VadaTech UTC00x (x = 1, 2, 4) MCH

Quick Start Guide

July 2024

Version 1.4

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Revision History

Doc Revision	Description of Change	Revision Date
1.0	Initial release	May 2014
1.1	Updated Changing IP address for slot based IP address assignment	April 2017
1.2	Added Temperature Range configuration parameters in Common Configuration options	July 2018
1.3	Fixed typo in Table 3: Default IP Address	August 2018
1.4	Added section for Retrieving the Platform type Added section for Network interface configuration for VT040 Platform	July 2024

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1   Introduction

1.1   Purpose

VadaTech MCH offers a rich set of useful features and it is quite challenging to describe all features in a single document. The intention of this document is to help you quickly get started using the MCH, get familiar with some of the common configuration options, introduce you to some of the remote management protocols supported by the MCH, and provide references to manuals that explain a particular feature in greater depth.

1.2   Applicable Products

This document is applicable to the UTC001, UTC002, UTC004 MCH, as well as VadaTech chassis with integrated MCH (for example: VT84x, VT85x and VT95x).

1.3   Document References

1.3.1   Specifications

UTC00x series are compliant with following specifications:

- *PICMG® MicroTCA.0 Base Specification*
- *PICMG® AMC.0 R2.0 Advanced Mezzanine Card Base Specification*
- *PICMG ® AMC.1 PCIe and Advanced Switching Environments Specifications*
- *PICMG® AMC.2 Ethernet Specification*
- *PICMG® AMC.3 Storage Specifications*
- *PICMG® AMC.4 Serial Rapid IO Port Specifications*

1.3.2   Related Documents

The following documents provide information related to UTC00x series:

- *VadaTech UTC001-UTC002 Hardware Reference Manual*
- *VadaTech MCH Gen3 Product Reference Guide*
- *VadaTech MicroTCA Carrier Manager Command Line Interface Reference Manual*
- *VadaTech MicroTCA Shelf Manager Command Line Interface Reference Manual*
- *VadaTech Gigabit Ethernet Managed Switch Setup*
- *VadaTech MicroTCA Carrier Manager Web Interface Reference Manual*
- *VadaTech MicroTCA Shelf Manager Web Interface Reference Manual*
- *VadaTech MicroTCA Carrier SNMP Interface Reference Manual*
- *VadaTech MicroTCA Shelf SNMP Interface Reference Manual*
- *VadaTech SNMP Trap Handler User Manual*
- *VadaTech MicroTCA System Manager Interface Reference Manual*
- *VadaTech MicroTCA MCH User Debug Mode Guide*
- *ViewTrace Reference Manual*
- *VadaTech MCH Field Upgrade Instruction Manual*
- *VadaTech MCH Daughter Card Field Upgrade Instruction Manual*
- *VadaTech UTC00x MCMC EEPROM Field Upgrade Instruction Manual*
- *VadaTech VTWSS Upgrade Instruction Manual*

1.4   Acronyms Used in this Document

Table 1: Acronyms

Acronym	Description
AMC	Advanced Mezzanine Card
GbE	Gigabit Ethernet
IPMB	Intelligent Platform Management Bus
IPMI	Intelligent Platform Management Interface
MicroTCA or MTCA	Micro Telecommunications Computing Architecture
MMC	Module Management Controller
PCIe	Peripheral Component Interconnect Express
PICMG	PCI Industrial Computer Manufacturers Group
SDR	Sensor Data Record
SerDes	Serializer-Deserializer
SRIO	Serial Rapid IO
USB	Universal Serial Bus
XAUI	10 Gigabit Media Independent Interface

1.5   Conventions Used

The following conventions are used in this document:

WARNING - Important information, when ignored can cause harm. serious injury or death to the User is described next to this symbol

CAUTION - Important information, when ignored can cause serious damage to the device is described using this symbol

NOTE - Important information useful to the reader is described next to this symbol

`Command`   *Any CLI commands are described with this font style*

2 MCH Overview

2.1 Front Panel

The VadaTech MCH is very modular and offers PCIe, SRIO, XAUI fabric options. Owing to the rich set of fabric, clock, expansion options, Ethernet interfaces, you have may have slightly different connectors on the front panel. *Figure 1* and *Figure 2* show a representation of UTC001, UTC002 MCH, and a VT841 chassis which comes with an integrated MCH. Please refer to *VadaTech UTC001-UTC002 Hardware Reference Manual* for more information.

Figure 1: MCH Front Panel - UTC001 (left), UTC002 (right)
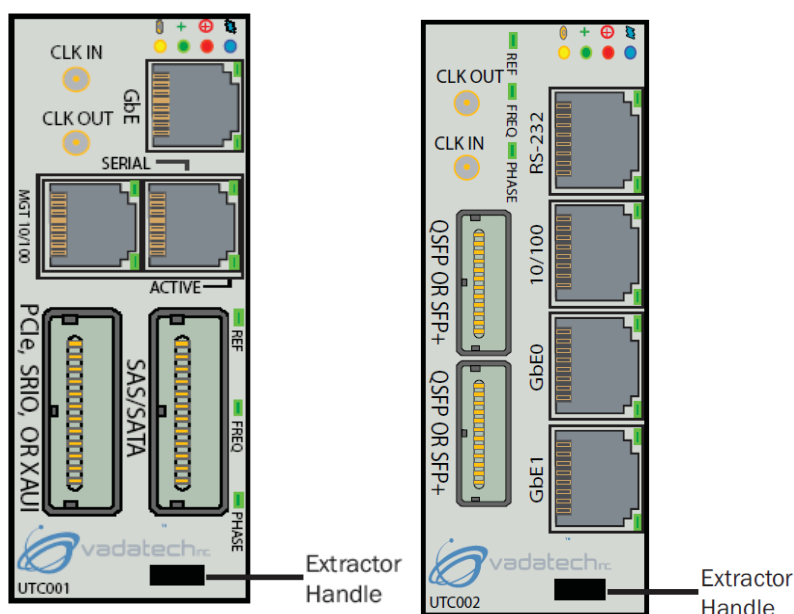
Figure 2: VT841 chassis with integrated MCH
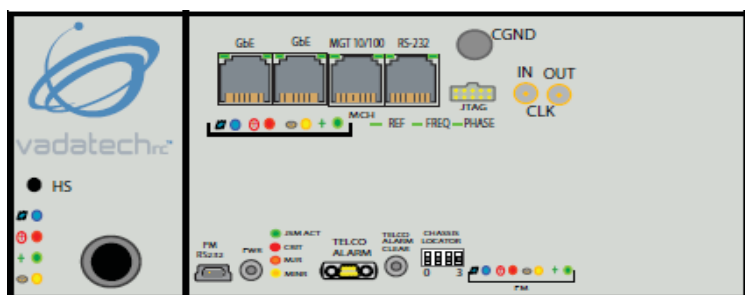
3   Retrieving the Platform Type

The subsequent instructions might depend on the platform type. To determine the platform type, connect to the MCH and execute the following command:

```
[root@vtipmi ~]# grep 'platform' /proc/cpuinfo
```

An example of output.

```
platform    : VT040
```

4   Management Interfaces and Protocols

The MCH supports serial console, ssh, telnet, ipmitool, webserver, SNMP and ScorpionWare (GUI based) for configuration and management purposes.

4.1   MCH Serial Port

The MCH has a RS-232/SERIAL port on the front panel. Connect the CBL-DB9RJ45 cable (provided) to this port, and the other end to the PC. The baud rate settings are 115200 baud, 8 bits data, No parity and 1 stop bit (**115200-8-N-1**).

The RS-232 serial management port pin outs are as follows.

Table 2: RS-232 Pin out

Pin	Signal
2	Tx
3	Rx
5	GND

To get a list of supported CLI commands, type in the following command on your serial console.

```
cli_commands
```

For a detailed description of all the CLI commands, please refer the following documents.

- *VadaTech MicroTCA Carrier Manager Command Line Interface Reference Manual*

- *VadaTech MicroTCA Shelf Manager Command Line Interface Reference Manual*

4.2   Default IP Addresses

The MCH has a 10/100 MGMT and Gigabit Ethernet interfaces which are used for remote management of MCH using ssh, telnet, ipmitool, webserver, SNMP and ScorpionWare.

Table 3: Default IP Address

Ethernet Port	Default IP Address
10/100 MGMT	192.168.1.252
GbE0/GbE1	192.168.40.250

The IP address can be changed as described in *Table 8*.

i   *Note: UTC002 has two front panel Gigabit Ethernet ports.*

4.3   ssh/telnet

To access the serial console remotely via ssh/telnet, connect an Ethernet cable to the 10/100 MGMT port or GbE port on the front panel with the default IP address as mentioned in the *Table 3*. The default username and password are described in the *Table 4.*

Table 4: ssh/telnet credentials

Username	Password
root	root

4.4   Gigabit Ethernet Console

Applicable only to VT002 based MCHs, the Gigabit Ethernet console can be accessed by keying the following command on the MCH serial console.

```
term –b 115200 /dev/ttyS1
```

For more details on the Gigabit Ethernet console, refer the document *VadaTech Gigabit Ethernet Managed Switch Setup*.

4.5   ipmitool

ipmitool is an open-source utility which can be used for monitoring IPMI-enabled devices. The default username and password are described in the *Table 5*.

Table 5: ipmitool credentials

Username	Password
NULL	NULL

Example command to access MCH from ipmitool;

```
ipmitool -I lan -H <IPAddress> -U "" -P "" -B 0 -T 0x82 picmg addrinfo
```

Additional information can be found at:
http://linux.die.net/man/1/ipmitool

4.6 Webserver

The MCH also supports a webserver to configure/read MCH parameters from a web page. Note that the webserver runs on port 8080.

Example - To access the webserver connected to the GbE interface (with IP address 192.168.40.250), open the browser and enter the URL;

```
http://192.168.40.250:8080
```

NOTE: The webserver feature needs to be enabled, which is described in Section 5.2.

Additional information regarding the webserver can be found in the following manuals:

- *VadaTech MicroTCA Carrier Manager Web Interface Reference Manual*

- *VadaTech MicroTCA Shelf Manager Web Interface Reference Manual*

4.7 SNMP

The MCH supports a SNMPv3 agent based on net-snmp. Note that the SNMP configuration option must be enabled as described in Section 5.2. The following MIB files are implemented in the MCH.

- VT-ATC.mib
- VT-UTCC.mib
- VT-UTCSH.mib

They are located within the MCH under the directory **/opt/vadatech/SNMP/mibs**

SNMP traps are also supported; note that they must be enabled as described in the Section 5.1.3.

Table 6: SNMP credentials

Username	Password
vadatech	vadatech1234

net-snmp is an open-source project, and can also be used as SNMP manager to install on your PC.

Example: Command to access MCH via net-snmp manager;

```
snmpwalk -u vadatech -l auth -a MD5 -A vadatech1234 192.168.1.252
1.3.6.1.4.1 -t 5 -m +VT
```

Additional information regarding using SNMP can be found in the following manuals:

- *VadaTech MicroTCA Carrier SNMP Interface Reference Manual*

- *VadaTech MicroTCA Shelf SNMP Interface Reference Manual*

- *VadaTech SNMP Trap Handler User Manual*

4.8   ScorpionWare (GUI Management Tool)

ScorpionWare is a comprehensive Network management tool which runs on a Linux/Windows PC, and it is used to remotely control and monitor VadaTech ATCA/uTCA Shelf/Carrier units. It can be connected to the Shelf via 10/100 MGMT or the GbE interface. Contact VadaTech to download this software from the Download center.

Table 7: ScorpionWare credentials

Username	Password
NULL	NULL

Further information can be found in the following documents:

- *VadaTech MicroTCA System Manager Interface Reference Manual*

5 Configuration Options

The MCH has numerous configuration options, which can be set by editing the following configuration files.

```
/opt/vadatech/startup/vtipmi.conf
/etc/rc.d/rc.conf
```

Since the file system is read-only, make sure you modify the access to read-write before saving changes to the configuration file. All changes will be reflected after a reboot. The following command can be used to modify access to read-write.

```
mount -o remount,rw /
```

File system is read-only, change to read-write to save configuration options

NOTE: You may use 'vi' to make changes to the configuration parameters and save changes.

Issue 'sync' to flush the data to the flash before reboot.

```
#   sync
```

Power cycle for the changes to take effect.

5.1 Changing IP addresses

This section is about IP address configurations for 10/100 Ethernet and Gigabit Ethernet interfaces. The configurations of those interfaces depend on the platform type, refer to section *3*.

5.1.1 Changing IP addresses on VT003 Platform

The IP address configuration of MGMT, GbE interfaces are in the following file.

```
/etc/rc.d/rc.conf
```

Table 8: rc.conf Configuration Parameters

Interface	Configuration Parameter	Comments
10/100 MGMT	IPADDR0	IPv4 Address – can be Static/DHCP
	NETMASK0	Netmask
	BROADCAST0	Broadcast IP
	GATEWAY0	Gateway (0.0.0.0 to disable)
GbE/GbE0	IPADDR1	IPv4 Address – can be Static/DHCP

Interface	Configuration Parameter	Comments
	NETMASK1	Netmask
	BROADCAST1	Broadcast IP
	GATEWAY1	Gateway (0.0.0.0 to disable)

5.1.2 IP Address Configuration Options in rc.conf

```
# net interface 0
export SYSCFG_IFACE0=y
export INTERFACE0="eth0"
export IPADDR0="192.168.1.114"
export NETMASK0="255.255.255.0"
export BROADCAST0="192.168.1.255"
export GATEWAY0="192.168.1.1"
export NAMESERVER0="0.0.0.0"

# net interface 1
export SYSCFG_IFACE1=y
export INTERFACE1="eth1"
export IPADDR1="192.168.40.250"
export NETMASK1="255.255.255.0"
export BROADCAST1="192.168.0.255"
export GATEWAY1="0.0.0.0"
export NAMESERVER1="0.0.0.0"
```

- To configure a DHCP address, the IPADDR configuration option is set to export IPADDR0="dhcp"
- UTC002 has two GbE connectors on the front panel – both are identical and can be used interchangeably.
- Only 1 gateway can be set (non-zero IP address), and the remaining ones must be disabled (by having an IP address of 0.0.0.0)

5.1.3 Changing IP addresses on VT040 Platform

To configure IP addresses on VT040 type platform Ethernet interfaces, edit the /etc/network/interfaces configuration file and then reboot or power cycle the board.

```
[root@vtipmi ~]# vim /etc/network/interfaces
[root@vtipmi ~]# reboot # Or power cycle the MCH.
```

5.2 Slot Based IP Address Assignment

Slot based IP, automatically generates the unique IP for the MCH network interfaces based on the slot number of the MCH in the chassis. When the 4th octet of network interface IP address is set to 0 in the /etc/rc.d/rc.conf then this feature calculates it by adding the slot number to the base value of the fourth octet and the rest of the first three octets are applied as is. See description of SHELF_IP_OCT4_BASE MCH configuration parameter in the *Table 9*.

5.2.1 UTC002 GbE Switch Slot based IP Address Assignment

On the UTC002, you can configure to set the IP address of the GbE switch management CPU based the MCH slot number.

To auto assign the slot based IP address of the GbE switch:

▪ Login to 1GbE CPU shell

```
term/dev/ttys1
```

▪ Set the 4th octet of the IP address to 0

```
-- ipconfig X.Y.Z.0 netmask 255.255.255.0
```

See description of `GBE_SWITCH_IP_OCT4_BASE` MCH configuration parameter in the *Table 9*.

5.3   Common Configuration Options

The following configuration is available in vtipmi.conf.

```
/opt/vadatech/startup/vtipmi.conf
```

Table 9: vtipmi.conf Configuration Parameters

Configuration Parameter	Flag/Value	Comments
ENABLE_SHELF_MANAGER	0 Disabled 1 Enabled	Configure Shelf Manager. By default the shelf manager is always enabled. If this option is disabled then only the carrier management application will run on the MCH.
ENABLE_WEB_SERVER	0 Disabled 1 Enabled	Refer Webserver as described in Section 3.6
ENABLE_SNMP	0 Disabled 1 Enabled	Refer SNMP as described in Section 3.7
ENABLE_HPI	0 Disabled 0 Enabled	Enabling Hardware Platform Interface
ENABLE_SNMP_TRAP_HANDLER	0 Disabled 1 Enabled	Refer SNMP as described in Section 3.7
ENABLE_USER_DEBUG	0 Disabled 1 Enabled	More debug options for advanced users
RUN_AS	0 as MCH 1 as IPMB-L Bus Analyzer 2 as IPMB-L/IPMB-0 Bus Analyzer	Used for logging IPMB messages.
SSC_MODE	0 Disable 1 -0.35% SS 2 -0.50% SS	Spread Spectrum Clock for PCIe
ENABLE_SWITCH_FAILOVER	0 Disabled 1 Enabled	Applicable to only MCH that has the VT002 Daughter card installed. This daemon when

Configuration Parameter	Flag/Value	Comments
		enable monitors the local GbE switch is alive. If unable to communicate with the switch will initiate a local failover to the Passive MCH.
ENABLE_SEL_ROTATION	0 Disabled 1 Enabled	By default the SEL will not rotate when full. This flag when enabled will enable the rotation.
ENABLE_HPM3_DHCP	0 Disabled 1 Enabled	Enable HPM.3 capability to the MCH. Refer to the HPM.3 specification.
ENABLE_CHASSIS_SW_POWER_SWITCH	0 Disabled 1 Enabled	Applicable only on the VadaTech Chassis, this when enable will allow soft showdown of the chassis using the external chassis soft power switch.
TEMPERATURE_RANGE	0 Commercial 1 Industrial 2 Extended	Specify the Operating Temperature range. By default is 0.
SHELF_IP_OCT4_BASE	0 to 252	Base value for the Shelf slot based IP address
GBE_SWITCH_IP_OCT4_BASE	0 to 252	Base value for Gbe switch management CPU slot based IP address

6 Monitoring and Debugging the MCH

We looked at setting up the tools to monitor and control the MCH in *Section 4*. If we need a closer look into the working of the system, we can go through the log events seen by the MCH and also capture the IPMI messages by using a GUI tool ViewTrace.

6.1 MCH Logs

The MCH event logs are logged into files in the following locations.

Table 10: MCH Logs

MCH Logs	Description
/tmp/MCMC/MCState.log	MCH MCMC log
/tmp/UTCC/MCState.log	MCH Carrier Manager log. Present only on the Primary MCH
/tmp/UTCShelf/MCState.log	MCH Shelf Manager log. Present only on the Primary MCH if the Shelf manager option is enabled

Note that by default, these logs are in volatile storage and won't be preserved across reboots. To save the logs in nonvolatile storage, please see the Non Volatile Log Section in the document *VadaTech MicroTCA MCH User Debug Mode Guide*.

NOTE: By default, MCH logs are not preserved across reboots.

6.2 Enabling the IPMB-0 and IPMB-L View Trace Server

The IPMI messages on the bus IPMB-0 and IPMB-L can be captured, saved and viewed for offline analysis. This feature is particularly helpful in testing the interoperability of the system with third party AMC vendor cards. By default, this option is always disabled on the MCH and is recommended to keep this disabled unless the bus trace is required.

The ViewTrace can be enabled as described in *Section 4.2*.

For additional details, and for installing ViewTrace client on a PC, please refer *ViewTrace Reference Manual*.

6.3   Capturing the MCH state information

The MCH (v 1.8.8 onwards) has a helpful feature to capture all the relevant logs and information of the system. Please run this command and provide a copy of the outcome whenever requesting help from Technical Support.

Run the following command to get the captureStatus.tgz file;

```
cd /opt/vadatech/IPMI/tools

./captureChassisStatus
```

The MCH state information will be in the following location;

```
/tmp/captureStatus.tgz
```

7 MCH Upgrade and Factory Defaults

7.1 Factory Defaults

To restore the factory defaults, the following command may be issued.

Table 11: Commands to revert to Factory Defaults

Command	Description
setMchDefaults	Revert the MCH to Factory settings
setGbEDefaults	Revert the GbE Switch to Factory settings
setAppDefaults	Revert /etc and /opt/vadatech/startup to factory settings

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

7.2 Upgrading MCH to new firmware

There are various modules within MCH, and to upgrade them, please refer to the appropriate manual below.

- The IPMI software can be upgraded using *VadaTech MCH Field Upgrade Instruction Manual*

- The Fabric firmware, which is in the daughter cards can be upgraded using *VadaTech MCH Daughter Card Field Upgrade Instruction Manual*

- The MCMC EEPROM is upgraded as described in *VadaTech UTC00x MCMC EEPROM Field Upgrade Instruction Manual*

- The Ethernet Switch firmware (base interface) can be upgraded using *VadaTech VTWSS Upgrade Instruction Manual*

Contact VadaTech

Technical Support

If you have purchased the VadaTech product through our distributor network, contact your distributor for any technical assistance. If you require further technical support, you can contact VadaTech technical support team from VadaTech Customer Support site.

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