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## Configuration Commands

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### File Management Commands

#### bof

**Syntax**    **bof**

**Context**    <ROOT>

**Description**    This command creates or edits the boot option file (BOF) for the specified local storage device. A BOF file specifies where the system searches for runtime images, configuration files, and other operational parameters during system initialization.

BOF parameters can be modified. Changes can be saved to a specified compact flash. The BOF must be located in the root directory of either an internal or external compact flash local to the system and have the mandatory filename of *bof.cfg*.

When modifications are made to in-memory parameters that are currently in use or operating, the changes are effective immediately. For example, if the IP address of the management port is changed, the change takes place immediately.

Only one entry of the BOF configuration command statement can be saved once the statement has been found to be syntactically correct.

When opening an existing BOF that is not the BOF used in the most recent boot, a message is issued notifying the user that the parameters will not affect the operation of the node.

No default boot option file exists. The router boots with the factory default boot sequence and options.

**Default**        **none**

#### save

**Syntax**    **save [cflash-id]**

**Context**    bof

**Description**    This command uses the boot option parameters currently in memory and writes them from the boot option file to the specified compact flash.

The BOF must be located in the root directory of the internal or external compact flash drives local to the system and have the mandatory filename of *bof.cfg*.

If a location is not specified, the BOF is saved to the default compact flash drive (cf3:) on the active CPM (typically the CPM in slot A, but the CPM in slot B could also be acting as the active CPM). The slot name is not case-sensitive. You can use upper or lowercase “A” or “B”.

Command usage:

## File Management Commands

- **bof save** — Saves the BOF to the default drive (cf3:) on the active CPM(either in slot A or B).
- **bof save cf3:** — Saves the BOF to cf3: on the active CPM (either in slot A or B).

To save the BOF to a compact flash drive on the standby CPM (for example, the redundant (standby) CPM is installed in slot B), specify -A or -B option.

Command usage:

- **bof save cf3-A:** — Saves the BOF to cf3: on CPM in in slot A whether it is active or standby.
- **bof save cf3-B:** — Saves the BOF to cf3: on CPM in in slot B whether it is active or standby.

The slot name is not case-sensitive. You can use upper or lowercase “A” or “B”.

The **bof save** and **show bof** commands allow you to save to or read from the compact flash of the standby CPM Use the **show card** command to determine the active and standby CPM(A or B).

**Default** Saves must be explicitly executed. The BOF is saved to cf3: if a location is not specified.

**Parameters** *flash-id* — The compact flash ID where the *bof.cfg* is to be saved.

**Values** cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:

**Default** cf3:

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## BOF Processing Control

### wait

**Syntax**    `wait seconds`

**Context**    bof

**Description**    This command configures a pause, in seconds, at the start of the boot process which allows system initialization to be interrupted at the console.

When system initialization is interrupted the operator is allowed to manually override the parameters defined in the boot option file (BOF).

Only one **wait** command can be defined in the BOF.

**Default**    3

**Parameters**    *seconds* — The time to pause at the start of the boot process, in seconds.

**Values**    1 — 10

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## Console Port Configuration

### console-speed

**Syntax**    **console-speed** *baud-rate*  
              **no console-speed**

**Context**    bof

**Description**    This command configures the console port baud rate.  
                    When this command is issued while editing the BOF file used for the most recent boot, both the BOF file and the active configuration are changed immediately.  
                    The **no** form of the command reverts to the default value.

**Default**        **115200** — console configured for 115,200 bps operation

**Parameters**    *baud-rate* — The console port baud rate, expressed as a decimal integer.

**Values**        9600, 19200, 38400, 57600, 115200

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## Image and Configuration Management

### persist

**Syntax** `persist {on | off}`

**Context** bof

**Description** This command specifies whether the system will preserve system indexes when a **save** command is executed. During a subsequent boot, the index file is read along with the configuration file. As a result, a number of system indexes are preserved between reboots, including the interface index, LSP IDs, path IDs, etc. This reduces resynchronizations of the Network Management System (NMS) with the affected network element.

In the event that **persist** is **on** and the reboot with the appropriate index file fails, SNMP is operationally shut down to prevent the management system from accessing and possibly synchronizing with a partially booted or incomplete network element. To enable SNMP access, enter the **config>system>snmp>no shutdown** command.

If **persist** is enabled and the **admin save <url>** command is executed with an FTP path used as the **<url>** parameter, two FTP sessions simultaneously open to the FTP server. The FTP server must be configured to allow multiple sessions from the same login, otherwise, the configuration and index files will not be saved correctly.

Notes:

- Persistency files (.ndx) are saved on the same disk as the configuration files and the image files.
- When an operator sets the location for the persistency file, the system will check to ensure that the disk has enough free space. If this there is not enough free space, the persistency will not become active and a trap will be generated. Then, it is up to the operator to free adequate disk space. In the meantime, the system will perform a space availability check every 30 seconds. As soon as the space is available the persistency will become active on the next (30 second) check.

**Default** `off`

**Parameters** `on` — Create when saving the configuration.

`off` — Disables the system index saves between reboots.

## primary-config

<b>Syntax</b>	<b>primary-config</b> <i>file-url</i> <b>no primary-config</b>								
<b>Context</b>	bof								
<b>Description</b>	<p>This command specifies the name and location of the primary configuration file.</p> <p>The system attempts to use the configuration specified in <b>primary-config</b>. If the specified file cannot be located, the system automatically attempts to obtain the configuration from the location specified in <b>secondary-config</b> and then the <b>tertiary-config</b>.</p> <p>Note that if an error in the configuration file is encountered, the boot process aborts.</p> <p>The <b>no</b> form of the command removes the <b>primary-config</b> configuration.</p>								
<b>Default</b>	<b>none</b>								
<b>Parameters</b>	<i>file-url</i> — The primary configuration file location, expressed as a file URL.								
<b>Values</b>	<table> <tr> <td>file-url</td> <td>[<i>local-url</i>   <i>remote-url</i>] (up to 180 characters)</td> </tr> <tr> <td>local-url</td> <td>[<i>cflash-id</i>]/[<i>file-path</i>]</td> </tr> <tr> <td>remote-url</td> <td>[{ftp:// tftp://} <i>login:pswd@remote-locn</i>]/[<i>file-path</i>]</td> </tr> <tr> <td>cflash-id</td> <td>cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:</td> </tr> </table>	file-url	[ <i>local-url</i>   <i>remote-url</i> ] (up to 180 characters)	local-url	[ <i>cflash-id</i> ]/[ <i>file-path</i> ]	remote-url	[{ftp:// tftp://} <i>login:pswd@remote-locn</i> ]/[ <i>file-path</i> ]	cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:
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cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:								

## primary-image

<b>Syntax</b>	<b>primary-image</b> <i>file-url</i> <b>no primary image</b>								
<b>Context</b>	bof								
<b>Description</b>	<p>This command specifies the primary directory location for runtime image file loading.</p> <p>The system attempts to load all runtime image files configured in the <b>primary-image</b> first. If this fails, the system attempts to load the runtime images from the location configured in the <b>secondary-image</b>. If the secondary image load fails, the tertiary image specified in <b>tertiary-image</b> is used.</p> <p>All runtime image files (*.tim files) must be located in the same directory.</p> <p>The <b>no</b> form of the command removes the <b>primary-image</b> configuration.</p>								
<b>Default</b>	<b>none</b>								
<b>Parameters</b>	<i>file-url</i> — The <i>location-url</i> can be either local (this CPM) or a remote FTP server.								
<b>Values</b>	<table> <tr> <td>file-url</td> <td>[<i>local-url</i>   <i>remote-url</i>] (up to 180 characters)</td> </tr> <tr> <td>local-url</td> <td>[<i>cflash-id</i>]/[<i>file-path</i>]</td> </tr> <tr> <td>remote-url</td> <td>[{ftp:// tftp://} <i>login:pswd@remote-locn</i>]/[<i>file-path</i>]</td> </tr> <tr> <td>cflash-id</td> <td>cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:</td> </tr> </table>	file-url	[ <i>local-url</i>   <i>remote-url</i> ] (up to 180 characters)	local-url	[ <i>cflash-id</i> ]/[ <i>file-path</i> ]	remote-url	[{ftp:// tftp://} <i>login:pswd@remote-locn</i> ]/[ <i>file-path</i> ]	cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:
file-url	[ <i>local-url</i>   <i>remote-url</i> ] (up to 180 characters)								
local-url	[ <i>cflash-id</i> ]/[ <i>file-path</i> ]								
remote-url	[{ftp:// tftp://} <i>login:pswd@remote-locn</i> ]/[ <i>file-path</i> ]								
cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:								

## secondary-config

<b>Syntax</b>	<b>secondary-config</b> <i>file-url</i> <b>no secondary-config</b>		
<b>Context</b>	bof		
<b>Description</b>	<p>This command specifies the name and location of the secondary configuration file.</p> <p>The system attempts to use the configuration as specified in <b>secondary-config</b> if the primary config cannot be located. If the <b>secondary-config</b> file cannot be located, the system attempts to obtain the configuration from the location specified in the <b>tertiary-config</b>.</p> <p>Note that if an error in the configuration file is encountered, the boot process aborts.</p> <p>The <b>no</b> form of the command removes the <b>secondary-config</b> configuration.</p>		
<b>Default</b>	none		
<b>Parameters</b>	<i>file-url</i> — The secondary configuration file location, expressed as a file URL.		
	<b>Values</b>	file-url	[ <i>local-url</i>   <i>remote-url</i> ] (up to 180 characters)
		local-url	[ <i>cflash-id</i> ]/[ <i>file-path</i> ]
		remote-url	[{ftp:// tftp://} <i>login:pswd@remote-locn</i> ]/[ <i>file-path</i> ]
		cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:

## secondary-image

<b>Syntax</b>	<b>secondary-image</b> <i>file-url</i> <b>no secondary-image</b>		
<b>Context</b>	bof		
<b>Description</b>	<p>This command specifies the secondary directory location for runtime image file loading.</p> <p>The system attempts to load all runtime image files configured in the <b>primary-image</b> first. If this fails, the system attempts to load the runtime images from the location configured in the <b>secondary-image</b>. If the secondary image load fails, the tertiary image specified in <b>tertiary-image</b> is used.</p> <p>All runtime image files (*.tim files) must be located in the same directory.</p> <p>The <b>no</b> form of the command removes the <b>secondary-image</b> configuration.</p>		
<b>Default</b>	none		
<b>Parameters</b>	<i>file-url</i> — The <i>file-url</i> can be either local (this CPM) or a remote FTP server.		
	<b>Values</b>	file-url	[ <i>local-url</i>   <i>remote-url</i> ] (up to 180 characters)
		local-url	[ <i>cflash-id</i> ]/[ <i>file-path</i> ]
		remote-url	[{ftp:// tftp://} <i>login:pswd@remote-locn</i> ]/[ <i>file-path</i> ]
		cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:

## tertiary-config

<b>Syntax</b>	<b>tertiary-config</b> <i>file-url</i> <b>no tertiary-config</b>		
<b>Context</b>	bof		
<b>Description</b>	<p>This command specifies the name and location of the tertiary configuration file.</p> <p>The system attempts to use the configuration specified in <b>tertiary-config</b> if both the primary and secondary config files cannot be located. If this file cannot be located, the system boots with the factory default configuration.</p> <p>Note that if an error in the configuration file is encountered, the boot process aborts.</p> <p>The <b>no</b> form of the command removes the <b>tertiary-config</b> configuration.</p>		
<b>Default</b>	none		
<b>Parameters</b>	<i>file-url</i> — The tertiary configuration file location, expressed as a file URL.		
	<b>Values</b>	local-url	[ <i>cflash-id</i> ]/[ <i>file-path</i> ]
		cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:
		remote-url	[{ftp:// tftp://} <i>login:pswd@remote-locn</i> ]/[ <i>file-path</i> ]

## tertiary-image

<b>Syntax</b>	<b>tertiary-image</b> <i>file-url</i> <b>no tertiary-image</b>		
<b>Context</b>	bof		
<b>Description</b>	<p>This command specifies the tertiary directory location for runtime image file loading.</p> <p>The system attempts to load all runtime image files configured in the <b>primary-image</b> first. If this fails, the system attempts to load the runtime images from the location configured in the <b>secondary-image</b>. If the secondary image load fails, the tertiary image specified in <b>tertiary-image</b> is used.</p> <p>All runtime image files (*.tim files) must be located in the same directory.</p> <p>The <b>no</b> form of the command removes the <b>tertiary-image</b> configuration.</p>		
<b>Default</b>	none		
<b>Parameters</b>	<i>file-url</i> — The location-url can be either local (this CPM) or a remote FTP server.		
	<b>Values</b>	file-url	[ <i>local-url</i>   <i>remote-url</i> ] (up to 180 characters)
		local-url	[ <i>cflash-id</i> ]/[ <i>file-path</i> ]
		remote-url	[{ftp:// tftp://} <i>login:pswd@remote-locn</i> ]/[ <i>file-path</i> ]
		cflash-id	cf1:, cf1-A:, cf1-B:, cf2:, cf2-A:, cf2-B:, cf3:, cf3-A:, cf3-B:



## Management Ethernet Configuration

### address

**Syntax** [no] address *ip-prefix/ip-prefix-length* [active | standby]

**Context** bof

**Description** This command assigns an IP address to the management Ethernet port on the active CPM in the running configuration and the Boot Option File (BOF) or the standby CPM for systems using redundant CPMs. Deleting a BOF address entry is not allowed from a remote session.

Note that changing the active and standby addresses without reboot standby CPM may cause a boot-env sync to fail.

The **no** form of the command deletes the IP address from the CPM Ethernet port.

**Default** **no address** — There are no IP addresses assigned to Ethernet ports.

**Parameters** *ip-prefix/ip-prefix-length* — The destination address of the aggregate route in dotted decimal notation.

<b>Values</b>	ipv4-prefix	a.b.c.d (host bits must be 0)
	ipv4-prefix-length	0 — 32
	ipv6-prefix	x:x:x:x:x:x:x (eight 16-bit pieces)
		x:x:x:x:x:d.d.d.d
		x: [0 — FFFF]H
		d: [0 — 255]D
	ipv6-prefix-length	0 — 128

**active | standby** — Specifies which CPM Ethernet address is being configured: the active CPM Ethernet or the standby CPM Ethernet.

**Default** active

### autonegotiate

**Syntax** [no] autonegotiate [limited]

**Context** bof

**Description** This command enables speed and duplex autonegotiation on the management Ethernet port in the running configuration and the Boot Option File (BOF).

When autonegotiation is enabled, the link attempts to automatically negotiate the link speed and duplex parameters. If autonegotiation is enabled, then the configured duplex and speed parameters are ignored.

The **no** form of the command disables the autonegotiate feature on this port.

**autonegotiate** — Autonegotiation is enabled on the management Ethernet port.

## Management Ethernet Configuration

**Parameters** **limited** — Specifies ethernet ports to be configurable to use link autonegotiation but with only a single speed/duplex combination advertised. This allows a specific speed/duplex to be guaranteed without having to turn off autonegotiation, which is not allowed for 1000BASE-T.

### duplex

**Syntax** **duplex {full | half}**

**Context** bof

**Description** This command configures the duplex mode of the CPM management Ethernet port when autonegotiation is disabled in the running configuration and the Boot Option File (BOF).

This configuration command allows for the configuration of the duplex mode of the CPM Ethernet interface. If the port is configured to autonegotiate this parameter will be ignored.

**Default** **duplex full** — Full duplex operation.

**Parameters** **full** — Sets the link to full duplex mode.

**half** — Sets the link to half duplex mode.

### fips-140-2

**Syntax** **fips-140-2**  
**no fips-140-2**

**Context** bof

**Description** This command is used to configure the node in FIPS-140-2 mode. Before using this command, the operator must ensure that no current configuration exists in the config file that is not supported in FIPS-140-2 mode. Failing to remove unsupported configuration will result in the node being unable to boot up. The node must be rebooted after executing this command in order for the node to begin operating in FIPS-140-2 mode.

**Default** no fips-140-2

### li-local-save

**Syntax** **[no] li-local-save**

**Context** bof

**Description** This command enables the lawful intercept (LI) configuration to be saved locally.

## li-separate

**Syntax** [no] **li-separate**

**Context** bof

**Description** This command enables separate access to lawful intercept (LI) information.

## speed

**Syntax** **speed** *speed*

**Context** bof

**Description** This command configures the speed for the CPM management Ethernet port when autonegotiation is disabled in the running configuration and the Boot Option File (BOF).

If the port is configured to autonegotiate this parameter is ignored.

**Default** **speed 100** — 100 M/bps operation.

**Parameters** **10** — Sets the link to 10 M/bps speed.

**100** — Sets the link to 100 M/bps speed.

## static-route

**Syntax** [no] **static-route** *ip-prefix/ip-prefix-length next-hop ip-address*

**Context** bof

**Description** This command creates a static route entry for the CPM management Ethernet port in the running configuration and the Boot Option File (BOF).

This command allows manual configuration of static routing table entries. These static routes are only used by traffic generated by the CPM Ethernet port. To reduce configuration, manual address aggregation should be applied where possible.

A static default (0.0.0.0/0 or ::/0) route cannot be configured on the CPM Ethernet port. A maximum of 10 static routes can be configured on the CPM port.

The **no** form of the command deletes the static route.

**Default** No default routes are configured.

**Parameters** *ip-prefix/ip-prefix-length* — The destination address of the static route in dotted decimal notation.

<b>Values</b>	ip-prefix/ip-prefix-length: ipv4-prefix	a.b.c.d (host bits must be 0)
	ipv4-prefix-le	0 — 32
	ipv6-prefix	x:x:x:x:x:x:x (eight 16-bit pieces)
		x:x:x:x:x:d.d.d.d
		x: [0..FFFF]H

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	ip-address:	ipv6-prefix-le	d: [0..255]D
		ipv4-address	0 — 128
		ipv6-address	a.b.c.d
			x:x:x:x:x:x:x (eight 16-bit pieces)
			x:x:x:x:x:d.d.d.d
			x: [0..FFFF]H
			d: [0..255]D

*mask* — The subnet mask, expressed as an integer or in dotted decimal notation.

**Values** 1 — 32 (mask length), 128.0.0.0 — 255.255.255.255 (dotted decimal)

**next-hop** *ip-address* — The next hop IP address used to reach the destination.

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## DNS Configuration Commands

### dns-domain

**Syntax** **dns-domain** *dns-name*  
**no dns-domain**

**Context** bof

**Description** This command configures the domain name used when performing DNS address resolution. This is a required parameter if DNS address resolution is required. Only a single domain name can be configured. If multiple domain statements are configured, the last one encountered is used.

The **no** form of the command removes the domain name from the configuration.

**Default** **no dns-domain** — No DNS domain name is configured.

**Parameters** *dns-name* — Specifies the DNS domain name up to 32 characters in length.

### primary-dns

**Syntax** **primary-dns** *ip-address*  
**no primary-dns**

**Context** bof

**Description** This command configures the primary DNS server used for DNS name resolution. DNS name resolution can be used when executing ping, traceroute, and service-ping, and also when defining file URLs. DNS name resolution is not supported when DNS names are embedded in configuration files.

The **no** form of the command removes the primary DNS server from the configuration.

**Default** **no primary-dns** — No primary DNS server is configured.

**Parameters** *ip-address* — The IP or IPv6 address of the primary DNS server.

**Values**

```

ipv4-address - a.b.c.d
ipv6-address:  x:x:x:x:x:x:x[-interface]
                x:x:x:x:x:d.d.d.d[-interface]
                x: [0..FFFF]H
                d: [0..255]D
                interface - 32 chars max, for link local addresses

```

## secondary-dns

**[no] secondary-dns** *ip-address*

**Context** bof

**Description** This command configures the secondary DNS server for DNS name resolution. The secondary DNS server is used only if the primary DNS server does not respond.

DNS name resolution can be used when executing ping, traceroute, and service-ping, and also when defining file URLs. DNS name resolution is not supported when DNS names are embedded in configuration files.

The **no** form of the command removes the secondary DNS server from the configuration.

**Default** **no secondary-dns** — No secondary DNS server is configured.

**Parameters** *ip-address* — The IP or IPv6 address of the secondary DNS server.

**Values**

```

ipv4-address - a.b.c.d
ipv6-address:  x:x:x:x:x:x:x[-interface]
                x:x:x:x:x:d.d.d.d[-interface]
                x: [0..FFFF]H
                d: [0..255]D
                interface - 32 chars max, for link local addresses

```

## tertiary-dns

**Syntax** **[no] tertiary-dns** *ip-address*

**Context** bof

**Description** This command configures the tertiary DNS server for DNS name resolution. The tertiary DNS server is used only if the primary DNS server and the secondary DNS server do not respond.

DNS name resolution can be used when executing ping, traceroute, and service-ping, and also when defining file URLs. DNS name resolution is not supported when DNS names are embedded in configuration files.

The **no** form of the command removes the tertiary DNS server from the configuration.

**Default** **no tertiary-dns** — No tertiary DNS server is configured.

## DNS Configuration Commands

**Parameters**    *ip-address* — The IP or IPv6 address of the tertiary DNS server.

**Values**

- ipv4-address - a.b.c.d
- ipv6-address:    x:x:x:x:x:x:x[-interface]  
                  x:x:x:x:x:d.d.d.d[-interface]  
                  x: [0..FFFF]H  
                  d: [0..255]D  
                  interface - 32 chars max, for link local addresses