

Zhone EtherXtend

30xx Series CLI Users Guide

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Z H O N E .

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1 ABOUT THIS GUIDE

This guide is intended for use by system users and administrators.

Note: This document describes all the parameters and commands in the EtherXtend 30xx Series for Release 1.3.1.

The parameters and commands that appear on a particular system depend on the system software running and the hardware configuration of the device.

1.1 TYPOGRAPHICAL CONVENTIONS

The following typographical styles are used in this guide to represent specific types of information.

Bold	Used for names of buttons, dialog boxes, icons, menus, profiles when placed in body text, and property pages (or sheets). Also used for commands, options, parameters in body text, and user input in body text.
Fixed	Used in code examples for computer output, file names, path names, and the contents of online files or directories.
Fixed Bold	Used in code examples for text typed by users.
<i>Fixed Bold Italic</i>	Used in code examples for variable text typed by users.
<i>Italic</i>	Used for book titles, chapter titles, file path names, notes in body text requiring special attention, section titles, emphasized terms, and variables.
PLAIN UPPER CASE	Used for environment variables.
<i>Command Syntax</i>	Commands that have to be typed as shown in the shell, filenames, code, and contents are preceded with a prompt. For example: EtherXtend > show system general-info. Vertical bars () separate alternative, mutually exclusive, elements. Braces ({ }) indicate a required choice. Square brackets ([]) indicate optional elements. Braces within brackets ([{ }]) indicate a required choice within an optional element.



1.2 ACRONYMS

The following acronyms appear throughout this manual:

Acronym	Description
ACL	Access List
CLI	Command Line Interface
CDL	Command Definition Language
XML	Extensible Markup Language
XSD	XML Schema Definition
10P	label to indicate “pertains to 10PASS-TS port-type”
10P/2B	label to indicate “pertains to 10PASS-TS and 2BASE-TL port-types”
2B	label to indicate “pertains to 2BASE-TL port-type”
2-PAM	two level pulse amplitude modulation
CO	central office
CPE	customer premises equipment
DSL	digital subscriber line
EFM	Ethernet in the first mile
LT	line termination
NT	network termination
OAM	operations, administration, and maintenance
PAF	PME aggregation function
PAM	pulse amplitude modulation
PME	physical medium entity
PMS-TC	physical media specific - transmission convergence
PSD	power spectral density
SHDSL	single-pair high-speed digital subscriber line
TC	transmission convergence
TTY	teletypewriter

1.3 RELATED DOCUMENTS

Refer to the documentation that came with your device for information about installing the EtherXtend access device. Other related documents for the EtherXtend CPE products can be obtained from www.zhone.com/support/manuals.



1.4 CONTACTING GLOBAL SERVICE AND SUPPORT

Contact Global Service and Support (GSS) if you have any questions about this or other Zhone products. Before contacting GSS, make sure you have the following information:

- Zhone product you are using
- System configuration
- Software version running on the system
- Description of the issue

1.4.1 Technical support

If you require assistance with the installation or operation of your product, or if you want to return a product for repair under warranty, contact GSS. The contact information is as follows:

E-mail	support@zhone.com
Telephone (North America)	877-ZHONE20
Telephone (International)	510-777-7133
Internet	http://www.zhone.com/support

If you purchased the product from an authorized dealer, distributor, Value Added Reseller (VAR), or third party, contact that supplier for technical assistance and warranty support.

1.4.2 Service requirements

If the product malfunctions, all repairs must be performed by the manufacturer or a Zhone-authorized agent. It is the responsibility of users requiring service to report the need for service to GSS.



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2 BASIC CLI INTERFACE

The EtherXtend Command Line Interface provides the capability to:

- Change the operational characteristics of the device by setting configuration values
- Display system status
- Perform diagnostics

2.1 ACCESSIBILITY

The EtherXtend Command Line Interface is accessible through a directly connected serial console terminal (tty) session, through a Telnet client session, or through a SSH client session.

To access a EtherXtend unit through the directly connected serial console interface, the terminal emulation communications program, such as Microsoft® HyperTerminal or Linux Minicom, must be configured with the following serial port settings:

```
Port Rate (Bps) = 9600
Data bits= 8
Parity = None
Stop bits= 1
Hardware/Software Flow Control = Off
```

To access a EtherXtend unit through a Secure Shell (SSH) session, a SSH client that is compatible with the OpenSSH server 2.0 must be installed on your PC or workstation, such as the Windows compatible PuTTY® OpenSSH client. For details on how to install an OpenSSH client, go to <http://www.putty.nl/download.html>.

For more information on the OpenSSH client remote login program, go to <http://www.openssh.com>.

2.2 MODES OF OPERATION

Normally, all commands are executed from the root of the command line tree. This requires that the entire command be entered on one line. This is the preferred method for automated scripts. Some commands, such as configuration, will allow the user to step through the commands one token at a time. Each token enters a sub mode from the main command. This feature simplifies the configuration of interfaces that have numerous parameters.

2.3 COMMAND RECALL

The user can scroll through the command history by using the <up> and <down> arrows on the keyboard. In addition, the CLI provides a “history” command whereby the user can not only display the commands entered (which is useful for scripting purposes), but can also configure the number of commands that can be stored in the history buffer and save the history file to a remote tftp or http server.

2.4 COMMAND MODES

Many commands support a lower-level command mode of operation. Command modes allow the CLI user to configure or show a group or set of commands or command options without having to re-enter redundant command prefixes. For example, suppose a user would like to configure all of the vlan configuration options like port configuration, port default and QOS configuration options for a particular vlan. To do so, the user could enter the “config vlan” command mode as shown below:



```
config> vlan
  <enter>      - Enter command mode

  portdefaults - Configure VLAN defaults for a port
  qosconfig    - Configure QOS settings for a VLAN
  vlanconfig   - Configure VLANs and VLAN port assignments
```

By typing “vlan <enter>”, a user could enter the “vlan” command mode and receive the following prompt:

```
vlan>
```

Once in the “vlan” command mode, the user can now configure the “vlanconfig”, “portdefaults” or “qosconfig” commands without having to prefix each command with “config vlan”.

2.5 COMPLETE COMMANDS FROM ANY NODE

Complete commands can also be entered from any node in the command tree, even if the command is not a child (or root) of the current node. This feature is useful for scripting commands and particularly useful for scripting commands via the exec-replay command.

By default, commands at a certain level within the command tree cannot be executed without first entering the parent command node. Commands outside of the parent command node can also be executed, however, they must be prefixed with the slash ‘/’ character. For example, suppose the CLI is in the “config system” parent node. To execute the “show if interface” command without exiting the “config system” parent node and entering the “show if” command node, a ‘/’ is prepended to the “show if interface” command as shown below:

```
EtherPWE > config system
system> /show if interface eth1:1

Total Interfaces: 1

IfName           - eth1:1
IfAlias          - LAN 2
Type             - ethernet
HWAddress        - 00:39:e0:ff:ff:34
ManagementAddrMode - static
IpAddress        - 192.168.1.1
Netmask          - 255.255.255.0
BroadcastAddr    - 192.168.1.255
Default-Gateway  - 10.10.10.24
MTU              - 1500
RemoteAddr       - 192.168.1.1
OpStatus         - enable
Scope           - lan
BridgeScope      - bridge
DNS Server Mode  - unconfigured
Primary DNS Server - 10.10.10.200
Secondary DNS Server - 10.10.40.200

show>
```

Note that after executing a complete command from any node in the command tree, the CLI traverses to the new parent node. As shown in the above example, the “show >” prompt is displayed following the execution of the “/show if interface eth1:1” command indicating the new parent node is now the “show” parent node.



2.6 COMMAND LINE ACCESS LEVELS

New user accounts can be added/deleted/modified by any CLI user that has access to the user-mgmt configuration commands. As new user accounts are configured, a user role for each user account must also be configured. Three types of user accounts, or user “roles” are supported:

- su** (Superuser) - User can exit to the busybox and execute all CLI commands
- admin** (Administrator) - User cannot exit to the busybox, but can execute all other CLI commands
- user** - User can only execute CLI “show” commands

The default **admin** account will have superuser access to CLI commands.

2.7 COMMAND LINE HELP

A description of every command and the command line options are available by typing in a “?”. For example, to obtain help with the “config admin-tools” command, execute:

```
EtherXtend> config admin-tools ?  
  
<enter>          - Enter command mode  
settings         - Configure Restore-Backup settings  
save             - Save configuration  
restore          - Restore configuration
```

For ease of use, a “tab” will also fill in the remainder of a command. For example, the execution of the command “config ad<tab>” will result in:

```
EtherXtend> config admin-tools
```

2.8 BUSYBOX ACCESS

The CLI supports the ability to switch user interface context between the CLI and the busybox. To enter into the busybox mode, execute the “**shell**” command. To exit from the busybox mode, type in “**exit**”.

The Busybox is provided for Zhone Global Service and Support (GSS) Personnel and should not be used unless requested by GSS Personnel, except to invoke the Zhone Ping Utility.

2.8.1 Zhone Ping Utility (zhnping)

From the busybox, a “ping-like” utility (zhnping) can be invoked for diagnostic purposes. Once in the busybox mode, execute the following for additional information on the usage and command syntax for the zhnping:

```
SkyZhone login: admin  
Password:  
SkyZhone> shell  
BusyBox v1.00 (2007.10.18-20:25+0000) Built-in shell (ash)  
Enter 'help' for a list of built-in commands.  
~$ zhnping  
Try zhnping --help' for more information.
```



```
QUICK START:

simple ICMP ping:  zhnping -l <host>

simple TCP ping:   zhnping <host>

simple Port Scan: zhnping --scan 1-30,70-90 -S <host>

~ $ zhnping -l 192.168.2.254

HPING 192.168.2.254 (brvlan7 192.168.2.254): icmp mode set, 28 headers + 0 data
bytes

len=28 ip=192.168.2.254 ttl=128 id=13115 icmp_seq=0 rtt=13.0 ms

~ $ exit
```

2.9 ETHERXTEND INTERFACES

In the initial release, EtherXtend will support the following default interface names for the physical interfaces:

- **eth0** – 1, 2, or 4 port 2BaseTL (SHDSL.bis EFM) bonded aggregation interface group.
- **eth1** – 10/100 BaseT Internal Ethernet Switch device.
- **eth1:0** – 10/100 BaseT Ethernet access port 1.
- **eth1:1** – 10/100 BaseT Ethernet access port 2.
- **eth1:2** – 10/100 BaseT Ethernet access port 3.
- **eth1:3** – 10/100 BaseT Ethernet access port 4.

EtherXtend will also configure, by default, the following bridge and vlan logical interfaces:

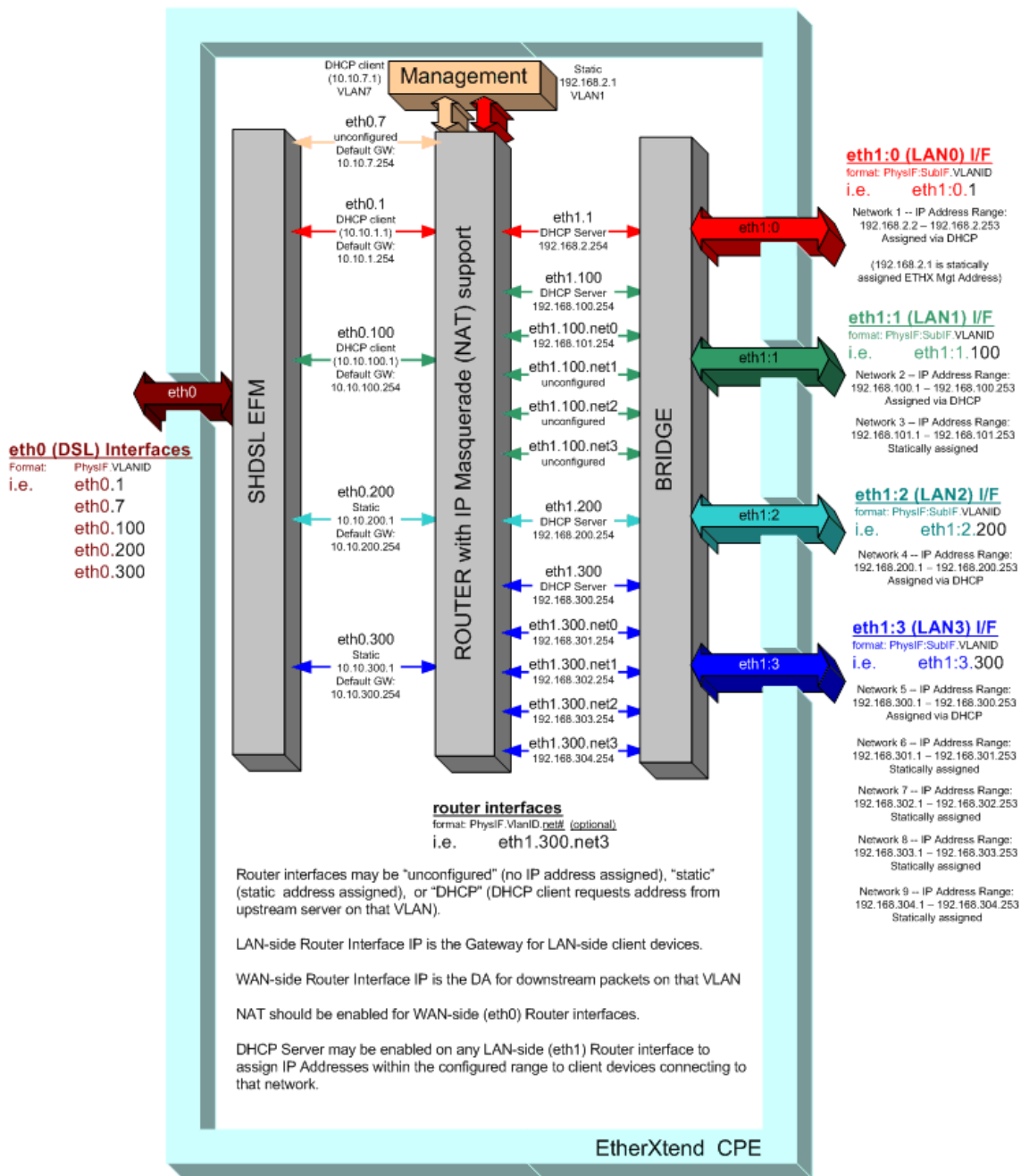
- **br0** - default internal bridge interface.
- **brvlan1** – default bridge interface for vlan 1 untagged, user traffic.
- **brvlan7** - default bridge interface for vlan 7 tagged, management traffic.
- **eth0.1** – default untagged vlan 1 interface for the SHDSL.bis EFM bonded group interface.
- **eth0.7** – default tagged vlan 7 interface for the SHDSL.bis EFM bonded group interface.
- **eth1.0** – default untagged vlan 0 interface for the 10/100 BaseT Internal Ethernet Switch device.
- **eth1.1** – default tagged vlan 1 interface for the 10/100 BaseT Internal Ethernet Switch device.
- **eth1.7** – default vlan 7 interface for the 10/100 BaseT Internal Ethernet Switch device.
- **eth1:0** – 10/100 BaseT Ethernet access port 1.



- **eth1:0.1** – default tagged vlan 1 interface for 10/100 BaseT Ethernet access port 1.
- **eth1:1** – 10/100 BaseT Ethernet access port 2.
- **eth1:1.1** – default tagged vlan 1 interface for 10/100 BaseT Ethernet access port 2.
- **eth1:2** – 10/100 BaseT Ethernet access port 3.
- **eth1:2.1** – default tagged vlan 1 interface for 10/100 BaseT Ethernet access port 3.
- **eth1:3** – 10/100 BaseT Ethernet access port 4.
- **eth1:3.1** – default tagged vlan 1 interface for 10/100 BaseT Ethernet access port 4.



Below is a sample configuration for an EtherXtend ETHX-3024 with multiple VLANs:



NOTE:
 Every configured VLAN will be assigned a virtual interface on the bridge, creating a vlan bridge interface. Up to 24 VLANs may be configured, using any of the available 4096 VLAN IDs. The **Bridge Interfaces** status screen will display all configured VLAN bridge interfaces. The VLAN bridge interfaces that may be used for management access to the EtherXtend unit must have an IP address assigned to them. **brvlan1** is the default VLAN bridge interface with a static IP address that may be used to gain management access into the EtherXtend unit. **brvlan7** is the default VLAN bridge interface with a dynamic (DHCP client) IP address that may be used to gain management access.



Z H O N E®



3 ETHERXTEND COMMAND SET

The structure of the CLI commands supported by EtherXtend is similar to a tree. There are major commands that define a set of similar commands. Upon entering a major command, the CLI will enter into that command node of the command tree and allow all the the sub-commands of the major command defined to be visible with the help '?' command.

3.1 COMMAND TREE

3.1.1 Top Level Command Tree

config	- Configure EtherXtend parameters
show	- Display EtherXtend parameters
test	- Test EtherXtend features
history	- Show / Save / Load CLI command history
alias	- Show defined aliases / Add an alias for a command
exec-replay	- Replay commands contained within a file
exit	- Exit from the current tree and go to parent
where	- Show the path of the current module from the root
logout	- Log out from the current session
cli-settings	- Configure / Show CLI settings
tree	- Show module tree under the current module
previous-module	- Go to the previous module
alias-file	- Save current aliases to file/Load aliases from file

3.2 GLOBAL COMMANDS

exit	- Exit from the current tree and go to parent
top	- Exit from the current node and go to the top node
where	- Show the path of the current module from the root
logout	- Log out from the current session
cli-settings	- Configure / Show CLI settings
tree	- Show module tree under the current module
previous-module	- Go to the previous module
alias-file	- Save current aliases to file/Load aliases from file

The global commands listed above are accessible at each major command level. For example, if the "config bridge" command is executed, the major command level for all "config bridge" is entered. All "config bridge" sub-commands and all global commands can be executed at this major command level.

3.2.1 exit

SYNTAX:	<code>exit</code>
DESCRIPTION:	Exit from the current tree and go back one level to the parent command module
EXAMPLE:	<code>settings> exit</code> <code>admin-tools></code>

3.2.2 top

SYNTAX:	<code>top</code>
DESCRIPTION:	Exit from the current tree and go back to the top level of the command tree
EXAMPLE:	<code>settings> top</code> <code>EtherPWE></code>



3.2.3 where

SYNTAX: `where`

DESCRIPTION: Shows the path of the current module from the root module.

EXAMPLE: `settings> where`
`EtherXtend->config->admin-tools->settings`

3.2.4 logout

SYNTAX: `logout`

DESCRIPTION: Log out from the current cli session.

EXAMPLE: `settings> logout`
`EtherXtend>`

3.2.5 cli-settings

SYNTAX: `cli-settings more {enable | disable}`

DESCRIPTION: Enable or disable the CLI support for paginating command responses (i.e. the "more" feature)

EXAMPLE: `EtherXtend > cli-settings more enable`

3.2.6 history

SYNTAX: `history`

DESCRIPTION: Display the history of the CLI commands executed for the current session.

EXAMPLE: `settings> history`

```
0 2006-01-01 11:07:21 config
1 2006-01-01 11:10:51 admin-tools
2 2006-01-01 11:11:54 settings
3 2006-01-01 11:13:22 history
```

3.2.7 tree

SYNTAX: `tree [show-all]`

DESCRIPTION: Display all CLI modules under the current module.

EXAMPLE: `admin-tools> tree`

```
admin-tools
  -settings
  -save
  -restore
```

3.2.8 previous_module

SYNTAX: `previous_module`

DESCRIPTION: Go to the previous CLI module in the CLI history file.

EXAMPLE: `admin-tools> previous_module`
`settings>`



3.2.9 exec-replay

SYNTAX: `exec-replay <filename> [echo-off]`

`<filename>` - Name of the exec replay file (1-100 alpha-numeric characters)
`echo_off` - Disables echoing of CLI commands to the local console

DESCRIPTION: Execute the CLI commands in the specified file. Useful for scripting repetitive command sequences. The specified file must have previously been transferred to the Flash File System (FFS) on the unit. A file can be transferred to the unit via the Secure Copy Protocol (SCP).

EXAMPLE: `admin-tools> exec-replay vlan_config_commands echo-off`

3.2.10 alias

SYNTAX: `alias [<newname>=<oldname>]`

`<newname>` - Enter name followed by "="
`<oldname>` - Enter value

DESCRIPTION: Creates a command alias "newname" for an existing command "oldname". The "alias" command with no parameters will display all command aliases configured for the unit. Note that unless aliases are saved and reloaded, all aliases configured will be lost when a user logs out of a CLI session.

EXAMPLE: `admin-tools> alias back=exit`

3.2.11 alias-file

SYNTAX: `alias-file {save | load} <filename>`

`<filename>` - Alias file name

DESCRIPTION: Saves all command aliases to a file under the "/alias" directory on the Flash File System, or loads command aliases from a file under the "/alias" directory on the Flash File System.

EXAMPLE: `alias-file save alias_file1`



3.3 CONFIGURE COMMANDS

admin-tools	- Configuration options
vlan	- VLAN configuration
routing	- Routing configuration
bridge	- Bridge and Bridge Port configuration
system	- System configuration
snmp	- SNMP configuration
firewall	- Firewall configuration
nat	- NAT configuration
if	- Interface configuration
ethernet	- Ethernet port configuration
dhcp	- DHCP server configuration
swupgrade	- Software Upgrade configuration
usrmgmt	- User Management configuration
efm	- EFM Group and SHDSL Line configuration

3.3.1 Configure Administrative Tools

settings	- Configure Restore-Backup and History settings
save	- Save configuration
restore	- Restore configuration

3.3.1.1 Configure Administrative Tools Settings

history-size	- history size
always-save-running-config	- always save running config

3.3.1.1.1 config admin-tools settings history-size

SYNTAX: `config admin-tools settings history-size <historysize>`

<historysize> - Enter history (buffer) size

DESCRIPTION: Configure the number of CLI commands that are stored in the history command file and displayed.

EXAMPLE: `settings> history-size 200`

3.3.1.1.2 config admin-tools settings always-save-running-config

SYNTAX: `config admin-tools settings always-save-running-config {enable | disable}`

DESCRIPTION: Enable/disable the ability to always save the configuration to permanent, non-volatile storage when a configuration change occurs.

EXAMPLE: `settings> always-save-running-config enable`

3.3.1.2 Configure Administrative Tools Save

running-config	- Save running configuration
to-history	- Save configuration to history file
to-remote	- Save configuration to a remote history file



3.3.1.2.1 config admin-tools save running-configuration

SYNTAX: `config admin-tools save running-config`

DESCRIPTION: Save running configuration to permanent, non-volatile storage.

EXAMPLE: `admin-tools> save running-config`

3.3.1.2.2 config admin-tools save to-history

SYNTAX: `config admin-tools save to-history filename <filename> backupname <backupname>`

<filename> - Name of the file where the configuration will be stored
<backupname> - A name to distinguish between various backup configuration files

DESCRIPTION: Save running configuration to a history file on the unit's flash file system for use as a backup configuration file. Note the history size must be configured to be greater than 0 before a backup configuration file can be configured.

EXAMPLE: `admin-tools> save to-history filename saveit backupname 010106`

Editor's Note: This command essentially creates a zipped, tarball of all files under the /etc/np_device_config/saved directory and stores the file locally on the flash file under the /etc/np_device_config/history directory (e.g. /etc/np_device_config/history/saveit.tar.gz)

3.3.1.2.3 config admin-tools save to-remote

SYNTAX: `config admin-tools save to-remote filename <filename> remote-path <path> protocol {tftp|sftp|scp} remote-server-IP <ip-address> [User <username> password <password>]`

<filename> - File name to save configuration file to
<remote-path> - Path name of the file
<ip-address> - IP Address of remote tftp, sftp or scp server to store the configuration file
<username> - User name for remote login. This is optional for tftp servers.
<password> - Password for login. This is optional for tftp servers.

DESCRIPTION: Save running configuration to a history file for use as a backup configuration file.

EXAMPLE: `admin-tools> save to-remote filename Config_010106.tar.gz remote-path c:/EtherXtend/configs protocol tftp remote-server-IP 10.10.10.1`

3.3.1.3 Configure Administrative Tools Restore

factory-defaults - Restore to factory default configuration
remote - Restore remote configuration from tftp server
from-history - Restore from history
alternate-software - Restore alternate software version and reboot

3.3.1.3.1 config admin-tools restore factory-defaults

SYNTAX: `config admin-tools restore factory-defaults`

DESCRIPTION: Restore to factory default configuration.

Some EtherXtend models may be shipped from the factory with customized factory default database settings. For those models that support customized factory defaults, the restoration of factory default settings will result in a two step process. The first step being the unit will apply the generic



factory default settings. The second step being the unit will apply the customized factory default settings by executing a CLI exec-replay command script.

EXAMPLE: admin-tools> restore factory-defaults

3.3.1.3.2 config admin-tools restore remote

SYNTAX: config admin-tools restore remote remote-file <pathname> protocol {tftp|sftp|scp} remote-server-IP <ip-address> [User <username> password <password>]

<remote-file> - Path and file name of the file stored on the remote server
<ip-address > - IP Address of remote tftp, sftp or scp server from which to retrieve the configuration file
<username> - User name for remote login. This is optional for tftp servers.
<password> - Password for login. This is optional for tftp servers.

DESCRIPTION: Restore running configuration from a backup configuration file stored on an external tftp/sftp/scp server. Note, if the configuration file was initially stored while running a different firmware revision, the request to restore the configuration using an incompatible configuration file will be rejected.

EXAMPLE: admin-tools> restore remote remote-file c:/EtherXtend/configs/Config_010106.tar.gz protocol tftp remote-server-IP 10.10.10.1

3.3.1.3.3 config admin-tools restore from-history

SYNTAX: config admin-tools restore from-history <backupname>

<backupname> - A name to distinguish between various backup configuration files

DESCRIPTION: Restore configuration from a backup configuration file.

EXAMPLE: admin-tools> restore from-history 010106

3.3.1.3.4 config admin-tools restore alternate-software

SYNTAX: config admin-tools restore alternate-software

DESCRIPTION: Switch active firmware to the alternate software version. This command will force the unit to load the version of firmware that resides in the other "alternate" firmware bank. The firmware version of firmware that resides in the alternate bank can be viewed by executing the "show system general-info" command.

WARNING: This command will cause the unit to reboot.

EXAMPLE: admin-tools> restore alternate-software
The system is going down NOW !!

3.3.2 Configure VLAN Settings

portdefaults - Configure VLAN defaults for a port
qosconfig - Configure QOS settings for a VLAN
vlanconfig - Configure VLANs and VLAN port assignments

3.3.2.1 config vlan portdefaults



SYNTAX: `config vlan portdefaults vlanport <interface> pvid <pvid> priority <priority>`

<interface> - Specify an interface name for which the default priority is to be assigned (1-16 alpha-numeric characters).
<pvid> - Configure the default PVID for all VLANs configured for the port (0-4094)
<priority> - Configure the default VLAN priority for all VLANs configured for the port (0-7)

DESCRIPTION: Configure the default VLAN PVID and VLAN priority to be assigned for all untagged frames received for the specified interface

EXAMPLE: `config> vlan portdefaults vlanport eth1:1 pvid 500 priority 3`

3.3.2.2 Configure VLAN QOS Settings

`set-ingress-map` - Configure QOS settings for an ingress port
`set-egress-map` - Configure QOS settings for an egress port

The `set-egress-map` and `set-ingress-map` QOS commands allow for the configuration of the internal VLAN priority assigned to the ingress and egress ports, respectively. As traffic is received at a port, the VLAN priority in each packet is replaced with the internal ingress priority. The internal ingress priority is used to steer packets to the appropriate priority queue for the egress port.

After the packets have been removed from the queue for transmitting out the DSL ports (egress), the VLAN priority field can be optionally modified based upon the Egress Priority Map for that interface. This mapping is to change the value before the packet is transmitted out the DSL interface.

After the packets have been removed from the queue for transmitting out the LAN port (ingress), the VLAN priority field can be optionally modified based upon the Ingress Priority Map for that port. This mapping is to change the value before the packet is transmitted out the LAN port.

There are four priority queues for each interface in the egress direction. Currently only the EFM egress queues are active. Refer to **“Appendix B – VLAN Prioritization Capabilities”** for more general information on VLANs and VLAN prioritization supported by the EtherXtend access device.

3.3.2.2.1 config vlan qosconfig set-ingress-map

SYNTAX: `config vlan qosconfig set-ingress-map vlanid <id> vlanport <interface> skbpriority <skb> vlan_qos <qos>`

<interface> - Specify an interface name for which the default PVID is to be assigned (1-16 alpha-numeric characters).
<id> - Specify a VLAN PVID (0-4094) which is assigned to the specified VLAN
<skb> - Specify the socket buffer (SKB) priority
<qos> - Specify the Quality of Service (QOS) value (0-7)

DESCRIPTION: Configure the QOS settings for a port such that inbound packets with the specified VLAN QOS value should be queued according to the specified SKB priority. The default skb-priority is 0.

EXAMPLE: `config> vlan qosconfig set-ingress-map vlanid 1 vlanport eth0 skbpriority 4 vlan_qos 4`

3.3.2.2.2 config vlan qosconfig set-egress-map



SYNTAX: `config vlan qosconfig set-egress-map vlanid <id> vlanport <interface> skbpriority <skb> vlan_qos <qos>`

<interface> - Specify an interface name for which the default PVID is to be assigned (1-16 alpha-numeric characters).

<id> - Specify a VLAN PVID (0-4094) which is assigned to the specified VLAN

<skb> - Specify the socket buffer (SKB) priority

<qos> - Specify the Quality of Service (QOS) value (0-7)

DESCRIPTION: Configure the QOS settings for a port such that outbound packets with a particular skb-priority should be tagged with the particular vlan priority vlan_qos. The default vlan priority is 0.

EXAMPLE: `config> vlan qosconfig set-egress-map vlanid 1 vlanport eth0 skbpriority 4 vlan_qos 4`

3.3.2.3 Configure VLAN Port Settings

addport - Add a port to a VLAN

addvlan - Add VLAN by VLAN ID

removeport - Remove a port from a VLAN

removevlan - Remove specified VLAN

secure-mode - Configure secure mode for a VLAN

rate-limit - Configure rate-limit for a VLAN

3.3.2.3.1 config vlan vlanconfig addport

SYNTAX: `config vlan vlanconfig addport interface <interface> vlanid <id> {tagged | untagged}`

<interface> - Specify an interface name that is to be assigned to a VLAN (1-16 alpha-numeric characters).

<id> - Specify a VLAN id of the VLAN which to assign the interface

DESCRIPTION: Add an interface (port) to the specified VLAN.

EXAMPLE: `config> vlan vlanconfig addport interface eth0.1 vlanid 4 tagged`

3.3.2.3.2 config vlan vlanconfig addvlan

SYNTAX: `config vlan vlanconfig addvlan vlan_name <name> vlanid <id> mode [bridging | routing]`

<name> - Specify a VLAN name for the new VLAN

<id> - Specify a VLAN id (1-4094) for the new VLAN

DESCRIPTION: Create a new VLAN, assign it a VLAN id, and enable routing or bridging mode for the new VLAN. Note, the configuration of a significant number of VLANs may affect performance.

EXAMPLE: `config> vlan vlanconfig addvlan vlan_name VLAN122 vlanid 122 mode routing`

3.3.2.3.3 config vlan vlanconfig removeport

SYNTAX: `config vlan vlanconfig removeport interface <interface> vlanid <id>`

<interface> - Specify an interface name for which a vlan is to be removed (1-16 alpha-numeric characters).

<id> - Specify a VLAN id which is assigned to the specified VLAN



DESCRIPTION: Delete the specified VLAN from an interface.

EXAMPLE: `config> vlan vlanconfig removeport interface eth0.1 vlanid 4`

3.3.2.3.4 config vlan vlanconfig removevlan

SYNTAX: `config vlan vlanconfig removevlan vlanid <id>`

<id> - Specify a VLAN id which is assigned to the specified VLAN

DESCRIPTION: Delete the specified VLAN. Note that all ports assigned to a VLAN must first be removed from a VLAN before the VLAN can be removed. Execute the "config vlan vlanconfig removeport" command to remove ports assigned to a VLAN.

EXAMPLE: `config> vlan vlanconfig removevlan vlanid 4`

3.3.2.3.5 config vlan vlanconfig secure-mode

SYNTAX: `config vlan vlanconfig secure-mode vlanid <id> {disable | enable interface <interface> }`

<id> - Specify a VLAN id which is assigned to the specified VLAN

<interface> - Specify an interface name for which a vlan traffic is bridged (1-16 alpha-numeric characters).

DESCRIPTION: Enable or disable secure-mode for a VLAN. If secure-mode is enabled, all traffic received from the specified VLAN is forwarded to the specified interface. This implies traffic received from the specified VLAN will not be bridged to another interface.

EXAMPLE: `config> vlan vlanconfig secure-mode vlanid 4 enable eth0`

3.3.2.3.6 config vlan vlanconfig rate-limit

SYNTAX: `config vlan vlanconfig rate-limit vlanid <id> {disable | enable rate <rate> queueing {enable | disable} }`

<id> - Specify a VLAN id which is assigned to the specified VLAN

<rate> - Specify the maximum data rate (in kbits/s) that can be transmitted upstream over the VLAN (1-16 alpha-numeric characters).

DESCRIPTION: Enable or disable the rate-limiting feature for a VLAN. If rate-limiting mode is enabled, the maximum amount of traffic sent in the upstream or downstream firection for the specified VLAN is restricted to the specified rate. If the data-rate for the specified VLAN exceeds the rate-limit, traffic can be queued or discarded.

EXAMPLE: `config> vlan vlanconfig rate-limit vlanid 4 enable rate 1000 queueing enable`

3.3.3 Configure Router Settings

bgp - BGP Configuration

advanced - Advanced Routing Configuration

dynamic-routing - Dynamic Routing Configuration



3.3.3.1 Configure Router BGP Settings

add-bgp	- Add BGP router
modify-bgp	- Modify BGP Router
delete-bgp	- Delete BGP Router
add-neighbor	- Add neighbor BGP router
delete-neighbor	- Delete neighbor router
add-network	- Enable or disable BGP for a network address
delete-network	- Delete BGP network address

3.3.3.1.1 config routing bgp add-bgp

SYNTAX: `config routing bgp add-bgp bgp-name <bgp_name> interface <if_name> local-as <asn#>`

<bgp_name> - Enter the name of the Border Gateway Protocol router (1-32 alpha-numeric characters)
<if_name> - Enter the router interface name (1-32 alpha-numeric characters)
<asn#> - Enter the local autonomous system number (1-65536)

DESCRIPTION: Create a BGP router.

EXAMPLE: `routing> bgp add-bgp bgp-name mybgprouter interface eth0.1 local-as 2000`

3.3.3.1.2 config routing bgp modify-bgp

SYNTAX: `config routing bgp modify-bgp bgp-name <bgp_name> [interface <if_name>] [local-as <asn#>]`

<bgp_name> - Enter the name of the Border Gateway Protocol router to modify (1-32 alpha-numeric characters)
<if_name> - Enter the router interface name (1-32 alpha-numeric characters)
<asn#> - Enter the local autonomous system number (1-65536)

DESCRIPTION: Modify a BGP router.

EXAMPLE: `routing> bgp modify-bgp bgp-name mybgprouter local-as 2550`

3.3.3.1.3 config routing bgp delete-bgp

SYNTAX: `config routing bgp delete-bgp bgp-name <bgp_name>`

<bgp_name> - Enter the name of the Border Gateway Protocol router to delete (1-32 alpha-numeric characters)

DESCRIPTION: Delete a BGP router.

EXAMPLE: `routing> bgp modify-bgp bgp-name mybgprouter`

3.3.3.1.4 config routing bgp add-neighbor

SYNTAX: `config routing bgp add-neighbor interface <if_name> remote-as <asn#>`



<if_name> - Enter the interface name by which to access the neighboring router (1-32 alpha-numeric characters)
<asn#> - Enter the remote autonomous system number (1-65536)

DESCRIPTION: Create a neighboring BGP router.

EXAMPLE: routing> `bgp add-neighbor interface eth0.1 remote-as 4000`

3.3.3.1.5 config routing bgp delete-neighbor

SYNTAX: `config routing bgp delete-neighbor interface <if_name> remote-as <asn#>`

<if_name> - Enter the interface name by which to access the neighboring router (1-32 alpha-numeric characters)
<asn#> - Enter the remote autonomous system number (1-65536)

DESCRIPTION: Delete a neighboring BGP router.

EXAMPLE: routing> `bgp delete-neighbor interface eth0.1 remote-as 4000`

3.3.3.1.6 config routing bgp add-network

SYNTAX: `config routing bgp add-network interface <if_name> ip <ip-addr> mask <mask> advertise {enable | disable}`

<if_name> - Enter the interface name by which to access the neighboring network (1-32 alpha-numeric characters)
<ip_addr> - Enter the IP network address to advertise
<mask> - Enter the IP network mask to advertise

DESCRIPTION: Enable or disable the advertisement of a network address to a neighboring BGP router.

EXAMPLE: routing> `bgp add-neighbor interface eth0.1 ip 135.26.20.1 mask 255.255.255.0 advertise enable`

3.3.3.1.7 config routing bgp delete-network

SYNTAX: `config routing bgp delete-network interface <if_name> ip <ip-addr> mask <mask>`

<if_name> - Enter the interface name by which to access the neighboring network (1-32 alpha-numeric characters)
<ip_addr> - Enter the IP network address to delete
<mask> - Enter the IP network mask to delete

DESCRIPTION: Delete a BGP network address.

EXAMPLE: routing> `bgp add-neighbor interface eth0.1 ip 135.26.20.1 mask 255.255.255.0`

3.3.3.2 Configure Router Advanced Settings



secure-routing	- Configure the routing between LAN IP subnets
interVLAN-routing	- Configure the routing between VLANs

3.3.3.2.1 config routing advanced secure-routing

SYNTAX: `config routing advanced secure-routing {enable | disable}`

DESCRIPTION: Enable or disable routing between IP subnets assigned to LAN interfaces.

EXAMPLE: `routing> advanced secure-routing enable`

3.3.3.2.2 config routing advanced interVLAN-routing

SYNTAX: `config routing advanced interVLAN-routing {enable | disable}`

DESCRIPTION: Enable routing between IP subnets on the same or different VLAN(s). Or, restrict the router to only route between subnets that are on the same VLAN.

EXAMPLE: `routing> advanced interVLAN-routing enable`

3.3.3.3 config routing dynamic-routing

SYNTAX: `config routing dynamic-routing {rip | bgp} {enable | disable}`

DESCRIPTION: Enable or disable RIP or BGP routing protocols.

EXAMPLE: `routing> dynamic-routing rip enable`

3.3.4 Configure Bridge and Bridge Port Settings

no	- Delete bridge or bridgeport configuration setting
bridge	- Bridge configuration

bridgeport - Bridge port configuration

3.3.4.1 Delete Bridge or Bridge Ports

bridge	- Delete a bridge
bridgeport	- Delete a port from a bridge

3.3.4.1.1 config bridge no bridge

SYNTAX: `config bridge no bridge <bridge-name>`

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)

DESCRIPTION: Delete the specified bridge

EXAMPLE: `bridge> no bridge br1`

3.3.4.1.2 config bridge no bridgeport



SYNTAX: `config bridge no bridgeport <if_name>`

<if_name> - Interface name (1-16 alpha-numeric characters)

DESCRIPTION: Delete the bridge port for the specified interface from the bridge

EXAMPLE: `bridge> no bridge eth1`

3.3.4.2 Configure Bridge

hello-time - Configure the hello-time interval

bridge-priority - Configure the bridge priority

stp - Enable or disable the Spanning Tree Protocol (STP)

forward-delay - Configure the forward delay

max-age - Configure the maximum time between hello frames

aging - Configure time an entry will remain in forwarding-database (FDB)

3.3.4.2.1 config bridge bridge hello-time

SYNTAX: `config bridge bridge <bridge-name> hello-time <hello_time>`

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)

<hello_time> - Hello Time

DESCRIPTION: Configure the time, in seconds, between each bridge protocol data unit (BPDU) that is sent on a port. Periodically, a hello packet is sent out by the Root Bridge and the Designated Bridges to communicate information about the topology throughout the entire Bridged Local Area Network.

EXAMPLE: `bridge> bridge br0 hello-time 500`

3.3.4.2.2 config bridge bridge bridge-priority

SYNTAX: `config bridge bridge <bridge-name> bridge-priority <bridge-priority>`

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)

<bridge_priority> - Bridge Priority

DESCRIPTION: Configure the priority of the specified bridge. Each bridge has a relative priority and cost. Each interface is associated with a port (number) in the spanning-tree protocol (STP). Each interface has a priority and a cost that is used to decide which interface will provide the shortest path to forward a packet. If you have multiple bridges and interfaces, then you may need to adjust the priorities to achieve optimum performance.

EXAMPLE: `bridge> bridge br0 bridge-priority 1`

3.3.4.2.3 config bridge bridge stp

SYNTAX: `config bridge bridge <bridge-name> stp {yes | no}`

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)

DESCRIPTION: Enable or disable the Spanning Tree Protocol for specified bridge. If you are running multiple or redundant bridges, then you need to enable the Spanning Tree Protocol (STP) to handle multiple hops and avoid cyclic routes. STP can be enabled for a bridge while adding or modifying a bridge row.



EXAMPLE: bridge> `bridge br0 stp no`

3.3.4.2.4 config bridge forward-delay

SYNTAX: `config bridge bridge <bridge-name> forward-delay <delay>`

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)
<delay> - Forward Delay

DESCRIPTION: Configure the time, in seconds, that is spent in the listening and learning state for specified bridge. Forwarding delay time is the time spent in each of the Listening and Learning states before the Forwarding state is entered. This delay is so that when a new bridge comes onto a busy network it looks at some traffic before participating.

EXAMPLE: bridge> `bridge br0 forward-delay 50`

3.3.4.2.5 config bridge max-age

SYNTAX: `config bridge bridge <bridge-name> max-age <max-age>`

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)
<max-age> - Maximum age for configuration information

DESCRIPTION: Configure the maximum amount of time, in seconds, the specified bridge port will wait for a hello packet before starting the Root Bridge takeover procedure. If another bridge in the spanning tree does not send out a hello packet for a long period of time, it is assumed to be dead.

EXAMPLE: bridge> `bridge br0 max-age 1000`

3.3.4.2.6 config bridge aging

SYNTAX: `config bridge bridge <bridge-name> aging <age-time>`

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)
<age_time> - Age time

DESCRIPTION: Configure the length of time, in seconds, the MAC address will be kept in the Forwarding Database (FD) after receipt of a packet from this MAC address. Failure to receive another packet from this MAC address before the time period expires will cause this entry to be deleted from the Forwarding Database.

EXAMPLE: bridge> `bridge br0 aging 1000`

3.3.4.3 Config Bridge Bridgeport

path-cost - Configure the path cost
priority - Configure the bridge port priority

3.3.4.3.1 config bridge bridgeport path-cost

SYNTAX: `config bridge bridgeport <if-name> bridge <bridge-name> path-cost <cost>`



<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)
<if-name> - Interface name (1-16 alpha-numeric characters)
<cost> - Path cost

DESCRIPTION: Configure the cost of the path from the bridge sending the configuration message to the root bridge. Each interface in a bridge could have a different speed and this value is used when deciding which link to use. Faster interfaces should have lower costs.

EXAMPLE: bridge> bridgeport eth0 bridge br0 path-cost 10

3.3.4.3.2 config bridge bridgeport priority

SYNTAX: config bridge bridgeport <if-name> bridge <bridge-name> port-priority <port_priority>

<bridge_name> - Enter Bridge Name (1-32 alpha-numeric characters)
<if-name> - Interface name (1-16 alpha-numeric characters)
<port_priority>- Port Priority

DESCRIPTION: Configure the priority of data sent/received over the specified interface for the bridge ports. Each bridge has a relative priority and cost. Each interface is associated with a port (number) in the STP code. Each has a priority and a cost that is used to decide which is the shortest path to forward a packet. The lowest cost path is always used unless the other path is down. If you have multiple bridges and interfaces then you may need to adjust the priorities to achieve optimum performance.

EXAMPLE: bridge> bridgeport eth1 bridge br0 port-priority 1

3.3.5 Configure System Settings

date - Set date
time - Set time
ntpserver - Set Date/Time from NTP server
timezone - Set time zone
reboot - Reboot the device immediately
domain - Configure domain name
host - Configure host name
dns - Configure name servers
auto-update-DNS - Configure DNS auto-update
inactivity-timeout - Set login session inactivity timeout
service - Enable/disable a service
syslog - Configure Syslog Parameters

3.3.5.1 config system date

SYNTAX: config system date <date>

<date> - Set date in mm-dd-yyyy format

DESCRIPTION: Configure the date in months-days-years for the system

EXAMPLE: config> system date 8-20-2006



3.3.5.2 config system time

SYNTAX: `config system time <time>`

<time-str> - Enter time in HH:MM:SS format

DESCRIPTION: Configure the time in hours:minutes:seconds for the system

EXAMPLE: `config> system time 11:05:00`

3.3.5.3 config system ntpserver

SYNTAX: `config system ntpserver {disable | <server_ip_address>}`

<server> - Enter NTP server (name or IP address)
disable - Disable ntpserver

DESCRIPTION: Enable or disable the acquisition of time from the specified address of an NTP Server

EXAMPLE: `config> system ntpserver 192.168.1.200`

3.3.5.4 config system dns primary

SYNTAX: `config system dns primary <pri-dns>`

<pri-dns> - Configure primary DNS server's IP address

DESCRIPTION: Configure the IP address primary Domain Name Server

EXAMPLE: `config> system dns primary 192.168.1.200`

3.3.5.5 config system dns secondary

SYNTAX: `config system dns secondary <pri-dns>`

<pri-dns> - Configure secondary DNS server's IP address

DESCRIPTION: Configure the IP address secondary Domain Name Server

EXAMPLE: `config> system dns secondary 192.168.1.200`

3.3.5.6 config system timezone

SYNTAX: `config system timezone <zone>`

<zone>

(GMT-12:00) International Date Line West	- DateLine Standard Time
(GMT-11:00) Midway Island, Samoa	- Samoa Standard Time
(GMT-10:00) Hawaii	- Hawaiian Standard Time
(GMT-09:00) Alaska	- Alaskan Standard Time
(GMT-08:00) Pacific Time - US and Canada; Tijuana	- Pacific Standard Time
(GMT-07:00) Arizona	- US Mountain Standard Time
(GMT-07:00) Chihuahua, La Paz, Mazatlan	- Mexico Standard Time 2
(GMT-07:00) Mountain Time - US and Canada	- Mountain Standard Time
(GMT-06:00) Central America	- Central America Std Time
(GMT-06:00) Central Time - US and Canada	- Central Standard Time
(GMT-06:00) Guadalajara, Mexico City, Monterrey	- Mexico Standard Time
(GMT-06:00) Saskatchewan	- Canada Central Std Time
(GMT-05:00) Bogota, Lima, Quito	- SA Pacific Standard Time
(GMT-05:00) Eastern Time - US and Canada	- Eastern Standard Time
(GMT-05:00) Indiana (East)	- US Eastern Standard Time
(GMT-04:00) Atlantic Time - Canada	- Atlantic Standard Time



(GMT-04:00) Caracas, La Paz	- SA Western Standard Time
(GMT-04:00) Santiago	- Pacific SA Standard Time
(GMT-03:30) Newfoundland	- Newfoundland Standard Time
(GMT-03:00) Brasilia	- E.South America Std Time
(GMT-03:00) Buenos Aires, Georgetown	- SA Eastern Standard Time
(GMT-03:00) Greenland	- Greenland Standard Time
(GMT-02:00) Mid-Atlantic	- Mid-Atlantic Standard Time
(GMT-01:00) Azores	- Azores Standard Time
(GMT-01:00) Cape Verde Is.	- Cape Verde Standard Time
(GMT) Casablanca, Monrovia	- Greenwich Standard Time
(GMT) Greenwich Mean Time: Dublin, Edinburg, Lisbon, London	- GMT Standard Time
(GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna	- W. Europe Standard Time
(GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague	- Central Europe Std Time
(GMT+01:00) Brussels, Copenhagen, Madrid, Paris	- Romance Standard Time
(GMT+01:00) Sarajevo, Skopje, Warsaw, Zagreb	- Central European Std Time
(GMT+01:00) West Central Africa	- W. Central Africa Std Time
(GMT+02:00) Athens, Beirut, Istanbul, Minsk	- GTB Standard Time
(GMT+02:00) Bucharest	- E. Europe Standard Time
(GMT+02:00) Cairo	- Egypt Standard Time
(GMT+02:00) Harare, Pretoria	- South Africa Standard Time
(GMT+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius	- FLE Standard Time
(GMT+02:00) Jerusalem	- Jerusalem Standard Time
(GMT+03:00) Baghdad	- Arabic Standard Time
(GMT+03:00) Kuwait, Riyadh	- Arab Standard Time
(GMT+03:00) Moscow, St. Petersburg, Volgograd	- Russian Standard Time
(GMT+03:00) Nairobi	- E. Africa Standard Time
(GMT+03:30) Tehran	- Iran Standard Time
(GMT+04:00) Abu Dhabi, Muscat	- Arabian Standard Time
(GMT+04:00) Baku, Tbilisi, Yerevan	- Caucasus Standard Time
(GMT+04:30) Kabul	- Afghanistan Standard Time
(GMT+05:00) Ekaterinburg	- Ekaterinburg Standard Time
(GMT+05:00) Islamabad, Karachi, Tashkent	- West Asia Standard Time
(GMT+05:30) Chennai, Kolkata, Mumbai, New Delhi	- India Standard Time
(GMT+05:45) Kathmandu	- Nepal Standard Time
(GMT+06:00) Almaty, Novosibirsk	- N. Central Asia Std Time
(GMT+06:00) Astana, Dhaka	- Central Asia Standard Time
(GMT+06:00) Sri Jayawardenepura	- Sri Lanka Standard Time
(GMT+06:30) Rangoon	- Myanmar Standard Time
(GMT+07:00) Bangkok, Hanoi, Jakarta	- SE Asia Standard Time
(GMT+07:00) Krasnoyarsk	- North Asia Standard Time
(GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi	- China Standard Time
(GMT+08:00) Irkutsk, Ulaan Bataar	- North Asia East Std Time
(GMT+08:00) Kuala Lumpur, Singapore	- Malay Peninsula Std Time
(GMT+08:00) Perth	- AUS Western Standard Time
(GMT+08:00) Taipei	- Taipei Standard Time
(GMT+09:00) Osaka, Sappora, Tokyo	- Tokyo Standard Time
(GMT+09:00) Seoul	- Korea Standard Time
(GMT+09:00) Yakutsk	- Yakutsk Standard Time
(GMT+09:30) Adelaide	- AUS Central Standard Time
(GMT+09:30) Darwin	- AUS Central Standard Time
(GMT+10:00) Brisbane	- AUS Eastern Standard Time
(GMT+10:00) Canberra, Melbourne, Sydney	- AUS Eastern Standard Time
(GMT+10:00) Guam, Port Moresby	- West Pacific Standard Time
(GMT+10:00) Hobart, Tasmania	- Tasmania Standard Time
(GMT+10:00) Vladivostok	- Vladivostok Standard Time
(GMT+11:00) Magadan, Solomon Is., New Caledonia	- Central Pacific Std Time
(GMT+12:00) Auckland, Wellington	- New Zealand Standard Time
(GMT+12:00) Fiji, Kamchatka, Marshall Is.	- Fiji Standard Time
(GMT+13:00) Nuku'alofa	- Tonga Standard Time

adjust-for-daylight-savings - Adjust clock for daylight savings changes.

DESCRIPTION: Configure the timezone and adjust the timezone automatically for daylight savings time.

EXAMPLE: config> system timezone (GMT+09:00) Seoul

3.3.5.7 config system reboot

SYNTAX: config system reboot



DESCRIPTION: Reboot the system
EXAMPLE: config> system reboot

3.3.5.8 config system domain

SYNTAX: config system domain <domain-name>
<domain-name> - Enter domain name string (1-64 alpha-numeric characters)

DESCRIPTION: Configure the system domain name
EXAMPLE: config> system domain Largo-Lab

3.3.5.9 config system host

SYNTAX: config system host <host-name>
<host-str> - Enter host name (1-64 alpha-numeric characters)

DESCRIPTION: Configure the system host name
EXAMPLE: config> system host EtherXtend-NYC

3.3.5.10 config system auto-update-DNS

SYNTAX: config system auto-update-DNS {enable | disable}

DESCRIPTION: Enable or disable the auto-configuration of an DNS server via DHCP. If DHCP is not configured for the management interface, is it recommended a (primary or secondary) DNS server address be statically configured.

EXAMPLE: config> system auto-update-DNS enable

3.3.5.11 config system inactivity-timeout

SYNTAX: config system inactivity-timeout <timeout>
<timeout> - Enter login session inactivity timeout in seconds. A value of 0 disables the timeout.

DESCRIPTION: Configure the amount of time, in seconds, that a web-browser, telnet, SSH, or local-console CLI session can be inactive before the session is terminated. If the timeout value is set to zero, all user-sessions will remain active until the system reboots, or a user explicitly exists from a session.

EXAMPLE: config> inactivity-timeout 300

3.3.5.12 config system service

SYNTAX: config system service {syslog | snmp | telnet | web-server} {enable | disable}

DESCRIPTION: Enable or disable Syslog, SNMP, Telnet or Web Server system services.
EXAMPLE: config> system snmp enable



3.3.5.13 Configure System Syslog

service	- Configure syslog service
size	- Configure syslog file size
remote-logging	- Configure remote logging
exit	- Exit from the current tree and go to parent
where	- Show the path of the current module from the root
logout	- Log out from the current Session
cli-settings	- Configure cli settings
tree	- Show all modules under the current module

3.3.5.13.1 config system syslog service

SYNTAX:	<code>config system syslog service {enable disable}</code>
DESCRIPTION:	Enable or disable the logging of messages to a system log file
EXAMPLE:	<code>config> system syslog service enable</code>

3.3.5.13.2 config system syslog size

SYNTAX:	<code>config system syslog size <max_log_size> num-rotated-logs <num-logs></code>
<max_log_size>	- Maximum file size (KB) before rotate (1-500)
<num-logs>	- Number of log files to keep (1-99, default=1, 0=purge)
DESCRIPTION:	Configure the maximum size of the log file before entries in the file are rotated to another log file, and the maximum number of log files maintained.
EXAMPLE:	<code>config> system syslog size 500 num-rotated-logs 5</code>

3.3.5.13.3 config system syslog remote-logging

SYNTAX:	<code>config system syslog remote-logging {enable <server> [port <port> local-logging {enable disable}] {disable}}</code>
<server>	- Enter remote syslog host (name or IP address)
<port>	- Configure the port for which syslog messages will be sent to on the specified remote syslog server
DESCRIPTION:	Enable or disable the logging of system messages to a remote syslog server
EXAMPLE:	<code>config> system syslog remote-logging enable 192.168.1.254 port 1012 local-logging enable</code>

3.3.6 Configure SNMP Settings

contact	- Configure SNMP system contact
location	- Configure SNMP system location
default-trap-community	- Configure the default trap community string
community-info	- Configure SNMP community information
trap-managers	- Configure SNMP Trap Manager information
trap-filters	- Enable or disable the generation of specific trap types

3.3.6.1 config snmp contact

SYNTAX:	<code>config snmp contact <contact-string></code>
---------	---



<contact-string> - Enter system contact (1-256 alpha-numeric characters) If blank characters are embedded in the string, the string must be enclosed in parentheses.

DESCRIPTION: Configure the system contact information. This information is returned when a SNMP get occurs on the sysContact MIB II object for the system.

WARNING: do not include the string "http://" in the system contact or system location information. This string can cause problems with certain web browsers when attempting to display the values.

EXAMPLE: config> snmp contact www.zhone.com

3.3.6.2 config snmp location

SYNTAX: config snmp location <location-string>

<location> - Enter system location (1-256 alpha-numeric characters). If blank characters are embedded in the string, the string must be enclosed in parentheses.

DESCRIPTION: Configure the system location information. This information is returned when a SNMP get occurs on the sysLocation MIB II object for the system.

WARNING: do not include the string "http://" in the system contact or system location information. This string can cause problems with certain web browsers when attempting to display the values.

EXAMPLE: config> snmp location "Global Services and Support, Zhone Technologies"

3.3.6.3 config snmp default-trap-community

SYNTAX: config snmp default-trap-community <community-string>

<community-string> - Enter community string (1-256 alpha-numeric characters, no blanks)

DESCRIPTION: Configure the default community string If a community string is not configured for a trap manager, the default-trap-community string will be used for all traps sent to that trap manager.

EXAMPLE: config> snmp default-trap-community private

3.3.6.4 config snmp community-info

SYNTAX: config snmp community-info {add | modify | delete} <community-string> {read-only | read-write}

<community-string> - Enter community string (1-256 alpha-numeric characters, no blanks)

DESCRIPTION: Add, modify or delete a community for the system's SNMP agent. Authentication traps are generated for all snmp requests received by the SNMP agent with an invalid community, unless the filtering of authentication traps is configured. Multiple communities with read-only and read-write access are supported by the system.

EXAMPLE: config> snmp community-info add private read-write

3.3.6.5 config snmp trap-managers

SYNTAX: config snmp trap-managers {add | modify | delete} <ip-address> {v1 | v2c} [community <community-string> port <udp-port>]



<ip-address> - Configure the IP Address of the destination trap manager
<community-string> - Configure the community string (1-256 alpha-numeric characters, no blanks)
<udp-port> - Configure the UDP port number (1-65536)

DESCRIPTION: Add, modify or delete a trap manager for the system. When configured, all traps (unless explicitly filtered) will be sent to each trap manager configured for the system. An optional community string and UDP port # can also be configured. If a community string is not configured, the "default-trap-community" will be used. If a UDP port # is not configured, the default SNMP trap port of 162 will be used.

EXAMPLE: config> snmp trap-managers add 192.168.1.254 v2c community private port 1162

3.3.6.6 config snmp trap-filters

SYNTAX: config snmp trap-filters {authentication | config-change | linkup-down} {enable | disable}

DESCRIPTION: Enable or disable the generation of authentication-failure traps, configuration change traps, or linkup-linkdown traps. If disabled, the specified type of trap will not be sent to each of the trap managers configured.

EXAMPLE: config> snmp trap-filters authentication disable

3.3.7 Configure Firewall Settings

access-control - Access Control configuration
router - Management access on a router interface
default-config - Default configuration
disable - Disable Firewall
enable - Enable Firewall

3.3.7.1 Configure Firewall Access Control Settings

no - Remove access control
enable-ping - Enable ping (ICMP) traffic communication
port-forward - Forward port to a local server

3.3.7.1.1 config firewall access-control no enable-ping

SYNTAX: config firewall access-control no enable-ping

DESCRIPTION: Disallow inbound and outbound ping (ICMP) traffic

EXAMPLE: config> firewall access-control no enable-ping

3.3.7.1.2 config firewall access-control no port-forward

SYNTAX: config firewall access-control no port-forward start-port [http | https | ftp | telnet | ssh | port <in-port>] end-port [http | https | ftp | telnet



```
| ssh | port <in-port> ]protocol {tcp | udp} public-address <address> local-  
server <name_or_ipaddress> ]
```

```
<in_port>          - Inbound port number (0 - 65535)  
<address>          - Specify the Public IP Address of which to translate from  
<name_or_ipaddr>  - Specify the name or IP Address of the server of which to forward  
to
```

DESCRIPTION: Delete a port-forwarding rule from the access-control firewall list.

EXAMPLE: `config> firewall access-control no port-forward startport telnet end_dport telnet protocol tcp public-address 10.110.20.1 local-server 192.168.1.200`

3.3.7.1.3 config firewall access-control enable-ping

SYNTAX: `config firewall access-control enable-ping`

DESCRIPTION: Allow inbound and outbound ping (ICMP) traffic

EXAMPLE: `config> firewall access-control enable-ping`

3.3.7.1.4 config firewall access-control port-forward

SYNTAX: `config firewall access-control port-forward start-port [http | https | ftp | telnet | ssh | port <in-port>] end-port [http | https | ftp | telnet | ssh | port <in-port>] protocol {tcp | udp} public-address <address> local-server <name_or_ipaddress>]`

```
<in_port>          - Inbound port number (0 - 65535)  
<address>          - Configure the Public IP Address of which to translate from  
<name_or_ipaddr>  - Configure the name or IP Address of the server of which to forward  
to
```

DESCRIPTION: Add a port-forwarding rule to the access-control firewall list.

EXAMPLE: `config> firewall access-control port-forward startport telnet end_dport telnet protocol tcp public-address 10.110.20.1 local-server 192.168.1.200`

3.3.7.2 config firewall router

```
add      - Enable management access on a router interface  
delete  - Disable management access on a router interface
```

3.3.7.2.1 config firewall router add

SYNTAX: `config firewall router add <if-name>`

```
<if-name> - Interface name (1-16 alpha-numeric characters)
```

DESCRIPTION: Enable management access on a router interface.

EXAMPLE: `config> firewall router add eth1:2`

3.3.7.2.2 config firewall router delete

SYNTAX: `config firewall router delete <if-name>`

```
<if-name> - Interface name (1-16 alpha-numeric characters)
```



DESCRIPTION: Disable management access on a router interface.
EXAMPLE: config> firewall router delete eth1:2

3.3.7.3 config firewall default-config

no - Disallow a protocol, by default
enable - Enable Services

3.3.7.3.1 config firewall default-config no

SYNTAX: config firewall default-config no [ssh | telnet | http | https | tftp | ftp
| syncookies]
DESCRIPTION: Block protocol traffic for the specified protocol on all interfaces.
EXAMPLE: config> firewall default-config no http

3.3.7.3.2 config firewall default-config enable

SYNTAX: config firewall default-config enable [ssh | telnet | http | https | tftp |
ftp | syncookies]
DESCRIPTION: Allow protocol traffic for the specified protocol on all interfaces.
EXAMPLE: config> firewall default-config enable http

3.3.7.4 config firewall disable

SYNTAX: config firewall disable
DESCRIPTION: Disable all firewall rules
EXAMPLE: config> firewall disable

3.3.7.5 config firewall enable

SYNTAX: config firewall enable
DESCRIPTION: Enable all firewall rules
EXAMPLE: config> firewall enable

3.3.8 Configure Interface Settings

interface - Interface parameter configuration
dns - Set DNS configuration for interfaces
mgmt-addrmode - Set Management connection address mode
interface-state - Set interface administrative state
route-add - Add route



route-del - Delete route

3.3.8.1 config if interface

SYNTAX: `config if interface <if_name> ip <ipaddr> mask <mask> broadcast <addr> default-gateway <gw-addr> [mtu <size>]`

<if_name> - Interface name (1-16 alpha-numeric characters)
<ipaddr> - Configure the IP Address for the specified interface
<mask> - Configure the subnet mask for the specified interface
<addr> - Configure the broadcast address for the specified interface
<gw-ip> - Enter default gateway
<size> - Enter maximum transfer unit, in bytes

DESCRIPTION: Configure the IP address, network mask, broadcast address and optional MTU size for the specified interface

EXAMPLE: `config> if interface brvlan7 ip 10.10.10.10 netmask 255.255.255.0 broadcast 100.100.100.100 default-gateway 192.168.10.2 mtu 512`

3.3.8.2 config if dns

SYNTAX: `config if dns {dhcp | static primary-ip <ipaddr> secondary-ip <ipaddr> | none}`

<if_name> - Interface name (1-16 alpha-numeric characters)

DESCRIPTION: Configure the Dynamic Name Server (DNS) information. Select "dhcp" if the DNS address is to be acquired via the DHCP protocol. Select "static" if the primary DNS IP address (and an optional secondary DNS IP address) is well-known and can be statically configured. Select "none" if DNS information is undefined.

EXAMPLE: `config> if dns static primary-ip 192.168.1.200 secondary-ip 192.168.2.200`

3.3.8.3 config if mgmt-addrmode

SYNTAX: `config if mgmt-addrmode <if_name> {dhcp | static | none}`

<if_name> - Interface name (1-16 alpha-numeric characters)

DESCRIPTION: Configure the management connection type for the specified interface. Connection types supported are DHCP, static and none. If static is configured, a static IP address, mask and broadcast address must also be configured for the interface.

EXAMPLE: `config> if mgmt-addrmode dhcp`

3.3.8.4 config if interface-state

SYNTAX: `config if interface-state <if_name> {enable | disable | disableip }`

<if_name> - Interface name (1-16 alpha-numeric characters)

DESCRIPTION: Enable/disable the specified interface, or set the IP address of the specified interface to 0.0.0.0.

EXAMPLE: `config> if interface-state eth1 disable`



3.3.8.5 config if route-add

SYNTAX: `config if route-add destination {default gw-addr <gw-ip> [metric <metric>] } | {<dest-ip> <dest-mask> gw-addr <gw-ip> [metric <metric>] }`

<dest-ip> - Enter Destination IP Address of route destination
<dest-mask> - Enter Network Mask for route destination
<gw-ip> - Enter Gateway to reach destination
<metric> - Enter Metric (ie. cost for the destination)

DESCRIPTION: Add a default route for all destinations, or add a single route for the specified destination

EXAMPLE: `config> if route-add destination 10.10.10.10 255.255.255.255 gw-addr 10.110.10.254 metric 10`

3.3.8.6 config if route-del

SYNTAX: `config if route-del destination {default {none | gw-addr <gw-ip>} } | {<dest-ip> <dest-mask>}`

<gw-ip> - Enter Gateway to reach destination
<dest-ip> - Enter Destination IP Address of route destination
<dest-mask> - Enter Network Mask for route destination

DESCRIPTION: Delete the default route for all destinations, or delete the single route for the specified destination

EXAMPLE: `config> if route-del destination 10.10.10.10 255.255.255.255`

3.3.9 Configure Ethernet Port Settings

mode - Non-auto-negotiation rate and duplex mode
auto-neg - Enable or disable auto-negotiation
restart-auto-neg - Restart port negotiation
admin-state - Enable or disable admin state
follow-wan-uplink-status - Enable or disable follow-wan-uplink-status

3.3.9.1 config ethernet mode

SYNTAX: `config ethernet mode <port-name> {10HD | 10 FD | 100HD | 100FD}`

<port-name> - Enter port name (1-32 characters).
10HD - 10BaseT, half-duplex
10FD - 10BaseT, full-duplex
100HD - 100BaseT, half-duplex
100FD - 100BaseT, full-duplex

DESCRIPTION: Configure the rate and duplex mode for the specified Ethernet interface.

EXAMPLE: `config> ethernet mode eth1 100FD`

3.3.9.2 config ethernet auto-negotiation

SYNTAX: `config ethernet auto-neg <port-name> {enable | disable}`

<port-name> - Enter port name (1-32 characters).



DESCRIPTION: Enable or disable the auto-negotiation of the rate and duplex mode for the specified Ethernet interface.

EXAMPLE: config> ethernet auto-neg eth1 enable

3.3.9.3 config ethernet restart-auto-negotiation

SYNTAX: config ethernet restart-auto-neg <port-name> {restart | norestart}

<port-name> - Enter port name (1-32 characters).

DESCRIPTION: Restart the auto-negotiation process for the specified ethernet interface, if auto-negotiation is enabled for the port.

EXAMPLE: config> ethernet restart-auto-neg eth1 restart

3.3.9.4 config ethernet admin-state

SYNTAX: config ethernet admin-state <port-name> {enable | disable}

<port-name> - Enter port name (1-32 characters).

DESCRIPTION: Enable or disable the specified port. This command is useful to prevent the generation of an alarm condition and link-down trap for an unused ethernet port.

EXAMPLE: config> ethernet admin-state eth1:3 disable

3.3.9.5 config ethernet follow-wan-uplink-status

SYNTAX: config ethernet follow-wan-uplink-status <port-name> {enable | disable}

<port-name> - Enter port name (1-32 characters).

DESCRIPTION: Configure an ethernet port to follow the status of the WAN uplink. When set to enable, the specified ethernet port to inherit the status of the WAN uplink. When set to disable, the ethernet port status will reflect the status of the ethernet physical connection.

EXAMPLE: config> ethernet follow-wan-uplink-status eth1:3 enable

3.3.10 Configure DHCP Settings

enable - Enable DHCP Server on router interface
disable - Disable DHCP on router interface
server - Enable/disable DHCP server
server-params - Configure DHCP scalar parameters

3.3.10.1 config dhcp enable

SYNTAX: config dhcp enable interface <if-name> ipaddr-range start <ip-addr> end <ip-addr> [dns-interface <if-name>]



<if-name> - Enter dns-interface name (1-32 characters).
<ip-addr> - Enter IP address (e.g. 192.168.20.30).

DESCRIPTION: Enable the DHCP server on a router interface, assign a range of IP addresses for the server to use and, optionally, specify the routed interface by which to send DNS information requests.

EXAMPLE: config> dhcp enable interface eth1.10 ipaddr-range start 10.10.10.20 end 10.10.10.30 dns-interface eth0.10

3.3.10.2 config dhcp disable

SYNTAX: config dhcp disable interface <if-name>

<if-name> - Enter interface name (1-32 characters).

DESCRIPTION: Disable the DHCP server on a router interface.

EXAMPLE: config> dhcp disable interface eth1.10

3.3.10.3 config dhcp server enable

SYNTAX: config dhcp server [enable | disable]

DESCRIPTION: Enable or disable the DHCP server.

EXAMPLE: config> dhcp server enable

3.3.10.4 Config DHCP Server-params

lease-period - Configure DHCP lease period

3.3.10.4.1 config dhcp server-params lease-period

SYNTAX: config dhcp server-params lease-period <lease>

lease - number of seconds before a lease expires (60-59,606,578) or (1 minute up to 365 days, 23 hours, 59 minutes and 59 seconds).

DESCRIPTION: Configure the DHCP server lease period for all DHCP interfaces.

EXAMPLE: config> dhcp server-params lease-period 7140

3.3.11 Configure Ethernet First Mile (EFM) Group and SHDSL Line Settings

group - Configure the EFM settings at the bonding group level
line - Configure the SHDSL settings at the line level
custom-profile - Add or delete a custom profile for an EFM group

3.3.11.1 Configure EFM Group Settings

mode - Configure the EFM group for CO or CPE mode
snr-margin - Configure the Signal to Noise Ratio (SNR) for the EFM group
data-rate - Configure the data rate for the EFM group
profile - Apply default profile settings to the EFM group
admin-state - Enable or disable the EFM group



3.3.11.1.1 config efm group mode

SYNTAX: `config efm group mode {CO | CPE}`

CO - Central Office mode
CPE - Customer Premises Equipment mode

DESCRIPTION: Configure all SHDSL lines in the EFM bonded group with an administrative sub-type of CO or CPE.

Note, the execution time for this command can approach 2-3 minutes. When the command completes execution, a "Success" response or error message will be returned. Do not attempt to execute any additional EFM CLI commands until this command completes execution.

EXAMPLE: `config> efm group mode CO`

3.3.11.1.2 config efm group snr-margin

SYNTAX: `config efm group snr-margin <value>`

<value> - Enter the desired signal-to-noise ratio (SNR) in dBm (0-21)

DESCRIPTION: Configure the desired SNR margin to be achieved for the SHDSL port during initialization. The SNR margin is the difference between the desired SNR and the actual SNR. The changing of the SNR margin will not take affect until a line is down. It does not take affect while the line is up or training.

Note, the worst-case SNR margin is automatically derived by the unit based upon the configured target snr-margin and the actual snr-margin, per the table below:

Target SNR Margin	Worst Case Margin	Current Margin
0	-10	4
1	-9	4
2	-8	4
3	-7	4
4	-6	5
5	-5	6
6	-4	7
7	-3	8
8	-2	9
9	-1	10
10	0	11
11	1	12
12	2	13
13	3	14
14	4	15
15	5	16
16	6	17
17	7	18
18	8	19
19	9	20
20	10	21
21	11	22

EXAMPLE: `config> efm group snr-margin 5`

3.3.11.1.3 config efm group date-rate



SYNTAX: `config efm group data-rate <value>`

<value> - Enter the target data rate (1-22784 Kbps)

DESCRIPTION: Configure the target data rate for the group. The maximum rate obtainable per SHDSL port is 5696 Kbps, therefore the maximum obtainable rate for four operational SHDSL ports is 22784 Kbps.

EXAMPLE: `config> efm group data-rate 11392`

3.3.11.1.4 config efm group profile

SYNTAX: `config efm group profile <index>`

<index> - Enter the profile index (1-22). Default profiles range from 1 to 14. Custom profiles range from 15 to 22.

DESCRIPTION: Assign the profile settings to all SHDSL ports in the EFM bonded group based upon the profile settings for the specified profile index. The default profile indecises and parameters are shown below:

Index	Region	Min Rate	Max Rate	Power	Constallation
1	region1	5696	5696	13.5	tcpam32
2	region1	3072	3072	13.5	tcpam32
3	region1	2048	2048	13.5	tcpam16
4	region1	1024	1024	13.5	tcpam16
5	region1	704	704	13.5	tcpam16
6	region1	512	512	13.5	tcpam16
7	region2	5696	5696	14.5	tcpam32
8	region2	3072	3072	14.5	tcpam32
9	region2	2048	2048	14.5	tcpam16
10	region2	1024	1024	13.5	tcpam16
11	region2	704	704	13.5	tcpam16
12	region2	512	512	13.5	tcpam16
13	region1	192	5696	not fixed	adaptive
14	region2	192	5696	not fixed	adaptive

To assign a profile index of a custom profile, that custom profile must have already been configured via the "config efm custom-profile" command.

EXAMPLE: `config> efm group profile 2`

3.3.11.2 Configure EFM-SHDSL Line Settings

`profile` - Apply default profile settings to a SHDSL port
`admin-state` - Enable, disable or reset a SHDSL line
`extended-rates` - Configure proprietary extended data rates

3.3.11.2.1 config efm line profile

SYNTAX: `config efm line profile <index> line {1 | 2 | 3 | 4}`



<index> - Enter the profile index (1-22). Default profiles range from 1 to 14. Custom profiles range from 15 to 22.

DESCRIPTION: Apply custom or default profile settings for the specified SHDSL port. Configuring a profile index for a SHDSL port will override any profile settings configured for the bonded group for which this port is a member.

EXAMPLE: config> efm line profile 13 line 2

3.3.11.2 config efm line admin-state

SYNTAX: config efm line admin-state {enable | disable | reset} line {1 | 2 | 3 | 4}

enable - Set the administrative state of the SHDSL line to "up"
disable - Set the administrative state of the SHDSL line to "down"
reset - Set the administrative state of the SHDSL line to "down", then "up"

DESCRIPTION: Enable, disable, or reset the specified SHDSL line.

EXAMPLE: config> efm line admin-state reset line 1

3.3.11.3 config efm line extended-rates

SYNTAX: config efm line extended-rates rate <rate> [constellation {tcpam4 | tcpam8 | tcpam16 | tcpam32 | tcpam64 | tcpam128}] line {1 | 2 | 3 | 4}

rate - Configure the extended data rate for the line (0 - 15532 Kb)

DESCRIPTION: Configure the extended data rate and constellation for the specified SHDSL line. The constellation is the Trellis Coded Pulse Amplitude Modulation (TCPAM) format to be used for the SHDSL line.

EXAMPLE: config> efm line extended-rates rate 12000 constellation tcpam64 line 2

3.3.11.3 Configure EFM Custom Profile Settings

add - Create a SHDSL line custom profile
delete - Delete a SHDSL line custom profile

3.3.11.3.1 config efm custom-profile add

SYNTAX: config efm custom-profile add min-rate <min-rate> max-rate <max-rate> region {region1 | region2} power <tx-power> constellation {adaptive | tcpam16 | tcpam32} [description <profile-description>]

<min-rate> - minimum rate, in Kbps (192-5696). A min-rate value less than the max-rate value means the data rate is not fixed but is adaptive and should be set to the maximum attainable rate not exceeding the max-rate value under the spectral limitations placed by the region and the spectral mode.

<max-rate> - maximum rate, in Kbps (192-5696)

<tx-power> - signal transmit power, in dBm (0.0-42.0)



<region1>	- configure the region as North America (Annexes A and F)
<region2>	- configure the region as Europe (Annexes B and G)
<adaptive>	- maximize the attainable rate by adapting to either 16-TCPAM or 32-TCPAM
<tcpam16>	- 16-TCPAM
<tcpam32>	- 32-TCPAM
<description>	- optional textual description of the profile (0-128 characters)

DESCRIPTION: Create a new custom profile and onfigure the settings for the new profile. When a new profile is created successfully, the index assigned to the new profile will be displayed in the response to the command.

The min-rate and max-rate can take values of $n \times 64\text{Kbps}$, where $n=3..60$ for 16-TCPAM and $n=12..89$ for 32-TCPAM encoding. The rate is fixed when the min-rate value is equal to the max-rate value.

A min-rate value less than the max-rate value means the data rate is not fixed but is adaptive and should be set to the maximum attainable rate not exceeding the max-rate value under the spectral limitations placed by the region and the spectral mode.

Regional settings as specified in the relevant Regional Annex of [G.991.2]. and place limitations on the maximum allowed data rate, power and constellation.

A transmit power value of 0 in the custom profile means that the signal transmit power is not fixed and should be set to maximize the attainable rate, under the spectral limitations placed by the PSD region.

Constellation settings will configure the Trellis Coded Pulse Amplitude Modulation (TCPAM) constellation for the custom profile. The value of adaptive means that the constellation is not fixed and should be set to maximize the attainable rate, under the spectral limitations placed by the PSD region.

EXAMPLE: `config> efm custom-profile add min-rate 192 max-rate 5696 region region1 power 10 constellation tcpam-32`

3.3.11.3.2 config efm custom-profile delete

SYNTAX: `config efm custom-profile delete index <value>`

<value > - profile index (15-22)

DESCRIPTION: Delete a custom profile

EXAMPLE: `config> efm custom-profile delete 15`

3.3.12 Configure Software Upgrade Settings

autoUpgrade	- Configure the automatic upgrade of software
apply-image	- Apply a previously transferred software image
tftp	- Transfer a software image from a TFTP server
url	- Transfer a software image from a FTP server

3.3.12.1 config swupgrade autoupgrade

SYNTAX: `config swupgrade autoupgrade {enable | disable } forceupgrade {enable | disable} time <time> interval <interval> url <url_string>`

<time> - Auto upgrade time string



<interval> - Auto upgrade interval
<url_string> - URL of the host where software upgrade files reside

DESCRIPTION: Enable or disable the automatic software upgrade feature. If enabled, this command will configure the access device to automatically check for software upgrades periodically from the specified file server. This command can also be used to force an upgrade even when the firmware version has not changed.

EXAMPLE: config> swupgrade autoupgrade enable forceupgrade disable time 24:00 url tftp://192.168.1.254/EtherXtend-swupgrade.img_1.2.2

3.3.12.2 config swupgrade apply-image

SYNTAX: config swupgrade apply-image

DESCRIPTION: Upgrade the EtherXtend software by activating a previously transferred software image. The image must have previously been downloaded to the unit following the last reset. If a EtherXtend unit resets or reboots, all software images transferred to the unit before the reset or reboot is lost and must be downloaded again.

EXAMPLE: config> swupgrade apply-image

3.3.12.3 config swupgrade tftp

SYNTAX: config swupgrade tftp server <server-addr> remote-file-path <remote-path>

<server-addr> - TFTP server IP address
<remote-path> - Complete path where the file resides on the TFTP server

DESCRIPTION: Download an EtherXtend software image from the specified TFTP server.

EXAMPLE: config> swupgrade tftp server 192.168.1.254 Ethx-3000/EtherXtend-swupgrade.img_1.2.2

3.3.12.4 config swupgrade ftp

SYNTAX: config swupgrade ftp server <server-addr> username <name> password <pswd> remote-file-path <remote-path>

<server-addr> - FTP server IP address
<remote-path> - Complete path where the file resides on the FTP server
<username> - FTP server login/username
<password> - FTP server password

DESCRIPTION: Download an EtherXtend software image from the specified FTP server.

EXAMPLE: config> swupgrade ftp server 192.168.1.254 username anonymous password zhone Ethx-3100/EtherXtend-swupgrade.img_1.2.2.116

3.3.13 Configure User Management Settings

delete-user - Delete an existing user account
change-password - Change the password for a user account
add-user - Add a new user account



edit-user-info - Modify the account settings for a user account.

3.3.13.1 config usrmgmt delete-user

SYNTAX: `config usrmgmt delete-user user-name <username>`

<username> - User name (1-32 alpha-numeric characters)

DESCRIPTION: Delete the user name from the list of users that can access the management services of the system. Note that all users configured can be deleted. Caution must be taken to not delete the last user account.

EXAMPLE: `config> usrmgmt delete-user user-name hacker`

3.3.13.2 config usrmgmt add-user

SYNTAX: `config usrmgmt add-user user-name <username> passwd <passwd> confirm-passwd <confrmpasswd> role {su | admin | user} [usr-description <usrdesc>] [e-mail <email>] [useraddress <useraddress>]`

<username> - Enter user name (1-32 alpha-numeric characters).
<passwd> - Enter password (6-32 alpha-numeric characters).
<confrmpasswd> - Enter password (6-32 alpha-numeric characters).
<usrdesc> - Enter description for user (5-50 alpha-numeric characters). To Enter with spaces put into double quotes.
<email_addr> - Enter user email address (5-50 alpha-numeric characters). Do not use special characters other than @.
<usraddr> - Enter the user address (5-50 alpha-numeric characters). To Enter with spaces put into double quotes.

DESCRIPTION: Add the user name to the list of users that can access the management services of the system and configure the account information for the new user. Note that a user role (or access level) must be defined for the new user. The supported roles are:

su (superuser) - Users configured at this level have access to all commands.
admin (administrative) - Users configured at this level have access to all commands.
user - Users configured at this level have access to show commands, but cannot alter the configuration of the access device.

EXAMPLE: `config> usrmgmt add-user user-name nohacker passwd abc123 confirm-passwd abc123 role su`

3.3.13.3 config usrmgmt change-password

SYNTAX: `config usrmgmt change-password user-name <username> old-password <passwd> new-password <passwd>`

<username> - Enter user name (1-32 alpha-numeric characters).
<passwd> - Enter password (6-32 alpha-numeric characters). Press Enter after password key word to put echo off.

DESCRIPTION: Change the user password for the specified user

EXAMPLE: `config> usrmgmt change-password user-name nohacker old-password abc123 new-password xyz123`

3.3.13.4 config usrmgmt edit-user-info

SYNTAX: `config usrmgmt edit-user-info user-name <username> [usr-description <usrdesc>] [email <email_addr>] [useraddress <usraddr>]`



<usrname> - Enter user name (1-32 alpha-numeric characters).
<usrdesc> - Enter description for user (5-50 alpha-numeric characters). To Enter with spaces put into double quotes.
<email_addr> - Enter user email address (5-50 alpha-numeric characters). Do not use special characters other than @.
<usraddr> - Enter the user address (5-50 alpha-numeric characters). To Enter with spaces put into double quotes.

DESCRIPTION: Configure the user information for the specified user

EXAMPLE: `config> usrmgmt edit-user-info user-name nohacker email <user@zhone.com> useraddress <"7001 Oakport Street Oakland, California">`



3.4 SHOW COMMANDS

```

admin-tools    - Show administrative configuration options
vlan           - Show VLAN configuration
routing        - Show routing configuration
bridge         - Show bridge configuration
system         - System configuration
snmp           - Show SNMP configuration
firewall       - Show firewall configuration
nat            - Show NAT'ed interfaces
if             - Show Interface parameters, statistics, and status
ethernet       - Show Ethernet port configuration and status
dhcp           - Show DHCP configuration and lease information
swupgrade      - Show Software Upgrade configuration
usrmgmt        - Show user login information
efm            - Show EFM configuration and statistics
alarms         - Show system alarms

```

3.4.1 Show Administrative Tools

```

settings        - Show Restore-Backup settings
backup-history  - Show the backup history

```

3.4.1.1 Show Administrative Tools Settings

```

history-size          - Show number of history backups
always-save-runningconfig - Always save running config

```

3.4.1.1.1 Show Administrative Tools Settings History-Size

```

SYNTAX:      show system history-size

DESCRIPTION: Display the history-size setting for the system.

EXAMPLE:     show> admin-tools settings history-size

              Max History Size           - 1

```

3.4.1.1.2 Show Administrative Tools Settings Always-Save-Runningconfig

```

SYNTAX:      show system settings always-save-runningconfig

DESCRIPTION: Display the setting for the "always-save-running" configuration option for
              the system.

EXAMPLE:     show> admin-tools settings always-save-runningconfig

              Always Save Running Config   - disable

```

3.4.1.1.3 Show Administrative Tools Backup-History

```

SYNTAX:      show admin-tools backup-history

DESCRIPTION: Display the backup history files that have been stored on the local flash
              file system.

EXAMPLE:     show> admin-tools backup-history

```

Name	URL	Backup Date
-----	-----	-----



testit1	history/testit_file.tar.gz	12-31-2006 19:5:55
---------	----------------------------	--------------------

3.4.2 Show VLAN Settings

- vlan - Show VLAN names and IDs
- portdefaults - Show default PVID and VLAN priority for VLAN ports
- vlanport - Show VLAN port assignments
- vlan-ingress-map - Show ingress QOS mapping
- vlan-egress-map - Show egress QOS mapping

3.4.2.1 Show VLANs

SYNTAX: `show vlan vlans [vlanid <vlan#>]`

<vlan#> - vlan ID

DESCRIPTION: Display the names and VLAN IDs for all vlans configured or for the specified vlan ID.

EXAMPLE: `show> vlan vlans`

VLAN Info Table

VLAN Name	ID	Rate Limit Mode	Rate Limit (kbps)	Priority Queuing	Secure Status	Secure Port
Default_Native_Vlan	0	disabled	1000	disabled	disabled	eth0
Default_Data_Vlan	1	disabled	1000	disabled	disabled	eth0
Default_Mgmt_Vlan	7	disabled	1000	disabled	disabled	eth0
vlan9	9	disabled	1000	disabled	enabled	eth1
vlan10	10	disabled	1000	enabled	disabled	eth0
vlan11	11	disabled	1000	enabled	disabled	eth0

3.4.2.2 Show VLAN Port Defaults

SYNTAX: `show vlan portdefaults [vlanid <vlan#>]`

<vlan#> - vlan ID

DESCRIPTION: Display the default PVID and VLAN priority values for all vlans in the system or for the specified vlan.

EXAMPLE: `show> vlan portdefaults`

Default VLAN Port	Default Port PVID	Default Port Priority
eth1	0	0
eth0	1	0
eth1:0	1	0
eth1:1	1	0



eth1:2	1	0
eth1:3	1	0

3.4.2.3 Show VLAN Ports

SYNTAX: `show vlan vlanport [vlanid <vlan#>]`

<vlan#> - vlan ID

DESCRIPTION: Display the ports configured for all vlans in the system or for the specified vlan.

EXAMPLE: `show> vlan vlanport`

VLAN Port Table

VLAN ID	Port Name	Tagging
2	eth0	tagged
7	eth1	untagged
7	eth0	tagged
9	eth0	tagged
10	eth0	tagged
2	eth1:0	untagged
2	eth1:1	untagged
3	eth1:2	untagged
3	eth1:3	untagged

3.4.2.4 Show VLAN Ingress Map

SYNTAX: `show vlan vlan-ingress-map [vlanid <vlan#>] [vlanport <port>]`

<vlan#> - vlan ID

<port> - interface name

DESCRIPTION: Display the mapping of 802.1Q priority to SKB priority on the vlan ingress side for the specified vlan or vlan port or for all vlans in the system.

EXAMPLE: `show> vlan vlan-ingress-map vlanid 10`

VLAN ID	VLAN Port	VLAN 802.1q priority	VLAN SKB Priority
10	eth0	0	0
10	eth0	1	1
10	eth0	2	2
10	eth0	3	3
10	eth0	4	4
10	eth0	5	5
10	eth0	6	6



10	eth0	7	7
----	------	---	---

3.4.2.5 Show VLAN Egress Map

SYNTAX: `show vlan vlan-egress-map [vlanid <vlan#>] [vlanport <port>]`

<vlan#> - vlan ID
<port> - interface name

DESCRIPTION: Display the mapping of 802.1Q priority to SKB priority on the vlan egress side for the specified vlan or vlan port or for all vlans in the system.

EXAMPLE: `show> vlan vlan-egress-map vlanport eth1`

VLAN ID	VLAN Port	VLAN 802.1q priority	VLAN SKB Priority
2	eth1	0	0
2	eth1	1	1
2	eth1	2	2
2	eth1	3	3
2	eth1	4	4
2	eth1	5	5
2	eth1	6	6
2	eth1	7	7

3.4.3 Show Router Settings

bgp - Show BGP configuration
advanced - Show routing configuration
dynamic-routing - Show dynamic routing configuration

3.4.3.1 Show Router BGP Configuration

SYNTAX: `show routing bgp-router config [interface <if_name>]`

<if_name> - interface name

DESCRIPTION: Display the Border Gateway Protocol configuration settings for the system.

EXAMPLE: `/show routing bgp-router config interface eth0.1`

BGP Router Table

Name	AS Number	Interface	IP	Redistr ibute Kernel	Redistr ibute Static	Redistr ibute Connect ed	Redistr ibute RIP
mybgprouter	2000	eth0.1	0.0.0.0	enable	enable	enable	enable



3.4.3.2 Show Router BGP Neighbor

SYNTAX: `show routing bgp-neighbor config`

DESCRIPTION: Display the Border Gateway Protocol neighbor configuration settings for the system.

EXAMPLE: `/show routing bgp-neighbor config`

```
Router Interface           - eth0.1
Admin State                - enabled
Local IP                   - 0.0.0.0
Remote IP                  - 135.26.45.3
ASN                        - 4000
Connect Retry Interval    - 120
Hold Time                  - 90
Keep Alive                 - 30
Origination Interval      - 15
Advertisement Interval     - 30
```

3.4.3.3 Show Router BGP Network

SYNTAX: `show routing bgp-network config`

DESCRIPTION: Display the Border Gateway Protocol neighbor configuration settings for the system.

EXAMPLE: `/show routing bgp-network config`

BGP Network Table

Router Interface	IP Address	IP Subnet Mask	Redistribute Network
eth0.1	135.26.20.1	255.255.255.0	enable

3.4.3.4 Show Router Advanced Configuration

SYNTAX: `show routing advanced`

DESCRIPTION: Display the advanced routing configuration settings for the system.

EXAMPLE: `show> routing advanced`

```
Secure Routing            - enable
InterVLAN Routing        - enable
```

3.4.3.5 Show Router Dynamic-Routing Configuration

SYNTAX: `show routing dynamic-routing`

DESCRIPTION: Display the dynamic routing configuration settings for the system.



```

EXAMPLE:      show> routing dynamic-routing

                RIP Status           - disable
                BGP Status          - disable

```

3.4.4 Show Bridge Settings

```

bridge          - Show bridge configuration
bridgeport      - Show bridge port configuration
bridgefdb       - List Forwarding Database entries

```

3.4.4.1 Show Bridge Configuration

```

SYNTAX:         show bridge bridge [<bridge_name>]

<bridge_name>  - bridge name

DESCRIPTION:    Display the bridge settings for the specified bridge or for all bridge
                interfaces in the system.

```

```

EXAMPLE:        show> bridge bridge brvlan1

                Bridge Details

                Bridge Name           - brvlan1
                Hardware Address      - 00:19:15:06:bb:98
                Bridge Priority        - 10
                Stp status             - no
                Aging time            - 298
                Stp Forwarding delay   - 0
                Stp Hello Time        - 19
                Stp Max age           - 0

```

3.4.4.2 Show Bridge Port

```

SYNTAX:         show bridge bridgeport [<bridge_name>]

<bridge_name>  - bridge name

DESCRIPTION:    Display the bridge port configuration for the specified bridge or for all
                bridge interfaces in the system.

```

```

EXAMPLE:        show> bridge bridgeport

```

Bridge Port Details

Parent Bridge	Port Name	Port Priority	Port State	Path Cost	Designated Root id	Designated Bridge id	Designated Port
brvlan1	eth0.1	0	forwarding	19	000a.00191506bb98	000a.00191506bb98	32769
brvlan7	eth1.7	0	forwarding	19	000a.0039e0ffff39	000a.0039e0ffff39	32769
brvlan7	eth0.7	0	forwarding	19	000a.0039e0ffff39	000a.0039e0ffff39	32770
brvlan9	eth0.9	0	forwarding	19	000a.00191506bb98	000a.00191506bb98	32769
brvlan10	eth0.10	0	forwarding	19	000a.00191506bb98	000a.00191506bb98	32769
brvlan2	eth0.2	0	forwarding	19	000a.00191506bb98	000a.00191506bb98	32769
brvlan2	eth1.2	0	forwarding	19	000a.00191506bb98	000a.00191506bb98	32770



3.4.4.3 Show Bridge FDB

SYNTAX: `show bridge fdb [bridge_name <bridge_name>]`

<bridge_name> - bridge name
<port#> - bridge port number

DESCRIPTION: Display the bridge forwarding database table for the specified bridge or bridge port number, or for all bridge interfaces in the system.

EXAMPLE: `show> bridge bridgefdb bridge-name brvlan2`

FDB table

Bridge Name	Port Name	Port MAC Address	Is Local	Aging timer
brvlan2	eth0.2	00:19:15:06:bb:98	yes	0
brvlan2	eth1.2	00:00:06:8e:00:00	no	0
brvlan2	eth1.2	00:10:4b:87:35:05	no	114

3.4.5 Show System Settings

general-info - Show general system information and settings
 model-info - Show model information
 board-info - Show circuit board information
 pld-info - Show circuit board PLD information
 timezone - Show Time Zone (TZ)
 ntpserver - Show ntpserver
 service-status - Show status of various services
 autoupdate-DNS-status - Autoupdate DNS from DHCP status
 inactivity-timeout - Show login session inactivity timeout
 syslog - Show Syslog Parameters

3.4.5.1 show system general-info

SYNTAX: `show system general-info`

DESCRIPTION: Display the general information for the system.

EXAMPLE: `show> system general-info`

```

Firmware version - 1.2.2.101
Alt Bank Firmware version - 1.2.3
Serial number - HGT8W
Host name - Central-Park
Domain name - EtherXtendDomain
Primary DNS - 192.168.1.213
Secondary DNS - 0.0.0.0
Date - 02-14-2008
Time - 15:21:55
Uptime - 29 days, 47 min
  
```

3.4.5.2 show system model-info

SYNTAX: `show system model-info`



DESCRIPTION: Display the model information for the system.

EXAMPLE: show> system model-info

```
Model Number           - ETHX-3014
System Contact         - www.zhone.com
System Location        - Zhone Global Services and Support
                       - 7001 Oakport Street Oakland, CA 94621 USA,
                       - (877) Zhone30
Power Supply Type      - dc
Base MAC Address       - 00:e0:39:ff:ff:39
Number of MAC Addresses - 2
```

3.4.5.3 show system board-info

SYNTAX: show system board-info

DESCRIPTION: Display the board information for the system.

EXAMPLE: show> system board-info

```
Board ID               - 0
Board Name             - Main
Board Part Number      - 860-54678-20
Board Serial Number    - GVN032
Board Revision         - 01
```

3.4.5.4 show system pld-info

SYNTAX: show system pld-info

DESCRIPTION: Display the PLD information for the system.

EXAMPLE: show> system pld-info

```
PLD ID                 - 0
PLD Name               - Main
PLD Revision           - 0.2
```

3.4.5.5 show system timezone

SYNTAX: show system timezone

DESCRIPTION: Display the timezone information for the system.

EXAMPLE: show> system timezone

```
Time Zone              - (GMT-05:00) Eastern Time - US and Canada
```

3.4.5.6 show system ntpserver

SYNTAX: show system ntpserver

DESCRIPTION: Display the ntpserver information for the system.

EXAMPLE: show> system ntpserver

```
NTP Server Status      - enable
NTP Server              - 172.16.23.5
```



3.4.5.7 show system DNS autoupdate status

SYNTAX: `show system autoupdate-DNS-status`

DESCRIPTION: Display the autoupdate-DNS-status information for the system.

EXAMPLE: `show> autoupdate-DNS-status`

```
autoupdate DNS status           - enable
```

3.4.5.8 show system inactivity-timeout

SYNTAX: `show system inactivity-timeout`

DESCRIPTION: Display the amount of time, in seconds, that a web-browser, telnet, SSH, or local-console CLI session can be inactive before the session is terminated. If the timeout value is set to zero, all user-sessions will remain active until the system reboots, or a user explicitly exists from a session.

EXAMPLE: `show> system inactivity-timeout`

```
Login Session Inactivity       - 300
Timeout (seconds)
```

3.4.5.9 Show System Syslog Settings

`system-log` - Show syslog messages
`remote-logging` - Show remote logging details
`settings` - Show Syslog settings

3.4.5.9.1 show system syslog system-log

SYNTAX: `show system syslog system-log`

DESCRIPTION: Display the system log settings for the system.

EXAMPLE: `show> system syslog system-log`

```
Jan  1 00:00:00 (none) syslog.info System log daemon exiting.
Jan  1 00:00:00 (none) syslog.info syslogd started: BusyBox v1.00
(2007.05.13-15:12+0000)
Jan  1 00:00:01 (none) syslog.info System log daemon exiting.
Jan  1 00:00:01 Central-Park syslog.info syslogd started: BusyBox v1.00
(2007.05.13-15:12+0000)
Jan  1 00:00:01 Central-Park syslog.info System log daemon exiting.
Jan  1 00:00:01 Central-Park syslog.info syslogd started: BusyBox v1.00
(2007.05.13-15:12+0000)
Jan  1 00:00:01 Central-Park syslog.info System log daemon exiting.
Jan  1 00:00:01 Central-Park syslog.info syslogd started: BusyBox v1.00
(2007.05.13-15:12+0000)
Jan  1 00:00:01 Central-Park syslog.info System log daemon exiting.
Jan  1 00:00:01 Central-Park syslog.info syslogd started: BusyBox v1.00
(2007.05.13-15:12+0000)Jan  1 00:00:01 Central-Park syslog.info System log
daemon exiting.
Jan  1 00:00:01 Central-Park syslog.info syslogd started: BusyBox v1.00
(2007.05.13-15:12+0000)
Jan  1 00:02:58 Central-Park kern.info passwd[4870]: password for `admin'
changed by user `root'
```

3.4.5.9.2 show system syslog remote-logging

SYNTAX: `show system syslog remote-logging`



DESCRIPTION: Display the system log settings for the logging events to a remote Syslog server.

EXAMPLE: show> system syslog remote-logging

```
Remote Syslog Server      - 192.168.1.200
Remote Logging            - enable
Local Logging             - enable
Remote Syslog Server Port - 514
```

3.4.5.9.3 show system syslog settings

SYNTAX: show system syslog settings

DESCRIPTION: Display the system log settings for the system.

EXAMPLE: show> system syslog settings

```
Size (KB)                  - 100
Num of rotated logs        - 2
Syslog                     - enable
```

3.4.6 Show SNMP Settings

```
system                    - Show SNMP system parameters
community-info            - Show SNMP community information
trap-default-community    - Show SNMP trap default community string
trap-filters              - Show SNMP trap-type filters
reap-managers             - Show SNMP trap-manager configurations
```

3.4.6.1.1 show snmp system

SYNTAX: show snmp system

DESCRIPTION: Display the snmp system contact and system location information.

EXAMPLE: show> snmp system

```
System Contact      - www.zhone.com
System Location     - Zhone Global Services and Support,
                    Zhone Technologies, Oakland, CA
```

3.4.6.1.2 show snmp community-info

SYNTAX: show snmp community-info

DESCRIPTION: Display the snmp community information.

EXAMPLE: show> snmp community-info

```
Community Type      - read-only
Community Name      - public

Community Type      - read-only
Community Name      - operator

Community Type      - read-write
Community Name      - private
```



3.4.6.1.3 show snmp trap-default-community

SYNTAX: `show snmp trap-default-community`

DESCRIPTION: Display the default trap-manager community string.

EXAMPLE: `show> snmp trap-default-community`

```
Trap Default Community Name - public
```

3.4.6.1.4 show snmp trap-filters

SYNTAX: `show snmp trap-filters`

DESCRIPTION: Display the trap filtering information.

EXAMPLE: `show> snmp trap-filters`

```
Authentication Trap Type - disable
Link Up/Down Trap Type - enable
Configuration Change Trap Type - enable
```

3.4.6.1.5 show snmp trap-managers

SYNTAX: `show snmp trap-managers`

DESCRIPTION: Display the trap manager information.

EXAMPLE: `show> snmp trap-managers`

```
Trap Destination - 192.168.1.254
Trap Version - v2c
Trap Port - 162
Trap Community Name - public

Trap Destination - 10.10.10.1
Trap Version - v1
Trap Port - 2162
Trap Community Name - private
```

3.4.7 Show Firewall Settings

```
access-control - Show access-control rules
default-config - Show default configuration
router - Show router management interfaces
status - Show firewall status
```

3.4.7.1 show firewall access-control

SYNTAX: `show firewall access-control`

DESCRIPTION: Display the access-control firewall rules.

EXAMPLE: `access-control> port-forward`

```
Start Port - 100
End Port - 200
Protocol - tcp
```



```
Start                               - 22
Private Server                      - 10.10.10.1
Public Address                      - 135.26.20.1

Start Port                         - 22
End Port                           - 22
Protocol                           - tcp
Private Server                      - 192.168.1.200
Public Address                      - 10.110.20.1
```

3.4.7.2 show firewall default-config service-status

SYNTAX: `show firewall default-config service-status`

DESCRIPTION: Display the default firewall rules that apply to all interfaces. If a firewall rule does not exist for an interface, the default firewall rules will be applied to that interface.

EXAMPLE: `default-config> service-status`

```
Service Name                       - ssh
Status                             - enable

Service Name                       - telnet
Status                             - enable

Service Name                       - http
Status                             - disable

Service Name                       - https
Status                             - enable

Service Name                       - tftp
Status                             - disable

Service Name                       - ftp
Status                             - disable

Service Name                       - syncookies
Status                             - disable
```

3.4.7.3 show firewall router interfaces

SYNTAX: `show firewall router interfaces`

DESCRIPTION: Display all management interfaces that are assigned to VLANs which are configured for router mode.

EXAMPLE: `router> interfaces`

```
Router Management Interfaces
Interface                       - eth0.10
```

3.4.7.4 show firewall status

SYNTAX: `show firewall status`

DESCRIPTION: Display the status of the firewall rules.

EXAMPLE: `router> status`

```
Status                           - enable
```



3.4.8 Show Interface Settings

interface - Interface parameters
interface-stats - Interface Statistics
route - Show routes

3.4.8.1 show if interface

SYNTAX: `show if interface <if_name>`
<if_name> - interface name (1-16 alpha-numeric characters)
DESCRIPTION: Display the interface settings for the specified interface or for all interfaces in the system.
EXAMPLE: `show> if interface brvlan7`

```
Total Interfaces: 1

IfName           - brvlan7
IfAlias           - Bridge / VLAN 7
Type              - ethernet
HWAddress         - 00:39:e0:ff:ff:34
ManagementAddrMode - static
IpAddress         - 192.168.1.1
Netmask           - 255.255.255.0
BroadcastAddr     - 192.168.1.255
Default-Gateway   - 10.10.10.24
MTU               - 1500
RemoteAddr        - 192.168.1.1
OpStatus          - enable
Scope            - lan
BridgeScope       - bridge
DNS Server Mode   - unconfigured
Primary DNS Server - 10.10.10.200
Secondary DNS Server - 10.10.40.200
```

3.4.8.2 show if interface statistics

SYNTAX: `show if interface-stats <if_name>`
<if_name> - interface name (1-16 alpha-numeric characters)
DESCRIPTION: Display the interface statistics for the specified interface or for all interfaces in the system.
EXAMPLE: `show> if interface-stats eth1.7`

```
Total Interfaces: 1

Interface Name - eth1.7
Rx Packets     - 11479
Rx Errors      - 0
Rx Dropped     - 0
Rx Overruns    - 0
Rx Bytes       - 13179412
Tx Packets     - 9536
Tx Errors      - 0
Tx Dropped     - 0
Tx Overruns    - 0
Tx Bytes       - 2368096
```

3.4.8.3 show if route

SYNTAX: `show if route [destination default | <ip_address>]`



<ip_address> - destination ip address

DESCRIPTION: Display the entire routing table or the routing table entry for the specified destination.

EXAMPLE: show> if route

Total Routes: 3
IP Routing Table

Destination Addr	Destination Mask	Gateway Addr	Metric	Type	Detail	Interface
192.168.3.0	255.255.255.0	0.0.0.0	0	network	connected	br0
192.168.1.0	255.255.255.0	0.0.0.0	0	network	connected	brvlan1
10.10.10.0	255.255.255.0	192.168.1.254	0	network	static	brvlan1

3.4.9 Show Ethernet Port Configuration and Status

3.4.9.1 show ethernet port

SYNTAX: show ethernet port <port-name>

<port-name> - port name (1-32 alpha-numeric characters)

DESCRIPTION: Display the ethernet port configuration information and status for the specified port.

EXAMPLE: show> ethernet port eth1

```

Ethernet Port - eth1
Non-Auto-Negotiation Rate/Duplex - full100BaseT
Auto-Negotiation - enabled
Operational Rate/Duplex - full100BaseT
Link Status - up
Admin State - enabled
Follow WAN Uplink Status - enabled

```

3.4.10 Show DHCP Configuration and Status

```

server-params - DHCP Scalars
client-leases - DHCP client lease information
interface - DHCP enabled router interfaces

```

3.4.10.1 show dhcp server-params

SYNTAX: show dhcp server-params

DESCRIPTION: Display the DHCP server configuration parameter settings.

EXAMPLE: show> dhcp server-params

```

Server Parameters Displayed

Lease Period - 1000

```



3.4.10.2 show dhcp client-leases

SYNTAX: `show dhcp client-leases`

DESCRIPTION: Display the DHCP server client lease information.

EXAMPLE: `show> dhcp client-leases`

```
Lease Period          - 1000
```

3.4.10.3 show dhcp interface

SYNTAX: `show dhcp interface`

DESCRIPTION: Display the DHCP enabled router interfaces and the DHCP address range information.

EXAMPLE: `show> dhcp interface`

```
Total Interfaces: 2
  Interface Name          - eth1.10
  Address Range Start     - 10.10.10.20
  Address Range End       - 10.10.10.30
  Interface to Get DNS From - eth0.10
  Primary DNS Server      - 107.220.3.1
  Secondary DNS Server    - 107.221.3.1

  Interface Name          - eth1.14
  Address Range Start     - 10.10.14.20
  Address Range End       - 10.10.14.30
  Interface to Get DNS From - eth0.10
  Primary DNS Server      - 107.220.3.1
  Secondary DNS Server    - 107.221.3.1
```

3.4.11 Show Software Upgrade Settings and Status

```
history          - Show software upgrade history
auto-upgrade-details - Show auto-upgrade parameters
image_info      - Show information about the current and backup images
status          - Show software upgrade status
```

3.4.11.1 show swupgrade history

SYNTAX: `show swupgrade history`

DESCRIPTION: Display the history of all software upgrade file transfers since the last system reboot.

EXAMPLE: `show> swupgrade history`

Sequence Num	Date Time	Status	Message
NULL	NULL	NULL	NULL



3.4.11.2 show swupgrade auto-upgrade-details

SYNTAX: `show swupgrade auto-upgrade-details`

DESCRIPTION: Display the history of all software upgrade file transfers since the last system reboot.

EXAMPLE: `show> swupgrade auto-upgrade-details`

```
enableAuto           - disable
upgradeUrl           - file:///tmp/swupgrade.img
upgradeTime          - 00:00:00
upgradeInterval      - 7
enableForce          - enable
```

3.4.11.3 show swupgrade image_info

SYNTAX: `show swupgrade image_info`

DESCRIPTION: Display the software information contained within the software image specified.

EXAMPLE: `show> swupgrade image_info url tftp://192.168.1.254/EtherXtend.img_1.2.2`

3.4.11.4 show swupgrade status

SYNTAX: `show swupgrade status`

DESCRIPTION: Display the status of the current software upgrade or file transfer request. If a software upgrade is not in progress, the status of the previous software upgrade or file transfer request is displayed.

EXAMPLE: `show> swupgrade status`

```
Status               - downloadInProgress
Action               - downloadSw
Secure FTP           - disabled
Primary File Server Address - 192.168.1.254
Local File Path      -
Remote File Path     - SkyZhone-01.02.02.125.img
```

3.4.12 Show User Management Settings

```
show-user-info      - Show all information for specified user
show-all-user-info - Shows information for all users
roles               - Show all user roles
```

3.4.12.1 show usrmgmt show-user-info

SYNTAX: `show usrmgmt show-user-info [user-name <name>]`

`<name>` - user name (1-32 alpha-numeric characters)

DESCRIPTION: Display the user account settings for the specified user.

EXAMPLE: `show> usrmgmt show-user-info user-name admin`

```
Name                - admin
```



```

Description      - Default administrative account
Address          - Undefined
E-mail Address  - Undefined
Role            - su

```

3.4.12.2 show usrmgmt show-all-user-info

SYNTAX: `show usrmgmt show-all-user-info`

DESCRIPTION: Display the user account settings for all users configured.

EXAMPLE: `show> usrmgmt show-all-user-info`

```

Name            - admin
Description     - Default administrative account
Address         - Undefined
Email          - Undefined
Role           - su

Name            - hacker
Description     - Known hacker (aka John Smith)
Address        - 123 Elm St.
Email          - hacker@zhone.com
Role           - user

```

3.4.12.3 show usrmgmt roles

SYNTAX: `show usrmgmt roles`

DESCRIPTION: Display the user account roles supported by the system.

EXAMPLE: `show> usrmgmt roles`

```

-----
User Roles
-----
su
.....
admin
.....
user
-----

```

3.4.13 Show EFM

```

group-config      - Display the EFM SHDSL group configuration
group-status      - Display the EFM SHDSL group status
shdsl-line-profile - Display the profile parameters for the specified EFM profile
shdsl-line-config - Display the EFM SHDSL line configuration
shdsl-line-status - Display the EFM SHDSL line status

```

3.4.13.1 show efm group-config

SYNTAX: `show efm group-config`

DESCRIPTION: Display the EFM Copper 2BASE-TL SHDSL group configuration settings

EXAMPLE: `show> efm group-config`

```

Group Mode      - CO
Group Name      - NewYork_EFM_Group1

```



Group Profile ID	- 13
Target SNR Margin (dB)	- 3
Low Rate Threshold (dB)	- (-)10
Low Rate Trap Enabled	- false

3.4.13.2 show efm shdsl-group-status

SYNTAX: show efm shdsl-group-status

DESCRIPTION: Display the EFM Copper 2BASE-TL group and statistics information

EXAMPLE: show> efm sdsl-group-status

Fault Status Bits	- noPeer,lowRate
Port Side	- subscriber
Number of SHDSL Lines	- 4
Aggregate In Errors	- 0
Aggregate In Small Fragments	- 12
Aggregate In Large Fragments	- 20
Aggregate In Bad Fragments	- 0
Aggregate In Lost Fragments	- 5
Aggregate In Lost Starts	- 0
Aggregate In Lost Ends	- 0
Aggregate In Overflows	- 0

3.4.13.3 show efm shdsl-line-profile

SYNTAX: show efm shdsl-line-profile

DESCRIPTION: Display the EFM Copper 2BASE-TL SHDSL line profile parameters.

EXAMPLE: show> efm shdsl-line-profile

Index	- 1
Description	- profile1
Region	- region1
Max Data Rate(Kbps)	- 5696
Min Data Rate(Kbps)	- 5696
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam32
Index	- 2
Description	- profile2
Region	- region1
Max Data Rate(Kbps)	- 3072
Min Data Rate(Kbps)	- 3072
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam32
Index	- 3
Description	- profile3
Region	- region1
Max Data Rate(Kbps)	- 2048
Min Data Rate(Kbps)	- 2048
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam16
Index	- 4
Description	- profile4
Region	- region1
Max Data Rate(Kbps)	- 1024
Min Data Rate(Kbps)	- 1024
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam16



Index	- 5
Description	- profile5
Region	- region1
Max Data Rate(Kbps)	- 704
Min Data Rate(Kbps)	- 704
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam16
Index	- 6
Description	- profile6
Region	- region1
Max Data Rate(Kbps)	- 512
Min Data Rate(Kbps)	- 512
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam16
Index	- 7
Description	- profile7
Region	- region2
Max Data Rate(Kbps)	- 5696
Min Data Rate(Kbps)	- 5696
Power(multiple of 0.5dBm)	- 29
Constellation	- tcpam32
Index	- 8
Description	- profile8
Region	- region2
Max Data Rate(Kbps)	- 3072
Min Data Rate(Kbps)	- 3072
Power(multiple of 0.5dBm)	- 29
Constellation	- tcpam32
Index	- 9
Description	- profile9
Region	- region2
Max Data Rate(Kbps)	- 2048
Min Data Rate(Kbps)	- 2048
Power(multiple of 0.5dBm)	- 29
Constellation	- tcpam16
Index	- 10
Description	- profile10
Region	- region2
Max Data Rate(Kbps)	- 1024
Min Data Rate(Kbps)	- 1024
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam16
Index	- 11
Description	- profile11
Region	- region2
Max Data Rate(Kbps)	- 704
Min Data Rate(Kbps)	- 704
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam16
Index	- 12
Description	- profile12
Region	- region2
Max Data Rate(Kbps)	- 512
Min Data Rate(Kbps)	- 512
Power(multiple of 0.5dBm)	- 27
Constellation	- tcpam16
Index	- 13
Description	- profile13
Region	- region1
Max Data Rate(Kbps)	- 5696
Min Data Rate(Kbps)	- 192
Power(multiple of 0.5dBm)	- 0
Constellation	- adaptive
Index	- 14
Description	- profile14
Region	- region2



Max Data Rate(Kbps)	- 5696
Min Data Rate(Kbps)	- 192
Power(multiple of 0.5dBm)	- 0
Constellation	- adaptive

3.4.13.4 show efm shdsl-line-config

SYNTAX: `show efm shdsl-line-config`

DESCRIPTION: Display the EFM Copper 2BASE-TL SHDSL line configuration settings

EXAMPLE: `show> efm shdsl-line-config`

```
Port Number - 1
Group Remote Discovery Code - 0e:39:a7:28:63:c4
Line Administrative Sub-type - ieee2BaseTLR
Line Attenuation Threshold (dB) - (-)10
Line SNR Margin Threshold (dB) - 50
Line Attenuation Crossing Enabled - false
Line SNR Margin Crossing Enabled - true
Line Fault Enabled - false
Line Config Initialization Failure Enabled - false
Line Protocol Initialization Failure Enabled - false
Line Extended Data Rate (Kbps) - 1500
Line Extended Constellation - tcpam4
```

```
Port Number - 2
Group Remote Discovery Code - 0e:39:a7:28:63:c5
Line Administrative Sub-type - ieee2BaseTLR
Line Attenuation Threshold (dB) - 20
Line SNR Margin Threshold (dB) - 20
Line Attenuation Crossing Enabled - false
Line SNR Margin Crossing Enabled - true
Line Fault Enabled - false
Line Config Initialization Failure Enabled - false
Line Protocol Initialization Failure Enabled - false
Line Extended Data Rate (Kbps) - 0
Line Extended Constellation - tcpam4
```

3.4.13.5 show efm shdsl-line-status

SYNTAX: `show efm shdsl-line-status`

DESCRIPTION: Display the EFM Copper 2BASE-TL SHDSL port status and statistics information

EXAMPLE: `show> efm shdsl-line-status`

```
Port Number - 1
Line Operational Status - up
Line Port Rate (kbps) - 1540
Current/Last Link Fault Status - snrMgnDefect
Line Operational Sub-type - ieee2BaseTLR
Current Line SNR Margin (dB) - 30
Current Line Attenuation (dB) - 40
Line TC Coding Errors - 0
Line TC CRC Errors - 0
Line Up Counter - 2
Line Up Time - 27 days, 8:26:49
```

```
Port Number - 2
Line Operational Status - downReady
Line Port Rate (kbps) - 0
Current/Last Link Fault Status - noFault
Line Operational Sub-type - ieee2BaseTLR
Current Line SNR Margin (dB) - 0
Current Line Attenuation (dB) - 0
```



```
Line TC Coding Errors      - 0
Line TC CRC Errors        - 0
Line Up Counter           - 2
Line Up Time              - 0 days, 0:00:00
```

3.4.14 Show Alarms

SYNTAX: `show alarms all`

DESCRIPTION: Display all alarms for the system.

EXAMPLE: `show> alarms`

```
Interface    - eth0
Severity     - major
Description  - interfaceDown
```



4 APPENDIX A – QUICK START GUIDE

Initial installation of an EtherXtend device may require changes to the default configuration settings in order to access your EtherXtend device from within your network. Complete installation instructions can be found in the EtherXtend Installation Guide at www.zhone.com/support/manuals.

Below are a sample set of CLI commands necessary to configure a custom management connection to your EtherXtend device. Once the management connection is established, data-path connections can be configured.

Note that you must be connected to the local COM port on your EtherXtend device port to execute the CLI commands necessary to create a custom management connection.

4.1 CREATING A CUSTOM MANAGEMENT CONNECTION

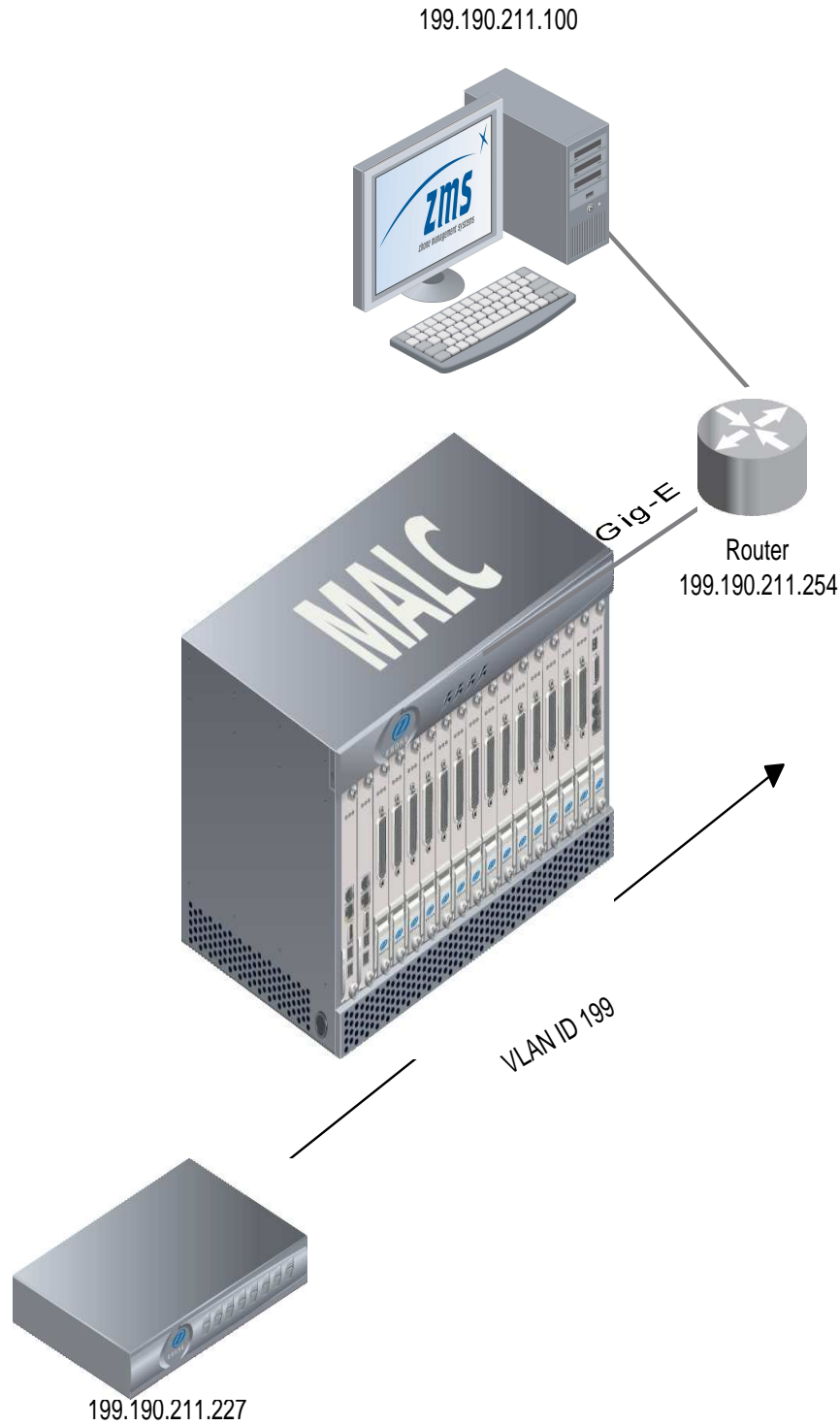
In the diagram below, a management connection between the ZMS system (IP Address = 199.190.211.15) and the EtherXtend device (IP Address = 199.190.211.227) must be created in order to manage the EtherXtend device. Below are the CLI commands required to create this management connection.

Step 1: Create a Tagged Management VLAN (brvlan199) with VLAN ID = 199

```
config vlan vlanconfig addvlan vlan_name brvlan199 vlanid 199 mode bridging
```

Step 2: Add the EFM SHDSL Interface (eth0) as a Member of the new Management VLAN

```
config vlan vlanconfig addport interface eth0 vlanid 199 tagged
```





Step 3: Assign an IP Address to the new Management VLAN

```
config if interface brvlan199 ip 199.190.211.227 mask 255.255.255.0 broadcast  
199.190.211.255 default-gateway 192.168.10.2
```

Step 4: Configure the default destination gateway

```
route-add destination default gw-addr 199.190.211.254
```

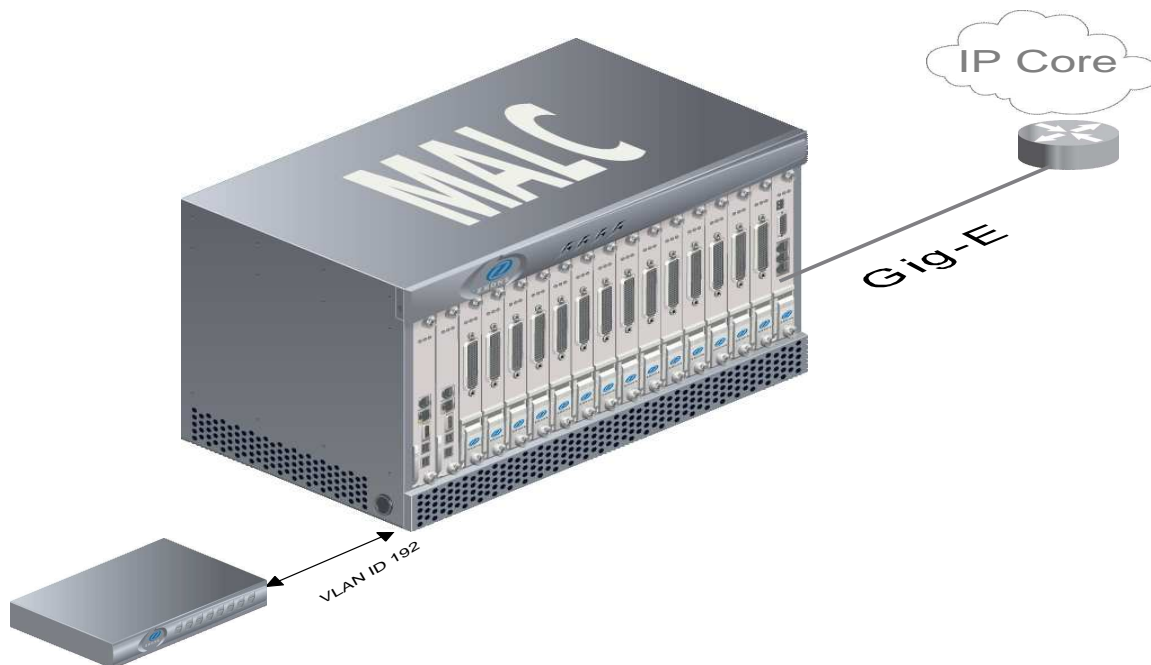
Step 5: Save the configuration so the Management Connection is automatically re-established following a power-cycle.

```
config admin-tools save running-config
```



4.2 CREATING A CUSTOM DATA CONNECTION

In the diagram below, for data to pass from an Ethernet port on the EtherXtend device to/from the IP Core network, a data connection from an Ethernet LAN port over the SHDSL EFM interface must be created for VLAN ID 192. Below are the CLI commands required to create this data connection for Ethernet port 1.



Step 1: Remove Ethernet Port 1 Interface as a Member of default VLAN ID = 1

```
config vlan vlanconfig removeport interface eth1:0 vlanid 1
```

Step 1: Create a Tagged User-Data VLAN (brvlan192) with VLAN ID = 192

```
config vlan vlanconfig addvlan vlan_name brvlan192 vlanid 192 mode bridging
```

Step 2: Add the EFM SHDSL Interface (eth0) as a Member of the new User-Data VLAN

```
config vlan vlanconfig addport interface eth0 vlanid 192 tagged
```

Step 3: Add Ethernet Port 1 Interface as a Member of the new User-Data VLAN

```
config vlan vlanconfig addport interface eth1:0 vlanid 192 tagged
```



Step 4: Save the configuration so the Data Connection is automatically re-established following a power-cycle.

```
config admin-tools save running-config
```

5 APPENDIX B – VLAN PRIORITIZATION CAPABILITIES

The EtherXtend ETHX-30x4 series of products support four Ethernet ports and up to four EFM-SHDSL ports.

Each Ethernet port can be configured to apply a VLAN ID and a VLAN Priority to incoming untagged traffic. The VLAN ID and/or the VLAN Priority can be configured independently for each port. For example, if one port is connected to a VoIP IAD, that traffic could be tagged by the EtherXtend access device with a higher priority level than the untagged traffic received on the remaining 3 Ethernet ports.

Each Ethernet port can also be configured to allow tagged traffic to pass through unaffected. This allows the customer to provision multiple VLANs end to end through the network and pass them through a single port on the EtherXtend device. If the EtherXtend device is not provisioned properly, data will not pass through. The end user must specify which VLANs are to be used and the Service Provider must configure the EtherXtend device to allow those VLANs to pass through the device.

The VLAN ID and VLAN Priority will be removed for the VLAN that is provisioned as an untagged member of that port, while all VLANs configured as tagged members of that Ethernet port will pass through unmodified.

Priority queuing is used to ensure each of the 4 LAN ports have access to at least some of the uplink bandwidth. EtherXtend ETHX-30x4 products support a maximum of four priority queues for each port (4 LAN ports and the SHDSL port). The 4 queues are identified as Critical, High, Medium and Low.

The eight IEEE 802.1p priorities supported are mapped to the four queues according to the rules defined in Clause 7.7.3 and table 7-2 of the IEEE 802.1D standard. The queue mapping is defined as follows:

802.1p Priority value	Internal Priority Queue
7	Critical
6	Critical
5	High
4	High
3	Medium
2	Low
1	Low
0	Medium

The EtherXtend access device uses a weighted round robin scheduling algorithm. The weights of each of the queues are distributed as follows:

Critical-priority Queue = 50%
 High-priority Queue = 25%
 Medium-priority Queue = 15%
 Low-priority Queue = 10%