET Request to an Agent. The Request packet has to specify the interface where the agent is listening along with the community string to identify itself (manager) to the agent. Also, it has to specify the Object ID of the variable, type, and value.

Upon receiving the SET Request from the Manager, it validates the Manager as above and sends a SET Response with the error status and the same Object ID.

Description	The SocketEthernet IP should set the value of the parameter corresponding to the Object Identifier.
Configuration	1. Mandatory configuration.
Command	SNMP SET REQUEST OID
Result Responses	To set the value of the enterprise-specific MIB through a particular Object Identifier. If the requested OID is Read-Only then the agent should respond with an error message

Appendix G – Raw TCP/UDP Socket Interface to the Serial Device

Introduction

The serial/host device can use the IP Module Raw TCP or UDP socket interface to work with multiple servers with proprietary protocols between the device and the remote servers.

Features

- Opens RAW TCP sockets and establishes TCP sessions to any TCP server running on any port.
- Opens, connects, and binds UDP sockets.
- Opens a TCP listen socket on any configured port.
- Maintains the socket status and sessions and lists the socket status upon request from the device.
- Closes the specified socket or all the sockets, which was/were opened previously.
- Transmits or receives data of a specified size on any previously opened socket.
- Flushes data in the socket buffer of any previously opened socket at any time.
- Supports multiple TCP sockets, UDP sockets, TCP listen sockets respectively.

Commands to Access the RAW TCP and UDP Socket Interface

The host/serial device can use the following commands to work on the sockets to send/ receive data to/from a remote server depending on the requirements.

Syntax

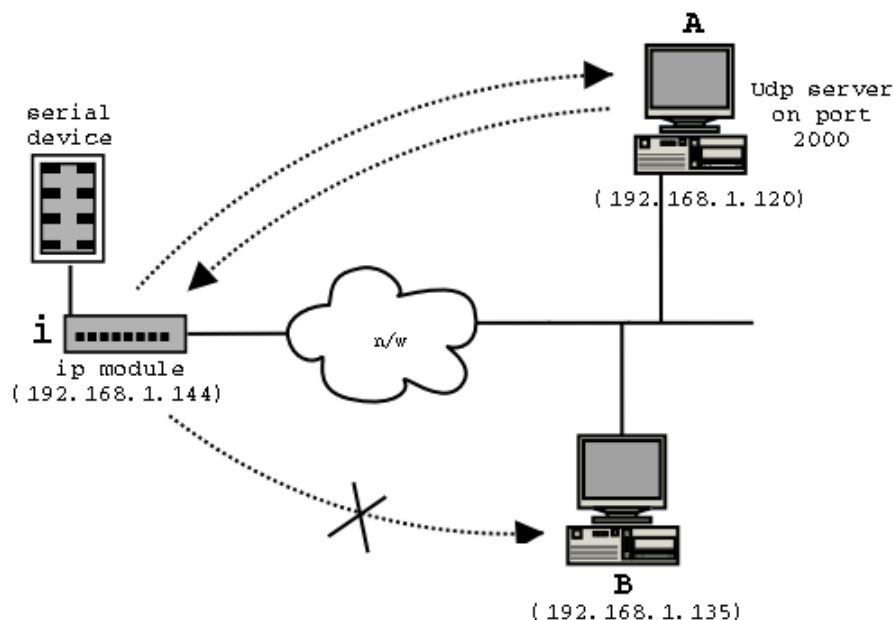
```
socket close <socket-handle>
socket closeall
socket flush <socket-handle>
socket flushall
socket listall [-s] [-d]
socket listlisten [-s] [-d]
socket recv [-s <max-size>] <socket-handle>
socket send <[-s <max-size>] [-d <delim>]> [-m <MTU>] <socket-handle>
socket stat [-s] [-d]
socket tcp <remote-ip> <remote-port>
socket tcplisten <local-port> [backlog]
socket udp <remote-ip> <remote-port> <local-port>
```

Scenario 1 – Setting up UDP Sessions and IP Module Acting as Client

Create a UDP socket on the IP Module and connect to a UDP socket on a remote host. Once created, the socket can be used to send data to and receive data from only this particular remote host. **Command**

```
socket udp <remote_ip> <remote_port> [local_port]
```

<remote_ip> and <remote_port> are ip address of the machine running a UDP socket and port number to which the socket is bound to respectively.



Example:

To connect to the UDP socket on host **A** from IP Module **i**.

Create UDP socket (local port is optional)

```
#socket udp 192.168.1.120 2000
```

```
<4>
```

```
OK
```

```
#
```

You can use the returned socket handle to send and receive data

```
#socket send -d $ 4
```

```
Enter data- ('$' to terminate)
```

```
--- 5 bytes sent ---
```

```
OK
```

```
#socket rcv 4
```

```
hello
```

```
---5 bytes received---
```

```
OK
```

```
#
```

Multiple UDP Sessions

Since a UDP socket can be used to connect to only a single remote host, for every new connection a new socket has to be created using the command **socket udp <remote_ip> <remote_port>**.

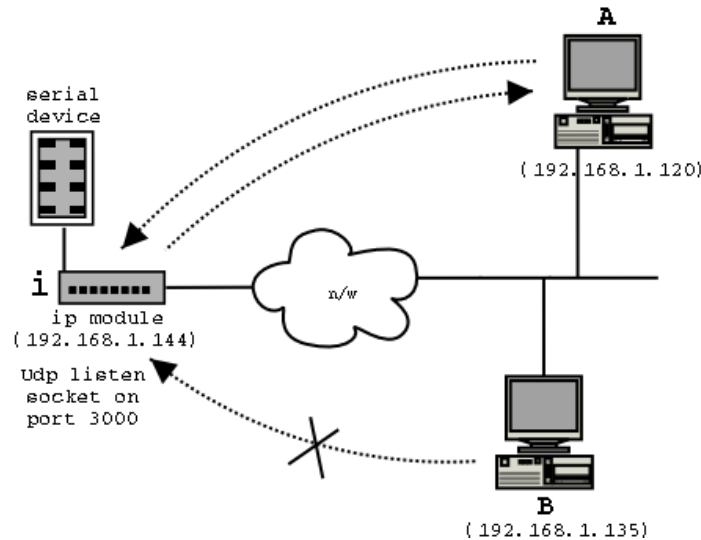
Scenario 2 – Setting up UDP Sessions and IP Module Acting as Server

Start a Listen Socket in the IP Module and wait for incoming requests to connect. In this case, the socket will latch on to the first client from which the data is read from and can further be used to send data to and receive data from only that client.

Command

```
socket udp 0.0.0.0 0 <local_port>
```

The <remote_ip> and <remote_port> parameters are specified as 0.0.0.0 and 0 respectively for a udp listen socket. The <local_port> parameter is mandatory for listen socket.



Example

Start a UDP listen socket on ip-module *i*.

```
#socket udp 0.0.0.0 0 3000
<4>
OK
#socket listall
No TCP connect sockets
No TCP listen sockets
UDP sockets
SockHandle SockType RemoteIP RemotePort LocalIP LocalPort
4 UDP listen 0.0.0.0 0 192.168.1.144 3000
OK
#
```

Now, when *i* receives data from *A*, the UDP socket <4> latches itself to *A*.

```
#socket rcv 4
data
--- 4 bytes read ---
OK
#socket listall
No TCP connect sockets
No TCP listen sockets
UDP sockets
SockHandle SockType RemoteIP RemotePort LocalIP LocalPort
4 UDP socket 192.168.1.120 2000 192.168.1.144 3000
OK
#
```

Any further send on socket <4> will result in sending data to *A*.

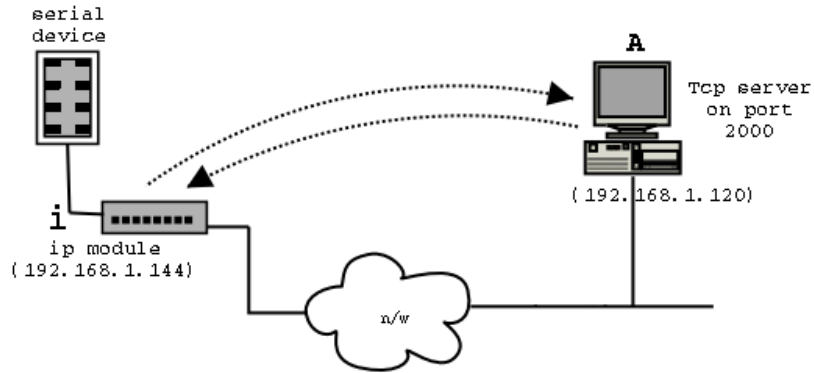
If *B* sends data to *i* on port 3000, socket <4> will not accept it, since it is latched to *A* and is listening only to *A*. Thus, in order to receive data from or send data to *B*, you'll have to create another UDP listen socket on a different port number.

Scenario 3 – Setting up TCP Sessions and IP Module Acting as Client

Create a TCP socket and connect to a TCP server on the network with the following command. Upon successful connection, a socket handle is returned.

Command

```
socket tcp <remote_ip> <remote_port>
```



Example

TCP server running on machine A on port 2000.

```
#socket tcp 192.168.1.120 2000
<4>
OK
#
```

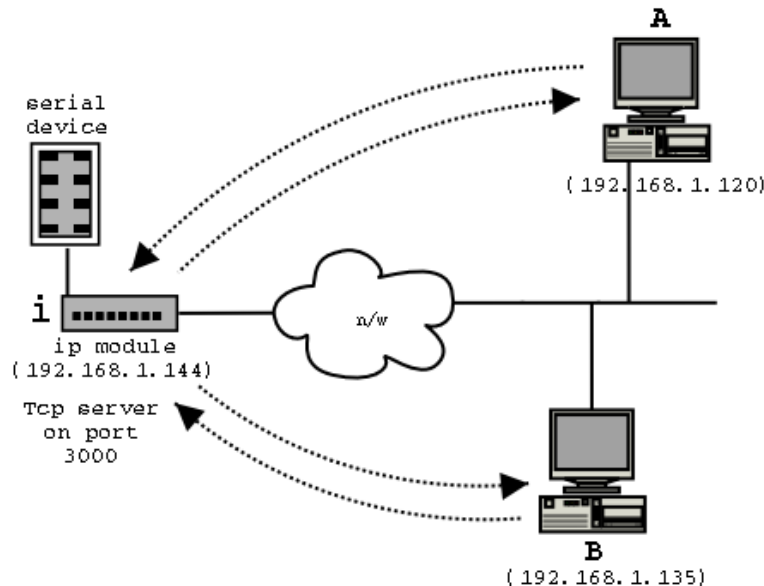
Send and recv commands can be used on the returned socket handle to send and receive data to and from A.

Scenario 4 – Setting up TCP Sessions and IP Module Acting as Server

Start a TCP server to keep listening on a particular port. When a connection is accepted from a remote host, a socket handle is created. This can be used to send and receive data to and from that remote host.

Command

```
socket tcp listen <local_port> [backlog]
```



Example

The `tcp listen` command on success returns a server socket handle.

```
#socket tcp listen 3000
Tcp Listen socket handle 4
OK
#
```

This doesn't create any listen sockets. The listen sockets are created when a remote host tries to connect to the IP Module and the connections are accepted by IP Module.

```
#socket listlisten
Tcp Server Handle: 4
Local Port: 3000
Backlog: 10
No TCP listen sockets
OK
#
```

After accepting connections from remote hosts the sockets list is updated.

```
#socket listlisten
Tcp Server Handle: 4
Local Port: 3000
Backlog: 10
SockHandle SockType RemoteIP RemotePort LocalIP LocalPort
5 TCP listen 192.168.1.120 3072 192.168.1.144 3000
OK
#
```

Notes

1. **Tcp listen with backlog** allows you to limit the number of connections to a TCP server by specifying the backlog parameter. By default the backlog is 10.
2. We can issue any socket command any time depending on the requirement.

Appendix H – Serial-to-Ethernet Connectivity Using Serial-Dial-in

Serial-to-Ethernet Connectivity Using the Telnet / UDP Dialin Feature

These examples illustrate serial-to-Ethernet connectivity using the serial dial-in feature. The serial dial-in feature enables the SocketEthernet IP module to act as a telnet client or a UDP client; thus facilitating the serial device to access any telnet/UDP servers on the LAN. Once the session (Serial Client-to-Ethernet Server) is opened successfully, it allows a two-way traffic between the serial device and the remote server.

Telnet Dialin Features

The IP module, acting as a Telnet/RAW-TCP client, accommodates the following features as per the configuration:

- Opens the session using Telnet client (residing at the IP Module) in Telnet Mode or Raw Mode.
- Opens the session to the specified port from the Serial Command prompt (Manual Dial-in).
- Switches between the Command prompt and the Dial-in session when the session is in Telnet mode.
- Opens the session to the configured port directly (Serial Auto Dial-in) whenever the serial port is free.

UDP Dialin Features

The IP module, acting as a UDP client, accommodates the following features as per the configuration:

- Initiates a session using UDP client (residing at the IP Module).
- Switches between the Command prompt and the Dial-in session when the session is in UDP mode if escape-monitor is enabled.
- Opens the session to the configured port directly (Serial Auto Dial-in) whenever the serial port is free.

Prerequisites

Telnet Mandatory Configuration Settings

The following items must be configured in order to use the dial-in feature:

- Enable Auto dial-in globally on all the serial ports.
set serial auto-dialin enable
- Enable Auto dial-in on the serial port s0.
set serial s0 auto-dial-in enable
- Set the Auto dial-in protocol.
set serial s0 auto-dialin-protocol telnet
- Set the Auto dial-in Server IP Address.
set serial s0 auto-dialin-ipaddress <ipaddress>
- Set the port to the one which the telnet client will be connected.
set serial s0 auto-port-port <port_number>

UDP Mandatory Configuration Settings

The following items must be configured in order to use the UDP auto-dial-in feature:

- Enable Auto dial-in globally on all the serial ports.
set serial auto-dialin enable
- Enable Auto dial-in on the serial port s0.
set serial s0 auto-dial-in enable
- Set the Auto dial-in protocol.
set serial s0 auto-dialin-protocol udp
- Set the Auto dial-in Server IP Address.
set serial s0 auto-dialin-ipaddress <ipaddress>
- Set the port to the one which the telnet client will be connected.
set serial s0 auto-port-port <port_number>

Telnet Auto-Dial-in Optional Configuration Settings

The following details are optional configurations:

- Enable/Disable **Switching-between-Dial-in** and the Command Prompt feature.
set serial escape-monitor <enable/disable>
- Set the **Escape-Monitor-String** to switch between Dial-in and Command Prompt sessions.
set serial escape-string "+++inet"
- Set the **Serial Dial-in Trigger** mode. Dictates the criterion for establishing a connection. The options provided are on reception of <char/ dtr/ dtr-char/ none>. Refer the command line configuration section for a detail know how of this command.
set serial s0 auto-dialin trig-mode <char/dtr/dtr-char/none>
- Enable/Disable the **Raw** mode globally for all **Auto-Dial-in** sessions.
set ip telnet raw-mode <enable/disable>
- Enable/Disable the **Raw** mode for **Auto-Dial-in** session on serial port s0.
set serial s0 raw-dial-in <enable/disable>

UDP Auto-Dial-in Optional Configuration Settings

The following details are optional configurations:

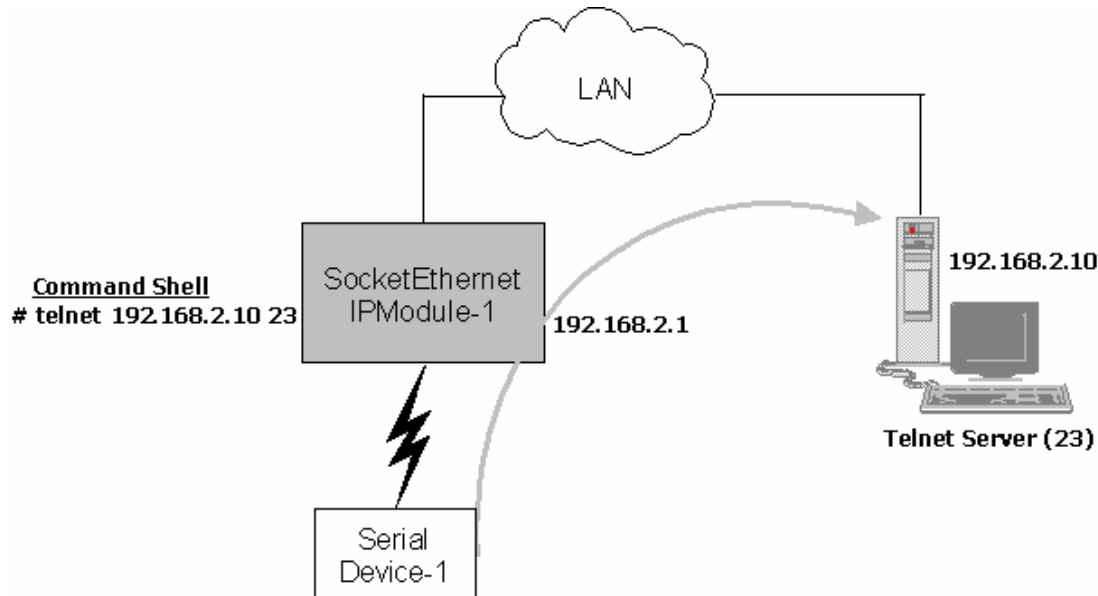
- Enable/Disable **Switching-between-Dial-in** and the Command Prompt feature.
set serial escape-monitor <enable/disable>
- Set the **Escape-Monitor-String** to switch between Dial-in and Command Prompt sessions.
set serial escape-string "+++inet"
- Set the **Serial Dial-in Trigger** mode to dictate the criterion for establishing a connection. The options provided are on reception of <char/ dtr/ dtr-char/ none>. Refer the command line configuration section for a detail know how of this command.
set serial s0 auto-dialin trig-mode <char/dtr/dtr-char/none>

Scenario 1 – Manual Serial Dial-in

Login in to the Command prompt from the serial side.

Invoke **# telnet <ip-address> <port>** at the command prompt. Once the session is opened successfully, there can be two-way traffic between the serial device and the remote server.

- You can switch from Command Prompt to Dial-in session using **restore session** command.
- You can switch from Dial-in session to Command Prompt using **<escape-monitor-string>**.



Manual Dial-in Feature through the Command Shell

Commands to Setup Manual Dial-In in the SocketEthernet IP Module 1

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1

# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Once the above configuration is saved on the SocketEthernet IP Module, login to the module through the serial port. At the command shell invoke:

```
# telnet 192.168.2.10 23
```

The telnet client on board in SocketEthernet IP module establishes a virtual serial tunnel between the serial device and the Telnet Server.

Notes:

- You cannot open more than one dial-in session.
- The dial-in session is closed when the telnet session is closed.
- When **escape-monitor** is enabled, care should be taken during file transfer that the **escape-monitor-string** is not part of the data.
- The manual dial-in is supported for Telnet ONLY and not for UDP.

Scenario 2 – Serial Auto Dial-in

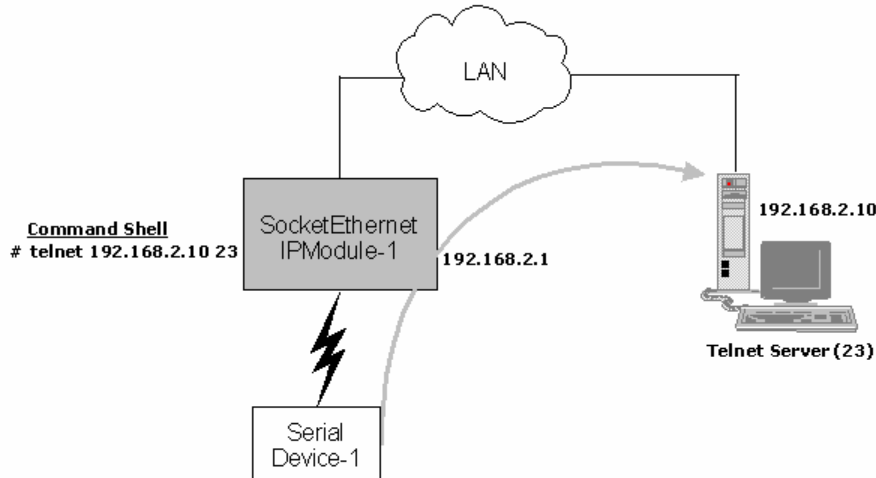
This example shows how to setup a serial auto dial-in session in telnet mode. The auto dial-in session is opened by telnet client embedded in the IP module to the configured server on a configured port.

Once the session is opened successfully, there can be two-way traffic between the serial device and the remote server.

- You can switch from Command Prompt to Dial-in session using the **restore session** command.
- You can switch from Dial-in session to Command Prompt using **<escape-monitor-string>**.

Prerequisites

- Raw mode (Global and each port) **MUST BE DISABLED** using the above-mentioned optional commands.



Auto Dial-in Feature in Telnet Mode

Commands to Setup Auto Dial-In in Telnet Mode for the SocketEthernet IP Module 1

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1

# set serial auto-dialin enable
# set serial s0 auto-dialin enable
# set serial s0 auto-dialin trig-mode dtr-char
# set serial s0 auto-dialin-ipaddress 192.168.2.10
# set serial s0 auto-dialin-port 23
# set serial s0 auto-dialin-protocol telnet

# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

When detecting either a **DTR signal (or) any character** received from the serial device connected to the serial port of SocketEthernet IP module, the Telnet client on board in the SocketEthernet IP module establishes a telnet session to 192.168.2.10 on port 23.

The serial tunnel between the serial device and the Telnet Server terminates in one of the following conditions.

- A physical disconnection of the serial device from the serial port of SocketEthernet IP module.
- The Telnet Client on board is terminated.
- The Telnet Server terminates the session.

Notes:

1. You cannot open more than one Dial-in session.
2. The Dial-in session is closed when the configuration session is closed (if opened).
3. When **escape-monitor** is enabled, care should be taken during file transfer that the **escape-monitor-string** is not part of the data.

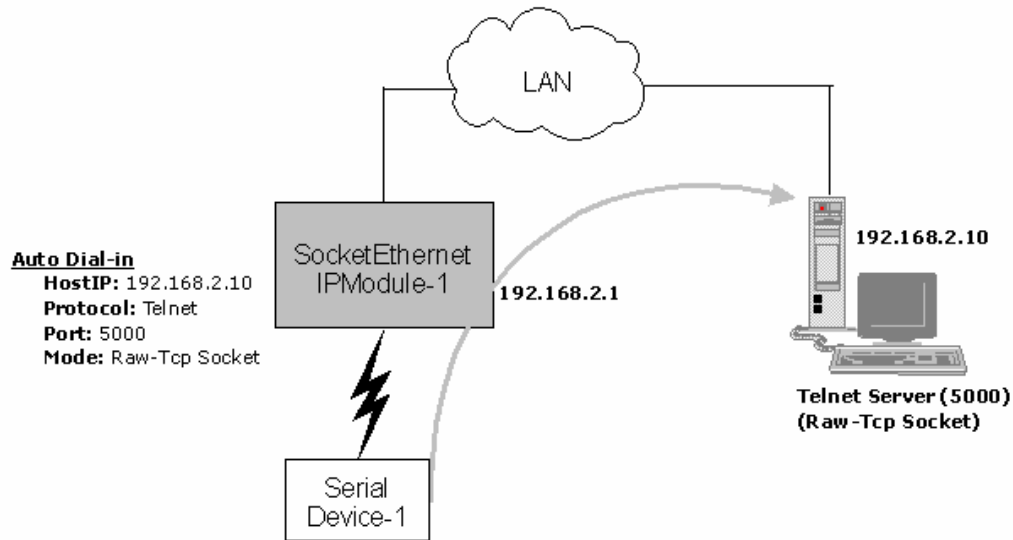
Scenario 3 – Serial Auto Dial-in Session in RAW Mode

This scenario shows how to configure a serial auto dial-in session in RAW mode.

Prerequisites

RAW mode (Global and each port) **MUST BE ENABLED** using the above-mentioned optional commands. The auto dial-in session is opened by Telnet client (embedded in the IP module) in **Raw-mode** to the configured server on a configured port number. Once the session is opened successfully, there can be two-way traffic between the serial device and the remote server.

Important – You cannot switch between Command Prompt and Dial-in session in Raw-mode.



Auto Dial-in Feature in RAW Mode

Commands to Setup Auto Dial-In in RAW Mode for the SocketEthernet IP Module 1

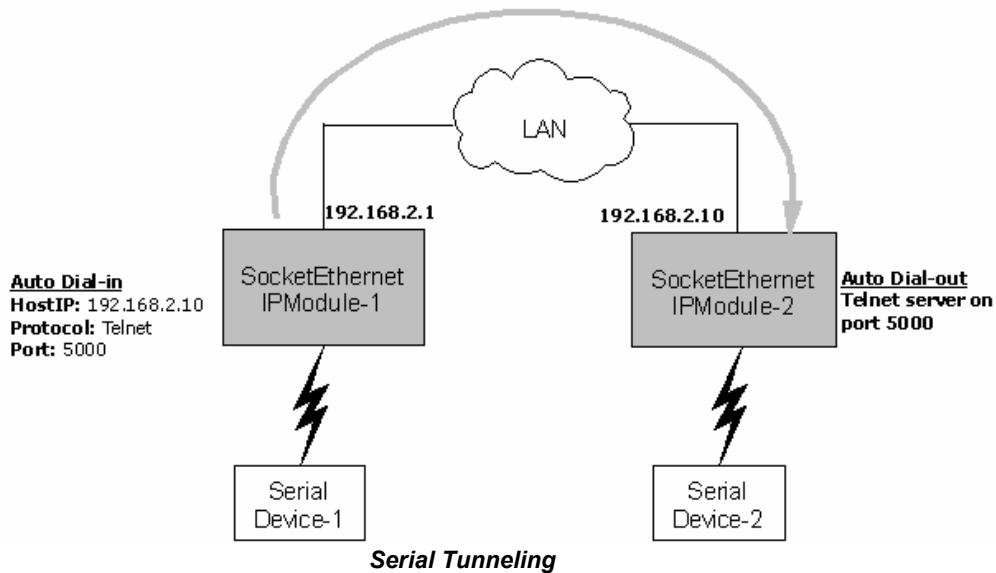
```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1
# set ip telnet raw-mode enable
# set serial auto-dialin enable
# set serial s0 raw-dialin enable
# set serial s0 auto-dialin enable
# set serial s0 auto-dialin trig-mode dtr-char
# set serial s0 auto-dialin-ipaddress 192.168.2.10
# set serial s0 auto-dialin-port 23
# set serial s0 auto-dialin-protocol telnet
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Notes:

1. The user cannot open more than one Dial-in session.
2. You cannot switch between Command Prompt and Dial-in session in case of RAW mode.

Scenario 4 – Serial Tunneling Mode

The scenario shows a serial tunnel established between two serial devices (Serial Device-1, Serial Device-2) using SocketEthernet IP modules, which are geographically located apart.



Commands to Setup Serial Tunneling Feature using two SocketEthernet IP Modules and Commands for SocketEthernet IP Module-1 (Configure for Serial Auto Dial-in).

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1
# set ip telnet raw-mode enable

# set serial auto-dialin enable
# set serial s0 raw-dialin enable
# set serial s0 auto-dialin enable
# set serial s0 auto-dialin trig-mode none
# set serial s0 auto-dialin-ipaddress 192.168.2.10
# set serial s0 auto-dialin-port 23
# set serial s0 auto-dialin-protocol telnet

# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Commands for SocketEthernet IP Module-2 (Configure for Telnet Auto Dial-out)

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.10
# set ip auto-dialout enable
# set ip telnet raw-mode enable

# set serial s0 auto-dialout enable
# set serial s0 auto-dialout-port 5000
# set serial s0 auto-dialout-protocol telnet
# set serial s0 raw-dialout enable

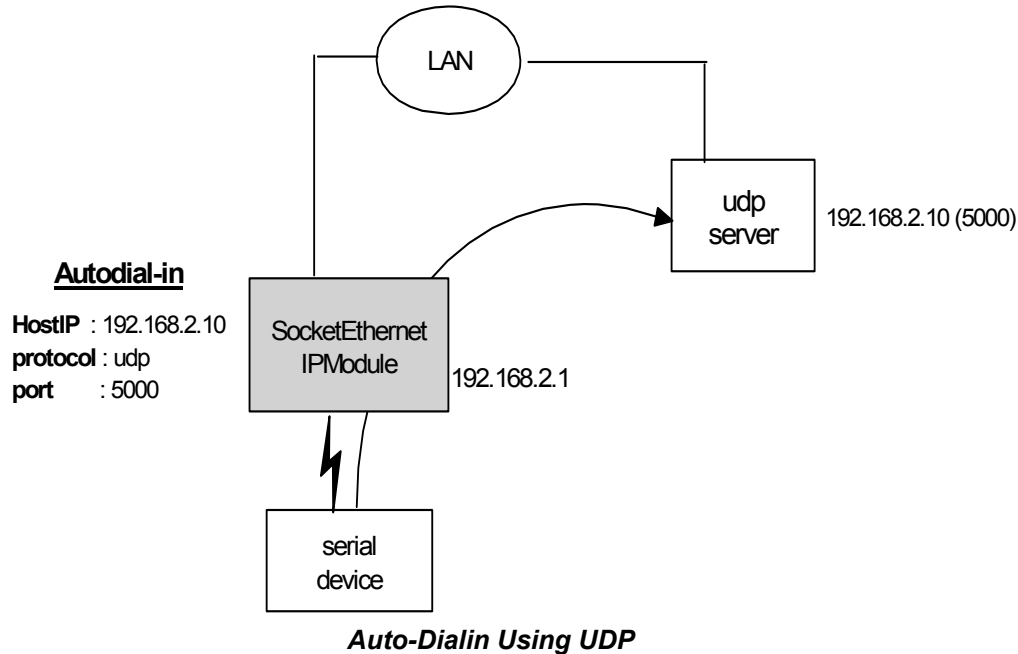
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Scenario 5 – Serial Auto Dial-in Using UDP

This example shows how to setup a serial auto dial-in session in UDP mode. The auto dial-in session is opened by the UDP client embedded in the IP module to the configured server on a configured port.

Once the session is opened successfully, there can be two-way traffic between the serial device and the remote server.

- You can switch from Command Prompt to Dial-in session using the **restore session** command.
- You can switch from Dial-in session to Command Prompt using **<escape-monitor-string>**.



Commands to Setup UDP Auto-dialin for the SocketEthernet IP Module

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1
# set serial auto-dialin enable
# set serial s0 auto-dialin enable
# set serial s0 auto-dialin trig-mode dtr-char
# set serial s0 auto-dialin-ipaddress 192.168.2.10
# set serial s0 auto-dialin-port 23
# set serial s0 auto-dialin-protocol udp
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Functionality

After booting, the SocketEthernet IP Module initiates a UDP Auto-dialin session to the configured server, depending on the configured Auto-dialin trig mode settings.

1. **dtr**: Upon detecting DTR on the serial port S0, it initiates the UDP session.
2. **char**: Upon entering any character, it initiates the session. (Login string is associated with this mode, so we need to enter the login string if it is not NULL to initiate the session).
3. **dtr-char**: Either of the above cases.
4. **none**: No dependency, the module initiates the session as soon as it boots up.

Notes:

1. More than one Dial-in session cannot be opened at a time.
2. No Authentication support.
3. When, escape-monitor is enabled, care should be taken during data transfer for Escape string occurrence in the data.
4. Raw mode is not applicable.

Appendix I – Serial-to-Ethernet Connectivity Using Dialout

Introduction

Serial-to-Ethernet Connectivity Using the Telnet / UDP Dialout Feature

This is an example of a Telnet or UDP client on an Ethernet network connecting to a remote serial device. The IP module acts as a Terminal Server using the Telnet or UDP dialout feature. This feature allows you to access the serial port and establish two-way traffic between the telnet/Raw-TCP/UDP client and the serial device.

Telnet Dialout Features

The SocketEthernet IP Module, acting as a Terminal Server, accommodates the following features:

- Authenticates the serial port.
- Monitors and waits for activity on the standard telnet port (23) or user-defined RAW-Socket.
- Opens the serial port from the command prompt (manual dialout).
- Opens the serial port directly (auto dialout) using a TCP Client according to the configured port-number.
- Switches between the command prompt and a dial-out session when the session is in Telnet mode.

UDP Dialout Features

The SocketEthernet IP Module, acting as a Terminal Server, accommodates the following features:

- Monitors and waits for activity on the user configured UDP port.
- Opens the serial port directly (auto dialout) using a UDP Client according to the configured port-number.
- Termination of the UDP dialout session:

The established UDP dialout session can be terminated in one of the following ways.

UDP Inactivity Timeout:

If the UDP inactivity timeout is enabled and UDP session is inactive for the configured 't' seconds, the connection is terminated and waits for next connection.

Terminate String:

If the UDP terminate monitor is enabled, the UDP server scans the client side data for the terminate string. If there is a match then the UDP session is terminated.

Dialout Monitor:

If the dialout-monitor is set to DTR, then a toggling in the DTR signal state terminates the UDP session.

Prerequisites

Telnet Auto-Dialout Mandatory Configuration Settings

The following items must be configured in order to use the dial-out feature:

- Disable the Host Interaction Mode to restrict Telnet-Dial-Out and PPP.
set serial <s0> host-interaction-mode disable
- Enable Auto dial-out globally on all the serial ports.
set ip auto-dialout enable
- Enable Auto dial-out on the serial port s0.
set serial s0 auto-dialout enable
- Set the Auto dialout port for the serial port s0 .
set serial s0 auto-dialout-port <port_number>
- Set the Auto dialout protocol for the serial port s0.
set serial s0 auto-dialout-protocol telnet/all

UDP Auto-Dialout Mandatory Configuration Settings

The following items must be configured in order to use the dial-out feature:

- Disable the Host Interaction Mode to restrict Telnet-Dial-Out and PPP.
set serial <s0> host-interaction-mode disable
- Enable Auto dial-out globally on all the serial ports.
set ip auto-dialout enable
- Enable Auto dial-out on the serial port s0.
set serial s0 auto-dialout enable
- Set the Auto dialout port for the serial port s0 .
set serial s0 auto-dialout-port <port_number>
- Set the Auto dialout protocol for the serial port s0.
set serial s0 auto-dialout-protocol udp/all

An ERROR message will displays if any of the above details are not configured or are not valid.

Telnet Auto-Dialout Optional Configuration Settings

The following details are optional configurations:

- Enable/Disable the Authentication for Dial-out session
set login auto-dialout-login <enable/disable>
- Enable/Disable the Switching-between-Dialout & CommandPrompt feature
set ip telnet escape-monitor <enable/disable>
- Set the Escape-Monitor-String to switch between Dialout and Command Prompt sessions.
set ip telnet escape-string "+++inet"
- Enable/Disable the Raw mode globally for all Dial-out sessions.
set ip telnet raw-mode <enable/disable>
- Enable/Disable the Raw mode for the serial port s0.
set serial s0 raw-dialout <enable/disable>
- Set the Baud rate for the serial port s0 to be taken for a Dialout session.
set serial s0 baud-rate <Baud-rate>
- Set the Flow control for the serial port s0 to be taken for a Dialout session.
set serial s0 flow-control <rts-cts/none>
- Set the Parity for the serial port s0 to be taken for a Dialout session.
set serial s0 parity <even/odd/none>
- Set the Data bits for the serial port s0 to be taken for a Dialout session.
set serial s0 data-bits <7/8>
- Set the Stop bits for the serial port s0 to be taken for a Dialout session.
set serial s0 data-bits <1/1.5/2>

UDP Auto-Dialout Option Configuration Settings

The following details are optional configurations:

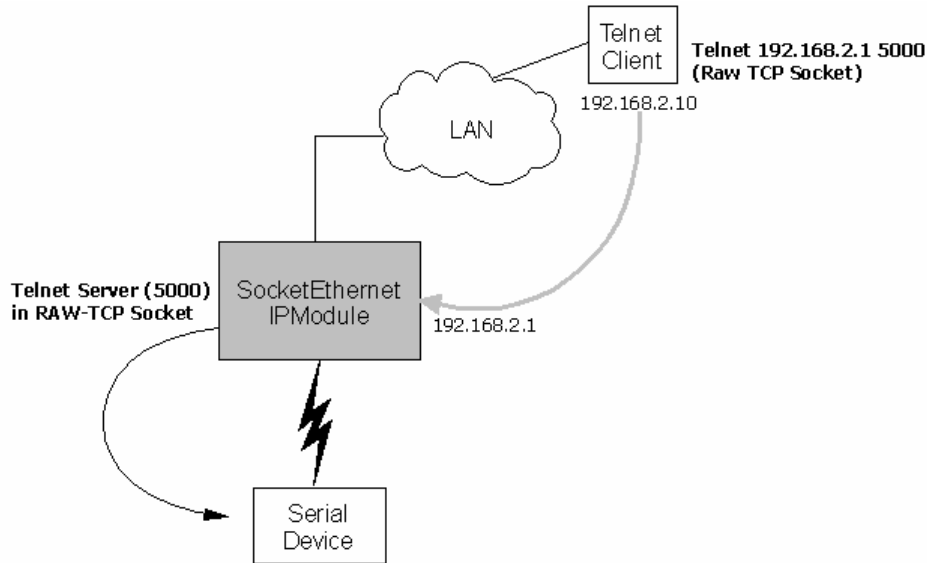
- Enable/Disable the Terminating Dialout Session using Terminate string
set ip udp terminate-monitor <enable/disable>
- Set the Terminate-Monitor-String to Terminate the Dialout Session.
set ip udp terminate-string "+++inet"
- Enable/Disable the Terminating Dialout Session using Inactivity Timeout
set ip udp inactivity <enable/disable>
- Set the Inactivity Timeout to Terminate the Dialout Session.
set ip udp inactivity-timeout 300
- Set the Baud rate for the serial port s0 to be taken for a Dialout session.
set serial s0 baud-rate <Baud-rate>
- Set the Flow control for the serial port s0 to be taken for a Dialout session.
set serial s0 flow-control <rts-cts/none>
- Set the Parity for the serial port s0 to be taken for a Dialout session.
set serial s0 parity <even/odd/none>
- Set the Data bits for the serial port s0 to be taken for a Dialout session.
set serial s0 data-bits <7/8>
- Set the Stop bits for the serial port s0 to be taken for a Dialout session.
set serial s0 data-bits <1/1.5/2>

Scenario 1 – Manual Dialout

Connect to the SocketEthernet IP module using a telnet Client on port 23 (or configuration port).

At the command prompt, invoke **# dialout serial s0**. Once the session is opened successfully, there can be two-way traffic between the telnet client and the serial device.

- You can switch from Command Prompt to Dialout session using "restore session" command.
- You can switch from Dialout session to Command Prompt using "<escape-monitor-string>" respectively.



Manual Dialout Feature through Command Shell

Commands to Setup Manual Dial-out in the SocketEthernet IP Module

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Once the above configuration is saved in the SocketEthernet IP Module, use a telnet client and connect to 192.168.2.1 on port 23.

On successful login, at the SocketEthernet IP module command prompt, invoke

```
# dialout serial s0
```

The serial port now opens for use.

Notes:

1. Only one dial-out session can be open at a time.
2. The Dial-out session is closed when the Telnet session is closed, thereby releasing the serial port.
3. When Dial-out session authentication is enabled as specified in Optional commands, the session prompts for user-name and password before opening the session successfully. (Enabled by default).
4. The serial port is opened with the current serial configuration.
5. When **escape-monitor** is enabled, care should be taken during file transfer that the **escape-monitor-string** is not part of the data.
6. Manual dial-out is supported for the Telnet protocol ONLY and not for the UDP protocol.

Scenario 2 – Auto Dialout

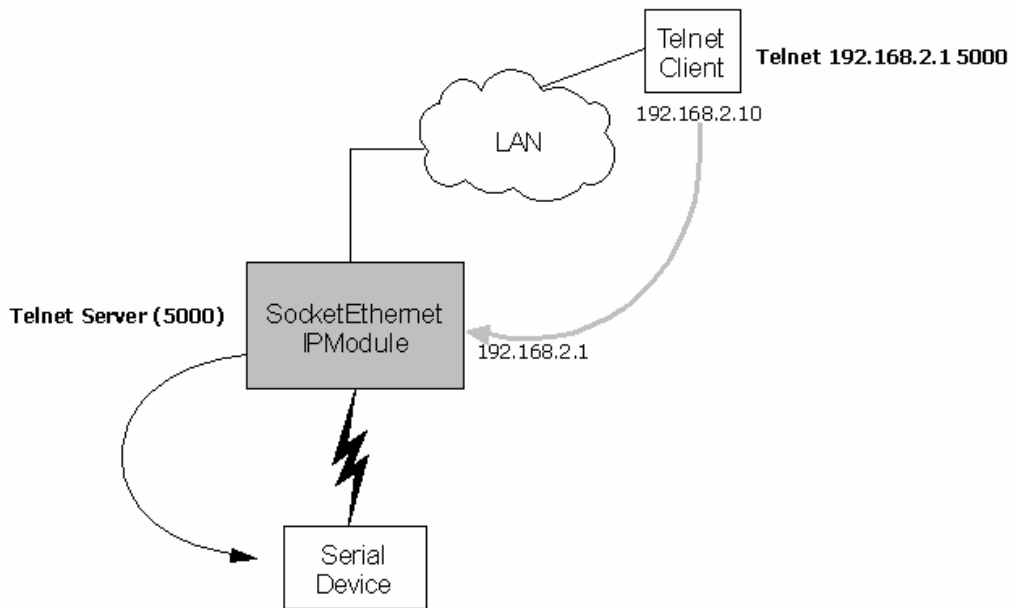
In this scenario, the Auto Dial-out session in Telnet mode is opened using a Telnet client.

Prerequisites

Raw mode (global and each port) **MUST BE DISABLED** using above-mentioned optional commands.

Auto Dial-out session can be opened by a Telnet client by specifying the configured auto-dialout port.

- Once the session is opened successfully, there can be two-way traffic between the telnet session and the remote serial device.



Auto Dialout Feature in Telnet Mode

Commands to Setup Auto Dialout in Telnet Mode for the SocketEthernet IP Module

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1
# set ip auto-dialout enable

# set serial s0 auto-dialout enable
# set serial s0 auto-dialout-port 5000
# set serial s0 auto-dialout-protocol telnet

# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Once the above configuration is saved in the SocketEthernet IP module, use a telnet client and connect to 192.168.2.1 on port 5000. This eventually establishes a telnet Auto dial-out session between the SocketEthernet IP module and the serial device.

Closing the Telnet client, closes the serial port in use.

Notes:

- Only one dialout session to the same port can be opened at one time.
- When dialout session authentication is enabled as specified in Optional commands, the session prompts for **user-name** and **password** before opening the session successfully. (Enabled by default)
- The serial port is opened with the current serial configuration.

Scenario 3 – Auto Dialout in RAW Mode

In this scenario, the Auto Dial-out session in RAW mode is opened using a RAW-TCP client.

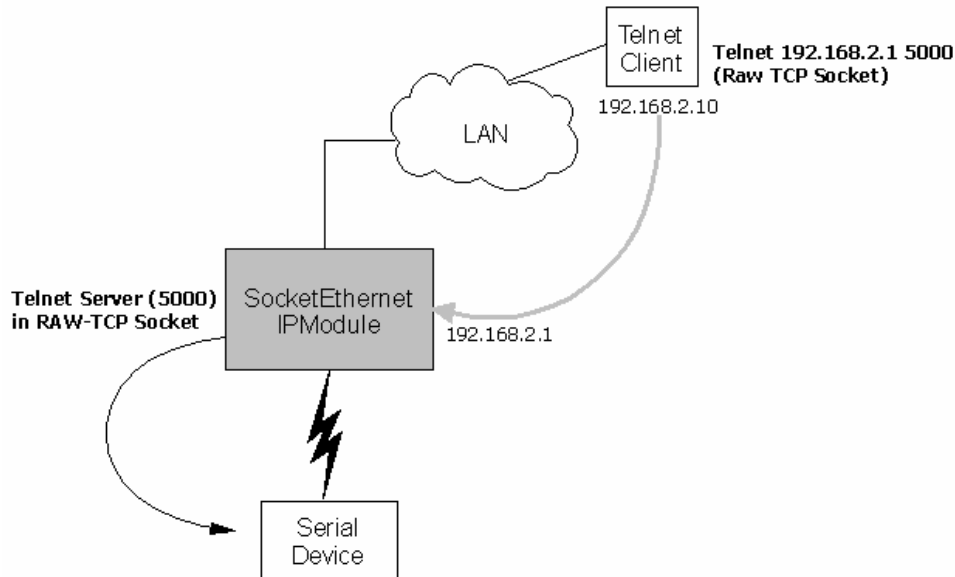
Prerequisites

Raw mode (Global and each port) **MUST BE ENABLED** using above mentioned optional commands.

The Auto Dialout session can be opened by Raw-TCP client by specifying the auto-dialout configured port. Once the session is opened successfully, there can be two-way traffic between the telnet session and the remote serial device.

Important

You cannot switch between the Command Prompt and the Dialout session in Raw-mode.



Auto Dialout Feature in RAW Mode

Commands To Setup Auto Dial-out in Raw-Mode For SocketEthernetIP Module

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1
# set ip auto-dialout enable
# set ip telnet raw-mode enable

# set serial s0 auto-dialout enable
# set serial s0 raw-dialout enable
# set serial s0 auto-dialout-port 5000
# set serial s0 auto-dialout-protocol telnet
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# save
```

Once the above configuration is saved in the SocketEthernet IP module, use a Telnet client and connect to 192.168.2.1 on port 5000 (Raw TCP socket). This eventually establishes a telnet auto-dial-out session (In RAWMODE) with the SocketEthernet IP module, thereby opening the serial port for use.

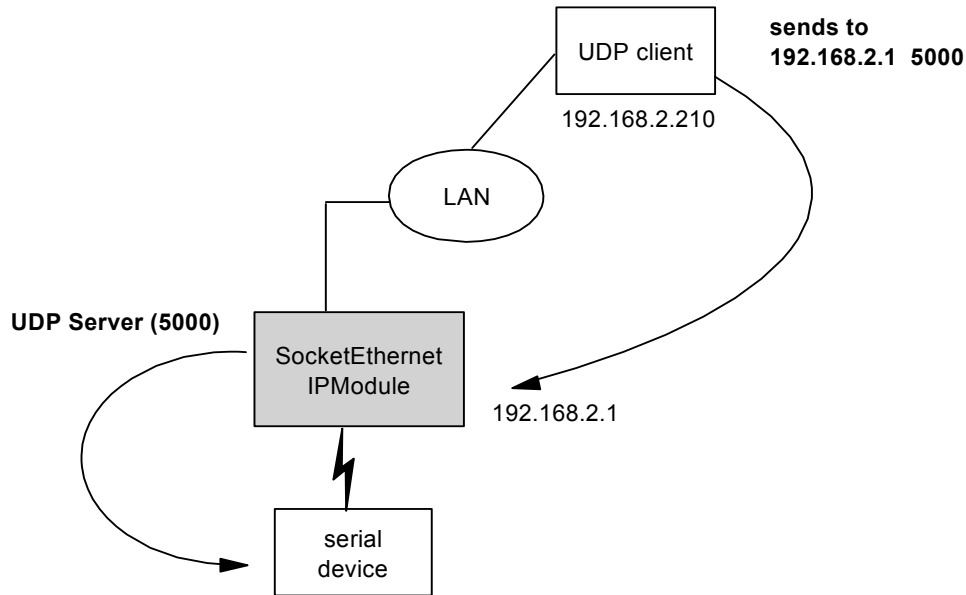
Closing the Telnet client, closes the serial port in use.

Notes:

1. You cannot open more than one dialout session to the same port.
2. When the Dial-out session authentication is enabled as specified in Optional commands, the session prompts for user-name and password before opening the session successfully.
3. The serial port is opened with the current serial configuration.

Scenario 4 – Auto Dialout Using UDP

In this scenario, the Auto Dial-out session in UDP mode is initiated by an external UDP Client.



The UDP Client can send/receive data to/from the UDPServer residing at the SocketEthernet IPModule.

Notes:

1. At any given point of time, only one "UDP Client" can send/receive data from the serial-device through the SocketEthernet IP Module.
2. ONLY on a termination of the first UDP-Client (See "Appendix I – Serial-to-Ethernet Connectivity Using Dialout" section for UDP session termination), the second UDP-Client can initiate a session with the UDP Server residing at the SocketEthernet IP Module.

Commands to Setup UDP Dial-out in the SocketEthernet IP Module

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip-address 192.168.2.1
# set ip auto-dialout enable
# set serial s0 auto-dialout enable
# set serial s0 auto-dialout-port 5000
# set serial s0 auto-dialout-protocol udp/all
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# set serial s0 flow-control rts-cts
# set serial s0 dialout-monitor dtr
# set ip udp inactivity enable/disable
# set ip udp inactivity-timeout t
# set ip udp terminate-monitor enable/disable
# set ip udp terminate-string <string>
# save
```

Functionality

When any UDP client connects to the SocketEthernet IP Module to the configured port, the IP Module locks the serial port for that UDP-Client and latches to the UDP client address connected. The UDP-Client is now ready to send/receive data to/from the serial device.

How to Terminate the UDP-Dialout Session

1. If the “**inactivity**” is enabled and the timeout value is configured, the active UDP session will be terminated on the expiry of inactive timeout.
2. If the “**terminate-monitor**” is enabled, the UDP-Client can terminate the session by sending the terminate-string configured in the SocketEthernet IPModule.
3. If both “**inactivity**” and “**terminate-monitor**” are enabled, the UDP dialout session is terminated on any of the above two events that occurs first.
4. When the “**dialout-monitor**” is set to **dtr**, toggling the DTR signal state terminates The UDP-dialout session.

Notes

- Authentication is NOT supported for the UDP Dialout feature.
- At any given point of time, only one “UDP Client” can send/receive data from the serial-device through the SocketEthernet IP Module.
- `# set serial s0 raw-mode <enable/disable>` is NOT applicable for the UDP Auto-dialout feature.

Appendix J – Remote Transparent Bridging Connectivity Examples

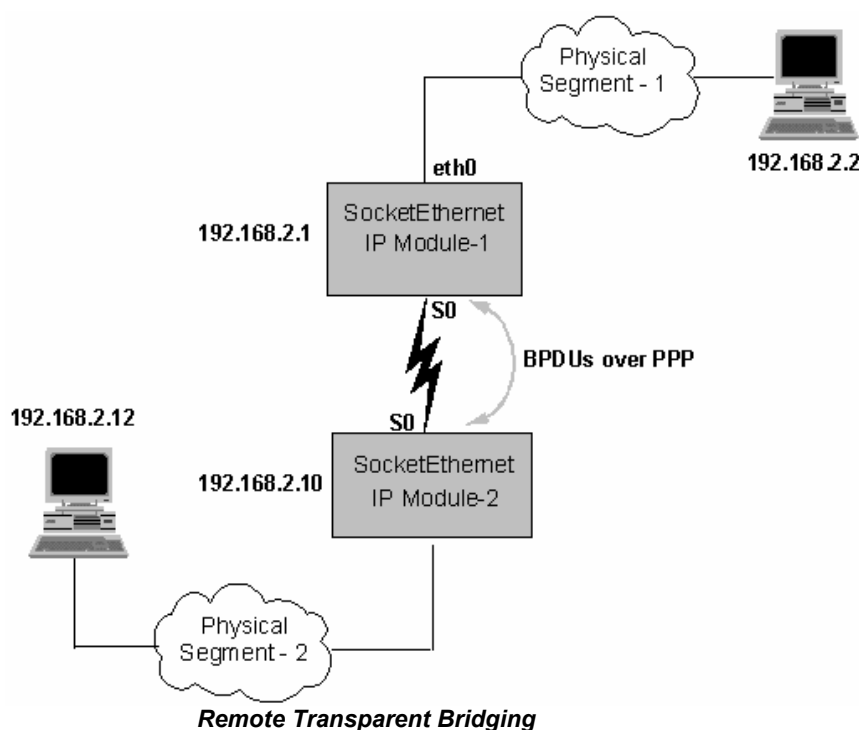
Introduction

Bridging is a feature in which multiple Local Area Networks (LANs) can be inter-connected and can enable packet forwarding between homogeneous networks or different networks.

Bridges can be grouped into categories based on various product characteristics. Using one popular classification scheme, bridges are either local or remote.

- Local bridges provide a direct connection between multiple LAN segments in the same area.
- Remote bridges connect multiple LAN segments in different areas, usually over telecommunications lines.

The SocketEthernet IP module provides **Remote Transparent Bridging**. Transparent bridging is primarily for Ethernet environments.



Remote bridging is provided over the PPP link established between two peers connected to the serial port. **Bridge Control Protocol (BCP)** is the standard method for transporting data grams over point-to-point links and is supported by the IP module.

Supported Features

Commands to Enable Authentication for PPP

```
# set ppp ppp0 authentication enable
# set ppp ppp0 authentication-type <pap/chap/pap-chap>
```

Commands to Enable PPP Compression (on both the SocketEthernet IP Modules)

```
# set ppp ppp0 compression enable
# set ppp ppp0 comp-type <both/bsd/deflate>
```

Note: These commands must be used on both SocketEthernet IP modules in the scenarios that follow.

Feature / Module Dependencies

When Bridging is Enabled

- Telnet service for configuration of SocketEthernet IP module is enabled and cannot be disabled.
- TFTP Service for Flash upgrades is also enabled and cannot be disabled.
- **PPP has to be manually enabled and other configurations also need to be made as explained in earlier sections.**
- BCP (Bridging Control Protocol) will be negotiated between the PPP peers.
- On the Ethernet:
 - DHCP Client MUST BE disabled.
- On the Serial:
 - Dial-in feature (Manual and Auto) is disabled since PPP captures the serial port.
 - Dialout feature (Manual and Auto) is disabled since PPP captures the serial port.

When Bridging Is Disabled

- PPP will be disabled. PPP alone cannot be enabled unless Bridging is enabled.
- On the Serial:
 - Dial-in feature (Manual and Auto) **can be** enabled.
 - Dialout feature (Manual and Auto) **can be** enabled.

Prerequisites and Configuration

The SocketEthernet IP module can act as a remote bridge between two different networks, which are connected through the serial link. Bridging has to be enabled on both the peers (SocketEthernet IP modules).

Remote bridging is provided over the PPP link using Bridge Control Protocol. Also the peers authenticate using Local database.

When Bridging is enabled, PPP is not enabled automatically unlike Telnet and TFTP. PPP has to be manually enabled and other PPP related configurations such as user database must be updated.

About Point-to-Point Protocol (PPP)

Point-to-Point Protocol is described in this Appendix since Remote Transparent Bridging in this example is used with PPP.

Point-to-Point Protocol (PPP) is the Internet Standard for transmission of IP packets over serial links. This protocol is commonly used in serial links (asynchronous or synchronous) to transfer packets between two endpoints. These links provide full-duplex simultaneous bi-directional operation and are assumed to deliver packets in order. It is intended that **PPP** provide a common solution for easy connection of a wide variety of hosts, bridges, and routers.

The advantage of **PPP** is that it allows for inter-operability between endpoints (for example, routers) using **PPP** for their serial communication.

Components of PPP

- A method for encapsulating multi-protocol data grams.
- A **Link Control Protocol (LCP)** for establishing, configuring, and testing the data-link connection. The LCP is used to automatically agree upon the encapsulation format options, handle varying limits on sizes of packets, detect a looped-back link and other common configuration errors, and terminate the link.
- A family of **Network Control Protocols (NCPs)** for establishing and configuring different network-layer protocols.

Prerequisites

- PPP as a stand-alone feature cannot be enabled UNLESS Bridging is enabled. PPP is provided for the support of Remote Transparent Bridging, and only BCP is negotiated. In order to enable bridging, see **Remote Transparent Bridging** later in this chapter.
- Before establishing a PPP session, users should be added to the user database. The username and password supplied by the remote peer will be authenticated using the local database.
- The following sections describe the commands to add / delete username and password to the local database.

Adding Users and Passwords

On successful execution of this command it will return an OK or an error message.

Command: # user add <username> [password]

Example: # user add user1 user1

OK

(Or)

user add user1

OK

Setting the Password

On successful execution of this command it will return an OK or an error message.

Command: # user password <username> <password>

Example: # user password user1 user1

OK

Deleting Users

On successful execution of this command it will return an OK or an error message.

Command: # user delete <username>

Example: # user delete user1

OK

PPP Configuration

PPP configuration consists of setting up the following parameters.

- Enabling PPP
- Enabling / Disabling Authentication and Authentication Type
- Configure username / password for remote peer to authenticate
- Configuring the Connect Type
- Configuring the Connect State
- Configure the modem settings

The following sections describe in detail the configuration commands in detail.

Enabling PPP

Command: # set ppp [interface] <enable/disable>
Enables PPP on the IPModule.

Example: # set ppp ppp0 enable
OK

Enabling / Disabling Authentication

This command enables or disables a PPP session's Authentication. If Authentication is enabled, then the authentication protocol, the username, and password should also be set.

Command: # set ppp [interface] authentication <enable/disable>

Example: # set ppp ppp0 authentication enable
OK

Authentication Type - Protocol

This command sets the Authentication type.

Command: # set ppp [interface] auth-type <pap/chap/pap-chap>

Example: #set ppp ppp0 auth-type pap
OK

Username and Password for Remote Peer Authentication

This command sets the username with which remote server will authenticate. If authentication is disabled, this need not be configured.

Command: # set ppp [interface] username
set ppp [interface] password

Example: # set ppp ppp0 username user1
OK
#set ppp ppp0 password user1
OK

Connection Type

This command sets the connection type. A connection type can be either direct or modem. In case of a modem connection, the modem settings also have to be configured as described in the following sections.

Command: # set serial [serial-interface] connect-type <direct/modem>

Example: #set serial s0 connect-type direct
OK
(Or)
#set serial s0 connect-type modem
OK

Connection State

This command sets the connection state to either Dialing or Answering. In case of a modem connection, the modem settings also have to be configured as described in the following sections.

Command: # set serial [serial-interface] connect-state
<answering/dialing>

Example: #set serial s0 connect-state answering
OK
(Or)
#set serial s0 connect-state dialing
OK

Modem Settings - Applicable Only with Modem Connection Type

1. This command sets the initialization string of the modem.

Command: # set serial [serial-interface] modem init-string <line-no>
<init string>

Example: #set serial s0 modem init-string 1 ATSO
OK

2. This command sets the hangup string of the modem.

Command: # set serial [serial-interface] modem hangup-string <hangup
string>

Example: #set serial s0 modem hangup-string +++ATH0
OK

3. This command sets the dial-prefix string of the modem.

Command: # set serial [serial-interface] modem dial-prefix <dial-
prefix string>

Example: #set serial s0 modem dial-prefix ATDT
OK

4. This command is used to set the dial number on the dialing end.

Command: # set serial [serial-interface] modem dial-number <phone no>

Example: #set serial s0 modem dial-number 224824
OK

5. This command allows you to view the PPP configuration settings.

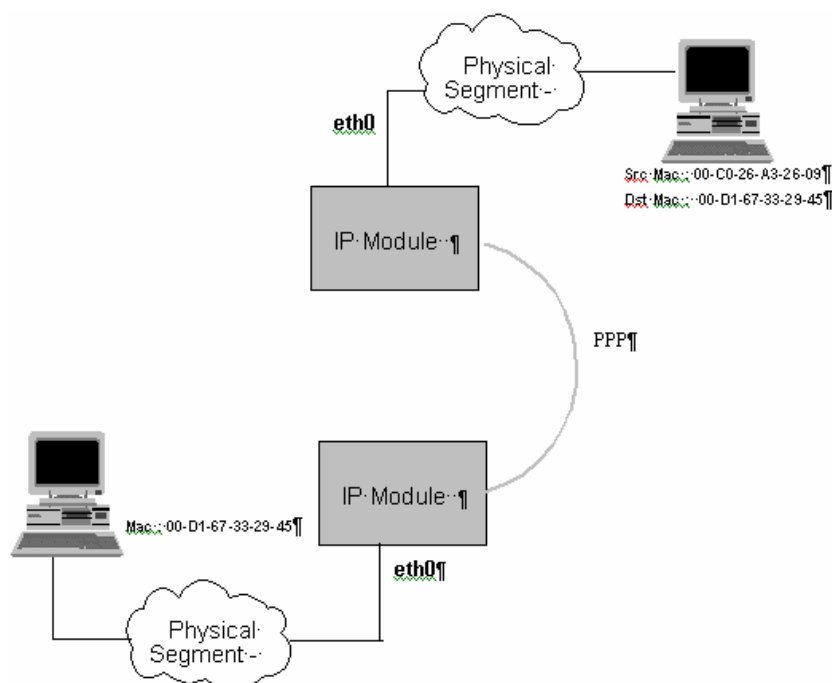
Command: # show ppp configuration

This ends the section on Point-to-Point Protocol.

Scenario 1 – Remote Bridging and PPP

Remote Bridging

This example shows a PPP session established between two IP modules over the serial port. One IP module is configured as **answering** and the other one as **dialing**. Make sure that the username, password, and authentication protocol match on both the sides. The IP module (configured for dialing) dials to the answering one, negotiates BCP, and, once the PPP link is up, the packets are bridged across.



PPP with Remote Bridging

Global Bridging Configuration

Successful execution of the command returns an OK. Otherwise, it returns an error message:

- Enable bridging.
- Set the bridge IP Address and Mask.

Refer to the **Bridge Setup Commands** for more details.

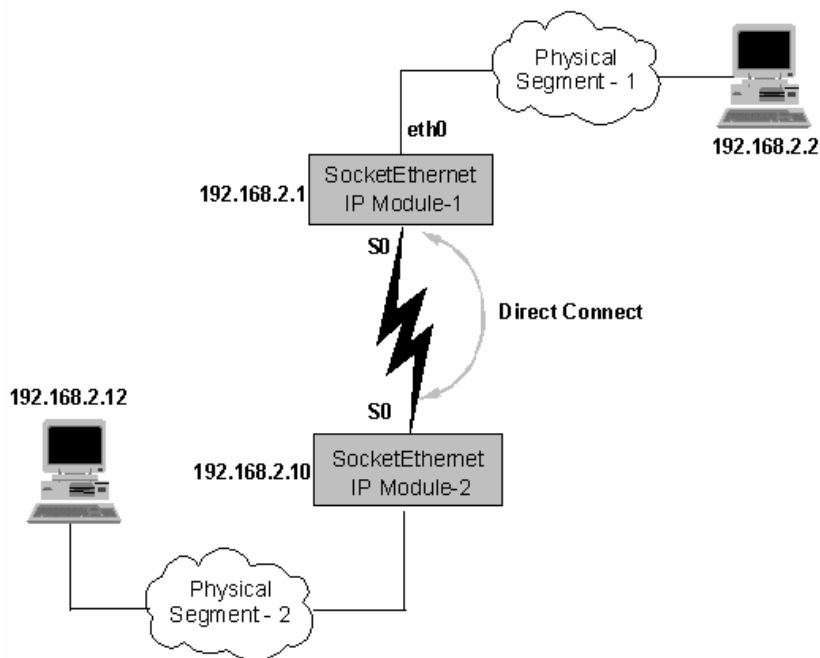
PPP Configuration Required for Bridging

- Enable PPP.
- Enable or disable Authentication.
- If authentication is enabled, the authentication protocol has to be configured. Supported protocols are PAP, CHAP (or) PAP-CHAP.
- User name and password should be configured.
- Connect type (Direct or Modem) should be configured.
- If the connect type is modem, then the modem state (Dialing / Answering), modem initialization, hang-up strings and dial up phone number has to be configured.

Refer to **PPP Setup Commands** for more details.

Scenario 2 – Remote Bridging with Direct Connection

This example of remote transparent bridging uses a direct connection between the serial ports.



Transparent Bridging - Direct Connection

Commands Setup for SocketEthernet IP Module-1

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip 192.168.2.1
# set bridge enable
# set bridge ipmodule ip-address 192.168.2.1
# set ppp ppp0 enable
# set ppp ppp0 raw-mode enable
    [Only if simple AHDLC quoting on the serial port is required.]
# set serial s0 connect-type direct
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# save
```

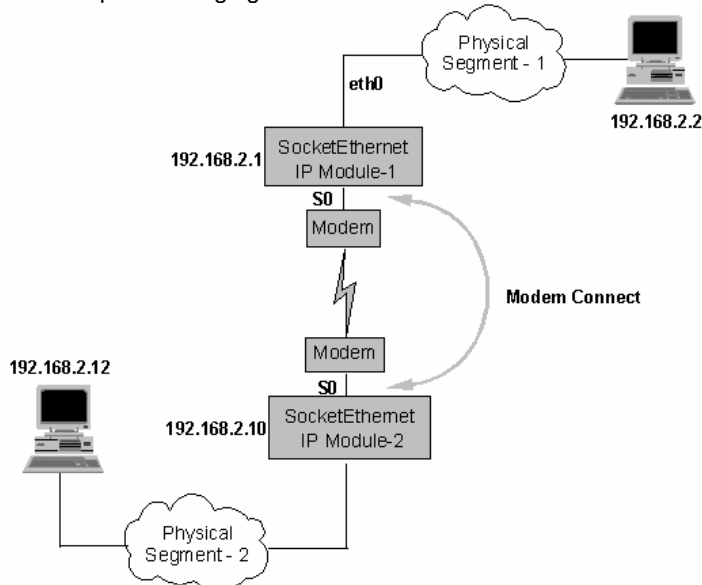
Commands Setup for SocketEthernet IP Module-2

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip 192.168.2.10
# set bridge enable
# set bridge ipmodule ip-address 192.168.2.10
# set ppp ppp0 enable
# set ppp ppp0 raw-mode enable
    [Only if simple AHDLC quoting on the serial port is required.]
# set serial s0 connect-type direct
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# save
```

Note: For simple AHDLC quoting on the serial port, the raw-mode has to be enabled on both the SocketEthernet IP modules. Raw-mode is disabled by default

Scenario 3 – Remote Bridging with Modem Connection

This example of remote transparent bridging uses a modem connection between the serial ports.



Transparent Bridging with Modem Connection

Commands Setup for SocketEthernet IP Module-1

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip 192.168.2.1
# set bridge enable
# set bridge ipmodule ip-address 192.168.2.1
# set ppp ppp0 enable
# set ppp ppp0 raw-mode enable
  [Only if simple AHDLC quoting on the serial port is required.]
# set serial s0 connect-type modem
# set serial s0 connect-state dialing
# set serial s0 modem init-string 1 "+++ATH0"
# set serial s0 modem init-string 2 "AT&F"
# set serial s0 modem dial-number 234
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
# save
```

Commands Setup for SocketEthernet/IP Module-2

```
# set ip eth0 dhcp-client disable
# set ip eth0 ip 192.168.2.10
# set bridge enable
# set bridge ipmodule ip-address 192.168.2.10
# set ppp ppp0 enable
# set ppp ppp0 raw-mode enable
  [Only if simple AHDLC quoting on the serial port is required.]
# set serial s0 connect-type modem
# set serial s0 connect-state answering
# set serial s0 modem init-string 1 "+++ATH0"
# set serial s0 modem init-string 2 "AT&F"
# set serial s0 baud-rate 115200
# set serial s0 data-bits 8
# set serial s0 parity none
# set serial s0 stop-bits 1
```

Notes:

1. For simple AHDLC quoting on the serial port, the raw-mode has to be enabled on both the SocketEthernet IP modules. Raw-mode is disabled by default
2. SocketEthernet IP Module-1 is configured for modem dialing. SocketEthernet IP Module-2 is configured for modem answering.
3. If you wish to have a complete control on the modem-dialing end, use the chat-scripts. By default the dialing-method is **configuration**.
4. Refer the following commands in the **Command Line Section** for more details on the chat-scripts.

```
# set serial s0 modem dialing-method ?  
# set serial s0 chat-script ?
```

Important Note:

The chat-script should be used ONLY FOR THE DIALING END.

Appendix K – Auto-Discovery Manager

Introduction

The Windows-Based Auto-Discovery Manager for the SocketEthernet IP Module

The Auto-Discovery Manager is a mechanism for remotely monitoring the IPModule. It also provides support for configuring several key parameters, such as DHCP Status (enable/disable), IP Address, and the Hostname of an SocketEthernet IP Module.

The Auto-Discovery mechanism is utilized by running a Windows-based Server Application that can monitor/configure the SocketEthernet IP Module. Communication between the SocketEthernet IP Module and the Windows-based Server is through MAC level broadcasts on a configured UDP port.

Auto-Discovery Components

The Auto-Discovery Manager is composed of two components:

- **The Client Component** – The Client component periodically broadcasts its current configuration over the network.
- **The Server Component** – The Server component receives the broadcasts from the client.

Client Component

The Auto-Discovery Client component is integrated with SocketEthernet IP Module. It broadcasts its current configuration over the network on a specific UDP SERVER-PORT. By default the SERVER-PORT is set to 1020. The configuration parameters broadcast are

- Version details
- MAC Address
- Static IP Address
- DHCP Status
- DHCP Assigned IP Address
- Host Name
- Broadcast interval
- Port number on which the client listens

How to Disable the Client Auto-Discovery Broadcasts

```
#set auto-discovery disable
```

Note: By default it is enabled

How to Change the Periodic Timer of Client's Broadcast

```
#set auto-discovery broadcast-timer <t secs>
```

Note: By default it is 10 seconds.

How to Change the Server-Port

```
#set auto-discovery server-port <port number>
```

Server Component

The Server component listens on the SERVER-PORT. It receives the broadcasts from the client and updates the list of configuration parameters. This list can be viewed by the administrator through the User Interface:

The screenshot shows the 'IP Module Auto Discovery Manager' application window. It features a menu bar with 'File' and 'Help'. Below the title bar is a banner with the MultiTech Systems logo and the application name. The main area contains a table of discovered entries and a detailed view of a selected entry.

The List of Entries

S.No	MAC ADDRESS	IP ADDRESS	HOST NAME	DHCP STATUS	DHCP IP ADDRESS	CLIENT STATUS	F/W VERSION
1	00:C0:AD:34:56:CA	192.168.2.1	SocketEthernetIP	Enabled	192.168.7.5	Active	VER - 1.01
2	00:C0:7A:8B:4C:...	192.168.2.121	IPModule	Disabled	255.255.255.255	InActive	VER - 1.00

Detailed Information on about a Selected Entry

MAC ADDRESS	00:C0:AD:34:56:CA	HOSTNAME	SocketEthernetIP
IP ADDRESS	192.168.2.1	CLIENT PORT NUMBER	1020
SUBNET MASK	255.255.255.0	BROADCAST TIMER	30
DHCP IP ADDRESS	192.168.7.5	F/W VERSION	VER - 1.01
DHCP SUBNET MASK	255.255.255.0	CLIENT ACTIVITY STATUS	<input checked="" type="checkbox"/>
DHCP STATUS	<input checked="" type="checkbox"/>		

Log Files will display here

The bottom section of the window is a large text area for log files, currently empty.

How to View the Detailed Information

New entries are appended to the list shown on the screen above. Only the first ten entries are displayed on the screen. However the administrator can scroll down to view more entries. Clicking on an entry displays the detailed information about that entry.

How to Edit the List and Make the Changes Permanent

1. Double-click on the entry you wish to edit.

Continued: How to Edit the List and Make the Changes Permanent

2. After clicking the desired entry, a new dialog box displays showing the current configuration.

Auto Discovery Manager - Edit Attributes

Edit

MAC ADDRESS 00:08:00:D2:02:3F

IP ADDRESS 192 . 168 . 2 . 1

SUBNET MASK 255 . 255 . 255 . 0

DHCP STATUS ☐

DHCP IP ADDRESS 000.000.000.000

DHCP SUBNET 000.000.000.000

HOSTNAME SocketEthernetIP

CLIENT PORT 9999

CLIENT ACTIVITY STATUS ☒

BROADCAST TIMER 10

VERSION 1.99

SET RESET RESTORE DEFAULTS CANCEL

3. Enter the new parameters and click the **SET** button. The server sends the modified parameters to the client.

Upon receiving the broadcast from the Server, the Client validates the packet. The Client determines whether the packet is destined for its own MAC Address. If so, it sets the modified parameters that are different from its current configuration, and then it broadcasts the newly configured parameters.

The Client Status is set to **Active** upon the receipt of a broadcast packet.

The Client Status is made **Inactive** if there is no request from the client for a stipulated period. (3 * periodic timer value).

How to Set the Parameters to the Previous Configuration

When the **RESET** button is clicked, the parameters are set to the defaults received. In other words, **RESET** is similar to **UNDO** (it sets the modifications to the previous ones).

Supported Feature - Saving the Log

The logs can be saved to a file. They are spooled into the third part of the window in the main dialog box. To save the log:

Select **File > Save Log As** option to save the log.

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