

## Chapter 4

# Configuring and Monitoring the System

Introduction .....	4-3
System Identification .....	4-3
Time and Date .....	4-4
Timezone and UTC Offset .....	4-5
Monitoring Switch Operations .....	4-7
Environmental Monitoring .....	4-11
Emailing Alerts from the Switch .....	4-11
Configuration Examples .....	4-12
Command Reference .....	4-14
activate cpu extended .....	4-14
activate system psu test .....	4-15
clear summertime .....	4-15
clear timezone .....	4-16
delete mail .....	4-16
disable cpu extended .....	4-17
disable debug active .....	4-17
disable mail debug .....	4-18
disable summertime .....	4-18
dump .....	4-19
enable cpu extended .....	4-20
enable summertime .....	4-21
enable mail debug .....	4-21
mail .....	4-22
modify .....	4-24
reset cpu utilisation .....	4-25
reset mail .....	4-25
reset system cpu utilisation .....	4-25
set mail .....	4-26
set summertime .....	4-27
set system contact .....	4-29
set system coredump .....	4-30
set system environmental .....	4-31
set system location .....	4-32
set system name .....	4-33
set system time .....	4-34
set time .....	4-35
set timezone .....	4-36
show buffer .....	4-37
show cpu .....	4-42
show debug .....	4-44
show debug active .....	4-46

show exception .....	4-50
show mail .....	4-51
show startup .....	4-52
show summertime .....	4-53
show system .....	4-54
show system boards .....	4-61
show system coredump .....	4-62
show system cpu utilisation .....	4-63
show system debug .....	4-64
show system environmental .....	4-65
show system exception .....	4-70
show system memory .....	4-71
show system processpartition .....	4-72
show system serialnumber .....	4-74
show system startup .....	4-74
show system time .....	4-75
show time .....	4-75
show timezone .....	4-76

## Introduction

This chapter contains the following information.

Read about this topic...	In this section...
setting values that identify the switch, and displaying a message at restart	<a href="#">System Identification</a>
setting the time and date on the switch	<a href="#">Time and Date</a>
using the log facility, counters, and debug commands to check switch and network functions	<a href="#">Monitoring Switch Operations</a>
checking the switch's CPU utilisation and memory	<a href="#">Monitoring Switch Operations</a>
monitoring power supplies and fans	<a href="#">x900-48FE and AT-9900</a>
monitoring fans, temperatures, voltage, and power supplies	<a href="#">x900-24X</a>
configuring the mail system so that the switch emails log messages and other alerts	<a href="#">Emailing Alerts from the Switch</a>

## System Identification

This section outlines how to set the system variables on the switch and how to display them. Some of these variables help with accurate network monitoring, such as the switch name. Others are required by certain protocols, such as the distinguished name that Public Key Infrastructure (PKI) uses.

### Settings for identification

System name, location, and contact parameters help a remote network administrator identify individual switches.

To set the name of a switch, use the command:

```
set system name=name
```

To set the location of a switch, use the command:

```
set system location=location
```

To set information about the network administrator responsible for the switch, use the command:

```
set system contact=contact
```

The name, location, and contact are strings 1 to 255 characters long containing any printable character. If the string includes spaces, it must be in double quotes.

### Settings for protocols

The following system settings are in the chapters about the relevant protocol:

- Host ID, used by stacking to identify this switch within a stack—see the [set system hostid](#) command on page 42-23 of Chapter 42, Management Stacking
- Distinguished name, used by Link Aggregation Control Protocol (LDAP) and Public Key Infrastructure (PKI) to identify the switch—see the [set system distinguishedname](#) command on page 35-31 of Chapter 35, Public Key Infrastructure (PKI)

### Displaying system information

To see a summary of the switch hardware, software, and operating conditions, use the command:

```
show system
```

To see the switch's serial number, use the command:

```
show system serialnumber
```

### Customised system messages

Users with Manager level privilege or higher can set the system to display messages when users access the switch through its CLI. The message displays before the login prompt when you login from Telnet or console connections. The following figure shows an example of a message (in bold).

```
TELNET session now in ESTABLISHED state

Warning: This equipment is for authorised persons only. Do not
log in unless you have proper clearance.

login:
```

The message is in a file named *login.txt*, which is displayed if it exists in flash memory. Create a login.txt file by using the **edit** command or by loading an existing text file. The contents of the file must be in printable ASCII characters but with no control characters. When no login.txt file exists, the login prompt is displayed without a message.

For more information about creating a login.txt file, see the [edit command on page 6-27 of Chapter 6, Managing the File System](#), and the [load command on page 5-31 of Chapter 5, Managing Configuration Files and Software Versions](#).

## Time and Date

To set the real-time clock to the current local time for x900-48FE and AT-9900 switches, use the command:

```
set time=hh:mm:ss
```

To set the real-time clock to the current local time for x900-24X switches, use the command:

```
set system time=hh:mm:ss
```

For example:

```
set time=14:50:00
set system time=14:50:00
```

You can also set the current date (dd-mmm-yy, or dd-mmm-yyyy), for example:

```
set date=29-JAN-05
set date=29-JAN-2005
set system date=29-JAN-05
set system date=29-JAN-2005
```

To display the time for x900-48FE and AT-9900 switches, use the command:

```
show time
```

To display the time for x900-24X switches, use the command:

```
show system time
```

Log messages also include the time.

### Using the GUI to set the time

Sometimes the time may not change even though you used the AT-9900 GUI to enter the correct time.

Remember that changing the time requires several small steps. First select Configuration > System > Time. Enter a time that is very shortly in the future (such as 20 seconds later than the current time), and then check **Set time**. Wait until the exact time you just entered, and then click **Apply**.

## Timezone and UTC Offset

The switch allows you to:

- set an internationally recognised timezone and set that timezone's UTC offset
- define and enable summer time settings, including the offset value that summer time uses alongside the UTC offset.

### Setting a timezone

You can define a timezone for the switch to use. Once defined, the system uses this timezone's time for operation.

To set a timezone, use the command:

```
set timezone [=time-zone-name]
[utcoffset=std-utc-offset]
```

The **utcoffset** parameter defines the UTC offset for the timezone. For more information about defining a UTC offset, see ["UTC offset" on page 4-6](#)

### Configuring summer time

Summer time is also known as Daylight Saving Time. When enabled, the system automatically sets the clock ahead when summer time begins, and sets the clock back when it ends.

You can enable summer time, specify when summer time starts and ends, and define a summer time offset value.

To enable summer time, use the command:

```
enable summertime
```

When summer time is enabled, but no summer time definition is set with the **set summertime** command, the switch uses North American settings as the default. Therefore, in North America, summer time values do not need to be defined, just enabled.

To set the system's summer time definition, use the command:

```
set summertime [=summertime-zone-name]
[{startdate=date|startmonth=month startweek=week
startday=day}] [starttime=hh:mm] [{enddate=date|
endmonth=month endweek=week endday=day}] [endtime=hh:mm]
[offset=offset]
```

The **offset** parameter in the **set summertime** command is the amount by which the UTC offset changes when summer time begins and ends, and therefore the amount by which the local time changes. The default is 60 minutes.

To disable summer time, use the command:

```
disable summertime
```

You still need to set the local time using the commands:

```
set time (x900-48FE and AT-9900 switches)
```

```
set system time (x900-24X switches)
```

If you set the time **before** you configure summer time settings, we suggest you set the time to standard time because the switch automatically changes the time to summer time when applicable. If you set the time **after** configuring summer time, we suggest you set the time to the current local time—either summer time or standard time, whichever applies.

**UTC offset** The UTC offset is the difference between local time and UTC (Coordinated Universal Time). The UTC offset value that the system uses is dependent on the switch's configuration.

The UTC offset can be defined with the following commands:

```
set timezone
```

```
set ntp utcoffset in Chapter 41, Network Time Protocol (NTP)
```

If you set a time zone using the **set timezone** command, the timezone's **utcoffset** definition overrides the UTC offset that is defined for NTP. When you remove the timezone using the **clear timezone** command, the **utcoffset** value is set back to the default of 0.

If you enable a summer time setting using the **enable summertime** command, the following rules determine the UTC offset:

- **If a timezone is currently set up**  
The timezone **utcoffset** setting, plus the current summer time **offset** value applies.
- **If no timezone is currently set up**  
The **set ntp utcoffset** setting, plus the current summer time **offset** value applies.

If no timezone is currently set up, and you disable summer time using the **disable summertime** command, then the system once again uses the default of 0 for the UTC offset. It does not revert to the NTP UTC offset value, even if one has been defined.

## Monitoring Switch Operations

The following commands and features help you monitor switch operations:

- [Event logging](#)
- [Counter commands](#)
- [Debug commands](#)
- [Redirecting output](#)
- [CPU utilisation](#)
- [Extended CPU monitoring](#)
- [Memory](#)
- [Restarts](#)

**Event logging** The switch responds to certain events by generating a log message about them. Each switch maintains a local event log of the most recent log messages. To view the log, use the command:

`show log`

The Logging facility provides a powerful, flexible and easily configured tool for monitoring network activity and displaying results.. User-defined output definitions can filter, prioritise, and output log messages to RAM, NVS, an asynchronous port, another switch, a syslog server or an email address. See [Chapter 45, Logging Facility](#) for a detailed description of the Logging facility.

**Counter commands** Most protocols and management features include `show <protocol> counter` commands, which count the number of items that the switch has processed for that protocol. They generally include items that the protocol received and transmitted, and items with errors. Many **counter** commands list the different types of messages that the protocol sends and receives, and count the number of each type of message. Counter commands are described in the chapters for each protocol or feature.

**Debug commands** Most protocols and management features include debugging commands that capture detailed information about what the switch is processing and how. These types of commands generally come in sets of three—enable, disable, and show. The following table shows an example of a set of debug commands.

This command...	Does this...
enable <protocol> debug	sets the switch to capture and display debug information. For example, <b>enable ip debug</b> sets the switch to capture incorrectly formatted IP packets to a buffer for later diagnosis. Debugging information is displayed on the console for most protocols.
disable <protocol> debug	turns off debugging.
show <protocol> debug	displays the debugging settings that are enabled, and sometimes displays information gathered by debugging.

Some debug commands produce very large amounts of data and can degrade network performance. Debugging commands are described in the chapters for each protocol or feature.

### Displaying and disabling active debugging

Protocol specific commands only provide information about the debugging that is enabled for that specific protocol. The following modules are supported for active debugging:

- BGPINTERFACE
- IP
- LACP
- OSPF
- PIM
- RADIUS
- STP
- SWITCH
- TACACS
- TACPLUS
- VRRP

For more information on these modules, see [“Module Identifiers and Names” on page B-2 of Appendix B, Reference Tables.](#)

To display the debugging active for a specific module or all modules, use the command:

```
show debug active={module|all}
```

To disable debugging output for a specific module or all modules, use the command:

```
disable debug active={module|all}
```

### Redirecting output

You can send output from a specific command or script to a text file when you next issue that command or script. This is especially useful when collecting debug output. Use one of these commands:

```
create file
```

```
add file
```

While output is being redirected, the text file cannot be edited, renamed, deleted, or uploaded.

To close one or all text files so that they no longer receive input from commands or scripts, use the command:

```
reset file permanentredirect
```

After the file closes, it can be uploaded or edited.

To display information about the redirected file, use the command:

```
show file permanentredirect
```

### CPU utilisation

To display CPU utilisation over the last minute, five minutes, or since the switch last restarted, use the commands:

```
show cpu (x900-48FE and AT-9900 switches)
```

```
show system cpu utilisation (x900-24X)
```



## Extended CPU monitoring

You can set the x900-48FE and AT-9900s switches to capture data about specific functions that the CPU is executing, and what level of instantaneous usage the CPU is experiencing. This allows you, in conjunction with your authorised distributor or reseller, to diagnose the causes of high rates of CPU utilisation on the switch.

You can set the switch to capture data continuously, or only when the CPU experiences a specific level of instantaneous usage. The switch holds up to 500 entries (10 seconds) of data about CPU utilisation.

To capture data when the CPU is experiencing a specific amount of instantaneous usage, set the start and stop percentages with the command:

```
activate cpu extended start=1..100 [stop=1..100]
```

When a start percentage is set, the switch automatically disables extended monitoring once it has 500 data entries.

To enable extended monitoring, use the command:

```
enable cpu extended
```

This command also lets you capture data immediately, without first setting start and stop percentages. This adds data entries continuously, until you stop it. Only the last 10 seconds of data entries are stored.

To stop capturing data, and reset the **start** and **stop** parameters if they are set, use the command:

```
disable cpu extended
```

To remove data entries and reset the **start** and **stop** parameters in the **activate cpu extended** command, use the command:

```
reset cpu utilisation
```

This command interrupts active data capturing for a specific event. However, monitoring remains enabled, and continues to collect data. This means you can capture data for a particular event without having to disable and re-enable this feature.

**Memory** To examine how the switch's memory is allocated, use the command:

```
show buffer (x900-48FE and AT-9900 switches)
```

```
show system memory (x900-24X switches)
```

If the pool of free buffers drops below a critical threshold, the switch progressively disables processes, resulting in a loss of functionality. This problem can potentially arise when a fast source sends enormous amounts of data to a slow destination or down a slow link. However, the cause is more likely to be a problem with the switch itself. The problem can be corrected in the short term by restarting the switch but also report it to your supplier.

To examine the contents of memory for x900-48FE and AT-9900 switches, use the command:

```
dump
```

To examine how each process uses its allocated memory for x900-24X switches, use the command:

```
show system processpartition
```

To overwrite the contents of the switch's memory for x900-48FE and AT-9900 switches, use the command:

**modify**



**Caution** These commands are provided as diagnostic tools and should not be used for normal operations. Inappropriate use of the **modify** command may cause a malfunction of the switch, resulting in loss of network services.

**Restarts** Some changes to configuration parameters require the switch to be restarted for the changes to take affect. The switch is restarted with the command:

**restart** {reboot|switch} [config={filename|none}]

If the switch encounters a fatal error condition from which it cannot recover, it automatically restarts. To determine the problem, examine the switch's exception list, which you can generate with the commands:

**show exception** (x900-48FE and AT-9900 switches)

**show system exception** (x900-24X switches)

The conditions that x900-48FE and AT-9900 switches encountered when it last restarted, such as the amount of RAM and the state of the battery-backed RAM, can be viewed with the command:

**show startup**

To display a snapshot of the state of these switches prior to the last fatal condition, use the command:

**show debug**

## Environmental Monitoring

---

**x900-24X** x900-24X switches periodically poll parameters to monitor an array of environmental conditions on the main board as well as for the following:

- Power supply unit (PSU)
- Fan-only module (FOM)
- Optional expansion module (XEM)

The switch monitors the following conditions:

- Fan speed
- Internal and ambient temperatures
- Voltage

You can define upper and lower limits with the [set system environmental command on page 4-31](#), and you are notified if conditions differ from those expected. Regular status is reported in the following manner:

- Switch and unit LEDs
- Log messages
- Simple Network Management Protocol (SNMP) messages
- Output from the [show system environmental](#) command

See the Hardware Reference for the switch for details about fault LEDs.

### **x900-48FE and AT-9900**

These switches monitor their own power supplies. Although one power supply unit (PSU) is required, two can be installed and there are two power supply bays. When two are fitted, they load share—if one fails, the other supplies the full load. If one PSU is installed, a fan-only module (FOM) must be in the other bay to prevent overheating. PSUs and FOMs can be hot-swapped.

The [show system command on page 4-54](#) displays the state of the PSUs and FOM.

When a fault occurs on a PSU or FOM, the Fault LED on the affected unit is red. Depending on which bay the faulty unit is in, either the PSU 1 or PSU 2 LED on the front panel of the switch is red. Facing the switch, PSU 1 is on the left and PSU 2 is on the right. For more information about PSUs and FOMs, see the *Removable Power Supply and Fan Installation Guide*.

## Emailing Alerts from the Switch

---

The switch has a built-in email client and SMTP (Simple Mail Transfer Protocol) server to enable email messages to be sent from the switch to remote mail systems using SMTP. The email client generates messages that comply with RFC 822, *Standard for the Format of ARPA Internet Text Messages*. The external SMTP server must be compliant with RFC 821, *Simple Mail Transfer Protocol*, for the transmission of mail messages. Note that Microsoft mail servers are not RFC 821 compliant.

The SMTP server transmits email messages only; it cannot accept emails from other mail systems.

A mail message is transmitted from the switch's command line or from a script by using the command:

```
mail to=destination {file=filename|message=message}
      [subject=subject] [etrn=mail-domain]
```

Messages can also be transmitted automatically. For more information about automatic messages, see:

- [Chapter 44, Trigger Facility](#)
- [Chapter 45, Logging Facility](#)

The body of the message may contain either a single character string or the contents of a file in the switch's NVS or flash memory.

Up to 64 messages can be queued for transmission. Messages can be deleted from the queue by using the command:

```
delete mail=id
```

Mail messages are automatically deleted from the queue if the destination address cannot be resolved using DNS.

The current state of the mail subsystem and the messages queued for transmission can be displayed by using the command:

```
show mail
```

The progress of mail messages can be monitored using the mail subsystem's debugging option, which is enabled or disabled by using the commands:

```
enable mail debug
disable mail debug
```

## Configuration Examples

The following procedures show how to configure a mail subsystem and transmit email messages. It assumes that IP has already been enabled and correctly configured on the switch.

### To configure the mail subsystem

#### 1. Configure a DNS Server.

Configure the IP address of the DNS server for the mail subsystem to use when resolving email addresses to IP addresses. The mail subsystem does not function without a DNS. Enter the command:

```
set ip nameserver=192.168.5.3
```

#### 2. Configure the mail host name.

Configure the host name used by the mail subsystem when communicating with other mail systems. Normally this is the fully qualified domain name of the switch. The mail subsystem needs a host name to function. Enter the command:

```
set mail hostname=ho1.company.com
```

#### 3. Check the configuration.

Check that the mail subsystem is correctly configured and enabled by using the command:

```
show mail
```

## To send a file via email from the command prompt

### 1. Send the file as the body of a mail message.

Text format files with .cfg, .scp, and .txt extensions can be transferred from the switch to a remote user in the body of an email message. For example, configuration scripts can be sent to a central host for management and change control. In this example, the boot.cfg file is sent to the network administrator's email address *netman@company.com*:

```
mail to=netman@company.com subject="boot script for  
hol.company.com" file=boot.cfg
```

### 2. Check the progress of the message.

The progress of the message as it is transmitted to the remote mail system can be monitored by using the command:

```
show mail
```

## To transmit messages automatically using the Trigger facility

### 1. Create a script to generate a mail message.

Create a script called mailcpu.scp by using the switch's built-in editor that sends a message to the network administrator:

```
edit mailcpu.scp
```

The script contains the following line:

```
mail to=netman@company.com subject= WARNING: Load high"  
message="CPU utilisation exceeded 80%"
```

It is not necessary to identify the switch in the subject line or message because the mail system automatically inserts the switch's host name in the From field of the message header.

### 2. Create a trigger to activate the script.

Enable the Trigger facility and create a trigger to activate the script when the switch's CPU utilisation rises above 80%:

```
enable trigger  
create trigger=1 cpu=80 direction=up script=mailcpu.scp  
show trigger=1
```

## Command Reference

---

This section describes the commands available on the switch to support day-to-day operational and management activities.

The shortest valid command is denoted by capital letters in the Syntax section. See [“Conventions” on page xlix of About this Software Reference](#) for details of the conventions used to describe command syntax. See [Appendix A, Messages](#) for a complete list of messages and their meanings.

### activate cpu extended

---

**Syntax** ACTivate CPU EXTended START={1..100} STOp={1..100}

**Description** This command lets you set monitoring on x900-48FE and AT-9900 switches so that it captures data when the CPU experiences a specific amount of instantaneous usage.

The **start** parameter sets the percentage of utilisation the CPU must equal or exceed before it can begin capturing data. When CPU utilisation reaches the parameter, the switch begins capturing data. It continues until utilisation falls below the **stop** parameter, or until it captures 500 entries (10 seconds worth).

The **stop** parameter sets the percentage of utilisation the CPU must reach to stop data capturing. If CPU utilisation falls below the **stop** percentage before the switch has 500 data entries, then the switch resumes data capturing the next time utilisation reaches the **start** percentage. When the switch has 500 entries, it stops collecting data.

**Examples** To capture extended CPU utilisation data when CPU utilisation exceeds 70% and until it falls below 50%, use the command:

```
act cpu ext star=70 sto=50
```

**Related Commands** [disable cpu extended](#)  
[enable cpu extended](#)  
[reset cpu utilisation](#)  
[show cpu](#)

## activate system psu test

**Syntax** ACTivate SYStem PSU=[1|2|ALL] TEST=[LOADShare]

**Description** This command tests power supply unit functionality on x900-48FE and AT-9900 switches.

The **psu** parameter specifies the bay where the test is performed. The bays are numbered; facing the rear of the switch, PSU 1 is the right bay and PSU 2 is the left bay. If **all** is specified, the test is run on units in both bays.

The **test** parameter specifies the test to run. The **loadshare** option tests power load sharing by testing the power status of the unit. The load sharing test can be used before swapping a power supply unit. To run this test, both PSUs must be present and their power status must be good.

Figure 4-1: Example output from the **activate system psu test** command

```
Info (1034289): Loadshare PSU test passed: PSU1 board AT-PWR01-AC power is good.  
Info (1034289): Loadshare PSU test passed: PSU2 board AT-PWR01-AC power is good.
```

**Examples** To run functionality tests on the PSU in bay 1, use the command:

```
act sys psu=1
```

## clear summertime

**Syntax** CLear SUMMertime

**Description** This command clears the existing summer time UTC offset and settings, and resets the default North American summer time definition.

Clearing summer time has an effect on the switch's UTC offset value. For more information about how the system derives its UTC offset value, see [“UTC offset” on page 4-6](#).

Before you can clear summer time, you must first disable it using the **disable summertime** command.

**Examples** The following command clears the existing summer time definition from the system:

```
cl summ
```

**Related Commands**

- [clear timezone](#)
- [disable summertime](#)
- [enable summertime](#)
- [set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)
- [set summertime](#)
- [set system time](#)
- [set time](#)
- [set timezone](#)
- [show ntp](#) in Chapter 41, Network Time Protocol (NTP)
- [show summertime](#)
- [show system time](#)
- [show time](#)
- [show timezone](#)

## clear timezone

---

**Syntax** CLear TIMEZone

**Description** This command clears the existing timezone definition from the system. The timezone definition sets a timezone for the switch's clock, and defines a UTC offset value.

Clearing the timezone has an effect on the switch's UTC offset value. For more information about how the system derives its UTC offset value, see "[UTC offset](#)" on page 4-6.

**Examples** The following command deletes the system time zone:

```
cl timez
```

**Related Commands**

- [clear summertime](#)
- [disable summertime](#)
- [enable summertime](#)
- [set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)
- [set summertime](#)
- [set system time](#)
- [set time](#)
- [set timezone](#)
- [show ntp](#) in Chapter 41, Network Time Protocol (NTP)
- [show summertime](#)
- [show system time](#)
- [show time](#)
- [show timezone](#)

## delete mail

---

**Syntax** DElete MAIL=*id*

where *id* is a hexadecimal number from 0x0 to 0xffff

**Description** This command deletes a specific mail message from the transmission queue. Up to 64 messages can be queued for transmission.

The **mail** parameter specifies the ID of the mail message to be deleted. The message ID can be determined from the output of the **show mail** command.

**Examples** To delete the mail message with a message id of 0x231b, use the command:

```
del mail=231b
```

**Related Commands**

- [mail](#)
- [reset mail](#)
- [show mail](#)



## disable cpu extended

---

**Syntax** DISable CPU EXTended

**Description** This command stops data capture of CPU utilisation on x900-48FE and AT-9900 switches, and resets parameters in the **activate cpu extended** command.

**Examples** To stop capturing extended CPU utilisation data, use the command:

```
dis cpu ext
```

**Examples** use the command:

```
dis cpu ext
```

**Related Commands** [activate cpu extended](#)  
[enable cpu extended](#)  
[reset cpu utilisation](#)  
[show cpu](#)

## disable debug active

---

**Syntax** DISable DEBug ACTive={ALL | *module*}

**Description** This command disables currently enabled debugging, either for a specific module or for all modules supported by the **show debug active** command.

The **active** parameter specifies which modules to disable. Specify **all** for all supported modules, or just a specific one. If no module is specified, active debugging is disabled on supported modules.

**Examples** To disable all active debugging, use one of the following commands:

```
dis deb act
```

```
dis deb act=all
```

To disable all active debugging for the OSPF module, use the command:

```
dis deb act=ospf
```

**Related Commands** [show debug active](#)  
[show debug](#)

## disable mail debug

---

**Syntax**    DISable MAIL DEBug

**Description**    This command disables the collection and display of mail information for debugging purposes. Debugging is disabled by default.

**Examples**    To disable mail debugging, use the command:

```
dis mail deb
```

**Related Commands**    [enable mail debug](#)  
[show mail](#)

## disable summertime

---

**Syntax**    DISable SUMMertime

**Description**    This command disables summer time on the switch. When disabled, the switch no longer automatically adjusts its clock when summer time begins and ends. By default, summer time is disabled.

Summer time is defined with the **set summertime** command, and enabled with the **enable summertime** command.

If you enter this command on a date that falls within the defined summer time period, this command immediately restores the system clock back to Standard Time.

Disabling summer time has an effect on the switch's UTC offset value. For more information about how the system derives its UTC offset value, see "[UTC offset](#)" on page 4-6.

Summer time must be disabled before it can be cleared with the **clear summertime** command.

**Examples**    The following command enables Daylight Saving Time.

```
dis summ
```

**Related Commands**    [clear summertime](#)  
[clear timezone](#)  
[enable summertime](#)  
[set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)  
[set summertime](#)  
[set system time](#)  
[set time](#)  
[set timezone](#)  
[show ntp](#) in Chapter 41, Network Time Protocol (NTP)  
[show summertime](#)  
[show system time](#)  
[show time](#)  
[show timezone](#)

# dump

**Syntax** DUMP [Address=*address*] [LENgth=*length*]  
[SIZE={BYTE|LONGword|WORD}] [SPace={SD|SP|UD|UP|UR}]

where:

- *address* is the first address (in hexadecimal) to be dumped.
- *length* is the number of bytes (in hexadecimal) to dump.

**Description** This command displays the contents of the memory on x900-48FE and AT-9900 switches. It may interrupt operation of the switch since it dumps I/O devices. This command is mainly a diagnostic tool, and should not be needed for normal operations. It requires a user with security officer privilege when the switch is in security mode.

The block of memory to be displayed is specified by the **address**, **length**, and **space** parameters. The **space** parameter specifies the CPU address space to be dumped. If **space** is not specified, it defaults to **sd**. The following table describes available options for this parameter.

Option	CPU Address Space
SD	Supervisor Data
SP	Supervisor Program
UD	User Data
UP	User Program
UR	User Reserved

The **size** parameter specifies whether the data should be displayed grouped as **bytes**, **longword**, or **word**. Note that **len** is always in bytes, regardless of the value of **size**.

If the **length**, **size**, or **space** parameters are omitted, they default to the values from when the command was last used. If the **address** parameter is omitted, it increments to dump the block of memory immediately following the block dumped by the previous invocation. If the **address** parameter is entered without a value, then it dumps the block of memory previously dumped.

**Examples** To dump 100 bytes of data at address 0 and grouped as words, use the command:

```
dump addr=0 len=100 size=word
```

Figure 4-2 on page 4-20 shows output from this command. The left-hand column shows the address of the data in each row. The next eight columns give the data starting at the address for the next 16 bytes. The right-most column is an ASCII representation of the data in the row, with non-printing characters represented by a dot.

Figure 4-2: Example output from the **dump** command.

```

00000000 0001 667c 0001 667c 0000 b424 0001 667c      ..f|..f|...$.f|
00000010 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
00000020 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
00000030 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
00000040 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
00000050 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
00000060 0001 66d4 0001 6b14 0001 667c 0001 667c      ..f|..f...k...f|
00000070 0001 667c 0001 1308 0001 6aa4 0001 66c8      ..f|.....j...f.
00000080 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
00000090 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
000000a0 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
000000b0 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
000000c0 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
000000d0 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
000000e0 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|
000000f0 0001 667c 0001 667c 0001 667c 0001 667c      ..f|..f|..f|..f|

```

**Related Commands** [modify](#)

## enable cpu extended

**Syntax** ENAbLe CPU EXTended

**Description** This command lets you capture up to 500 data entries (10 seconds) of CPU utilisation data on x900-48FE and AT-9900 switches. Extended monitoring is disabled by default. This command takes effect when you enter it, or use the **activate cpu extended** command to collect data during specific usage levels.

**Examples** To begin capturing extended CPU utilisation data, use the command:

```
ena cpu ext
```

**Related Commands** [activate cpu extended](#)  
[disable cpu extended](#)  
[reset cpu utilisation](#)  
[show cpu](#)

## enable summertime

---

**Syntax**    ENAbLe SUMMErtime

**Description**    This command enables summer time on the switch. Summer time settings are defined with the **set summertime** command. When enabled, the switch automatically adjusts its clock when summer time begins and ends. By default, summer time is disabled.

If you enter this command on a date that falls within the summer time period, this command immediately sets the system clock to summer time.

Enabling summer time has an effect on the switch's UTC offset setting. For information about how the system derives the UTC offset value to use, see ["UTC offset" on page 4-6](#).

**Examples**    The following command enables Daylight Saving Time.

```
ena summ
```

**Related Commands**    [clear summertime](#)  
[clear timezone](#)  
[disable summertime](#)  
[set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)  
[set summertime](#)  
[set system time](#)  
[set time](#)  
[set timezone](#)  
[show ntp](#) in Chapter 41, Network Time Protocol (NTP)  
[show summertime](#)  
[show system time](#)  
[show time](#)  
[show timezone](#)

## enable mail debug

---

**Syntax**    ENAbLe MAIL DEBug

**Description**    This command enables the collection and display of mail information for debugging. When debugging is enabled, messages recording the progress of email messages are displayed to the terminal from which the command was entered. Debugging is disabled by default.

**Examples**    To enable mail debugging, use the command:

```
ena mail deb
```

**Related Commands**    [disable mail debug](#)  
[show mail](#)

# mail

**Syntax** MAIL TO=*destination* {File=*filename*|MESSAge=*message*}  
[SUBject=*subject*] [ETRN=*mail-domain*]

where:

- *destination* is a character string 3 to 131 characters long. Valid characters are uppercase and lowercase letters, digits, and the underscore.
- *filename* for x900-48FE and AT-9900 switches is a filename in the format [*device*:]*filename.ext*. Invalid characters are \* + = " | \ [ ] ; : ? / , < >, and wildcards are not allowed. Valid characters are:

- uppercase and lowercase letters
- digits
- ~ ' ! @ # \$ % ^ & ( ) \_ - { }

Optionally, *device* specifies the physical memory device where the file is stored, either CFlash, NVS, or flash. If *device* is specified, it must be separated from the filename by a colon. If *device* is not specified, the default is flash. The file extension *.ext* is any valid file type that contains text such as CFG, SCP, and TXT.

- *filename* for x900-24X switches is a filename in the format [*device*:]*filename.ext*. Invalid characters are \* + = " | \ [ ] ; : ? / , < >, and wildcards are not allowed. Valid characters are:

- uppercase and lowercase letters
- digits
- ~ ' ! @ # \$ % ^ & ( ) \_ - { }

*device* specifies the physical memory device where the file is stored, either NVS or flash. If specified, it must be separated from the filename by a colon. If not specified, the default is flash. The file extension *.ext* is any valid file type that contains text such as CFG, SCP, and TXT.

- *message* is a character string 1 to 131 characters long. Valid characters are uppercase and lowercase letters, digits, a space, and the underscore. If *message* contains spaces, it must be in double quotes.
- *subject* is a character string 1 to 131 characters long. Valid characters are uppercase and lowercase letters, digits, a space, and the underscore. If *subject* contains spaces, it must be in double quotes.
- *mail-domain* is a character string 3 to 63 characters long. Valid characters are uppercase and lowercase letters, digits, and the underscore.

**Description** This command sends an email message or the contents of a file to a specific email address. It requires a user with security officer privilege when the switch is in security mode. Up to 64 mail messages can be queued for transmission.

The **to** parameter specifies the email address where the email is to be sent. This is normally in the format *user@company.net*. However on RFC 821-compliant mail servers, if only the IP address of the destination mail host is known, the IP address can be used by enclosing it in square brackets, for example, *user@[202.49.73.5]*. Note that Microsoft mail servers are not RFC 821 compliant.

The **file** parameter specifies the name of a file on the switch to send in the body of the email. The file type must be text and it must exist on the system.

The **message** parameter specifies a single line of text to send in the body of the email. The **message** and **file** parameters are mutually exclusive.

The **subject** parameter specifies the subject line to appear in the email. This field is not required but should normally be present in an email.

The **etrn** parameter sends an ETRN request (as defined in RFC 1985) to the remote mail server to forward any queued mail messages for the specified mail domain or host name. This can be used to assist mail servers that are connected to the Internet via dial-up rather than permanent connections. A trigger can be created to send an ETRN message to the email service provider each time the switch connects to the Internet. Some mail servers reject email messages from hosts without reverse DNS entries.

**Examples** To send an email message to user@testcom.com, use the command:

```
mail to=user@testcom.com SUBJ="Test Message" mess="Greetings  
from switch 192.168.14.1"
```

To send an ETRN request to the mail server mserver1.isp.com to forward mail queued for users in the email domain "company.com", use the command:

```
mail to=postman@mserver1.isp.com etrn=company.com
```

**Related Commands** [delete mail](#)  
[reset mail](#)  
[set mail](#)  
[show mail](#)

# modify

---

**Syntax**    `MODify ADDRess=address Size={Byte|Long|Word}  
                  VALue=value-list [SPace={SD|SP|UD|UP|UR}]`

where:

- *address* is the base address of the block of memory to modify.
- *value-list* is either a list of up to five numbers (in hexadecimal) separated by commas, or a text string of up to twenty characters enclosed with double quotes.

**Description**    This command modifies (overwrites) the contents of the memory for x900-48FE and AT-9900 switches. You can modify any memory or I/O device but this may interrupt the operation of the switch. This command is mainly a diagnostic tool, and should not be needed for normal operations. It requires a user with security officer privilege when the switch is in security mode.

The values to be written to memory are specified by the **value** parameter and are written to contiguous memory locations starting at the memory address specified by the **address** parameter. The **size** parameter specifies how the values are written: **byte**, **long**(word), **word**.

The **space** parameter specifies the CPU address space to be dumped. If **space** is not specified, it defaults to **sd**. The following table describes available options for this parameter.

Option	CPU Address Space
SD	Supervisor Data
SP	Supervisor Program
UD	User Data
UP	User Program
UR	User Reserved

**Examples**    This example modifies the first two words of memory starting at memory location 0x00000000:

```
mod addr=0 s=word val=5,6AA4
```

**Related Commands**    [dump](#)



---

## reset cpu utilisation

---

**Syntax** RESET CPU UTIlisation

**Description** This command resets all CPU utilisation percentages for the x900-48FE and AT-9900 switches. It also resets any start and stop percentages set with the **activate cpu extended** command. It also removes any data captured during extended utilisation monitoring, and clears this output from the **show cpu** command.

**Examples** To reset the CPU utilisation, use the command:

```
reset cpu util
```

**Related Commands** [activate cpu extended](#)  
[disable cpu extended](#)  
[enable cpu extended](#)  
[reset system cpu utilisation](#)  
[show cpu](#)

---

## reset mail

---

**Syntax** RESet MAIL

**Description** This command deletes all mail messages from the transmission queue.

**Examples** To reset the mail and delete all messages, use the command:

```
res mail
```

**Related Commands** [delete mail](#)  
[mail](#)  
[show mail](#)

---

## reset system cpu utilisation

---

**Syntax** RESET SYStem CPU UTIlisation

**Description** This command resets CPU utilisation percentages back to 0% for x900-24X switches.

**Examples** To reset CPU utilisation, use the command:

```
reset sys cpu uti
```

**Related Commands** [reset cpu utilisation](#)  
[show system cpu utilisation](#)

## set mail

---

**Syntax** SET MAIL HOSTname=*hostname* [SMTPserver=*ipadd*]

where:

- *hostname* is from 1 to 63 characters long. Any characters are valid **except** the following:
  - spaces
  - control characters (ASCII 0–31 and 127)
  - " ( ) < > @ , ; : \ [ ]
- *ipadd* is the IP address in dotted decimal notation

**Description** This command defines the name that the mail system uses when communicating with other mail systems. The mail system is not enabled until a host name is specified.

The **hostname** parameter is typically the fully specified domain name of the switch, for example, switch1.myorg.com. The host name appears in the *From* field of the message header when the remote mail system receives the message.

The **smtpserver** parameter specifies the IP address of the mail server where the mail from the switch is to be sent. When set, the address pre-empts the use of a DNS lookup for the domain name of the destination email address specified in the **mail** command.

**Examples** To set the mail host name to switch1.myorg.com, use the command:

```
set mail host=switch1.myorg.com
```

To set the mail destination SMTP server to 192.168.6.100 for admin.myorg.com, use the command:

```
set mail host=admin.myorg.com smtp=192.168.6.100
```

**Related Commands** [show mail](#)  
[mail](#)

## set summertime

**Syntax**

```
SET SUMMertime[=summertime-zone-name] STARTDate=date
    ENDDate=date [STARTTime=hh:mm] [ENDTime=hh:mm]
    [Offset=offset]

SET SUMMertime[=summertime-zone-name] STARTMonth=month
    STARTWeek=week STARTDay=day ENDMonth=month
    ENDWeek=week ENDDay=day [STARTTime=hh:mm]
    [ENDTime=hh:mm] [Offset=offset]
```

**Description** This command defines the start and end of summer time, and specifies summer time's offset value to Standard Time. The switch uses North American settings as the default. Therefore, in North America, summer time values do not need to be defined, just enabled using **enable summertime**.

If no summer time is defined with the **set summertime** command, the switch uses Standard Time as its local time.

Two formats can define the beginning and end of summer time, and only one may be used at a time.

For this format...	Then...
non-recurring fixed dates using the <b>startdate</b> and <b>enddate</b> parameter.	these dates apply only once on the dates given, and you must set new dates for the following year.
a recurring rule specifying the month, numbered week of the month, and day of the week	it stays in effect until it is either changed or reset. The date when summer time starts and ends is automatically recalculated each year.

Regardless of the format you use, you must use the same one to define both the beginning and end of summer time. That is, if a non-recurring fixed date is defined for **startdate**, then a non-recurring fixed date must be defined for **enddate**. If a recurring rule is used to define the start date of summer time, then a recurring rule must be used to define its end date.

Parameter	Description
SUMMertime	The abbreviation used to represent summer time for this time zone, for example, <b>nzdt</b> . Default: <b>dst</b>
STARTDate	The absolute summer time start date. <i>Date</i> is in the d-mmm-yyyy, dd-mmm-yy, or dd-mmm-yyyy format. <i>month</i> is the first three letters of the month, for example, <b>apr</b> . If you specify a <b>startdate</b> , you must specify an <b>enddate</b> .
STARTMonth	The start month for a recurring rule. <i>month</i> is the first three letters of the month, for example, <b>jan</b> . Default: <b>apr</b>
STARTWeek	The start week for a recurring rule. <i>week</i> is the number of the week within its month, a number between 1 and 5. The value 5 always means the last week in the month and can be used in any month. Default: <b>1</b>

Parameter	Description
STARTDay	The start day for a recurring rule. <i>day</i> is the name of a day of the week using the first three letters of the day only, for example <b>mon</b> , <b>tue</b> , <b>wed</b> . Default: <b>sun</b>
STARTTime	The start time. <i>time</i> is the time in hh:mm:ss format, where <b>hh</b> =0-23 <b>mm</b> =0-59, and <b>ss</b> =0-59. If <b>hh</b> is specified then <b>mm</b> is optional. If <b>mm</b> is specified then <b>ss</b> is optional. Default: <b>02:00</b> (2:00am)
ENDDate	The absolute summer time end date. <i>Date</i> is in the d-mmm-yyyy, dd-mmm-yy, or dd-mmm-yyyy format. <i>month</i> is the first three letters of the month, for example, <b>jun</b> . If you specify an <b>enddate</b> , you must specify a <b>startdate</b> .
ENDMonth	The end month for a recurring rule. <i>name</i> is the first three letters of the month, for example <b>jun</b> . Default: <b>jun</b>
ENDWeek	The end week for a recurring rule. <i>week</i> is the number of the week within its month, a number between 1 and 5. Default: <b>5</b>
ENDDay	The end day for a recurring rule. <i>day</i> is the name of a day of the week using the first three letters of the day only, for example <b>mon</b> , <b>tue</b> , <b>wed</b> . Default: <b>sun</b>
ENDTime	The end time. <i>time</i> is the time in hh:mm:ss format, where <b>hh</b> =0-23 <b>mm</b> =0-59, and <b>ss</b> =0-59. If <b>hh</b> is specified then <b>mm</b> is optional. If <b>mm</b> is specified then <b>ss</b> is optional. Default: <b>02:00</b> (2:00am)
Offset	The offset value, from 0 to 120 minutes. The value entered in this parameter is the amount of time by which Standard Time changes when summer time begins and ends. Default: <b>60</b>

**Example** The following command sets a summer time definition for New Zealand using NZST (UTC+12:00) as the standard time, and NZDT (UTC+13:00) as summer time. In this example, summer time is set to start on the 1st Sunday in October, and end on the 3rd Sunday in March. It accepts the default settings for **starttime** and **endtime** (02:00) and for **offset** (60 minutes).

```
set summ=nzdt startm=oct startw=1 startd=sun endm=mar endw=3
endd=sun
```

#### Related Commands

[clear summertime](#)  
[clear timezone](#)  
[disable summertime](#)  
[enable summertime](#)  
[set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)  
[set system time](#)  
[set time](#)  
[set timezone](#)  
[show ntp](#) in Chapter 41, Network Time Protocol (NTP)  
[show summertime](#)  
[show system time](#)  
[show time](#)  
[show timezone](#)

## set system contact

**Syntax** SET SYStem cONtact={*contact-name* | NONE}

**Description** This command sets the contact name for the switch. The contact name is:

- displayed in the output of the **show system** command
- stored in the MIB object sysContact

Parameter	Description
CONtact	Contact name. Default: <b>none</b>
<i>contact-name</i>	Contact name that consists of: a string 1 to 255 characters long any printable character If <i>contact-name</i> contains spaces it must be enclosed in double quotes.
NONE, empty string, no value	No contact name. Any existing contact name is cleared.

**Examples** To set the contact name for this switch to “IT Support, 555-9834”, use the command:

```
set sys con="IT Support, 555-9834"
```

To clear the contact name, use one of the commands:

```
set sys con=none
```

```
set sys con=""
```

```
set sys con=
```

```
set sys con
```

**Related Commands** [set system location](#)  
[set system name](#)  
[show system](#)

## set system coredump

**Syntax** SET SYSTEM COREdump SECTIONS=[STACKreg|RANGE]  
[THREAD={EXception|ALL}]

**Description** For x900-24X switches only, this command sets the level of detail for information dumped when a thread generates an exception. Information about an exception goes to a coredump file with a .core extension.

Parameter	Description
SECTIONS	Level of detail to be dumped. Default: <b>stackreg</b>
	STACKreg      Registers and stack.
	RANGE          Predefined writable sections as well as registers and stack. Applies to non-system exceptions only.
THREAD	Type of thread information to be included. Default: <b>exception</b>
	EXception      Information about the offending thread.
	ALL            Information about all threads in the process partition. Applies to non-system exceptions only.

**Examples** To set the system so that it dumps the registers and stack for all threads as well as specific writable sections, use the command:

```
set sys core sec=ran thr=all
```

**Related Commands** [show system coredump](#)  
[show system debug](#)  
[show system exception](#)  
[show system processpartition](#)

## set system environmental

**Syntax** SET SYStem ENVironment={FAN|TEMPerature|VOLTage} ID=0..255  
[LOWerthreshold=*lower*] [UPperthreshold=*upper*]

**Description** For x900-24X switches only, this command sets operational limits on monitors for the main board and optional expansion modules (XEM).

Parameter	Description
ENVironment	Type of monitor to set. Default: no default
FAN	Fan speed in RPM.
TEMPerature	Ambient and internal board temperatures in degrees Celsius.
VOLTage	Voltage rails in Volts.
ID	Instance number that identifies the monitor. The system assigns the ID and it is displayed with the <a href="#">show system environmental</a> command on page 4-65.
LOWerthreshold	Decimal number specifying the lower limit after which an alarm is generated. Not valid for temperature thresholds.
UPperthreshold	Decimal number specifying the upper limit after which an alarm is generated. Not valid for fan thresholds.

The following table contains initial settings; we recommend that you change them only after careful consideration. Inappropriate settings may cause poor environmental conditions to be ignored, possibly leading to hardware damage. Contact your authorised distributor or reseller for more information.

Type	Name	Initial Setting		Threshold Range
		Lower	Upper	
Fan	All	3515		2647–5000
Temp	Ambient		55	-127–127
Temp	Internal		75	-127–127
Temp	XEM internal		75	-55–125
Volt	Main board 12V	11.421	12.550	0.063–16.000
Volt	Main board 3.3V	3.144	3.453	0.018–4.380
Volt	Main board 2.5V	2.383	2.617	0.014–3.320
Volt	Main board 1.8V	1.719	1.875	0.027–6.640
Volt	Main board 1.65V	1.576	1.729	0.012–3.000
Volt	XEM 12V	11.432	12.556	0.063–15.930
Volt	XEM 5V	4.765	5.234	0.027–6.641
Volt	XEM 3.3V	3.146	3.455	0.018–4.383
Volt	XEM 2.5V	2.383	2.617	0.014–3.320
Volt	XEM 1.8V	1.715	1.884	0.015–3.586
Volt	XEM 1.65V	1.575	1.729	0.015–3.586

**Examples** To set the upper threshold for temperature sensor “1” to 45° C, use the command:

```
set sys env=temp id=1 up=45
```

**Related Commands** [show system](#)  
[show system environmental](#)

## set system location

**Syntax** SET SYStem LOCation={*location*|NONE}

**Description** This command sets the location of the switch. The location is:

- displayed in the output of the **show system** command
- stored in the MIB object sysLocation

Parameter	Description
LOCation	Location. Default: <b>none</b>
<i>location</i>	Location that consists of: a string 1 to 255 characters long any printable character If <i>location</i> contains spaces it must be enclosed in double quotes.
NONE, empty string, no value	No location. Any existing location is cleared.

**Examples** To identify the location of this switch as “Wiring Closet 3, First Floor, Head Office Building”, use the command:

```
set sys loc="Wiring Closet 3, First Floor, Head Office  
Building"
```

To clear the location, use one of the commands:

```
set sys loc=none  
set sys loc=""  
set sys loc=  
set sys loc
```

**Related Commands** [set system contact](#)  
[set system name](#)  
[show system](#)



## set system name

**Syntax** SET SYSTem NAME={*name* | NONE}

**Description** This command sets the system name for the switch. The system name is:

- displayed in the output of the **show system** command
- displayed in the CLI prompt so you know which switch you are configuring
- stored in the MIB object sysName

This command requires a user with security officer privilege when the switch is in security mode.

Parameter	Description
NAME	System name. Default: <b>none</b>
<i>name</i>	Name that consists of: a string 1 to 255 characters long any printable character If <i>name</i> contains spaces it must be enclosed in double quotes.
NONE, empty string, no value	No system name. Any existing system name is cleared.

**Examples** To set the name for the switch to “B2L3Admin”, use the command:

```
set sys nam=B2L3Admin
```

To clear the system name, use one of the commands:

```
set sys nam=none
```

```
set sys nam=""
```

```
set sys nam=
```

```
set sys nam
```

**Related Commands** [set system contact](#)  
[set system location](#)  
[show system](#)

## set system time

**Syntax** SET SYSTem [TIme=hh:mm:ss] [DAte=date]  
[UTCoffset={*time-zone-name* | *utc-offset*}]

**Description** This command sets the local time maintained by the real-time clock on x900-24X switches. It also sets the date and an offset for the Universal Time Coordinated (UTC).

Parameter	Description				
Time	Local time in 24-hour format. Default: local time				
Date	Date in d-mmm-yyyy, dd-mmm-yy, or dd-mmm-yyyy format. dates before 1-Jan-1980 are not accepted. The month is the first three letters of the month (for example, APR). The day of the month can be one or two digits, and the year can be two or four digits. Default: no default				
UTCoffset	Time difference between local time on the switch's clock and UTC/GMT. The offset is used to calculate UTC time system-wide. Default: 0 <table border="1" data-bbox="699 927 1423 1106"> <tr> <td><i>time-zone-name</i></td><td>Standard name of a time zone, for example, AEST and British Standard Time.</td></tr> <tr> <td><i>utc-offset</i></td><td>GMT/UTC time offset from +12:59 to -12:59. When the switch clock is ahead of UTC, the offset is positive.</td></tr> </table>	<i>time-zone-name</i>	Standard name of a time zone, for example, AEST and British Standard Time.	<i>utc-offset</i>	GMT/UTC time offset from +12:59 to -12:59. When the switch clock is ahead of UTC, the offset is positive.
<i>time-zone-name</i>	Standard name of a time zone, for example, AEST and British Standard Time.				
<i>utc-offset</i>	GMT/UTC time offset from +12:59 to -12:59. When the switch clock is ahead of UTC, the offset is positive.				

The Network Time Protocol (NTP), Public Key Infrastructure (PKI), and Logging Facility share the system-wide UTC offset in this command. Changing the offset with this command also changes the value that NTP and Logging use. See [“UTC offset” on page 4-6](#).

**Example** To set the switch's real-time clock to 10 p.m. on 29 January 2005 and the UTC offset to +12 hours (appropriate for New Zealand Standard Time), use the command:

```
set sys ti=22:00:00 da=29-jan-05 utc=12:00
```

To set the UTC offset to zero (appropriate for Greenwich Mean Time and Universal Coordinated Time) use the command:

```
set sys utc=0
```

**Related Commands** [show system time](#)

## set time

**Syntax** SET [TIme=*hh:mm:ss*] [DAtE=*date*]

**Description** This command sets the time and/or date on the system time (local time) for x900-48FE and AT-9900 switches. This command also sets the Real Time Clock.

If Network Time Protocol (NTP) is enabled, then you cannot change the time or date using this command. NTP maintains the clock automatically using an external time source. If you wish to manually alter the time or date, you must first disable NTP with the [disable ntp command on page 41-9 of Chapter 41, Network Time Protocol \(NTP\)](#).

If you set the time **before** you configure summer time settings, we suggest you set the time to standard time even if summer time currently applies. When you configure summer time, the switch automatically changes to summer time when applicable. If you set the time **after** configuring summer time, we suggest you set the time to current local time—either summer time or standard time, whichever applies.

Parameter	Description
Time	Local time in 24-hour format. Default: local time
DAtE	Date in d-mmm-yyyy, dd-mmm-yy, or dd-mmm-yyyy format. Dates before 1-Jan-1991 are not accepted. The month is the first three letters of the month (for example, APR). The day of the month can be one or two digits, and the year can be two or four digits. Default: no default

**Examples** The following command set the switch's real-time clock to 10 p.m. on 27 January 2007:

```
set ti=22:00:00 da=29-JAN-07
```

**Related Commands** [set system time](#)  
[show system time](#)  
[show time](#)

## set timezone

**Syntax** SET TIMEZone [=time-zone-name] [UTCoffset=std-utc-offset]

**Description** This command sets a timezone for the switch's clock and defines a UTC offset value. For information about how the system derives the UTC offset to use, see ["UTC offset" on page 4-6](#).

You can also use this command to redefine values for the current time zone.

Parameter	Description
TIMEzone	The timezone the switch should use. <i>time-zone-name</i> is a character string from 1 to 7 characters representing the abbreviation for this timezone's Standard Time, for example NZST. Default: No default.
UTCoffset	The time difference between local time on the switch's clock and UTC/GMT. The offset is used to calculate UTC time system-wide. <i>std-utc-offset</i> is a positive or negative number in the format hh[:mm], where hh=0-23 and mm=0-59. If hours are specified then mm is optional. Default: 0

**Examples** The following command sets the time zone to New Zealand Standard Time with an offset from UTC of +12 hours:

```
set timez=nzst utc=+12
```

The following command sets the timezone to Mountain Standard Time in North America, with a UTC offset of -7 hours:

```
set timez=mst utc=-7
```

**Related Commands**

- [clear summertime](#)
- [clear timezone](#)
- [disable summertime](#)
- [enable summertime](#)
- [set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)
- [set summertime](#)
- [set system time](#)
- [set time](#)
- [show ntp](#) in Chapter 41, Network Time Protocol (NTP)
- [show summertime](#)
- [show system time](#)
- [show time](#)
- [show timezone](#)

## show buffer

**Syntax** `SHoW BUffEr [SCAn[=address [QUEuepointers]]]`

where *address* is a memory address expressed in hexadecimal

**Description** This command displays information about memory buffer usage. If no optional parameters are specified, a summary is displayed (Figure 4-3 and Figure 4-4).

The **scan** and **queuepointers** parameters display low-level debugging information. Use them only when requested by technical support personnel.

The **scan** parameter displays detailed information about buffers usage. If an address is not specified, the memory addresses of sections of switch code and the number of buffers in use by that section are displayed (Figure 4-5 on page 4-38 and Figure 4-6 on page 4-39).

If an address is specified, the addresses of the buffers in use by that section of switch code are displayed (Figure 4-7 on page 4-39 and Figure 4-8 on page 4-40).

The value for **address** is obtained from the output of the **show buffer scan** command. Buffer violation information, such as buffers that are put twice, or buffers that are corrupted in the free buffer pool are also displayed by this command.

The **queuepointers** parameter displays additional information about the contents of the buffers used by the switch code section at the specified address (Figure 4-9 on page 4-40 and Figure 4-10 on page 4-40), and is valid when the **scan** parameter is specified with a valid address.

See Table 4-1 on page 4-41 for a description of parameters.

Figure 4-3: Example output from the **show buffer** command for x900-48FE and AT-9900 switches

```
Memory ( DRAM ) ..... 16384 kB
Free Memory ..... 48 %
Free fast buffers ..... 1799
Total fast buffers ..... 1802
Free buffers ..... 4013
Total buffers ..... 4096
Buffer level 3 ..... 125      (don't process input frames)
Buffer level 2 ..... 250      (don't do monitor or command output)
Buffer level 1 ..... 500      (don't buffer up log messages)
Buffer level 0 ..... 1500     (warning via snmp trap)
```

Figure 4-4: Example output from the **show buffer** command for x900-24X switches

```
Free buffers ..... 73623 (89%)
Total buffers ..... 81894
Buffer level 3 ..... 125      (don't process input frames)
Buffer level 2 ..... 250      (don't do monitor or command output)
Buffer level 1 ..... 500      (don't buffer up log messages)
Buffer level 0 ..... 1500     (warning via snmp trap)
```

Figure 4-5: Example output from the **show buffer scan** command for x900-48FE and AT-9900 switches

## Scan of buffers in use

0005ab10	8	006ebccc	24	006ebd1c	3	006ebeac	34
00438b3c	1	0011de2c	1	0010ad8c	1	0010ae08	1
005b8688	1	006e76c4	4	005cf690	28	0041eeb8	1
006e760c	1	00409d70	1	00409da4	1	00409fcc	1
00080c24	1	00169a18	1	001b7d0c	4	001c9f10	1
006df230	1	006df258	6	005e8c4c	1	001aacf4	1
001aad00	1	001aa990	40	005f24a4	1	0019e9ec	1
0019e9f4	1	006e2fa8	1	0075b0dc	1	006e823c	1
006e81a8	3	005632e0	1	005632f0	1	00563300	1
00563284	1	0065ed3c	2	0065eee8	2	0050a1e4	1
006838a8	1	006f0cc8	3	006e7cf4	1	006fe514	1
006fe53c	1	00376aa4	286	00372110	1	00372000	1
006e81d0	14	0064afec	1	004e35cc	1	006fbb78	3
006bfac8	1	006bfad8	1	0012493c	1	0012472c	1
0012479c	1	0035b7ac	1	0035b998	1	006ebd64	4
00257980	1	002609ec	1	002609fc	1	00260a0c	1
00260a1c	1	00260a2c	1	006e753c	1	0008de50	1
000906f4	1	00090028	1	0069ca68	1	006b3fb8	1
006868e8	1	006b2f64	1	006b67c8	1	0051ccb4	1
006c9550	1	00519be8	1	003f0894	1	0019daa0	40
0010bd7c	1	002fe7f4	1	002f10e0	1	0031adf8	1
0040daa0	1	001c8a7c	1	002cd898	1	00680c28	3
002659d8	2	00266124	28	00265ae8	8	00265dc4	135
00265e0c	24	00265ef4	1	00265f34	1	002657fc	2
00265680	17	00265c14	6	00265c68	1		

Total buffers in use - 805

Entries - 99

## Scan of fast buffers in use

001ac440	2	001acec8	1	0030126c	1	002de40c	572
007016e4	1	003560ac	1	001aebf8	1	001ad834	1
003014c0	1	0031d204	1	0031b354	1	002d3f38	1

Total fast buffers in use - 584

Entries - 12

```

Memory ( DRAM ) ..... 131072 kB
Free Memory ..... 86 %
Free fast buffers ..... 2186
Total fast buffers ..... 2770
Free buffers ..... 55625
Total buffers ..... 56437
Buffer level 3 ..... 125 (don't process input frames)
Buffer level 2 ..... 250 (don't do monitor or command output)
Buffer level 1 ..... 500 (don't buffer up log messages)
Buffer level 0 ..... 1500 (warning via snmp trap)

```

## Dynamic Memory Usage

```

Top pool, total bytes 0x015d6cd0
Total dynamic memory 0x02000000
Total free fast bin 0x00000000
Total free normal bin 0x00000000
Total free memory 0x015d6cd0

```

Figure 4-6: Example output from the **show buffer scan** command for x900-24X switches

Scan of buffers in use							
0005ab10	8	006ebccc	24	006ebd1c	3	006ebeac	34
00438b3c	1	0011de2c	1	0010ad8c	1	0010ae08	1
005b8688	1	006e76c4	4	005cf690	28	0041eeb8	1
006e760c	1	00409d70	1	00409da4	1	00409fcc	1
00080c24	1	00169a18	1	001b7d0c	4	001c9f10	1
006df230	1	006df258	6	005e8c4c	1	001aacf4	1
001aad00	1	001aa990	40	005f24a4	1	0019e9ec	1
0019e9f4	1	006e2fa8	1	0075b0dc	1	006e823c	1
006e81a8	3	005632e0	1	005632f0	1	00563300	1
00563284	1	0065ed3c	2	0065eee8	2	0050a1e4	1
006838a8	1	006f0cc8	3	006e7cf4	1	006fe514	1
006fe53c	1	00376aa4	286	00372110	1	00372000	1
006e81d0	14	0064afec	1	004e35cc	1	006fbb78	3
006bfac8	1	006bfad8	1	0012493c	1	0012472c	1
0012479c	1	0035b7ac	1	0035b998	1	006ebd64	4
00257980	1	002609ec	1	002609fc	1	00260a0c	1
00260a1c	1	00260a2c	1	006e753c	1	0008de50	1
000906f4	1	00090028	1	0069ca68	1	006b3fb8	1
006868e8	1	006b2f64	1	006b67c8	1	0051ccb4	1
006c9550	1	00519be8	1	003f0894	1	0019daa0	40
0010bd7c	1	002fe7f4	1	002f10e0	1	0031adf8	1
0040daa0	1	001c8a7c	1	002cd898	1	00680c28	3
002659d8	2	00266124	28	00265ae8	8	00265dc4	135
00265e0c	24	00265ef4	1	00265f34	1	002657fc	2
00265680	17	00265c14	6	00265c68	1		
Total buffers in use - 805							
Entries - 99							
Free buffers ..... 73623 (89%)							
Total buffers ..... 81894							
Buffer level 3 ..... 125 (don't process input frames)							
Buffer level 2 ..... 250 (don't do monitor or command output)							
Buffer level 1 ..... 500 (don't buffer up log messages)							
Buffer level 0 ..... 1500 (warning via snmp trap)							

Figure 4-7: Example output from the **show buffer scan** command for a specific address for x900-48FE and AT-9900 switches

002c93bc	002ce7bc	002d42bc	002d49bc	002d57bc	002d5ebc
002d65bc	002df8bc	002dffbc	002e0dbc	002e14bc	002eaebc
002eb5bc	002ec3bc	002ecabc			
Memory ( DRAM ) ..... 16384 kB					
Free Memory ..... 48 %					
Free fast buffers ..... 1799					
Total fast buffers ..... 1802					
Free buffers ..... 4013					
Total buffers ..... 4096					
Buffer level 3 ..... 125 (don't process input frames)					
Buffer level 2 ..... 250 (don't do monitor or command output)					
Buffer level 1 ..... 500 (don't buffer up log messages)					
Buffer level 0 ..... 1500 (warning via snmp trap)					

Figure 4-8: Example output from the **show buffer scan** command for a specific address for x900-24X switches

```

002c93bc 002ce7bc 002d42bc 002d49bc 002d57bc 002d5ebc
002d65bc 002df8bc 002dffbc 002e0dbc 002e14bc 002eaebc
002eb5bc 002ec3bc 002ecabc

Free buffers ..... 73623 (89%)
Total buffers ..... 81894
Buffer level 3 ..... 125 (don't process input frames)
Buffer level 2 ..... 250 (don't do monitor or command output)
Buffer level 1 ..... 500 (don't buffer up log messages)
Buffer level 0 ..... 1500 (warning via snmp trap)

```

Figure 4-9: Example output from the **show buffer scan queuepointers** command for x900-48FE and AT-9900 switches

```

002c93bc 002df8bc 002d5ebc 002c9434 002ce7bc 002e0dbc 002dffbc 002ce834
002d42bc 002d49bc 002569f0 002d4334 002d49bc 002d57bc 002d42bc 002d4a34
002d57bc 002d5ebc 002d49bc 002d5834 002d5ebc 002c93bc 002d57bc 002d5f34
002d65bc 002ec3bc 002eb5bc 002d6634 002df8bc 002dffbc 002c93bc 002df934
002dffbc 002ce7bc 002df8bc 002e0034 002e0dbc 002e14bc 002ce7bc 002e0e34
002e14bc 002eaebc 002e0dbc 002e1534 002eaebc 002eb5bc 002e14bc 002eaf34
002eb5bc 002d65bc 002eaebc 002eb634 002ec3bc 002ecabc 002d65bc 002ec434
002ecabc 002569f0 002ec3bc 002ecb34

Memory ( DRAM ) ..... 16384 kB
Free Memory ..... 48 %
Free fast buffers ..... 1799
Total fast buffers ..... 1802
Free buffers ..... 4013
Total buffers ..... 4096
Buffer level 3 ..... 125 (don't process input frames)
Buffer level 2 ..... 250 (don't do monitor or command output)
Buffer level 1 ..... 500 (don't buffer up log messages)
Buffer level 0 ..... 1500 (warning via snmp trap)

```

Figure 4-10: Example output from the **show buffer scan queuepointers** command for x900-24X switches

```

002c93bc 002df8bc 002d5ebc 002c9434 002ce7bc 002e0dbc 002dffbc 002ce834
002d42bc 002d49bc 002569f0 002d4334 002d49bc 002d57bc 002d42bc 002d4a34
002d57bc 002d5ebc 002d49bc 002d5834 002d5ebc 002c93bc 002d57bc 002d5f34
002d65bc 002ec3bc 002eb5bc 002d6634 002df8bc 002dffbc 002c93bc 002df934
002dffbc 002ce7bc 002df8bc 002e0034 002e0dbc 002e14bc 002ce7bc 002e0e34
002e14bc 002eaebc 002e0dbc 002e1534 002eaebc 002eb5bc 002e14bc 002eaf34
002eb5bc 002d65bc 002eaebc 002eb634 002ec3bc 002ecabc 002d65bc 002ec434
002ecabc 002569f0 002ec3bc 002ecb34

Free buffers ..... 73623 (89%)
Total buffers ..... 81894
Buffer level 3 ..... 125 (don't process input frames)
Buffer level 2 ..... 250 (don't do monitor or command output)
Buffer level 1 ..... 500 (don't buffer up log messages)
Buffer level 0 ..... 1500 (warning via snmp trap)

```



Table 4-1: Parameters in output of the **show buffer** command

Parameter	Meaning
Scan of buffers in use	List of memory addresses and the number of buffers used by the code at that memory address.
Total buffers in use	Total number of buffers in use.
Entries	Number of memory addresses listed in buffer scan.
Scan of fast buffers in use	List of memory addresses and the number of fast buffers used by the code at that memory address.
Total fast buffers in use	Total number of fast buffers in use.
Entries	Number of memory addresses listed in fast buffer scan.
Buffers put twice violations	List of buffers erroneously returned to the free buffer pool more than once. This field is only displayed if there are any violations, and is intended for use by customer support engineers.
Buffers corrupt in free buffer pool	List of buffers in the free buffer pool that were corrupted and have been repaired. This field is only displayed if there are any violations, and is intended for use by customer support engineers.
Memory ( DRAM )	Total amount of DRAM installed in the switch.
Free memory	Amount of free (unused) memory expressed as a percentage of total available memory.
Free fast buffers	The number of free (unused) fast memory buffers. Fast buffer memory is cached by the CPU and is available for program variable storage. It cannot be used for packet buffers.
Total fast buffers	The total number of fast memory buffers.
Free buffers	Number of free (unused) packet memory buffers. The percentage of free memory is also shown for x900-24X switches.
Total buffers	Total number of memory buffers.
Buffer level n	When the "Free buffers" value drops below this level, the specified activity ceases and/or an SNMP trap is generated.
Dynamic Memory Usage	Information about the dynamic memory manager, and is intended for use by customer support engineers.

**Examples** To display memory buffer usage, use the the command:

```
sh buf
```

To display detailed information about buffer usage by the code at memory address 002de40c, use the command:

```
sh buf sca=002de40c
```

**Related commands**

- [show cpu](#)
- [show debug](#)
- [show system cpu utilisation](#)
- [show system debug](#)
- [show system memory](#)
- [show system processpartition](#)

## show cpu

**Syntax** SHow CPU [EXTended]

**Description** This command displays information about CPU utilisation for the x900-48FE and AT-9900 switches (Figure 4-11, Table 4-2). The **extended** parameter displays extended CPU information.

Figure 4-11: Example output from the **show cpu extended** command

```

CPU Utilisation ( as a percentage )
-----
Maximum since switch restarted ..... 80
Maximum over last 5 minutes ..... 80
Average since switch restarted ..... 37
Average over last 5 minutes ..... 37
Average over last minute ..... 32
Average over last 10 seconds ..... 31
Average over last second ..... 32
-----

Extended CPU Information
-----
State ..... Enabled
Current Time ..... 21:44:49 (04aa9a34 / 2573941241)
Current Install ..... 54-281.rez (5012892)
Start percent ..... -
Stop percent ..... -

msSM      Timestamp Util   Caller   Return1  Return2  Return3
-----
04aa9a34  2573927208   100 0021a384 00031c0c 00027e8c 0021a57c
04aa9a20  2573907218   100 0021a384 00031c0c 00027e8c 0021a57c
04aa9a0c  2573887230   100 0021a4b0 00031c0c 00027e8c 0021a57c
.
.
.

```

Table 4-2: Parameters in output of the **show cpu** command

Parameter	Meaning
Maximum since switch restarted	Maximum CPU utilisation recorded since the switch restarted.
Maximum over last 5 minutes	Maximum CPU utilisation achieved over the last five minutes.
Average since switch restarted	Average CPU utilisation recorded since the switch restarted, as a percentage of total CPU capacity.
Average over last 5 minutes	Average CPU utilisation over the last five minutes, as a percentage of total CPU capacity.
Average over last minute	Average CPU utilisation over the last minute, as a percentage of total CPU capacity.
Average over last 10 seconds	Average CPU utilisation over the last 10 seconds, as a percentage of total CPU capacity.
Average over last second	Average CPU utilisation over the last second, as a percentage of total CPU capacity.

Table 4-2: Parameters in output of the **show cpu** command (cont)

Parameter	Meaning
State	Whether extended CPU utilisation is enabled.
Current Time	Current time in hh:mm:ss format. The time in milliseconds since midnight, and the current timestamp are also in brackets.
Current Install	Current installed version, with the size of the version in brackets.
Start percent	Percentage of utilisation that the CPU must reach, if any, before the switch can begin capturing extended CPU utilisation data. A "-" shows if no percentage is set.
Stop percent	Percentage of utilisation that the CPU must fall below before the switch stops capturing extended CPU utilisation data.
msSM	Time when the switch captured the CPU utilisation sample. The time format is milliseconds since midnight, in hexadecimal notation.
Timestamp	Time when the switch captured the CPU utilisation sample. The time format is microseconds since the switch last restarted. This figure wraps at 4 294 967 295 to return to 0.
Util	Percentage of instantaneous CPU utilisation.
Caller	Return address of the function that the CPU is executing.
Return 1, Return 2, Return 3	Return addresses for function calls on the CPU stack.

**Examples** To display the extended CPU utilisation data, use the command:

```
sh cpu ext
```

**Related Commands**

- [activate cpu extended](#)
- [disable cpu extended](#)
- [enable cpu extended](#)
- [reset cpu utilisation](#)
- [show buffer](#)

## show debug

**Syntax** SHow DEBug [STAck|FULl|IPSec]

**Description** This command executes a specific sequence of **show** commands on x900-48FE and AT-9900 switches to produce output useful for debugging.

The **stack** parameter limits output to a stack dump since the last power cycle, if one is available. Output depends on whether the last fatal condition was a software reboot or a hardware reset. After a software reboot, output is a stack dump (Figure 4-12 on page 4-45). After a hardware reset, no stack dump information is available and a message to this effect is displayed (Figure 4-13 on page 4-45). If the **stack** parameter is not specified, a stack dump is generated along with output from the **show** commands. The **full** parameter runs a longer list of commands. The **ipsec** parameter runs specific commands useful for debugging IPsec or ISAKMP problems.

Note that output depends on the switch's mode and user privilege as well as parameter. The following table lists commands.

Commands for show debug	Commands for show debug full
‡ show system (with current config file)	‡ show system (with current config file)
show file	show file
show install	show install
‡ show feature	‡ show feature
show release	show release
‡ show config dynamic	‡ show config dynamic
show buffer scan	show interface
show cpu	show ip interface
show log	show ip arp
show exception	show ip route full
show ffile check	show ip counter
	show switch
	show switch counter
	‡ show switch fdb
	show startup
	show flash
	show switch port=all
	show switch port=all counter
	show buffer scan
	show cpu
	show log
	show exception
	show ffile check

‡ When the switch is in security mode, this command produces output only when the user has security officer privilege.

Figure 4-12: Sample output from the **show debug stack** command after a software reboot

```

This is a production version of code
-----

Switch RESTART occurred
Check exception table for restart cause

STACK DUMP
-----

00012830: 00000001 00000001 00000001 00000001
00012840: 00010000 00000001 00000010 00000000
00012850: 0004c300 004c29f0 0001289c 0000e9a8
00012860: 0000e990 004bea9c 0001287c 00012004
00012870: 20040005 19c20084 00000000 000128d8
00012880: 00090c58 00000000 00090c2c 00000010
00012890: 0000e990 00000000 002aa284 004b0318
000128a0: 00000000 00000000 00000000 00000001
000128b0: 00000001 002b2660 0001294c 000128d4
000128c0: 004bea9c 0027c164 004bea9c 002b2850
000128d0: 000128d8 002b2850 004b030a 00000007
000128e0: 00000000 00000000 00000000 00000010
000128f0: 00000001 00000483 004b029c 00000000
00012900: 004bea9c 07400000 0009bcd6 004bea9c
00012910: 002b2660 0001294c 004b030a 0000003f
00012920: 00317567 00000fd5 00000023 00000014
00012930: 00000001 00000022 00317571 00000010
00012940: 00000000 00317572 004b030a 00287170
00012950: 0047c29c 0000030c 00000000 00000010
00012960: 00400100 00000006 00000000 000115a4
00012970: 000115a8 004b029c 0009bb78 00000010
00012980: 004b029c 00000000

```

Figure 4-13: Sample output from the **show debug stack** command after a hardware reset.

```

Switch hardware reset occurred - no debug info

```

**Related Commands**

- [show exception](#)
- [show log](#)
- [show startup](#)
- [show system](#)

## show debug active

**Syntax** SHow DEBug ACTive={ALL | *module*}

where *module* is the predefined name of a module

**Description** This command displays information about module-specific debugging enabled on the switch (Figure 4-14 on page 4-48). The following table lists the supported modules and their related debug commands. For information about the debugging options for each module, see the command description in the related command reference.

Module	Related Debugging Commands
BGP	<a href="#">disable bgp debug</a> <a href="#">enable bgp debug</a>
BOOTp	<a href="#">disable bootp relay option82 debug</a> <a href="#">enable bootp relay option82 debug</a>
DHCP	<a href="#">disable dhcp debug</a> <a href="#">enable dhcp debug</a>
DHCP6	<a href="#">disable dhcp6 debug</a> <a href="#">enable dhcp6 debug</a>
DHCP Snooping	<a href="#">disable dhcpsnooping debug</a> <a href="#">enable dhcpsnooping debug</a>
DVMrp	<a href="#">disable dvmrp debug</a> <a href="#">enable dvmrp debug</a>
ENCO	<a href="#">disable enco debugging</a> <a href="#">enable enco debugging</a>
ENCO	<a href="#">disable enco debugging</a> <a href="#">enable enco debugging</a>
GARP	<a href="#">disable garp debug</a> <a href="#">enable garp debug</a> <a href="#">show garp debug</a>
GRE	<a href="#">disable gre debug</a> <a href="#">enable gre debug</a>
HTTP	<a href="#">disable http debug</a> <a href="#">enable http debug</a> <a href="#">show http debug</a>
IP	<a href="#">disable ip debug</a> <a href="#">enable ip debug</a> <a href="#">show ip debug</a>
IPV6	<a href="#">disable ipv6 debug</a> <a href="#">disable ipv6 mld debug</a> <a href="#">disable mldsnooping debug</a> <a href="#">enable ipv6 debug</a> <a href="#">enable ipv6 mld debug</a> <a href="#">enable mldsnooping debug</a> <a href="#">show ipv6 mld debug</a>
LACP	<a href="#">disable lacp debug</a> <a href="#">enable lacp debug</a>
LDAP	<a href="#">disable ldap debug</a> <a href="#">enable ldap debug</a>

Module	Related Debugging Commands
LLDP	<code>disable lldp cdp debug</code> <code>enable lldp cdp debug</code>
MAIL	<code>disable mail debug</code> <code>enable mail debug</code>
OSPF	<code>disable ospf debug</code> <code>enable ospf debug</code> <code>show ospf debug</code>
PIM (PIM for IPv4)	<code>disable pim debug</code> <code>enable pim debug</code> <code>show pim debug</code>
PIM6 (PIM for IPv6)	<code>disable pim6 debug</code> <code>enable pim6 debug</code> <code>show pim6 debug</code>
PING	<code>disable ping poll debug</code> <code>enable ping poll debug</code>
PKI	<code>disable pki debug</code> <code>enable pki debug</code>
PORTAuth	<code>disable portauth debug</code> <code>enable portauth debug</code>
PPP	<code>disable ppp debug</code> <code>disable ppp template debug</code> <code>enable ppp debug</code> <code>enable ppp template debug</code>
QOS	<code>disable qos debug</code> <code>enable qos debug</code>
RADius	<code>disable radius debug</code> <code>enable radius debug</code> <code>show radius debug</code>
RSVP	<code>disable rsvp debug</code> <code>enable rsvp debug</code>
SSH	<code>disable ssh debug</code> <code>enable ssh debug</code>
SSL	<code>disable ssl debug</code> <code>enable ssl debug</code>
STAck	<code>disable stack debug</code> <code>enable stack debug</code>
STP	<code>disable stp</code> <code>enable stp debug</code> <code>show stp debug</code>
SWItch	<code>disable switch debug</code> <code>enable switch debug</code> <code>show switch debug</code>
TACACS	<code>disable tacacs debug</code> <code>enable tacacs debug</code> <code>show tacacs debug</code>
TACPlus	<code>disable tacplus debug</code> <code>enable tacplus debug</code>
TCP	<code>enable tcp debug</code> <code>disable tcp debug</code>

Module	Related Debugging Commands
VLAN	<a href="#">disable vlan debug</a> <a href="#">enable vlan debug</a> <a href="#">show vlan debug</a>
VRRP	<a href="#">disable vrrp debug</a> <a href="#">enable vrrp debug</a>

The output shows only the modules that are listed in the previous table, and which have debugging enabled. It does **not** list modules:

- for which debugging is currently disabled
- that are not listed in the previous table even if debugging is enabled

The **active** parameter specifies which modules to display information about. Specify **all** for all supported modules, or just a specific one. If no module is specified, active debugging is disabled on supported modules.

Figure 4-14: Example output from the **show debug active** command

```

DHCP
-----
DHCP Debug Options Enabled:
    STATE+PKT

IP
-----
IP Debug Timeout: 30 seconds
IP Debug Options Enabled:
    IP Packet
    IP ARP
    IP UPNP
-----
IP Route Debug Options Enabled:
    route
    multicast
    rip
    ripraw
-----
IP NAT Debug Options Enabled:
    allow
    deny
    packet
    process
    checksum
    identproxy
    smtp
    proxy
    http

TACACS
-----
TACACS Debug Options:
    all

```



Figure 4-14: Example output from the **show debug active** command (cont)

```

OSPF
-----
Debug Options Enabled      Detail
-----
autocost                  n/a
if state                  n/a
nbr state                 n/a
nssa                     n/a
state                    n/a
packet                   lsa full
spf                     n/a
lsu                      n/a

RADIUS
-----
RADIUS Debug Options:
    packet
    decode
    error

SWI
-----
SWI Debug Modes:
    arl
    dma

PIM4
-----
PIM4 Debug Options Enabled:
    join
    assert
    c-rp-adv
    bsr
    graft

BGP
-----
Peer          BGP Debug Options
-----
192.168.1.1   msg state trace update update_all rib

VRRP Debug
-----
Virtual Routers with Debug Enabled
    Virtual Router Identifier ..... 1

```

**Examples** To display all enabled debugging for the OSPF module, use the command:

```
sh deb act=ospf
```

**Related commands** [disable debug active](#)  
[show debug](#)

## show exception

**Syntax** SHow EXception

**Description** This command displays the exception list for x900-48FE and AT-9900 switches (Figure 4-15 on page 4-50).

There may be up to ten entries in the list, ordered from most recent (event 01) to least recent (event 10). The explicit format of each entry depends on the exception type and hence what information was stored for that event.

The Spurious Interrupts field is the number of spurious interrupts handled by the switch since startup. Under normal operating conditions this field should always be zero (0).

The fatal trap with error code of \$001e is a CPU software trap that is invoked in response to the [restart command on page 5-37 of Chapter 5, Managing Configuration Files and Software Versions](#) and hence should not be considered an error.

Figure 4-15: Example output from the **show exception** command

```

Spurious interrupts = 0

Switch exception list
-----
No: 01
  Offset/Type : $008/Bus error      Address   : $0019aaee
  Time        : 09:17:19 on 10-May-1997  Clock Log : 09:16:42 on 10-May-1997
  SSW         : $0225                Fault Addr : $0d0a0044

No: 02
  Offset/Type : $008/Bus error      Address   : $0019aaee
  Time        : 09:15:26 on 10-May-1997  Clock Log : 09:14:29 on 10-May-1997
  SSW         : $0225                Fault Addr : $0d0a0044

No: 03
  Offset/Type : $028/Line A emulator Address   : $0009624c
  Time        : 10:42:59 on 01-May-1997  Clock Log : 10:41:22 on 01-May-1997

No: 04
  Offset/Type : $028/Line A emulator Address   : $0009624c
  Time        : 10:42:59 on 01-May-1997  Clock Log : 10:41:22 on 01-May-1997

No: 05
  Offset/Type : $028/Line A emulator Address   : $0009624c
  Time        : 10:42:59 on 01-May-1997  Clock Log : 10:41:22 on 01-May-1997

No: 06
  Offset/Type : $028/Line A emulator Address   : $0009624c
  Time        : 10:42:59 on 01-May-1997  Clock Log : 10:41:22 on 01-May-1997
-----

```

## show mail

**Syntax** SHow MAIL

**Description** This command displays the current configuration of the email system, and any email messages that are currently queued for transmission ([Figure 4-16](#), [Table 4-3](#)).

Figure 4-16: Example output from the **show mail** command

MAIL						
Host Name ..... switch2.company.com						
SMTP Server ..... 192.68.6.100						
State ..... alive						
Debug ..... disabled						
Mails Sent ..... 0						
Date/Time	Id	To	Subject	State	Retries	
29 15:00:05	0002	jb@it.company.com	Test Message	Initial	0	

Table 4-3: Parameters in output of the **show mail** command

Parameter	Meaning
Host Name	Host name that the mail system uses.
SMTP Server	IP address of the SMTP mail server where mail is sent.
State	Status of the mail system: Alive Dead - name server not set Dead - host name not set
Debug	Whether debugging is enabled for the mail system.
Mails Sent	Number of mail messages transmitted since the last switch restart.
Date/Time	Date and time the message was queued for transmission.
Id	Unique message ID.
To	Email address where the message is to be sent.
Subject	Contents of the subject field in the message header.
State	Status of the transmission process: Initial Starting Get MX-IP Performing DNS lookup on MX record Get IP - Performing DNS lookup Connect TCP connection established S-hello Sending HELLO command S-from Sending MAIL FROM command S-rcpt Sending RCPT TO command S-data Sending DATA command S-header Sending headers S-file Sending file S-buffer Sending message text S-last Sending dot to terminate message S-done Sending message transmission S-quit Sending QUIT command

Table 4-3: Parameters in output of the **show mail** command (cont)

Parameter	Meaning
Retries	Number of times the mail system retransmitted the message because an acknowledgement was not received from the remote mail system.

**Examples** To show the state of the email system, use the command:

```
sh mail
```

**Related Commands** [delete mail](#)  
[disable mail debug](#)  
[enable mail debug](#)  
[mail](#)  
[reset mail](#)  
[set mail](#)  
[show mail](#)

## show startup

**Syntax** SHow STARTup

**Description** This command prints the state of the bits in the Startup Status Flag for x900-48FE and AT-9900 switches ([Figure 4-17](#)). This command can be used to check the state of the switch when it last started. When a bit signals an error, its message has an > added to the front of it.

This command is equivalent to the [show system startup](#) command on [page 4-74](#).

Figure 4-17: Example output from the **show startup** command

```
Switch Startup Status Flag is 00600040, which means:
-----
    4096k of RAM found
> Switch CRASHED prior to this startup
  Battery backed RAM battery OK
  NVS not corrupted
  Battery backed RAM not corrupted
  Real time clock not corrupted
  Real time clock, time set
  Switch software download OK
  Switch vector download OK
-----
```

## show summertime

**Syntax**    `SHoW SUMMErtime`

**Description**    This command displays information about the switch's current summer time settings.

Figure 4-18: Example output from the **show summertime** command:

```
Summertime Configuration
-----
Enabled ..... Yes
Summertime Name ..... NZDT
Start..... Sunday 2-Oct-2005 02:00am
End..... Sunday 19-Mar-2005 02:00am
Offset..... 60 minutes
Start rule..... non recurring fixed date
End rule..... non recurring fixed date
```

Table 4-4: Parameters in output of the **show summertime** command

Parameter	Meaning
Enabled	Whether summer time is currently enabled on the switch.
Summertime Name	The abbreviated name of the timezone being used for the Real Time Clock.
Start	The day, date, year, and time on which summer time starts.
End	The day, date, year, and time on which summer time ends.
Offset	The summer time offset value. This is the amount of time by which the clock will advance when summer time begins.
Start rule	The rule that is set to define the start date of summer time; one of 'recurring', or 'non-recurring fixed date'. If recurring, then the rule details are displayed.
End rule	The rule that is set to define the end date of summer time; one of 'recurring', or 'non-recurring fixed date'. If recurring, then the rule details are displayed.

**Example**    To display the switch's current summer time settings, use the command:

```
sh summ
```

**Related commands**

- `clear summertime`
- `clear timezone`
- `disable summertime`
- `enable summertime`
- `set ntp utcoffset` in Chapter 41, Network Time Protocol (NTP)
- `set summertime`
- `set system time`
- `set time`
- `set timezone`
- `show ntp` in Chapter 41, Network Time Protocol (NTP)
- `show system time`
- `show time`
- `show timezone`

## show system

---

**Syntax** SHow SYStem

**Description** This command displays general system information about the switch, including the hardware installed, memory, software versions loaded. It also displays location and contact details when these have been set with the appropriate **set system** commands.

See [Figure 4-19](#) and [Table 4-5 on page 4-56](#) for x900-48FE and AT-9900 switches).

See [Figure 4-20 on page 4-58](#) and [Table 4-6 on page 4-59](#) for x900-24X switches.

Figure 4-19: Example output from the **show system** command for AT-9900 switches

```

Switch System Status
Board      ID Bay  Board Name
-----
Base       220      9924T/4SP
PSU        212    1  AT-PWR01-AC
PSU        214    2  AT-FAN01
-----
Memory -   DRAM :262144 kB   FLASH : 16384 kB
-----

SysDescription
Allied Telesis 9924T/4SP version 2.9.1-00 13-Dec-2006
SysContact

SysLocation

SysName

SysDistName

SysUpTime
265270 ( 00:44:12 )
Boot Image      : at9924bt.fbr size 1005336 10-Dec-2006
Software Version: 2.9.1-00 13-Dec-2006
Release Version : 2.9.1-00 13-Dec-2006
Release built   : Nov 28 2006 at 15:32:47
Patch Installed : NONE
Territory       : europe
Help File       : help.hlp

PSU1:          (AC)      FAN: Normal Temp: Normal Power: Normal
PSU2:          (FAN)     FAN: Normal Temp: Normal Power: Warning

Current Temperature : Normal

FAN
-----
Main fan         Normal
-----

Configuration
Boot configuration file: flash:boot.cfg (exists)
Current configuration: flash:boot.cfg

Security Mode    : Disabled

```

Table 4-5: Parameters in output of the **show system** command for x900-48FE and AT-9900 switches

Parameter	Meaning
Board	One of the following board types: Base Expansion Uplink
ID	Identification number of the board.
Bay	Bay number where the expansion board is installed
Board Name	Descriptive name of the board.
Host Id	Host identification number for this switch.
Rev	Revision number and hardware modification level of the board.
Serial number	Serial number of the board.
DRAM	Amount of DRAM memory installed.
FLASH	Amount of flash memory installed.
SysDescription	Description of the product and software version.
SysContact	Name or address of person to call about the switch, set with the <a href="#">set system contact</a> command on page 4-29.
SysLocation	Location of the switch that is set with the <a href="#">set system location</a> command on page 4-32.
SysName	Name of the switch (usually the complete IP domain name) that is set with the <a href="#">set system name</a> command on page 4-33.
SysDistName	Distinguished name of the switch (used by PKI and ISAKMP) that is set with the <a href="#">set system distinguishedname</a> command on page 35-31 of Chapter 35, Public Key Infrastructure (PKI).
SysUpTime	Elapsed time in 100ths of a second since the last switch restart.
Boot Image	For devices that boot from flash, the flash boot image file name, size, and when it was loaded into the flash boot area,.
Software Version	Patch version running on the switch.
Release Version	Software version running on the switch.
Patch Installed	Description of the patch currently installed is any.
Territory	Territory where the switch is used; either Australia, China, Europe, Japan, Korea, New Zealand, or USA.
Country	Country where the switch is being used, for devices using ATM.
Help File	System help file used by the <a href="#">help</a> for online help that is set with the <a href="#">set help</a> command on page 2-13 of Chapter 2, Using the Command Line Interface (CLI).
PSU1 PSU2	Type of unit in each bay (in parentheses). Facing the rear of the switch, PSU1 is the right bay and PSU2 is the left bay.
Fan	Whether the fan voltage of each PSU or FOM is within the supported range; a warning is displayed if not.
Temp	Whether the temperature of each PSU or FOM is within the supported range; a warning is displayed if not.
Power	Whether the power output of each PSU is within the supported range; a warning is displayed if not.



Table 4-5: Parameters in output of the **show system** command for x900-48FE and AT-9900 switches (cont)

Parameter	Meaning
Current Temperature	Internal temperature status of the board:
	Normal    operating within the supported range
	Warning    operating outside the supported range
	Failed    the monitoring function has failed so the switch cannot report temperatures. A system LED also indicates failure by flashing three times, pausing, then repeating the sequence.
FAN	Status of each internal fan:
	Normal    operating within the supported range
	Warning    operating outside the supported range
	Failed    the monitoring function has failed so the switch cannot report the status. A system LED also indicates failure by flashing three times, pausing, then repeating the sequence.
Boot configuration file	Current boot configuration file set with the <b>set config</b> command and whether the file exists.
Current configuration	Source of the current switch configuration.
Security Mode	Whether security mode is enabled.
Patch files	Information about the patch files installed on the switch, if any.
Name	Name of a patch file.
Device	Whether the patch file is stored in flash or NVS.
Size	Size of the patch file in bytes.
Version	Version number of the patch, which consists of the version number of the version to which the patch applies, followed by a hyphen, and the generation number of the patch itself.

Figure 4-20: Example output from the **show system** command for x900-24X switches

```

AT-9924Ts version 3.0.1-00, built 28-Apr-2005
-----
System Time: 10-May-2005 16:13:28           Environment Status: Normal
UpTime      : 00:00:12 (1200)
-----

Installed Hardware
-----
Board Type  ID   Bay   Board Name                Host ID  Rev   Serial number
-----
Base        255             AT-9924s                   A-0     45AX4C00K
PSU         214   PSU1   AT-FAN01                   B-1     61115641
PSU         212   PSU2   AT-PWR01-AC                A-0     58458324
Expansion   265   Bay1   AT-A60                     A-0     45BB51007
Expansion   265   Bay2   AT-A60                     A-0     45BB51009
-----
Memory:     DRAM: 524288 kB    FLASH : 32768 kB
-----

Installed Software
-----
Software Type      File Name                Version      Size      Build Date
-----
Bootloader         -                        1-00        -        15-Apr-2005
Fallback Package   AT9924s_fb301-00.pkg     3.0.1-00    934090    24-Apr-2005
Current Package    AT9924s_301-00.pkg       3.0.1-00    3144258   28-Apr-2005
Current GUI File   -                        -           -         -
Current Help File  AT9924s_301.hlp          -           -         -
-----

Configuration
-----
Boot configuration file: startup.cfg (exists)
Current configuration: startup.cfg
-----

System Settings
-----
Security Mode: Disabled           Territory: usa

SysName
PC Lab Switch

SysDistName
PC Lab Switch

SysContact
Bob Jones

SysLocation
244 Ferry Rd
Phillipstown
Christchurch

```

Table 4-6: Parameters in output of the **show system** command for x900-24X switches

Parameter	Meaning
System Time	Date and time of this output.
Environment Status	Overall status of environmental monitoring. Either "normal" or an alarm if any conditions need attention. Details are in output from the <a href="#">show system environmental</a> command on <a href="#">page 4-65</a> . If there is a hardware or software fault that prevents any readings, "error" is displayed.
UpTime	Elapsed time in 100ths of a second since the last switch restart.
<b>Installed Hardware</b>	
Board Type	One of the following board types: Base Expansion PSU For details, see the <a href="#">show system boards</a> command on <a href="#">page 4-61</a> .
ID	Identification number of the board.
Bay	Bay ID where a power supply unit, fan-only module, or expansion module is installed. When facing the <i>rear</i> of the switch, PSU 1 is the right bay and PSU 2 is the left one. When facing the <i>front</i> of the switch, Bay 1 is on the left and Bay 2 is on the right.
Board Name	Model number of the board or module.
Host ID	Used when the stacking feature is enabled to uniquely identify each stack member in a stack.
Rev	Revision number and hardware modification level of the board or module.
Serial number	Serial number of the board or module
<b>Memory</b>	
DRAM	Amount of DRAM memory installed.
FLASH	Amount of flash memory installed.
<b>Installed Software</b>	
Software Type	Type of software, such as fallback or help file.
File Name	Name of the file.
Version	Version number of software.
Size	Size of the file in bytes.
Build date	Date the file was built.
<b>Configuration</b>	
Boot configuration file	The current startup configuration file set with the <a href="#">set config</a> command on <a href="#">page 5-39 of Chapter 5, Managing Configuration Files and Software Versions</a> .
Current configuration	Source of the current configuration for this switch.
<b>System Settings</b>	
Security Mode	Whether security mode is enabled.

Table 4-6: Parameters in output of the **show system** command for x900-24X switches

Parameter	Meaning
Territory	Territory where the switch is being used; either Australia, China, Europe, Japan, Korea, New Zealand, or USA.
SysName	Name of the switch, usually the complete IP domain name. This is set with the <a href="#">set system name</a> command on page 4-33.
SysDistName	District where the switch is located.
SysContact	Contact name or address of person to call about the switch. This is set with the <a href="#">set system contact</a> command on page 4-29.
SysLocation	Location of the switch. This is set with the <a href="#">set system location</a> command on page 4-32.

**Related Commands**

- [disable system security\\_mode](#)
- [enable system security\\_mode](#)
- [set help](#) in Chapter 2, Using the Command Line Interface (CLI)
- [set install](#)
- [set system contact](#)
- [set system location](#)
- [set system name](#)
- [show system boards](#)
- [show system environmental](#)

## show system boards

**Syntax** SHow SYStem BOArds

**Description** This command displays information that x900-24X switches store about printed circuit boards and power supply units (Figure 4-21, Table 4-7). This information is sometimes called the board's *personality* because it is unique for each board. This command provides details about the Board section that appears in the output from the [show system](#) command.

Figure 4-21: Example output from the **show system boards** command

```
Board Information
-----
Board instance ..... 1      (Base)
Board type number ..... 255  (AT-9924Ts)
Serial number ..... 45AX4C00K
PCB revision ..... X2-3
Manufacturer ID ..... A
Manufactured date ..... Jan 2005
Region ID ..... U
MAC address ..... 00-00-cd-24-03-1e
PCB BOM revision ..... X7
```

Table 4-7: Parameters in output of the **show system boards** command

Parameter	Meaning
Board instance	Index of this board in the table of board instances and whether the board is base, expansion, or PSU.
Board type number	Number assigned to the board and its name.
Serial number	Serial number of the board.
PCB revision	Revision and modification level of the board.
Manufacturer ID	Character that identifies the factory that manufactured the board.
Manufactured date	Month and year when the board was manufactured.
Region ID	Character that identifies the geographical region for which the board was manufactured.
MAC address	MAC address for the board on the base unit, if any.
PCB BOM revision	A one- or two-letter code for the bill of materials revision for the board.

**Examples** To display details about the PCBs on the switch, use the command:

```
sh sys boa
```

**Related Commands** [show system serialnumber](#)  
[show system](#)

## show system coredump

---

**Syntax** SHow SYStem COREdump

**Description** For x900-24X switches only, this command displays information about the level of detail that is dumped when a thread generates an exception. Information about an exception is stored in a coredump file with a .core extension.

Figure 4-22: Example output from the **show system coredump** command

```
System core dump configuration:

Sections: Stack and registers
Thread:   Exception
```

**Examples** To display the type of detail that is dumped for exceptions, use the command:

```
sh sys core
```

**Related Commands**

- [set system coredump](#)
- [show system debug](#)
- [show system exception](#)
- [show system processpartition](#)

## show system cpu utilisation

**Syntax** SHow SYStem CPU UTILisation

**Description** This command displays information about the CPU utilisation for x900-24X switches (Figure 4-22, Table 4-8).

Figure 4-23: Example output from the **show system cpu utilisation** command

```
CPU Utilisation (as a percentage)
-----
Maximum since switch restarted ..... 80
Maximum over last 5 minutes ..... 80
Average since switch restarted ..... 37
Average over last 5 minutes ..... 37
Average over last minute ..... 32
Average over last 10 seconds..... 10
-----
```

Table 4-8: Parameters in output of the **show system cpu utilisation** command

Parameter	Meaning
Maximum since switch restarted	Maximum CPU utilisation recorded since the switch restarted.
Maximum over last 5 minutes	Maximum CPU utilisation achieved over the last five minutes.
Average since switch restarted	Average CPU utilisation recorded since the switch restarted, expressed as a percentage of total CPU capacity.
Average over last 5 minutes	Average CPU utilisation over the last five minutes, expressed as a percentage of total CPU capacity.
Average over last minute	Average CPU utilisation over the last minute, expressed as a percentage of total CPU capacity.
Average over last 10 seconds	Average CPU utilisation over the 10 seconds, expressed as a percentage of total CPU capacity.

**Examples** To display cpu utilisation, use the command:

```
sh sys cpu uti
```

**Related Commands** [reset system cpu utilisation](#)  
[show system processpartition](#)

## show system debug

**Syntax** SHow SYStem DEBug [FULl]

**Description** This command executes a specific sequence of **show** commands for x900-24X switches to produce output useful for debugging. The **full** parameter runs a longer list of commands.

Note that when the switch is in security mode and the user has Manager privilege, some output is not displayed—an error message is displayed instead. The following table lists commands and notes ones that display the error message:

Commands for show system debug	Commands for show system debug full
‡ show system	‡ show system
show file	show file
show install	show install
‡ show feature	‡ show feature
show system licence	show system licence
show system package	show system package
‡ show config dynamic	‡ show configuration dynamic
show system memory	show interface
show buffer scan	show ip interface
show system boards	show ip arp
show system cpu utilisation	show ip route full
show log	show ip counter
show system exception	show switch
show system environment	show switch counter
	‡ show switch fdb
	show flash
	show nvs
	show switch port=all
	show switch port=all counter
	show system memory
	show buffer scan
	show system boards
	show system cpu utilisation
	show log
	show system coredump
	show system exception
	show system environment

‡ When the switch is in security mode, error 3034064 is displayed in output of these commands: Switch is in secure mode. Command needs security officer privilege.

**Related Commands** [set system coredump](#)



---

## show system environmental

---

**Syntax for x900-24X**     `SHoW SYStem ENVironmental [= {FAN | TEMPerature | VOLTage | PSB} ]`

**Syntax for x900-48FE  
and AT-9900**     `SHoW SYStem ENVironmental`

**Description**     This command displays the current information about temperatures, fans, and voltage on x900-24X switches ([Figure 4-24 on page 4-66](#), [Table 4-9 on page 4-67](#)). Information about devices in the rear bays—PSUs and FOMs—is also shown. The **environmental** parameter lets you specify the type of information to display. The **psb** (power supply bay) option displays data for devices in the rear bays. If no value is specified, all monitored data is displayed.

The command also displays the most recently measured temperature, fan, and voltage information recorded by the hardware monitor on AT-9900 switches ([Figure 4-25 on page 4-68](#), [Table 4-10 on page 4-69](#)). For the AT-9924T/4SP model only, information about the network processor accelerator card is available when a card is installed in the switch.

Additionally, the command displays the current temperature of the base board for x900-48FE switches ([Figure 4-26 on page 4-69](#)), and of the accelerator card if one is installed on an AT-8948.

Figure 4-24: Example output from the **show system environmental** command for x900-24X switches

Environment Monitoring Status					
ID	Voltage Monitors	Actual (volts)	Low Limit (volts)	High Limit (volts)	Status
1.	1.65V	1.658	1.576	1.729	Ok
2.	1.8V	1.771	1.719	1.875	Ok
3.	12V	12.111	11.421	12.550	Ok
4.	2.5V	2.578	2.383	2.617	Ok
5.	3.3V	3.350	3.144	3.453	Ok
6.	XEM Bay 1 - AT-A60 1.65V	1.575	1.575	1.729	Ok
7.	XEM Bay 1 - AT-A60 1.8V	1.743	1.715	1.884	Ok
8.	XEM Bay 1 - AT-A60 12V	11.557	11.432	12.556	Ok
9.	XEM Bay 1 - AT-A60 2.5V	2.422	2.383	2.617	Ok
10.	XEM Bay 1 - AT-A60 3.3V	3.215	3.146	3.455	Ok
11.	XEM Bay 1 - AT-A60 5V	4.896	4.765	5.234	Ok
12.	XEM Bay 2 - AT-A60 1.65V	1.575	1.575	1.729	Ok
13.	XEM Bay 2 - AT-A60 1.8V	1.743	1.715	1.884	Ok
14.	XEM Bay 2 - AT-A60 12V	11.557	11.432	12.556	Ok
15.	XEM Bay 2 - AT-A60 2.5V	2.435	2.383	2.617	Ok
16.	XEM Bay 2 - AT-A60 3.3V	3.215	3.146	3.455	Ok
17.	XEM Bay 2 - AT-A60 5V	4.922	4.765	5.234	Ok
ID	Temperature Monitors	Actual (celsius)	Low Limit (celsius)	High Limit (celsius)	Status
1.	Ambient	24.0	-	55.0	Ok
2.	Internal	37.0	-	75.0	Ok
3.	XEM Bay 1 - AT-A60 Internal	47.5	-	60.0	Ok
4.	XEM Bay 2 - AT-A60 Internal	51.0	-	60.0	Ok
ID	Fan Speed Monitors	Actual (r.p.m)	Low Limit (r.p.m)	High Limit (r.p.m.)	Status
1.	XEM Bay 1 - AT-A60 Fab Adpt	6136	3515	-	Ok
2.	XEM Bay 1 - AT-A60 Pkt Proc	5869	3515	-	Ok
3.	XEM Bay 2 - AT-A60 Fab Adpt	6081	3515	-	Ok
4.	XEM Bay 2 - AT-A60 Pkt Proc	5921	3515	-	Ok
ID	Power Supply Bay Device Monitors	Status			
1.	Bay 1 FOM Fans	Ok			
2.	Bay 1 FOM Temperature	Ok			
3.	Bay 2 PSU Fans	Ok			
4.	Bay 2 PSU Temperature	Ok			
5.	Bay 2 PSU Voltage	Ok			

Table 4-9: Parameters in output of the **show system environmental** command for x900-24X switches

Parameter	Meaning
<b>ID</b>	<b>Sequential instance number of voltage monitors.</b>
Voltage Monitors	Description of the voltage rail being measured on the base unit and expansion modules (XEM).
Actual (volts)	Current voltage.
Low Limit (volts)	Lower limit of the monitor before an alarm is reported.
High Limit (volts)	Upper limit of the monitor before an alarm is reported.
Status	Whether the reading is within the expected range; an alarm is displayed if not. If there is a hardware or software fault that prevents any readings, "error" is displayed.
<b>ID</b>	<b>Sequential instance number of temperature monitors.</b>
Temperature Monitors	Source of the temperature measurements on the base unit and expansion modules (XEM).
Actual (celsius)	Current temperature.
High Limit (celsius)	Upper limit of the monitor before an alarm is reported.
Status	Whether the reading is within the expected range; an alarm is displayed if not. The switch must warm up before it can give accurate readings.
<b>ID</b>	<b>Sequential instance number of fan monitors.</b>
Fan Speed Monitors	Source of the RPM measurements on the base unit and expansion modules (XEM).
Actual (r.p.m.)	Current revolutions per minute.
Low Limit (r.p.m.)	Lower limit of the monitor before an alarm is reported.
Status	Whether the reading is within the expected range; an alarm is displayed if not.
<b>ID</b>	<b>Sequential instance number of device monitors.</b>
Power Supply Bay Device Monitors	Whether the device is a power supply unit (PSU) or fan-only module (FOM), and the type of data being reported.
Status	Whether they are operating within expected ranges.

Figure 4-25: Example output from the **show system environmental** command for AT-9900 switches

Temperature	Status	Actual (celsius)
-----		
System	Normal	
Temperature1	Normal	31
PSU1	Normal	N/A
PSU2	Over	N/A
-----		
Fan	Status	Actual (rpm)
-----		
Switch1	Normal	5000
Switch2	Normal	5000
Adapter1	Normal	4600
Adapter2	Normal	4600
Adapter3	Normal	4600
Accelerator1	Normal	5000
Accelerator2	Normal	5000
PSU1	Normal	N/A
PSU2	Failed	N/A
-----		
Voltage		Actual (vdc)
-----		
12V		12.00
3V3		3.30
2V5		2.50
1V8		1.80
1V65		1.65
1V		1.00
-----		

Table 4-10: Parameters in output of the **show system environmental** command for AT-9900 switches

Parameter	Meaning
Temperature	The source of the temperature measurements.
Status	For System and Temperature1, either normal or failed. For PSU1 and PSU2, either normal or over.
Actual (celsius)	The current measured temperature. Note that PSUs do not report actual temperature.
Fan	Source of the revolutions per minute (RPM) measurements.
Status	Either normal or failed.
Actual (rpm)	Currently measured RPM. Note that PSUs do not report actual RPM.
Voltage	Nominal voltage of the voltage rail being measured.
Actual (vdc)	Currently measured voltage.

Figure 4-26: Example of **show system environmental** for x-900-48FE switches

```
Current Temperature
-----
24 Celsius
-----
```

**Examples** To display the current temperature of the base board on an x900-48FE, use the command:

```
show sys env
```

To display the speed of all system fans on an x900-24X, use the command:

```
sh sys env=fan
```

To display the current base board temperature, the status of all system fans, and the voltage being used on an AT-9900, use the command:

```
sh sys env
```

**Related Commands** [set system environmental](#)  
[show system](#)

## show system exception

**Syntax** SHow SYStem EXception

**Description** This command displays an exception list for x900-24X switches. An exception occurs when a fatal condition arises on the switch or when it is reset. The list of exceptions is maintained across power-downs (Figure 4-15, Table 4-11).

Figure 4-27: Example output from the **show system exception** command

```
Switch exception list
-----
23-Jun-2005 15:23:45
Process Partition: Product_Apps          Class : MEMORY ACCESS
Thread           : CLI_Shell             Type  : 0x00000102
Core file        : product_apps_1.core

13-May-2005 11:52:42
Process Partition: Product_Apps          Class : MEMORY ACCESS
Thread           : Main                  Type  : 0x00000102
Core file        : product_apps.core

08-May-2005 21:43:40
Process Partition: System                Class : SW TRAP
Thread           : Environment_Monitoring Type  : 0x00000003
Core file        : system.core
-----
```

Table 4-11: Parameters in output of the **show system exception** command

Parameter	Meaning
Date/Time	Date and time when the exception occurred.
Process Partition	Name of the process partition where the offending thread was running.
Thread	Name of the thread that caused the exception.
Core file	Name of the core dump file where threads registers and stack were dumped when the exception occurred.
Class	Type or problem: Memory access CPU error OS API error SW trap Recoverable sw trap
Type	Hex identifier for an exception within a class.

**Examples** To show information about problem events, use the command:

```
sh sys ex
```

**Related Commands** [set system coredump](#)

## show system memory

**Syntax** SHow SYStem MEMory

**Description** This command displays information about how memory for x900-24X switches is allocated (Figure 4-28, Table 4-12).

Figure 4-28: Example output from the **show system memory** command

```
Memory (DRAM) ..... 528800 kB
Process partitions .....25%
Buffer Pool ..... 12%
  Free buffers ..... 26494
  Total buffers ..... 27992
```

Table 4-12: Parameters in output of the **show system memory** command

Parameter	Meaning
Memory (DRAM)	Total amount of DRAM installed.
Process partitions	Percentage of memory allocated to process partitions.
Buffer Pool	Percentage of memory allocated to the buffer pool.
Free buffers	Number of unused memory buffers.
Total buffers	Total number of memory buffers.

**Examples** To show information about memory, use the command:

```
sh sys mem
```

**Related Commands** [show buffer](#)  
[show system processpartition](#)

## show system processpartition

**Syntax** SHow SYStem PROcesspartition[=*processpartition-name*]  
[THRead]

**Description** A *process* consists of one or more threads (sequences of instructions) that the CPU executes. A *process partition* consists of a region of memory where a process is executed and a set of permissions that govern the execution of the process.

This command shows how each process is using its allocated memory on x900-24X switches. You can display information about all partitions or a specific one. You can also request data about threads running in a partition (Figure 4-29, Table 4-13).

Parameter	Description
PROcesspartition	Process partitions. Default: no default (all are displayed)
<i>processpartition-name</i>	Name of a process partition. not case sensitive from 1 to 24 characters long
THRead	Name of thread running in a particular process partition and information about it. Default: no default

Figure 4-29: Example output from the **show system processpartition thread** command

Process Partition			Mem Size	Mem Usd		
Thread Name	Status	Cpu	Stk Size	Stk Max	Pri	Thread Id
-----						
Product_Apps			4096 kB	29%		
CLI_Shell	-	0%	255 kB	1%	127	218877952
Encryption_Service	-	0%	7 kB	0%	127	218890240
GUI_Agent	-	0%	15 kB	0%	127	218955776
interrupt	-	0%	3 kB	0%	200	218333184
Main	-	0%	63 kB	38%	127	217792512
OSPF_Application	-	0%	31 kB	0%	127	218935296
System			200008 kB	24%		
Environment_Monitoring	-	0%	4 kB	25%	127	268034048
File_System_Service	-	0%	4 kB	25%	127	268054528
I2C_Driver	-	0%	4 kB	25%	127	268029952
Idle	running	100%	0 kB	0%	0	268103680
LED_Control_Service	-	0%	4 kB	25%	127	268025856
Software_Installer	-	0%	2 kB	50%	254	268091392
PCI_Driver	-	0%	4 kB	25%	127	268050432
Register_Driver	-	0%	4 kB	25%	127	268042240
OS_Resource_Manager	-	0%	1 kB	0%	254	268099584
Software_Manager	running	0%	4 kB	50%	249	268070912
System_Error_Handler	-	0%	4 kB	0%	1	268083200
Time_Service	-	0%	4 kB	25%	127	268046336
Unit_Discovery_Service	-	0%	4 kB	50%	127	268062720
Unit_Information_Service	-	0%	4 kB	25%	127	268066816
-----						



Table 4-13: Parameters in output of the **show system processpartition threads** command

Parameter	Meaning
Process Partition	Name of a process partition on the switch.
Mem Size	Amount of memory in kilobytes allocated to the process partition.
Mem Usd	Percentage of memory the process partition used.
Thread Name	Name of a thread running in the process partition.
Status	Whether the thread is running, pending (-), or stopped.
CPU	Percentage of CPU time the thread has received.
Stk size	Amount of stack memory in kilobytes allocated to the thread.
Stk Max	Maximum percentage of stack memory the thread used.
Pri	Priority of the thread running on the switch.
Thread ID	ID of the thread assigned by the CPU.

**Examples** To display information about all process partitions and all threads running on the switch, use the command:

```
sh sys pro thr
```

**Related Commands** [set system coredump](#)

## show system serialnumber

---

**Syntax** SHow SYStem SErialnumber

**Description** This command displays the serial number of the base unit ([Figure 4-30 on page 4-74](#)).

Figure 4-30: Example output from the **show system serialnumber** command

```
45AX4C00K
```

**Examples** To display the switch's base hardware serial number, use the command:

```
sh sys se
```

**Related Commands** [show system](#)

## show system startup

---

**Syntax** SHow SYStem STARTup

**Description** This command prints the state of the bits in the switch Startup Status Flag for x900-48FE and AT-9900 switches([Figure 4-31](#)). This command can be used to check the state of the switch when it last started. When a bit signals an error, its message has an > added to the front of it.

This command is equivalent to the [show startup command on page 4-52](#).

Figure 4-31: Example output from the **show startup** command

```
Switch Startup Status Flag is 00600040, which means:
-----
    4096k of RAM found
> Switch CRASHED prior to this startup
    Battery backed RAM battery OK
    NVS not corrupted
    Battery backed RAM not corrupted
    Real time clock not corrupted
    Real time clock, time set
    Switch software download OK
    Switch vector download OK
-----
```

## show system time

---

**Syntax**    `SHoW SYStem TIme`

**Description**    This command displays the local time for x900-24X switches as maintained by the switch's real-time clock.

Figure 4-32: Example output from the **show system time** command

```
Info (1034318):System time is 16:11:57 on Thursday 07-Apr-2005, Time zone is UTC/GMT.
```

**Examples**    To display the current local time that the switch is using, use the command:

```
sh sys ti
```

**Related Commands**    [set system time](#)  
[set time](#)  
[show time](#)

## show time

---

**Syntax**    `SHoW TIme [RTC]`

**Description**    This command displays the currently configured local time and date for x900-48FE and AT-9900 switches.

Use the **RTC** parameter to display the time stored in the Real Time Clock.

Figure 4-33: Example output from the **show time rtc** command

```
System Real Time Clock is 14:18:05 on Wednesday 23-Jun-2005
```

**Example**    To display the time the switch is using, use the command:

```
sh ti
```

**Related Commands**    [clear summertime](#)  
[clear timezone](#)  
[disable summertime](#)  
[enable summertime](#)  
[set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)  
[set summertime](#)  
[set system time](#)  
[set time](#)  
[set timezone](#)  
[show ntp](#) in Chapter 41, Network Time Protocol (NTP)  
[show summertime](#)  
[show system time](#)  
[show timezone](#)

## show timezone

**Syntax** SHow TIMEZone

**Description** This command displays information about the switch's current timezone settings. If a timezone has not been specifically set, this command displays the system default values.

Figure 4-34: Example output from the **show timezone** command:

```
Timezone name is set to 'NZST', offset from UTC is +12:00
```

Table 4-14: Parameters in output of the **show timezone** command

Parameter	Meaning
Name	The abbreviated name for this time zone in Standard Time. If the timezone has been cleared, or has not yet been set, then 'not set' is shown.
offset from UTC	The offset from UTC time displayed as a positive (+) or negative (-) value, and the time displayed as hh:mm. If offset=0, then it is displayed as "+00:00"

**Example** To display the current timezone the switch is using, use the command:

```
sh timez
```

**Related Commands**

- [clear summertime](#)
- [clear timezone](#)
- [disable summertime](#)
- [enable summertime](#)
- [set ntp utcoffset](#) in Chapter 41, Network Time Protocol (NTP)
- [set summertime](#)
- [set system time](#)
- [set time](#)
- [set timezone](#)
- [show ntp](#) in Chapter 41, Network Time Protocol (NTP)
- [show summertime](#)
- [show system time](#)
- [show time](#)