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# **SSF on SharpMedia™ PCIE-8120 for MaxCore™ MC3000**

CLI Guide

P/N: 6806800U37C

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# About this Manual

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## Overview of Contents

This guide provides detailed information on usage of Command Line Interface (CLI) to work with System Services Framework (SSF). The following list gives an overview of the chapters described in this document.

This manual describes the CLI commands that are used to perform operations on a PCIe-8120 card.

This manual contains the following chapters and appendices:

[Chapter 1, Introduction on page 13](#) provides a brief description about PCIe-8120 software and a procedure on how to access SSF using CLI.

[Chapter 2, CLI Commands on page 15](#) describes the list of CLI commands supported by PCIe-8120 software.

[Appendix A, Related Documentation on page 27](#) provides a listing of related product documentation.

## Abbreviations





This document uses the following abbreviations.

Abbreviation	Definition
CLI	Command Line Interface
PEP	PCIe End Points
SSF	System Services Framework




## Conventions

The following table describes the conventions used throughout this manual.

Notation	Description
0x00000000	Typical notation for hexadecimal numbers (digits are 0 through F), for example used for addresses and offsets
0b0000	Same for binary numbers (digits are 0 and 1)
<b>bold</b>	Used to emphasize a word

Notation	Description
Screen	Used for on-screen output and code related elements or commands. Sample of Programming used in a table (9pt)
<b>Courier + Bold</b>	Used to characterize user input and to separate it from system output
<i>Reference</i>	Used for references and for table and figure descriptions
File > Exit	Notation for selecting a submenu
<text>	Notation for variables and keys
[text]	Notation for software buttons to click on the screen and parameter description
...	Repeated item for example node 1, node 2, ..., node 12
.	Omission of information from example/command that is not necessary at the time
..	Ranges, for example: 0..4 means one of the integers 0,1,2,3, and 4 (used in registers)
	Logical OR
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury
	Indicates a property damage message
	Indicates a hot surface that could result in moderate or serious injury



Notation	Description
	Indicates an electrical situation that could result in moderate injury or death
<b>Use ESD protection</b> 	Indicates that when working in an ESD environment care should be taken to use proper ESD practices
	No danger encountered, pay attention to important information

## Summary of Changes

This manual has been revised and replaces all prior editions.

Part Number	Publication Date	Description
6806800U37C	March 2020	Rebranded to SMART Embedded Computing.
6806800U37B	January 2017	Updated the section <a href="#">Connecting to CLI on page 14</a> and examples in <a href="#">Chapter 2, CLI Commands on page 15</a> .
6806800U37A	September 2016	Initial version



# Introduction

---

SharpMedia PCIE-8120 software enables the SharpMedia™ PCIE-8120 card to manage BCM switch and BCM port configurations, VLAN configurations, ARL table access or updates, DSP configuration and boot procedures, card sensor monitoring. This software is executed on the shelf host from where it manages the PCIE-8120 cards available in the MaxCore.

PCIE-8120 software can be managed using System Services Framework (SSF) CLI from Shelf Host. SSF provides the management and configuration interface. SSF facilitates system level configuration and management access to SSF managed hardware and software components, through Web, CLI, and XML protocol interfaces.

## 1.1 Managing PCIE-8120 Software using SSF CLI

PCIE-8120 software can be managed using SSF Command Line Interface (CLI) from Shelf Host. SSF CLI on Shelf Host is a telnet daemon that waits for inward TCP connections. You can access the CLI through telnet session.

The CLI can serve multiple client sessions simultaneously, the number of sessions supported by SSF is limited to the *maxSessions* parameter configured in */opt/ssf/etc/config/main/cli.cfg* on Shelf Host.

The following table provides command line editing features of SSF CLI.

*Table 1-1 Command Line Editing Features*

Keys	Description
Left and Right arrow keys	Allows you to move the cursor within the current command line.
Up and Down arrow keys	Allows you to browse through a command history.
BACKSPACE Key	Enables you to remove the character towards left.
TAB key	Completes the keyword being entered automatically.
? key	Provides you context help.
<cr>	Carriage return. System displays this command when you provide all mandatory arguments of a particular CLI command. It represents the command syntax completion.

## Connecting to CLI

---

### 1.1.1 Connecting to CLI

You can connect to the CLI after logging into SSF running host, using external SSH daemon with SSH connection. This is the default behavior of SSF CLI.

To start the **telnet** connection from an already established secure shell:

```
[root@ pcie9205-s1-cl ~]# telnet localhost 11001
Trying::1...
telnet: connect to address::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
Welcome to SSF CLI
Username: Admin
Password:
Access granted
>enable
#configure terminal
MaxCore(config)#system 1
MaxCore(system-1)#shelf 1
MaxCore(shelf-1-1)#PCIEslot 3
MaxCore(PCIEslot-1-1-3)#PCIECard 1
MaxCore(PCIECard-1-1-3-1)#CardConfiguration 1
MaxCore(CardConfiguration-1-1-3-1-1)#
```

## NOTICE

**By default, the host IP address is configured as 127.0.0.1 and the port numbers are 11001 and 15550.**

**The cli.cfg file configures:**

**The maximum number of connections to the command line interface (CLI), default value is 5.**

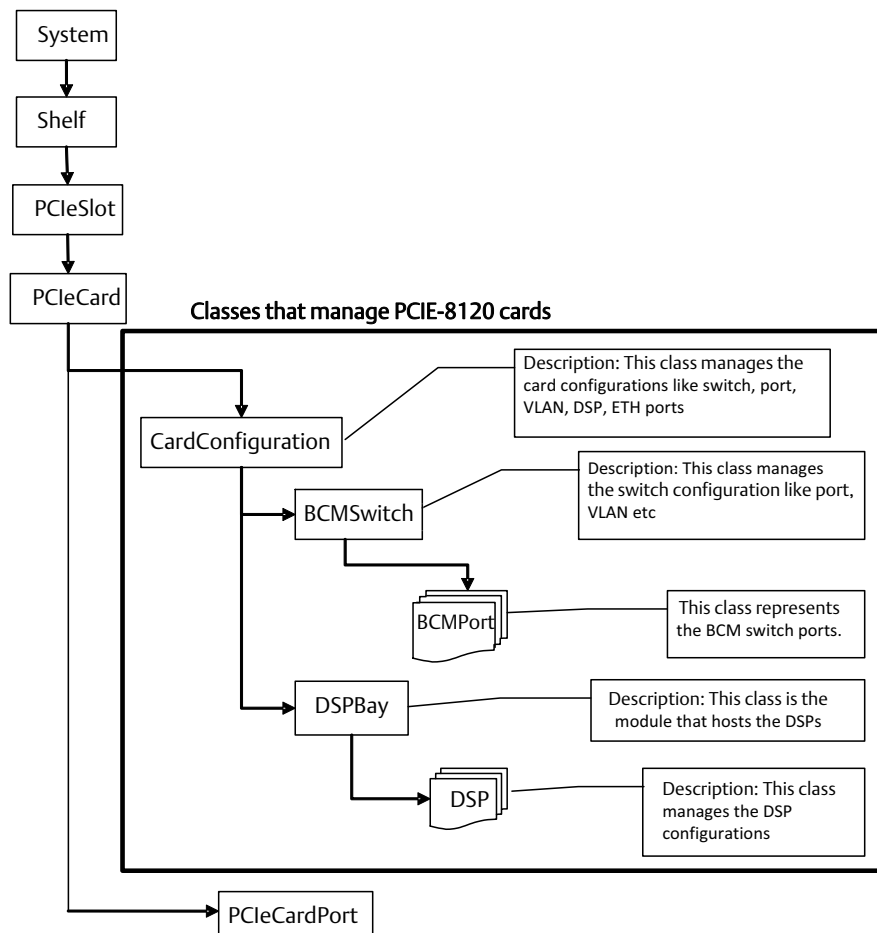
**The session time out in seconds, default value is 300.**

# CLI Commands

SSF CLI can be used to access the SharpMedia PCIE-8120 cards and their resources available in the MaxCore system.

Each PCIE-8120 card has a `CardConfiguration` CLI instance that manages the BCM switches, ports, VLANs, and DSPs available on the card. For each `CardConfiguration` instance, there are two BCM switches (one for Main switch and the other for Video switch) and a `DSPBay` instance. Each switch in turn has its port instances. Each `DSPBay` has individual DSP instances. The following figure depicts the class hierarchy.

*Figure 2-1 Class Hierarchy*



### NOTICE

For accessing the card through SSF, PCIE-8120 needs to be configured on shelf host. For PCIE-8120 configuration and setup, see *Installing Software and Configuring a SharpMedia PCIE-8120 Card in MaxCore section in SharpMedia PCIE-8120 Installation and Use manual.*

## 2.1 CardConfiguration CLI

This section describes all the CardConfiguration-level CLI commands that are required to get sensor information like list of sensors available on the card, historical data of sensors, and latest sensor data.

The following are the CardConfiguration commands:

- listSensors
- getSensorData
- getHistoricalSensorData

The following table provides a brief description about the attributes.

*Table 2-1 CardConfiguration Class Attributes*

Attribute	Description
name	Name of the card configuration class. For example, CardConfiguration.
boardSerialNumber	PCIE-8120 card serial number.
boardMarketingNumber	PCIE-8120 card marketing number.
boardPartNumber	PCIE-8120 card part number.

### 2.1.1 listSensors

This method lists all the sensors available for PCIE-8120.

#### Syntax

listSensors

#### Example

```
MaxCore(CardConfiguration-1-1-3-1-1)# listSensors
```

## 2.1.2 getSensorData

This method provides the sensor data of the requested monitor/sensor ID.

### Syntax

```
getSensorData monitorId <monitorId>
```

*Table 2-2 Parameter of getSensorData*

Argument	Description
monitorId	Id of the monitor/sensor.

### Example

```
Maxcore(CardConfiguration-1-1-3-1-1)# getSensorData monitorId 4
```

## 2.1.3 getHistoricalSensorData

This method gets the historical sensor data of the monitor within a time-interval specified.

### Syntax

```
getHistoricalSensorData monitorId <monitorId> startTime  
<startTime> endTime <endTime>
```

*Table 2-3 Parameters of getHistoricalSensorData*

Argument	Description
monitorId	Id of the monitor/sensor.
startTime	Contains the start date from which the monitoring data should be picked up. Format: MM-DD-YYYY, HH:MM:SS.<1-10> For example, 1-17-2015, 05:14:06.1
endTime	Contains the end date until which the monitoring data should be picked up. Format: MM-DD-YYYY, HH:MM:SS.<1-10> For example, 1-17-2015, 05:20:06.1

### Example

```
MaxCore(CardConfiguration-1-1-3-1-1)# getHistoricalSensorData  
monitorId 4 startTime 1-17-2015,05:14:06.1 endTime 1-17-  
2015,05:20:06.1
```

### 2.2 BCMSwitch CLI

This section describes all the BCMSwitch-level CLI commands that are required to configure VLANs, jumbo frames, and list ARL table.

The following are the BCM switch commands:

- listVLANs
- getVLAN
- setVLAN
- unsetVLAN
- portVLAN
- listARLTable
- setJumboFrames
- getJumboFrames

The following table provides a brief description about the attributes.

*Table 2-4 BCMSwitch Class Attributes*

Attributes	Description
name	Name of the BCM.
manufacturerId	Manufacturer Id of the BCM switch.
serialNumber	Serial number of the BCM switch.
partNumber	Part number of the BCM switch.
VLANControl	Controls 802.1Q function by Enabling or Disabling it.
portCount	Number of ports available for configuration in the BCM switch.

#### 2.2.1 VLANControl

This command enable or disables the 802.1Q function for the BCM switch.

##### Syntax

```
VLANControl <enable/disable>
```

##### Example

```
MaxCore(CardConfiguration-1-1-3-1-1)#BCMSwitch 1  
MaxCore(BCMSwitch-1-1-3-1-1-1)#VLANControl enable
```



## 2.2.2 listVLANs

This method lists the VLAN table.

### Syntax

```
listVLANs
```

### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#listVLANs
```

## 2.2.3 getVLAN

This method gets the VLAN table entry.

### Syntax

```
getVLAN vlanId <vlanId>
```

*Table 2-5 Parameter of getVLAN*

Argument	Description
vlanId	Id of the VLAN.

### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#getVLAN vlanId 999
```

## 2.2.4 setVLAN

This method sets the VLAN table entry with untag ports and forward mask.

### Syntax

```
setVLAN VLANId <vlanId> untagPorts <untagPorts> forwardPorts  
<forwardPorts>
```

*Table 2-6 Parameters of setVLAN*

Argument	Description
vlanId	Id of the VLAN.
untagPorts	List of untag ports.
forwardPorts	List of ports for which VLAN packet forwarding is enabled.

### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#setVLAN VLANId 999 untagPorts 1,3,5  
forwardPorts 1,4,5,6
```

## unsetVLAN

---

### 2.2.5 unsetVLAN

This method invalidates the VLAN table entry.

#### Syntax

```
unsetVLAN VLANid <vlanId>
```

*Table 2-7 Parameter of unsetVLAN*

Argument	Description
vlanId	Id of the VLAN.

#### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#unsetVLAN VLANid 999
```

### 2.2.6 portVLAN

This method defines VLAN on ports.

#### Syntax

```
portVLAN vlanId <vlanId> ports <ports>
```

*Table 2-8 Parameters of portVLAN*

Argument	Description
vlanId	Id of the VLAN.
ports	Set of ports on which VLAN is to be defined.

#### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#portVLAN vlanId 1 ports 1,4,5,6,10
```

## 2.2.7 listARLTable

This method lists the ARL (Address resolution table) entries.

### Syntax

```
listARLTable
```

*Table 2-9 Parameter of listARLTable*

Argument	Description
listARLTable	Lists the ARL table entries.

### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#listARLTable
```

## 2.2.8 setJumboFrames

This method enables jumbo frames for ports.

### Syntax

```
setJumboFrames ports <ports>
```

*Table 2-10 Parameter of setJumboFrames*

Argument	Description
ports	List of ports to enable jumbo frames.

### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#setJumboFrames ports 1,3,5
```

## 2.2.9 getJumboFrames

This method gets the list of ports for which jumbo frames are enabled.

### Syntax

```
getJumboFrames
```

### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-0)#getJumboFrames
```

### 2.3 BCMPort CLI

This section describes all the BCMPort-level CLI commands that are required to manage the port configurations like auto-negotiation, default VLAN id, and default priority.

`restartAutoNegotiation` is the BCMPort command.

The following table provides a brief description about the attributes.

*Table 2-11 BCMPort Class Attributes*

Attribute	Description
autoNegotiation	Auto-negotiation of port.
forwardingMask	Packet forwarding mask of port.
defaultVLANId	Default VLAN ID.
defaultPriority	Default priority of port.
linkStatus	Link status of port.
name	Name of the port. For example, DSP1.

#### 2.3.1 autoNegotiation

This command enables or disables the auto-negotiation for the BCM port.

##### Syntax

```
autoNegotiation <enable/disable>
```

##### Example

```
MaxCore(BCMSwitch-1-1-3-1-1-1)#BCMPort 11  
MaxCore(BCMPort-1-1-3-1-1-1-11)#autoNegotiation enable
```

#### 2.3.2 defaultVLANId

This command sets the default VLANId for this BCMPort.

##### Syntax

```
defaultVLANId <VLANId>
```

##### Example

```
MaxCore(BCMPort-1-1-3-1-1-1-11)#defaultVLANID 999
```

### 2.3.3 defaultPriority

This command set default Priority to a given Port number. Priority varies from 0 to 7.

#### Syntax

```
defaultPriority <priorityValue>
```

#### Example

```
MaxCore(BCMPort-1-1-3-1-1-1-11)#defaultPriority 2
```

### 2.3.4 restartAutoNegotiation

This method restarts auto-negotiation for port.

#### Syntax

```
restartAutoNegotiation
```

Example

```
MaxCore(BCMPort-1-1-3-1-1-0-11)#restartAutonegotiation
```

## 2.4 DSPBay CLI

This section describes all the DSPBay-level attributes that hold the number of DSPs available in the PCIE-8120 card. There are no commands in DSPBay CLI. Only attributes are available.

The following table provides a brief description about the attributes.

*Table 2-12 DSPBay Class Attributes*

Attribute	Description
name	Name of the DSPBay instance. For example, DSP1.
numDSPs	The number of DSPs available on the PCIE-8120.

### 2.5 DSP CLI

This section describes all the DSP-level CLI commands that are required to boot DSP, change the state of DSP, list or update ARL table.

The following are the DSP commands:

- listARLTable
- updateARLTable
- bootDSP

The following table provides a brief description about the attributes.

*Table 2-13 DSP Class Attributes*

Attribute	Description
name	Name of the DSP. For example, DSP11.
state	State of the DSP. For example, up/down.
firmwareVersion	Firmware version of the DSP. For example, 3.1.2
manufacturer	Name of the DSP manufacturer.
macAddress	MAC address of the DSP ports.

#### 2.5.1 state

This command changes the state of DSP. For example, UP or DOWN.

##### Syntax

```
state <UP/DOWN>
```

##### Example

```
MaxCore(DSPBay-1-1-3-1-1-1)#DSP 4  
MaxCore(DSP-1-1-3-1-1-1-4)#state UP
```

## 2.5.2 listARLTable

This method lists the ARL (Address resolution table) entries.

### Syntax

```
listARLTable
```

Table 2-14 Parameter of listARLTable

Argument	Description
listARLTable	List the ARL table entries.

### Example

```
MaxCore(DSP-1-1-3-1-1-1-4) #listARLTable
```

## 2.5.3 updateARLTable

This method inserts/removes entries in ARL table.

### Syntax

```
updateARLTable action <insert/remove> vlanId <vlanid> portId
<portid>
```

Table 2-15 Parameters of updateARLTable

Argument	Description
insert/remove	ARL table update action – insert/remove.
vlanId	vLAN Id of DSP.
portId	Port 0 represents connection to MSW and Port 1 represents connection to VSW.

### Example

```
MaxCore(DSP-1-1-3-1-1-1-4) #updateARLTable action insert vlanId
999 portId 0
```

## 2.5.4 bootDSP

This method boots the DSP with the image available in `/var/lib/tftpboot/pcie8120` directory.

On shelf host, the image is available in `/var/lib/tftpboot/pcie8120` directory and the required dhcp configurations are made.

### Syntax

```
MaxCore(DSP-1-1-3-1-1-1-4) #bootDSP
```





# Related Documentation

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## A.1 SMART Embedded Computing Documentation

The documentation listed is referenced in this manual. Technical documentation can be found by using the Documentation Search at <https://www.smartembedded.com/ec/support/> or you can obtain electronic copies of SMART EC documentation by contacting your local sales representative.

*Table A-1 SMART Embedded Computing Publications*

<b>Document Title</b>	<b>Publication Number</b>
SharpMedia™ PCIE-8120 Installation and Use	6806800R89
SSF for MaxCore™ MC3000 Platform XML Interface Guide	6806800T71





