IPMI over Cyclades TS2000

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1 IPMI over Cyclades TS2000

IPMI defines common interfaces to the intelligent hardware that is used to monitor server physical health characteristics, such as temperature, voltage, fans, power supplies, and chassis intrusion. In addition to health monitoring, IPMI includes other system management capabilities that help drive down the total cost of ownership (TCO) including automatic alerting, automatic system shutdown and restart, remote restart and power control capabilities, and asset tracking.

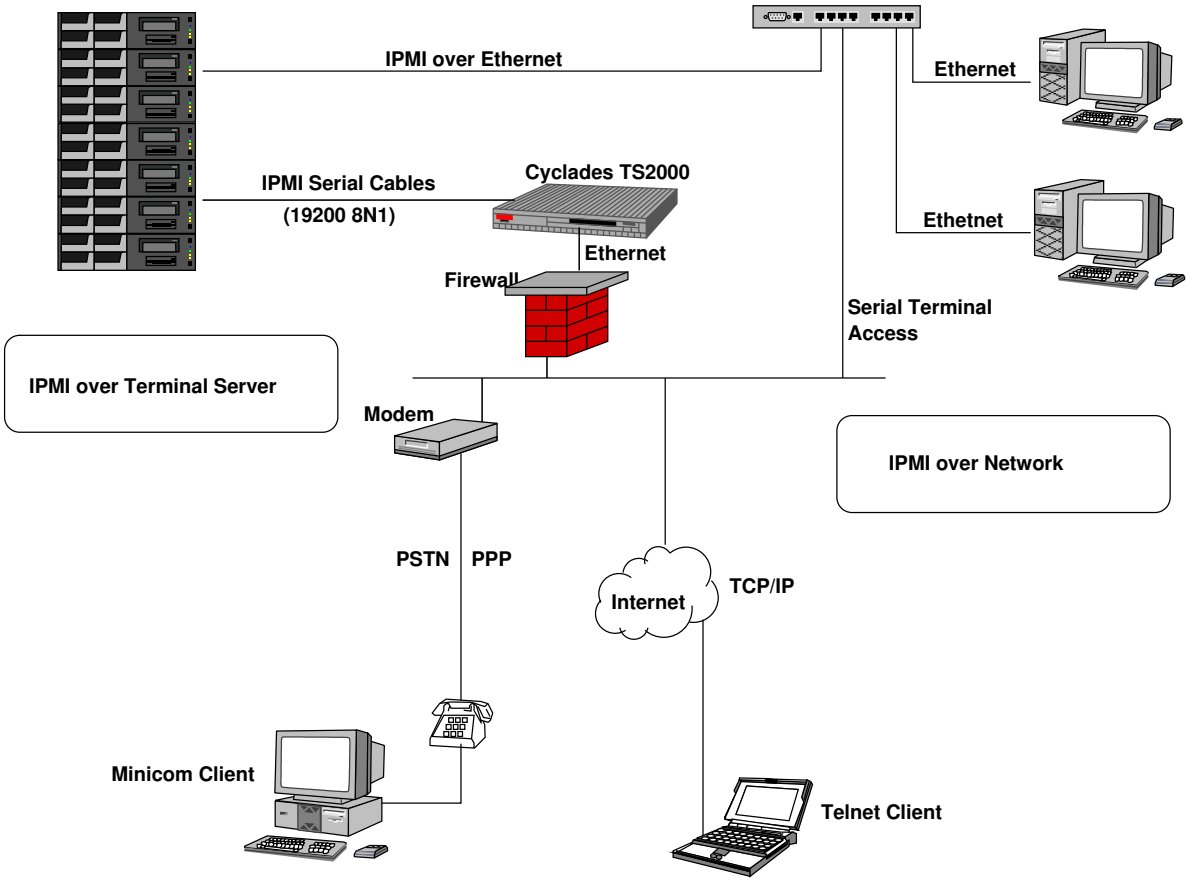
This document describes how to support IPMI-1.5 Terminal mode over Cyclades TS2000 terminal server.

1.1 IPMI Terminal Mode

Terminal Mode is intended primarily for direct serial connection operation. The mode is designed so that a simple terminal or terminal emulator can be used to generate requests and get responses from the BMC. The IPMI messages are entered using printable ASCII characters. While a user can enable a line edit mode and directly enter the codes for an IPMI message, the main purpose of this mode is to facilitate the development of scripts that work with available terminal emulation programs.

Terminal Mode also supports a small number of ASCII Text Commands that can be used for operations such as getting a high-level hardware health status for the system, and doing system reset and power on/off operations.

1.2 Block Diagram of IPMI setup



1.3 IPMI Physical Setup

The physical network setup is pretty normal as described in the above diagram, except that the serial port B of IPMI compliant motherboard connects to Cyclades TS2000 serial port using a special RJ45<->RJ45 cable provided by CDC. You should also refer to the marker on the cable to identify which end connects to IPMI board. The direction is important. For cable specifications see [SE7500WV2 Serial PORT B to TS2000], page 6.

1.3.1 Serial Port B (SE7500WV2)

Serial B is an external low profile 8-pin RJ45 connector that is located on the back of the board. For those server applications that require an external modem, an RJ45-to-DB9 adapter is necessary. A standard DH-10 to DB9 cable is available from Intel in the SE7500WV2 Serial Port Accessory Kit.

The rear RJ45 Serial B port is a fully functional serial port that can support any standard serial device. Using an RJ45 connector for a serial port allows direct support for serial port concentrators, which typically use RJ45 connectors and are widely used in the high-density server market. For server applications that use a serial concentrator to access the server management features of the baseboard, a standard 8-pin CAT-5 cable from the serial concentrator is plugged directly into the rear RJ45 serial port.

To allow support of either of two serial port configuration standards used by serial port concentrators, the J5A2 jumper block located directly behind the rear RJ45 serial port must be jumpered appropriately according to the desired standard.

[1]

1.4 Configuring The System

In order to make IPMI work over serial interface through the TS2000 terminal server, you need to carefully configure each components as described below.

1.4.1 IPMI Terminal Mode Configuration

You need to enable terminal mode in the SSU from
`[SSU->Platform Event Manager->EMP->Options->Terminal Mode]`.
You may also enable line editing and clear EMP password.

1.4.2 Cyclades TS2000 Configuration

1.4.2.1 Configuring brand new TS2000 with factory defaults

`telnet` [Network]

Use telnet client to connect to 192.168.160.10 and login as '`root`'. When prompted for password, press enter.

[1] By default as configured in the factory, the SE7500WV2 baseboard will have the rear RJ45 serial port configured to support a DSR signal which is compatible with the Cisco* standard. If you are using IPMI Terminal mode over Cyclades Terminal Server, this default setting will work.

`minicom` [Serial Console]

Use minicom to /dev/ttySn with 19200 8N1 serial port setting. You can use null modem cable + RJ45 to DB9 male DSR peripherals connector to connect to TS2000 console port. Login as '`root`' and press enter for password.

1.4.2.2 IPMI related configuration

In the file `/etc/portslave/pslave.conf` Set the IP address of the eth0 and the serial port range as per your network requirements. Then configure your serial port setting to match the below values

```
Speed    = 19200
Datasize = 8
StopBits = 1
Parity   = none
Serial flow control  = hardware
```

Activate the changes by running command

```
# signal_ras hup
```

If you are sure, the configuration is working fine, then Save the configuration into flash by

```
# saveconf
```

1.4.3 BIOS Console Redirection (Optional)

To configure '`BIOS Console Redirection`', enter BIOS setup, `Server->Console Redirection` and fill in the values as mentioned below

- BIOS Redirection Port `[Serial 2 (RJ45)]`
- Baud Rate `[19.2K]`
- Flow Control `[CTS/RTS]`
- Terminal Type `[VT100+]`

1.4.4 GRUB Console Redirection (Optional)

To configure '`GRUB Console Redirection`', add the following lines to '`/boot/grub/menu.lst`' or '`grub.conf`'

```
serial --unit=1 --speed=19200 --word=8 --parity=no --stop=1
terminal --timeout=10 serial console
```

1.4.5 Linux kernel Console Redirection

Append '`console=`' to the kernel command line in your boot loader configuration file.

```
## Example /boot/grub/menu.lst file
title GNU/Linux (RemoteManagement)
root (hd0,0)
kernel /vmlinuz ro root=/dev/sda3 noapic console=tty0 console=ttyS1,19200,n8
initrd /initrd.img
```

1.4.5.1 GNU/Linux Serial Console

Add the following line in your '/etc/inittab' file to start 'getty' on '/dev/ttyS1'

```
## Example /etc/inittab
...
...
S2:12345:respawn:/sbin/getty 19200 ttyS1 vt100
```

1.5 Accessing IPMI Terminal Mode

Terminal Mode can be enabled to be entered on receiving an <ESC>(sequence. The BMC will respond with [TMODE OK] and will operate in terminal mode until the connection is terminated or the data pattern for Basic Mode or PPP Mode IPMI-RMCP packet is detected.

Steps to get access to IPMI terminal mode:

1. telnet <IP address of TS2000 port>
2. press ESC (
3. you must get [TMODE OK] response
4. to verify if you are in terminal mode, type command [SYS TMODE] and you will get response [TMODE OK]
5. login in to the system with command [SYS PWD -N password]
6. to power on type [SYS POWER ON]. You will get BIOS console display if you have enabled BIOS console redirection. Do not press ESC (when you are in Console redirection mode. Wait until BIOS releases to console to the OS.
7. to power off type [SYS POWER OFF]
8. to log off type [SYS PWD -X] or just kill the session.

For complete list of IPMI Terminal commands, refer to 'IPMI 1.5 Reference Guide' 13.7.8 Terminal Mode ASCII Text Commands on Page 175

1.6 SE7500WV2 Serial PORT B to TS2000

SE7500WV2 Serial PORT B to TS2000 cable specification.

```
RJ45                    SE7500WV2
Cyclades                Serial Port B
--------                -------------
 3   TxD ------------ RxD    6
 6   RxD ------------ TxD    3
 4   Gnd ------------ Gnd    4

 2   DTR ------------ DSR    7
 7   DCD ------------ DTR    2

 1   RTS ------------ CTS    8
 5   CTS ------------ RTS    1
```

1.7 Useful URLs

a. IPMI Home Page http://www.intel.com/design/servers/ipmi/
b. IPMI Specifications http://www.intel.com/design/servers/ipmi/spec.htm

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