VadaTech MicroTCA MCH

Getting Started Guide

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vadatech inc.
THE POWER OF VISION

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Revision History

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1.0	Document Created	03/20/2009
1.1	Updated cli syntax and document format	07/16/2010
1.2	Setting up the MCH and Carrier/Shelf IP address parameters	02/28/2013
1.3	Add HPI server	04/17/2013
1.4	Add set defaults CLI commands	12/06/2013
1.5	Added Fabric Clock configuration	12/20/2013
1.6	Added Redundancy Heartbeat Daemon section	02/26/2014
1.7	Added Switch Failover Daemon section	05/30/2014
1.8	Added NTP configuration section	09/30/2014
1.9	Added HPM.3 configuration section	03/06/2015
2.0	Added System Event Log section	03/07/2016
3.0	Removed IP address setting	03/28/2016
3.1	Updated document references	03/31/2016

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1 Overview

This document is an overview of general MicroTCA Carrier Hub (MCH) setup information, such as instructions for changing default configurations and integration with a MicroTCA system.

1.1 References

- Intelligent Platform Management Interface Specification Second Generation v2.0
- PICMG® 3.0 Revision 3.0 AdvancedTCA® Base Specification
- PICMG® AMC.0 R2.0 Advanced Mezzanine Card Base Specification
- PICMG® Specification MTCA.0 R1.0 Base Specification
- VadaTech MicroTCA Carrier Manager Command Line Interface Reference Manual
- VadaTech MicroTCA Carrier Manager SNMP Interface Reference Manual
- VadaTech MicroTCA Carrier Manager Web Interface Reference Manual
- VadaTech MicroTCA Shelf Manager Command Line Interface Reference Manual
- VadaTech MicroTCA Shelf Manager SNMP Interface Reference Manual
- VadaTech MicroTCA Shelf Manager Web Interface Reference Manual
- VadaTech MicroTCA SNMP Trap User Manual
- VadaTech UTC001 and VT850 Telco / GPS Clock Configuration Guide
- VadaTech UTC001 Gigabit Ethernet Managed Switch Setup
-

1.2 Acronyms Used in this Document

Acronym	*Description*
MCH	MicroTCA Carrier Hub
PCIe	PCI Express
SAS	Serial Attached SCSI
SATA	Serial ATA
SRIO	Serial Rapid I/O
XAUI	10 Gigabit Attachment Unit Interface

Table 1: Acronyms

2 Front Panel

Refer to the MCH hardware/product reference manual for information about the front panel.

3 Getting Connected

Connecting to the MCH can be achieved via the RS-232 serial management port or either of the two Ethernet ports. Once connected to the system, users can manage and monitor the state of the MCH (see Section 4: Configuring the MCH).

Refer to the MCH hardware/product reference manual for locations of the serial management and the Ethernet ports.

3.1 Serial Port

The RS-232 serial management port pin outs are described in Table 2.

Pin	Signal
2	TX
3	RX
5	Ground

Table 2: RS-232 serial management pin out

This port uses a baud rate of 115200 baud, 8 data bits, no parity, and 1 stop bit. Once successfully connected and the MCH boots up, there will be a console prompt for access to the MCH file system and other system services.

3.2 Command Line Interface (CLI)

Once logged in the MCH provides a rich set of Commands to configure and control the System. Using the Command Line Interface (CLI), users can access information about the current state of the MCH. The interface can also be used to configure the MCH to correspond with the physical configurations of Chassis, Carrier Managers, and Shelf Manager.

The CLI is based on the IPMI v2.0, PICMG 3.0 (revision 3.0) of the ATCA base specification, and PICMG MTCA.0 (revision 1.0) base specification sets of commands. When the MCH is configured as a Carrier Manager, the list of CLI commands and, in some cases, the results of CLI commands, will be different than when the MCH is configured as a Shelf Manager, per the specifications.

The CLI commands mentioned in this document are only a subset of the available CLI commands. Refer to the VadaTech MicroTCA Carrier Manager Command Line Interface

Reference Manual and the VadaTech MicroTCA Shelf Manager Command Line Interface Reference Manual for information about the CLI and other CLI commands available.

The Command Line Interface (CLI) is used when logged directly into the MCH, for example, through SSH or Telnet, or on the serial console. For a complete list of CLI commands supported issue the following command:

```
cli_commands
```

In dual MCH-configured systems, CLI commands can be executed on either MCH if the switches between the MCH are properly configured. The CLI will always attempt to connect to the active MCH to execute the CLI command.

Refer to the VadaTech MicroTCA Carrier Manager Command Line Interface Reference Manual and the VadaTech MicroTCA Shelf Manager Command Line Interface Reference Manual for information about the CLI and CLI commands available.

3.3 Ethernet Ports

Users may remotely access the MCH using any of the addresses defined in the following sections. The MCH supports SSH and telnet connections. The default username and password for remote connections are '**root**' and '**root**', respectively.

3.3.1 10/100 Ethernet

By default, the 10/100 Ethernet port is configured to IP address 192.168.1.252.

3.3.2 Gigabit Ethernet

By default, the gigabit Ethernet port is configured to IP address 192.168.40.250.

3.3.3 Active and Standby MCH

When redundant UTC001 MCHs are configured on a Chassis, one MCH negotiates the role of an *active* MCH. The Shelf Manger and Carrier Manager always run on the active MCH. Upon a failover the standby MCH becomes active. In the following sections the Shelf and Carrier IP addresses described are access interfaces to the Shelf and Carrier Managers on the *active* MCH.

An *active* MCH can be identified by the Active Green LED on the UTC001 front panel. This LED will be **on** for an active MCH and **off** on a passive MCH.

4 Configuring the MCH

Once the serial connection to the MCH is established (see Section 3: Getting Connected), users can configure the MCH as necessary. This section provides information regarding the Command Line Interface (CLI), details for configuring the Shelf-Carrier Manager Interface between Carrier Managers and a remote Shelf Manager, enabling and disabling the Shelf Manager, and configuring Ethernet access.

4.1 File System

By default, the application file system is read-only. To modify the web server, SNMP server, and SNMP trap handler settings in the file `/opt/vadatech/startup/vtipmi.conf`, the file-system has to be changed to read-write. To change the file-system to read-write, use the following command:

```
mount –o remount,rw /
```

The above command will change the file-system to read-write only until the next power cycle.

4.2 Setting Desired Primary MCH Slot

This configuration is applicable only on systems that have dual MCH for failover. By default the VadaTech MCH is configured to be boot up as Primary on MCH slot 1. This can be changed by the user as described in this section.

```
# mount –o remount,rw /
# vi /opt/vadatech/startup/vtipmi.conf
```

```
# configure the site number as the primary MCH
# 0: disable primary preference
# 1: the left MCH slot will attempt to become primary
# 2: the right MCH slot will attempt to become primary
#
MCH_PRIMARY_SITE=1
```

Figure 1: Configuring the desired Primary MCH

The `MCH_PRIMARY_SITE` flag can be configured to setup the MCH to boot up Primary on MCH slot 1 or 2. Note that the same value must be applied on both the MCH configuration files.

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

4.3 Enabling Shelf Manager

The Shelf Manager on the MCH is a configurable option and the default depends on the MCH ordering option. The MCH Shelf Manager can be enabled or disabled by updating the file `/opt/vadatech/startup/vtipmi.conf`. When the Shelf Manager is disabled, the MCH will only act as a Carrier Manager.

The /opt/vadatech file system is write protected so you must first mount this partition with read/write permission

```
# mount –o remount,rw /
# vi /opt/vadatech/startup/vtipmi.conf
```

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

ENABLE_SHELF_MANAGER=0
ENABLE_WEB_SERVER=1
ENABLE_SNMP=1
ENABLE_SNMP_TRAP_HANDLER=1
ENABLE_NEBS_COMPLIENCY=0

IPMI_BASE_DIR=/opt/vadatech/IPMI
SNMP_BASE_DIR=/opt/vadatech/SNMP
```

Figure 2: Enabling/Disabling shelf manager

Set the **`ENABLE_SHELF_MANAGER`** to `0` or `1` to disable or enable, respectively, the Shelf Manager. Save the changes and power cycle the MCH for the changes to take effect.

4.4 Configuring Fabric Clock

Depending on ordering option (Ordering option F=1) MCH can have a 100Mhz fabric clock going to all the AMCs in the chassis. Fabric clock can operate both in Spread Spectrum and Non-Spread Spectrum clocking modes. Clocking mode can be configured by updating the file `/opt/vadatech/startup/vtipmi.conf`.

The /opt/vadatech file system is write protected so you must first mount this partition with read/write permission

```
# mount –o remount,rw /
# vi /opt/vadatech/startup/vtipmi.conf
```

```
#    Spread spectrum clocking mode
#        0: disable
#        1: -0.35% spread spectrum
#        2: -0.50% spread spectrum
SSC_MODE=0
```

Figure 3: Configuring Fabric Clock

Set the **SSC_MODE** to **0, 1 or 2** to configure the clocking mode. Save the changes and power cycle the MCH for the changes to take effect. If PCIe fabric is present on the MCH, software will take care of E-keying records and update link extension field based on clocking selected.

4.4.1.1 Configuring RMCP Authentication

NOTE: This step can be skipped if you are using VadaTech MCH with VadaTech MicroTCA Chassis. The default will be set as described in Figure 4.

Information used by the Carrier Manager to establish a session with a remote Shelf Manager and is located in the Carrier FRU Information. The default username and password will vary between Chassis and Chassis vendors. When using a VadaTech MCH with another vendor chassis, it is important the user name and password is correctly set for the Shelf-Carrier connection to be established.

This section describes the steps involved in setting up the user name and password for the Shelf-Carrier session to be established.

All Carrier Managers will attempt to establish an RMCP session with the remote/local Shelf Manager repeatedly using the Shelf-Carrier IP address. To successfully establish a Shelf-Carrier session connection, the Carrier Manager must use the correct RMCP session *username* and *password*.

VadaTech Shelf Manager expects a user name of "**shelf**" and password "**shelf**" for carrier RMCP session connections. If the MCH is installed on a third party chassis the username and password must be configured.

```
# carrier get_ip_connection

MicroTCA Shelf IP Address     : 192.168.16.17
MicroTCA Carrier IP Address   : 192.168.16.0
MCH 1 IP Address              : 192.168.16.0
MCH 2 IP Address              : 192.168.16.0
Subnet Mask                   : 255.255.255.0
Gateway Address 0             : 192.168.1.1
Gateway Address 1             : 0.0.0.0
Username                      : shelf
Password                      : ********
```

Figure 4: MicroTCA Shelf IP Connection username and password

To update the username and password use the following command:

```
carrier set_ip_connection –U shelf –P shelf
```

The MCH must be power cycled for the changes to take effect.

4.4.2 Adding an RMCP User

This section describes how to configure a new user account in the Carrier or Shelf Manager.

A new user ID can be added to the list of valid RMCP logins using the CLI. Once a username and a password are added and enabled, RMCP sessions using the new authentication information will be successfully authenticated.

These are the steps required to add a new user ID:

1. Retrieve a list of user IDs currently being used to determine an unused user ID:

   ```
   list_users
   ```

2. Add username. For example, to add a new user with username root and (unused) user ID 4:

   ```
   set_user_info –i 4 –n root
   ```

3. Set password. For example, to set the password for the newly created user root:

   ```
   set_user_info –i 4 –p new_password
   ```

4. Set privilege level, session limit, and other access information. For example, to set the privilege level to user, session limit to 5, enable IPMI messaging and link authentication, and restrict callback for the newly created user root:

   ```
   set_user_access –i 4 –c 0xe –l 2 –s 5 –m 1 –A 1 –r 1
   ```

5. Enable user. By default, the user is disabled.

```
set_user_info –i 4 –e
```

For security purposes, passwords are not displayed. However, users can test and verify passwords by using the following command:

```
set_user_info –i 4 –t test-password
```

In the example above, the password for the newly added user **root** is being tested against "test-password." If the passwords match, users will see "User information updated successfully." Otherwise, users will see "Password test failed."

4.4.3 Configuring the Carrier Number

NOTE: default all VadaTech Carriers have carrier number set to 1.

This configuration is applicable only on configurations with 1..16 Carriers managed by a single Shelf Manager which case each Carrier must have a unique Carrier number. The number assigned to each Carrier is stored in its Carrier FRU Information. To view this information, use the following command:

```
carrier read_fru_storage –f 253 –M –T 0x22
```

The Chassis **may** also provide a hardware-based Carrier Locator device. The *Carrier Number* in the Carrier FRU information takes precedence over the Carrier Locator device setting. This is a software override option. However, if the *Carrier Number* field in the Carrier FRU Information **is** set to FFh, then the value from the locator device will be used instead to determine the Carrier number.

Refer to the Chassis Manufacturer's Chassis manual for instructions on configuring the hardware locator device. If there are redundant locator devices on the chassis, make sure both are set to the same Carrier number.

To set the Carrier Number in the Carrier FRU Information use the following command:

```
carrier set_carrier_number –i  3
```

In this example the *Carrier Number* is set to 3. You can read back the Carrier FRU Information to verify the carrier number is configured correctly.

The Carrier Manager will use the carrier number to obtain a IPMB address for the Carrier as described in the table below:

Carrier Number	IPMB Address
1	0x82
2	0x84
3	0x86
4	0x88
5	0x8a
6	0x8c
7	0x8e
8	0x90
9	0x92
10	0x94
11	0x96
12	0x98
13	0x9a
14	0x9c
15	0x9e
16	0xa0

Table 3: Carrier Number- IPMB Address

4.4.4 Enabling tftpd

The default the tftpd is disabled on MCH production configuration.

The tftpd can be enabled in the /etc/inetd.conf

```
# vi /etc/inetd.conf
```

```
#
# Tftp service is provided primarily for booting.  Most sites
# run this only on machines acting as "boot servers." If you don't
# need it, don't use it.
#
tftp    dgram   udp     wait    nobody  /usr/sbin/tcpd  tftpd -l /tftpboot
```

Figure 5: Enabling tftpd

When modifying the configuration and enabling the tftpd, save the changes and power cycle the MCH for the changes to take effect.

By default the tftpd root directory is set to /tftpboot as shown in figure above. On the MCH the / filesystem is mounted read only and the / must be mounted read-write to copy files to /tftpboot.

It is recommended to change the tftp root directory to /upgrade which is read-write by default.

4.5 Enabling NTP on startup

MCH supports time synchronization using NTP protocol. By default NTP is not enabled on startup.

To enable NTP on startup `/etc/rc.d/rc.conf` has to be modified as shown below:

```
all_services="mount-proc-sys mdev udev hostname devfsd depmod modules
filesystems syslog network inetd portmap dropbear sshd boa smb dhcpd
settime fslgnome watchdog bluetooth gtk2 pango ntpd"
all_services_r="ntpd pango gtk2 bluetooth watchdog fslgnome settime dhcpd
smb boa sshd dropbear portmap inetd network syslog filesystems modules
depmod devfsd hostname udev mdev mount-proc-sys"

cfg_services="mount-proc-sys   hostname  depmod modules filesystems syslog
switch network inetd  dropbear ntpd"

cfg_services_r="ntpd  switch  dropbear   inetd  network  syslog  filesystems
modules depmod  hostname   mount-proc-sys"
```

Figure 6: Enabling NTP on startup

Before enabling NTP at startup user has to ensure that working NTP configuration is present in `/etc/ntp.conf` file.

NTP configuration is out of the scope of this document and user has to refer to NTP documentation available online for configuring NTP.

5 Restoring Factory Default Configuration

This section describes how to restore the factory default configuration on the MCH.

The `setMchDefaults` command restores the Gigabit Ethernet switch and MCH application configuration files to the factory default state. The `setMchDefaults` command takes no parameters.

The chassis must be power cycled for the default configuration to be applied.

5.1.1 Gigabit Ethernet Switch

The command `setGbeDefaults` restores the following Gigabit Ethernet switch configuration files to the factory default state. The `setGbeDefaults` command takes no parameters.

5.1.2 MCH Application

The `setAppDefaults` command takes no parameters. The `setAppDefaults` command restores the `/etc` and `/opt/vadatech/startup` files to the factory default state.

The chassis must be power cycled for the default configuration to be applied.

6 Upgrading the Backplane FRU Information

6.1 Upgrading Carrier and Shelf FRU Information

The Carrier and Shelf FRU Information are stored on the Chassis backplane FRU Information device. This device is an I^2C serial EEPROM, located on the MicroTCA Backplane. Each MCH slot has access to its own Carrier FRU Information Device.

The MCH provides a tool to update the Carrier FRU Information Device. The following shows how the tool can be used:

```
updateBackplaneRepository newBackplane.img
```

In the example above, **`newBackplane.img`** is a binary file containing the Carrier and/or Shelf FRU Information. The following sections provide a checklist for the records that are required to be in the Carrier and Shelf FRU Information, respectively.

Note: If the chassis supports redundant MCHs, there may be two redundant Chassis backplane FRU Information devices. The upgrade must be applied on both the MCH so both the FRU information devices are upgraded.

7 Monitoring and Debugging the MCH

There are several interfaces with which users can access information about the current state of the MCH. These interfaces are described in the following subsections.

Note that an MCH configured as a Shelf Manager (**ENABLE_SHELF_MANAGER=1**) will provide different information than when configured as a Carrier Manager (**ENABLE_SHELF_MANAGER=0**), since each manager's logical functions are different. Refer to the PICMG® 3.0 Revision 3.0 AdvancedTCA® Base Specification for information about a Shelf and Carrier Manager's respective responsibilities.

All interfaces are based on the IPMI v2.0, PICMG 3.0 (revision 3.0) of the ATCA base specification, and PICMG MTCA.0 (revision 1.0) base specification sets of commands.

7.1 Enabling the IPMB-0 and IPMB-L Trace Server

The IPMB-0 and IPMB-L trace can be enabled on the MCH. By default this option is always disabled on the MCH and is recommended to keep this disabled unless the bus trace is required.

The VadaTech View Trace Client interfaces with the VadaTech MCH trace server to capture the IPMB-0 and IPMB-L trace and presents it on a GUI with translated IPMI message packets.

The Trace Server is enabled or disabled by editing "/opt/vadatech/startup/vtipmi.conf". Different hosts support different trace options, which are described in the vtipmi.conf file.

The RUN_AS flag can be set to enable trace on IPMB-L or IPMB-0.

```
# mount -o remount,rw /
# vi /opt/vadatech/startup/vtipmi.conf
```

```
# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0
```

Figure 7: Enabling IPMB trace server

`RUN_AS=0` - disables trace

`RUN_AS=1` - enables trace only on the IPMB-L. For this case one UTC00x is sufficient to activate the chassis as well as trace the bus.

`RUN_AS=2` - enables trace on both the IPMB-0 and IPMB-L. But for this case you will need two UTC00x and one is dedicated to be a bus analyzer. The MCH that has this option enable will not participate in the chassis and will show in the Active MCH as in M7 (communication lost) state.

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

Refer to the ViewTrace Reference Manual on instructions to install the trace client tool on your PC and getting connected to the MCH trace server.

7.2 MCH Logging Mode

By default the MCH logs are saved in the following locations:

MCH Log	*Description*
`/tmp/MCMC/MCState.log`	The MCH MCMC log
`/tmp/UTCC/MCState.log`	The MCH Carrier Manager log. Is located only on the Primary MCH
`/tmp/UTCShelf/MCState.log`	The MCH Shelf Manager log. Is located only on the Primary MCH if the Shelf manager option is enabled.

The `/tmp` is a volatile storage and will clear when the MCH is rebooted. When it is required to have the logs persistent over reboot users can configure the MCH to save these log files in a non-volatile location. However this is only recommended during debug and must be set back to default setting, otherwise the flash may wear out in time.

See the Non Volatile Log Section in the VadaTech MicroTCA MCH User Debug Mode Guide to configure this feature.

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

The log files will be saved in `/etc/vadatech/tmp` in the respective folders.

7.3 Redundancy Heartbeat Daemon

The Redundancy Heartbeat Daemon feature can be enabled in a dual MCH system to provide additional verification the active MCH is functioning properly. When enabled, the backup MCH sends a heartbeat request packet to the active MCH every ten (10) seconds. If the backup MCH does not receive five (5) consecutive responses from the active MCH, the

backup MCH will become active. This feature requires that both MCHs have the same code release version and unique IP addresses on their eth1 interfaces. See the Ethernet Addresses section of this document to configure the IP addresses.

7.3.1 Enabling/Disabling

The value of **ENABLE_REDUNDANT_HBT_DAEMON** in the **/opt/vadatech/startup/vtipmi.conf** file determines whether or not the redundant heartbeat daemon is started during the MCH's initialization. A value of **1** indicates the redundant heartbeat daemon is enabled and will be started. A value of **0** indicates the redundant heartbeat daemon is disabled and will not be started.

```
# mount –o remount,rw /
# vi /opt/vadatech/startup/vtipmi.conf
```

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

# management configuration
ENABLE_SHELF_MANAGER=1
ENABLE_SNMP_TRAP_HANDLER=1
ENABLE_WEB_SERVER=0
ENABLE_SNMP=1
ENABLE_HPI=0
ENABLE_NEBS_COMPLIENCY=0
ENABLE_USER_DEBUG=0
ENABLE_REDUNDANCY_HBT_DAEMON=1
```

Figure 8: Enabling/Disabling Redundant Heartbeat Daemon

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

7.4 Switch Failover Daemon

The Switch Failover Daemon feature can be enabled in a dual MCH system to provide additional verification the active MCH's Ethernet switch is functioning properly. When enabled, the active MCH sends an ICMP Echo (ping) request packet to the Ethernet switch or switches every ten (10) seconds. If the active MCH does not receive five (5) consecutive responses from the Ethernet switch, the backup MCH will become active. To prevent

failover looping due to configuration errors, at least one good response must be received from the Ethernet switch before the five (5) consecutive failures.

This feature can be used with both the Gigabit Ethernet switch and the 10 or 40 Gigabit Ethernet switch available on some MCH products. When used with the 10 or 40 Gigabit Ethernet switch, appropriate IP routing must be configured on the MCH and Gigabit Ethernet switch.

This feature requires that both MCHs have unique IP addresses on their Ethernet switches. See the appropriate Ethernet Switch manual for information to configure its IP addresses.

7.4.1 Enabling/Disabling

The value of **ENABLE_SWITCH_FAILOVER** in the **/opt/vadatech/startup/vtipmi.conf** file determines whether or not the Switch Failover daemon is started during the MCH's initialization. A valid IP address value indicates the Switch Failover daemon is enabled and will be started. A value of **0.0.0.0** indicates the Switch Failover daemon is disabled and will not be started.

When configuring multiple Ethernet switch IP addresses, they must be enclosed in double quotes.

```
# mount –o remount,rw /
# vi /opt/vadatech/startup/vtipmi.conf
```

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

# management configuration
ENABLE_SHELF_MANAGER=1
ENABLE_SNMP_TRAP_HANDLER=1
ENABLE_WEB_SERVER=1
ENABLE_SNMP=1
ENABLE_HPI=0
ENABLE_NEBS_COMPLIENCY=0
ENABLE_USER_DEBUG=0
ENABLE_SWITCH_FAILOVER=192.168.40.230
```

Figure 9: Enabling Switch Failover Daemon

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

# management configuration
ENABLE_SHELF_MANAGER=1
ENABLE_SNMP_TRAP_HANDLER=1
ENABLE_WEB_SERVER=0
ENABLE_SNMP=1
ENABLE_HPI=0
ENABLE_NEBS_COMPLIENCY=0
ENABLE_USER_DEBUG=0
ENABLE_SWITCH_FAILOVER="192.168.40.230 192.168.41.230"
```

Figure 10: Enabling Switch Failover Daemon with multiple Ethernet switch IP addresses

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

7.5 Web Interface

The Web Interface provides access to the CLI to monitor and configure the MCH through the internet. The Web Interface can be accessed at any of the available Ethernet addresses (see Section 3: Getting Connected and Section Error! Reference source not found.: Error! Reference source not found.) at port 8080.

The available commands are grouped by categories, listed on the left side of the screen, as shown in Figure 11 and Figure 12.

Figure 11: Carrier Manager's Web Interface main screen

Figure 12: Shelf Manager's Web Interface main screen

Refer to the VadaTech MicroTCA Carrier Manager Web Interface Reference Manual and VadaTech MicroTCA Shelf Manager Web Interface Reference Manual for information about the Web Interface.

7.5.1 Enabling/Disabling

The value of `ENABLE_WEB_SERVER` in the file **`/opt/vadatech/startup/vtipmi.conf`** determines whether or not the web server is started during the MCH's initialization. A value of **1** indicates the web server is enabled and will be started. A value of **0** indicates the web server is disabled and will not be started.

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

# management configuration
ENABLE_SHELF_MANAGER=0
ENABLE_WEB_SERVER=1
ENABLE_SNMP=1
ENABLE_SNMP_TRAP_HANDLER=1
ENABLE_NEBS_COMPLIENCY=0

...
```

Figure 13: Enabling/Disabling web server

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

7.6 HPI Server

The HPI Interface provides users managing the UTCA system. HPI includes resource modeling; access to and control over sensor, control, and inventory data associated with resources; abstracted System Event Log interfaces; hardware events and alarms; and a managed hot swap interface.

7.6.1 Enabling/Disabling

The value of **`ENABLE_HPI`** in the file **`/opt/vadatech/startup/vtipmi.conf`** determines whether or not the HPI server is started during the MCH's initialization. A value of **`1`** indicates the HPI server is enabled and will be started. A value of **`0`** indicates the HPI server is disabled and will not be started.

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

# management configuration
ENABLE_SHELF_MANAGER=1
ENABLE_WEB_SERVER=1
ENABLE_SNMP=1
ENABLE_HPI=1
ENABLE_SNMP_TRAP_HANDLER=1
ENABLE_NEBS_COMPLIENCY=0
SNMP_BASE_DIR=/opt/vadatech/SNMP
```

Figure 14: Enabling/Disabling SNMP server

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

7.7 SNMP Server

The SNMP Interface provides users with access to monitor the MCH through the internet. While the Web Interface provides for extended configuration abilities, the SNMP provides only a limited ability to change the configuration.

The SNMP Interface can be accessed at any of the available Ethernet addresses (see **Section 3: Getting Connected** and **Section** Error! Reference source not found.**:** Error! Reference source not found.).

The MCH comes with Management Information Base (MIB) files. These MIB files (**`VT-ATC.mib`**, **`VT-UTCC.mib`** and **`VT-UTCSH.mib`**, located at **`/opt/vadatech/SNMP/mibs`**), describe the objects managed by the Carrier and Shelf Manager. A remote application, such as an SNMP/MIB manager, can compile the files (using a MIBs compiler) and utilize this information to monitor and manage devices in the Carrier and Shelf.

Refer to the VadaTech MicroTCA Carrier Manager SNMP Interface Reference Manual and the VadaTech MicroTCA Shelf Manager SNMP Interface Reference Manual for more information about SNMP.

The VadaTech SNMP agent is based on **net-snmp 5.3.1**; complete configuration instructions for **net-snmp** can be found at http://net-snmp.sourceforge.net/docs/readmefiles.html.

7.7.1 Enabling/Disabling

The value of **ENABLE_SNMP** in the file **/opt/vadatech/startup/vtipmi.conf** determines whether or not the SNMP server is started during the MCH's initialization. A value of **1** indicates the SNMP server is enabled and will be started. A value of **0** indicates the SNMP server is disabled and will not be started.

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

# management configuration
ENABLE_SHELF_MANAGER=1
ENABLE_WEB_SERVER=1
ENABLE_SNMP=1
ENABLE_SNMP_TRAP_HANDLER=1
ENABLE_NEBS_COMPLIENCY=0
SNMP_BASE_DIR=/opt/vadatech/SNMP
```

Figure 15: Enabling/Disabling SNMP server

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

7.8 SNMP Traps

SNMP provides the ability to send traps, or notifications, to advise an administrator when one or more conditions have been met. Traps are network packets that contain data relating to a component of the system sending the trap. Traps are sent out when a system condition has been met, as defined by the Platform Event Filtering for the MicroTCA system.

Refer to the VadaTech MicroTCA SNMP Trap User Manual for more information about SNMP traps.

For the SNMP traps to be sent out, the SNMP trap handler must be enabled.

The value of **ENABLE_SNMP_TRAP_HANDLER** in the file **/opt/vadatech/startup/vtipmi.conf** determines whether or not the SNMP trap handler is started during the MCH's initialization. A value of **1** indicates the SNMP trap handler is enabled and will be started. A value of **0** indicates the SNMP trap handler is disabled and will not be started.

```
#!/bin/bash

# software configuration
#    0:  mch
#    1:  mch and bus analyzer monitoring IPMB-L
#    2:  bus analyzer monitoring IPMB-L and IPMB-0
RUN_AS=0

# management configuration
ENABLE_SHELF_MANAGER=1
ENABLE_WEB_SERVER=1
ENABLE_SNMP=1
ENABLE_SNMP_TRAP_HANDLER=1

IPMI_BASE_DIR=/opt/vadatech/IPMI
SNMP_BASE_DIR=/opt/vadatech/SNMP
```

Figure 16: Enabling/Disabling SNMP traps

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.

7.9 System Event Log (SEL)

The System Event Log is a non-volatile repository for system events and certain system configuration information.

Users have ability to configure SEL behavior in case it gets full. The value of **ENABLE_SEL_ROTATION** in the file **/opt/vadatech/startup/vtipmi.conf** determines that behavior. A value of 0 indicates that SEL rotation feature is disabled and once the SEL becomes full the management application will stop logging new events and will generate "SEL Full" Alarm. A value of 1 indicates that SEL acts as a circular buffer and in case SEL is full, the management application will add new sensor event entry in place of oldest entry in the log by overriding it.

```
ENABLE_ACT_OVERRIDE=0
ENABLE_SEL_ROTATION=0
ENABLE_HPM3_DHCP=0

# Ethernet interface connected to HPM.3 DHCP server
HPM3_DHCP_SERVER_INTERFACE="eth0"
```

Figure 17: Enabling/Disabling SEL Rotation

When modifying the configuration, save the changes and power cycle the MCH for the changes to take effect.