SuperMicro IPMI 2.0 Solution Installation Guide

I. Overview

❖ IPMI = Intelligent Platform Management Interface

❖ The IPMI 2.0 solution is available for Intel® E7520,E7320 and E7525-based servers.

❖ The new interfaces featured in IPMI 2.0 facilitate the management of rack-mounted Internet servers and systems in remote environments over serial and LAN connections.

❖ IPMI 2.0 also includes new capabilities to automatically alert Information Technology (IT) managers of system errors. These new capabilities, combined with the remote management functionality, allow IT managers to manage their servers and systems, regardless of system health, power state or supported communication media.

❖ IPMI 2.0 is backwards compatible with version 1.5 and includes extensions to support existing and emerging standards.

II. SuperMicro IPMI Features Highlights

❖ IPMI 2.0 Compliant (IPMI over LAN and serial port)

❖ Supports Emergency Management Port (EMP): COM or LAN

❖ Dedicated serial port

❖ Shares LAN controller with mainboard and uses out-of-band bandwidth.

❖ Supports hardware monitor for:

➢ CPU / system temperature

➢ System fan & CPU fan status

➢ System voltage

❖ Supports Event Log information for:

➢ BIOS events

➢ Hardware monitor events

❖ Supports remote management when system dead or in power standby

❖ Remote power control

➢ Control through OS:

▪ Shutdown

▪ Reboot

▪ Power cycle

➢ Control directly through buttons on chassis:

▪ Reset

▪ Power down

▪ Power up

▪ Power cycle

❖ Supports SNMP trap (multiple destinations)

❖ Console Redirection (text only) through both LAN and Serial Ports

❖ OS independent

❖ User, password security control

III. IPMI CD Description

1) Self-bootable. When the CD is put into the CD-ROM drive before the OS is loaded, it will boot the system to DOS, then execute the BMC firmware update automatically.

2) Auto-run. When the CD is put into the CD-ROM drive after the OS is loaded, an Install Dialog will pop up in Windows.

3) CD Folder Structure:
   a) Firmware: Utility and firmware image used to update BMC Firmware. Can only be executed under DOS.
   b) J2RE1_4_2: Java Runtime Environment for both Windows and Linux. Users can also download the latest version from Sun Microsystems, Inc. http://java.sun.com/
   c) DiskImage: Images for storing updates on floppy diskettes.
   d) Res: used by the CD Auto-run feature.
   e) IPMI Solution:
      i)   Linux: IPMIView and Power Control Agent for Linux.
      ii) Utility: BMC utilities.
      iii) Windows: IPMIView and Power Control Agent for Windows.
      iv) Jar: This folder includes IPMIView and TrapReceiver jar files. If you have installed JVM already (JRE 1.4.0 above), you may copy all the files in the folder to hard disk then start IPMIView or TrapReceiver by running the batch file directly.
   f) Manual:
      i) Installation.pdf: The file you are now looking at.
      ii) IPMIView.pdf: User Guide for IPMIView management software.

4) BMC Firmware update :
   a) The Firmware update utility must be the first step to be executed when the user receives the managed system with BMC installed. The Flash.exe is for IPMI 2.0 and Bnew.exe is for IPMI 1.5.
   b) Flash.exe and Bnew.exe can only run under DOS. If the managed system has a CD-ROM drive with a higher boot priority, the user can put it into the managed system's CD-ROM and boot up the system to update the BMC firmware on the managed system. If the managed system has a floppy drive, the user may run this CD on any Windows system, choose "Make BMC Firmware Update Diskette" to make a bootable disk, and then let the managed system boot from the disk. The boot disk will update BMC on the managed system automatically. This bootable disk is useful for OEM and System Integrators.
   c) Use ipnmac.exe to change IP and MAC address settings on BMC

5) Auto-run for Windows Function Description:

   a) "Make BMC Firmware Update Diskette": the user may choose the image that corresponds to the model of the mainboard that has BMC installed. This function will make a bootable floppy disk, which the user may use to update the managed system's BMC.

   b) "Install Graceful Power Control Agent" (GPC Agent): this function must be run on the managed system with Windows NT/2K/XP running. The GPC Agent will Shutdown/Reboot/Power-cycle the managed system gracefully when it receives a command sent from IPMIView. Graceful power control will inform the system to shutdown/reboot/power-cycle within a specified time (default is 30 seconds) instead of the manager forcibly controlling the power state. This function can also be used to uninstall GPC if the managed system has already had the GPC agent installed.

   c) "Install IPMIView": this function will install either IPMIView or IPMI Trap Receiver or both on the manager's system.

   d) "Browse This CD": browse the contents on this CD for your convenience.

   e) "SUPERMICRO Home Page": visit Supermicro at www.supermicro.com for more information.

IV. BMC Firmware Refresh (the Firmware Refresh must be done first)

1) Shut down the system and unplug the AC power cord.

2) Insert the BMC card

3) Put the IPMI CD into the CD-ROM drive or insert the bootable disk created with the "Make BMC Firmware Update Diskette" procedure.

4) Power up the system

5) If you use the bootable disk to update the BMC firmware, the update utility will refresh the firmware automatically.

6) If you are using the CD-ROM to boot the system,

   a) IPMI 2.0: Enter command *FLASH -d xxx.MOT* where xxx is the model of motherboard there a BMC is going to install onto.

   b) IPMI 1.5: press Express Update when Bnew is running. Bnew will choose the proper firmware automatically.

   Notes:
   1. IPMI 2.0 can be run on any mainboard that has an IPMI connector (Intel® E7520,E7320 and E7525-based). For example, you may plug in and refresh a BMC card on a X6DH8-G2 mainboard with x6dh8g2.mot firmware and then use the same BMC card on a X6DA8-G mainboard.
   2. When plugging or unplugging a BMC card, you must first unplug the AC power cord.

V. Software Install Procedures

1) On the system to be managed:

a) Install Graceful Power Control agent (GPC Agent) for Windows: Boot your managed system to Windows NT4/2K/XP, insert the IPMI CD into CD-ROM. An auto-run pop-up window should show up automatically, if not, double click on CD-ROM driver to open it, and double click on autorun.exe.   Select "Install Graceful Power Control Agent" (step III-5-b) to install the agent.   After installed, the system need to be rebooted to take effect.

b) Install Graceful Power Control agent (GPC Agent) for Linux: The necessary files for GPC agent are placed in "/IPMI Solution/Linux/GPC Agent" on CD.
   i)   For detail, please read README.
   ii) If you are new to compile the modules in Linux kernel, please read COMPILE_MODULES for the procedure of compiling the i2c drivers and/or the ipmi device drivers.
   iii) # tar zxvf GPC_Agent-x.y-yymmddnn.tar.gz
   iv) # cd GPC_Agent
   v)   # ./quickinstall

2) On the system you will manage from:

   a) Install IPMIView:
      i)   For Windows: Select "Install IPMIView" (step III-5-c) from auto-run windows to install IPMIView.
           You may also select "IPMIView20setupwin32.exe" in the "IPMI SOLUTION/Windows/Administrator" directory.
      ii) For Linux:
           Select "IPMIView20setuplinux.bin" in the "IPMI SOLUTION/Linux/Administrator" directory.
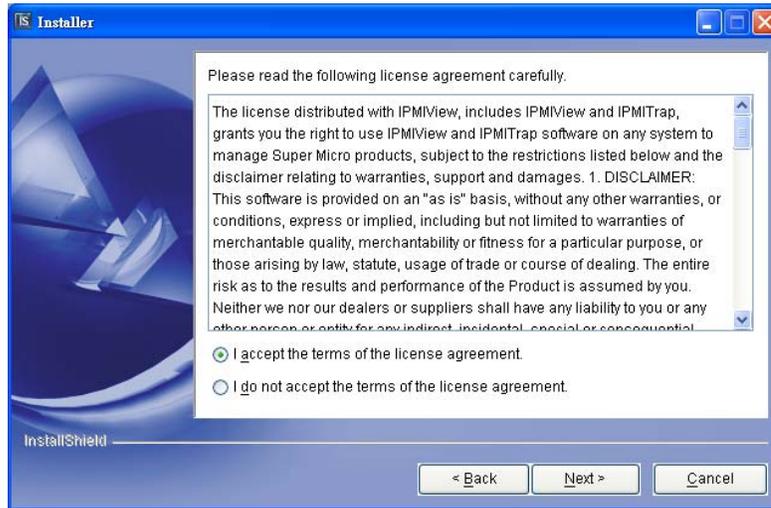   iii) IPMIView installation steps:
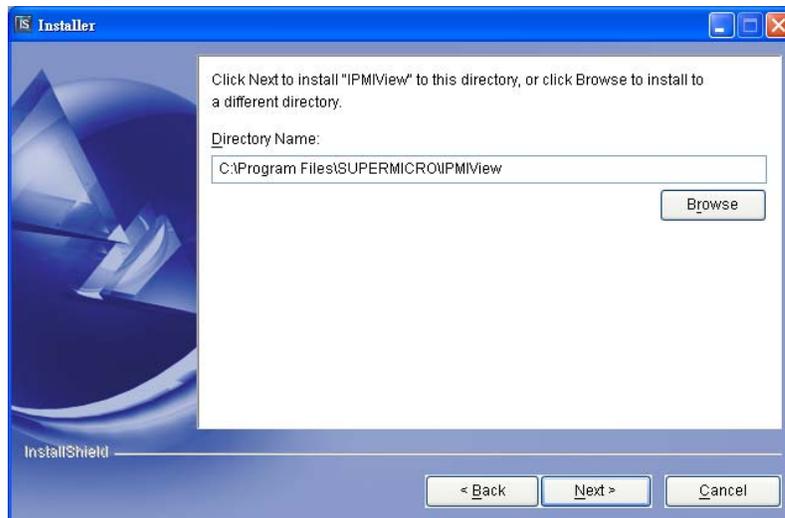
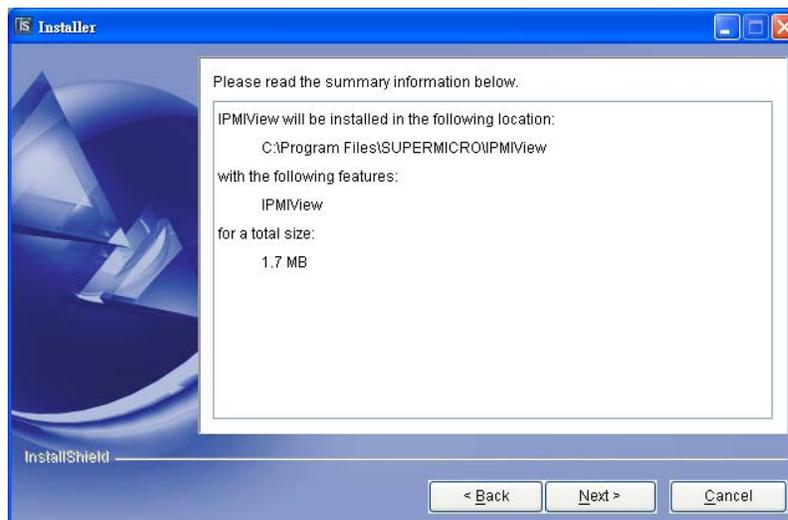

Figure 1: Step 1

Figure 2: Step 2
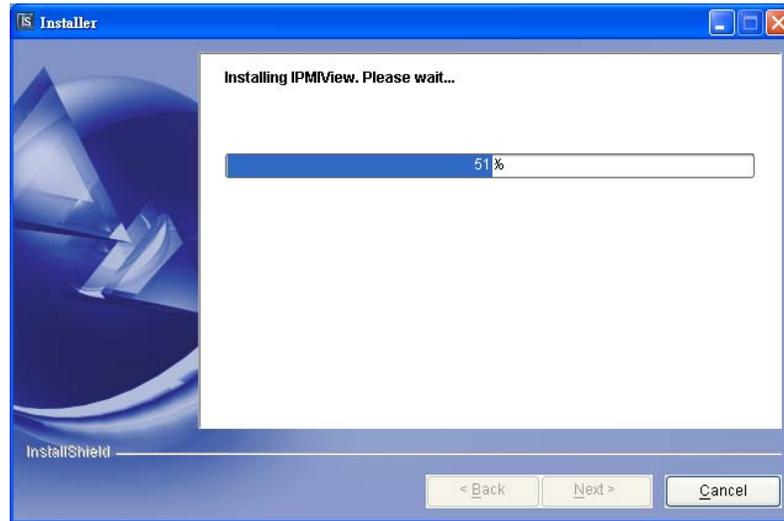

Figure 3: Step 3

Figure 4: Step 4

Figure 5: Step 5

Figure 6: Step 6 and Finish

VI. Managing an IPMI-enabled System for the First Time

1) On the system to be managed:

   a) First make sure you have an IPMI (BMC) card installed in the IPMI slot on the mainboard.
   b) Boot up the system.
   c) Check the IP, MAC and Gateway addresses.
      i) Windows: Open the DOS prompt window.
         (1) Type "ipconfig /all" at the DOS prompt to see the IP, MAC and Gateway addresses.
         (2) Type "arp –a" to see the Gateway's MAC (Physical Address). If you do not see the Gateway's IP (Internet Address) in the ARP list, you may try to issue a "ping xxxxxxx" command to retrieve the MAC (where xxxxxxx is the Gateway's IP) then use "arp –a" to check again.
      ii) Linux:
         (1) Type "ifconfig". The value after "inet addr" is the IP Address, and the value after "HWaddr" is the MAC.

(2) Type "route -n". The Gateway value in the line "default" is the Gateway IP for this system.

(3) Type "arp -n" to get the HWaddress for the Gateway MAC.

Note: IPMI over LAN can only work with LAN1.

2) On the system you will manage from:
   a) Bring up IPMIView 2.0:
      i) Windows: Click the IPMIView 2.0 shortcut icon in the IPMIView programs folder [Start-> Programs -> IPMIView->IPMIView20] (step IV.c).
      ii) Linux: Type "./opt/SUPERMICRO/IPMIView/IPMIView20.bin".
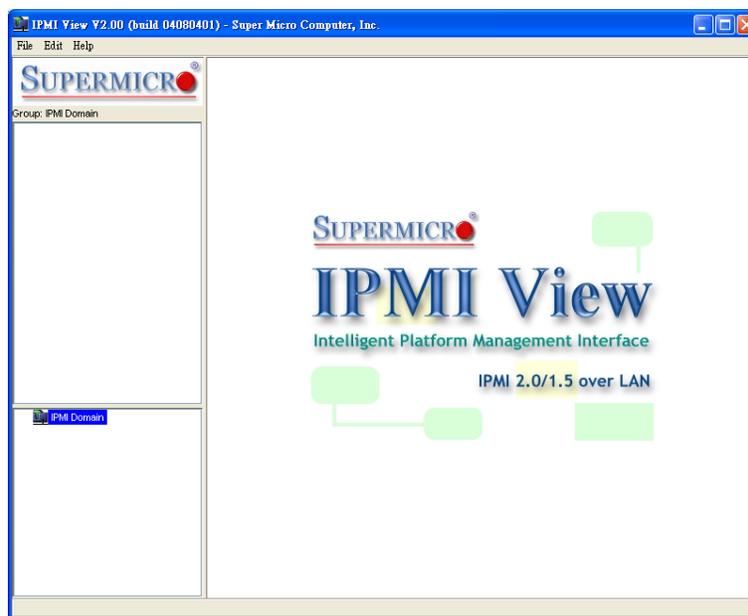   b) After opening the program, you should see the Figure 7 screen below.

Figure 7: IPMIView main screen

   c) Click on File > New > System to add a new system to manage. Enter the IP you found (step VI-1-c). Click on File > Save Configuration. Double click on the new system name you just added (in the window on the left) to bring up the manage screen (see the Figure 8 below). Click on the BMC Setting page and fill in the correct IP, MAC and Gateway information for the system, then click on Update. Repeat this step until all systems to be managed have been added.

   Note: The default Login ID and Password are both "ADMIN". You can change this later near the bottom of the BMC Setting page.
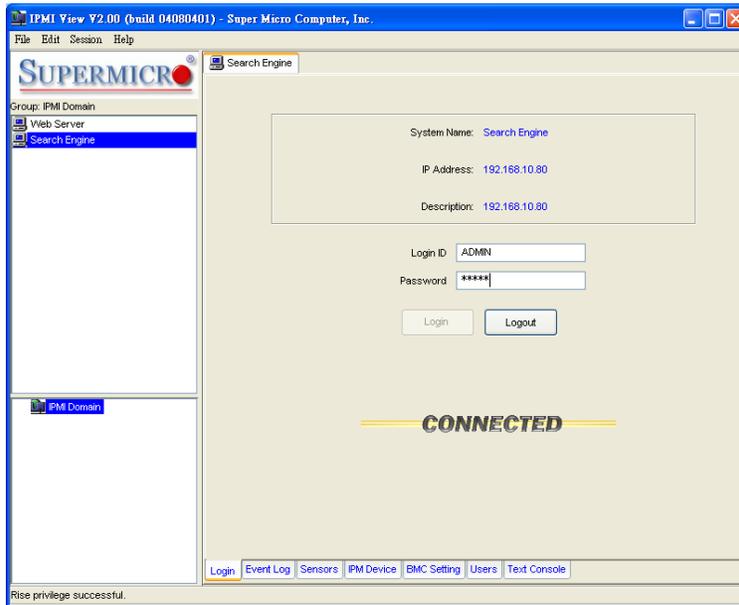
Figure 8: Connect to IPMI System

d) Click on the BMC Setting tab to bring up the display shown below.(see the Figure 9) As you can see, you have to fill in the IP Address, LAN MAC, and Gateway IP and MAC information found in step VI-1-c. Be careful to enter the correct value, especially for the LAN MAC. If you enter a wrong LAN MAC, you cannot connect to that system any more. Click on the Update button to the right of the LAN MAC field to save the configuration. Once you have done this configuration, you may connect to this managed system even when it is in a power-off (standby) state.
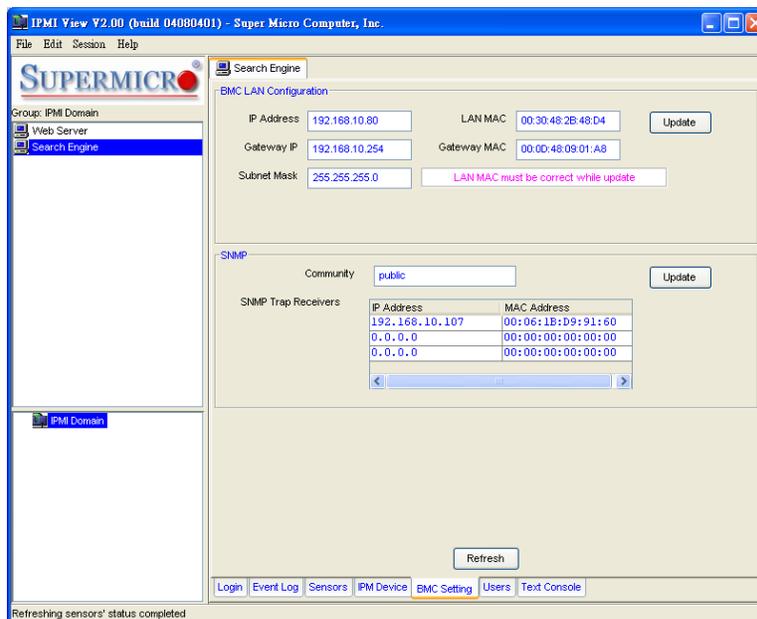

Figure 9: BMC Setting

e) If you accidentally enter a wrong LAN MAC value in step VI-2-d, you may use the IPnMAC command in the Utility subfolder on this CD to update it. IPnMAC is a DOS command - you have to use on the managed system.

VII. Instructions of IPMI Text Console Redirection under Linux

(1) Host A with IPMI BMC installed:
   a) BIOS POST:
     (i) Enable "Console Redirection" in BIOS Setup.
       For example, COM2 / 19.2Kbps / 8N1
     (ii) Disable "Enable Console Redirection after POST" in BIOS setup.
   b) BOOT LOADER:
     (i) For GRUB, add the following TWO lines into /boot/grub/grub.conf, but
       comment out "splashimage=(hd0,0)/grub/splash.xpm.gz"
       serial --unit=1 --speed=19200 --word=8 --parity=no --stop=1
       terminal --timeout=10 serial console
       #splashimage=(hd0,0)/grub/splash.xpm.gz
     (ii) Then add "serial console=ttyS1,19200n8" to the end of kernel /vmlinuz in
       /boot/grub/grub.conf.
       For example:
         kernel /vmlinuz-2.6.5-1.358smp ro root=LABEL=/ rhgb quiet serial
         console=ttyS1,19200n8

     This will result all boot message to be output to console ttyS1, and you will not see all these boot messages in local console until login message promt up.
   c) LINUX OS:
     (i) Add the following line into /etc/inittab.
       s0:2345:respawn:/sbin/agetty ttyS1 19200
     (ii) Edit /etc/securetty and add ttyS1

(2) Host B with IPMIView installed:
   a) Install and run IPMIView.
   b) Log in Host A with IPMI BMC installed as Admin.
   c) Start Console Redirection in IPMIView right after the Host A reboots.

   You will see the BIOS POST, the boot loader, and the Linux OS messages and prompts.