



M3291

**Server Management Daughter Card
& Tyan System Operator**

Revision v1.00

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Box Contents

The retail motherboard package should contain the following:

	1 x TYAN System Management Daughter Card
	1x 50-pin Ribbon Cable
	1 x Serial-to-Serial Cable
	1 x Standard PCI Bracket
	1 x Low Profile PCI Bracket
	1 x HD Bay Bracket (Option)
	1 x SMDC & TSO User's Manual(Option)
	1 x TYAN TSO CD

If any of these items are missing, please contact your vendor/dealer for replacement before continuing with the installation process.

About this Manual

This manual is designed to provide the basic information for the SMDC M3291. It includes the introduction of hardware, software and general troubleshooting procedures.

Chapter 1: Overview – Includes the basic introduction of SMDC, TSO and Server Management.

Chapter 2: Hardware Information – Introduces the hardware information, including card features, specification, components, jumper setting and installation procedure.

Chapter 3: Software Installation – Introduces details on how to install software, update firmware and configurations, as well as introducing some open source IPMI software.

Chapter 4: Software Information – Introduces the software information of TSO (Tyan System Operator), including features and how SMDC and TSO work.

Chapter 5: Troubleshooting – Provides the general troubleshooting procedures the users will meet in their daily work, effectively reducing the problems happened in the process of server management.

Chapter 1: Overview

Servers today provide the necessary resource for corporate databases, financial and statistical analysis data, military defense networks, and much more. To act as the heart and soul of any network, servers must be infallible or near infallible. There must be competent management of IT resources at all times in order to keep servers and networks running smoothly and without incident. However, most network and server administration staff can just provide part of that support, they cannot be present 24 hours a day, 7 days a week, on a constant 365-day calendar.

To help provide a solution for constant vigilance, the server remote management card eliminates the problem of having an administrator on call at all times. Tyan has the entire package to manage servers and networks. This makes the Tyan solution one of the most complete IT resource tools available.

1.1 What are SMDC and TSO?

SMDC stands for Server Management Daughter Card while TSO stands for Tyan System Operator. The TSO is software made by Tyan which acts as a front end client that provides additional functionality for the SMDC. The SMDC and TSO offer remote management over servers. The remote management gives the ability to monitor and control remote resources, such as temperature monitoring, fan control, turning system on/off, or modifying system settings remotely.

1.2 Features of Tyan Server Management



Monitor various system components remotely
-such as fans, processor temperature, and more



Remote power on and power off



Console redirect
-the ability to view system remotely



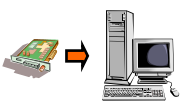


Alert and error actions
-such as audible beep, e-mail, power down and reboot



SMDC runs on stand-by power
-the SMDC will continue to function, even if the system is not powered on

1.3 How SMDC and TSO work

The brief descriptions below will help explain how these items function. For further, more in-depth descriptions, please refer to *Chapter 3: Software information*.

	<p>Agent – a system with SMDC installed The SMDC is installed in the Agent system that uses a compatible/supported Tyan motherboard.</p>
	<p>Manager – manages the Agent The Manger is set up to manage the Agent that has the SMDC. The Manager and Agent should be in same subnet.</p>
	<p>Console – communicates with Manager The Console is used to monitor and control the Agent through the Manager.</p>

1.4 Operating System Compatibility

SMDC is OS-independent.

And TSO, the remote management software is compatible with the following operation systems:



Microsoft®
Windows® 2000
Windows® XP (32/64-bit)
Windows® Server 2003 (32/64-bit)



Red Hat®
RH Linux 7.2, 7.3, 8.0, 9.0 (32/64-bit)
Adv. Server 2.1, 3.0 (32/64-bit)

SuSE®
SuSE Enterprise Server 8.0,
9.0(32/64-bit)
Professional 9.0, 9.1, 9.2 and 9.3
(32/64-bit)

TYAN reserves the right to add support or discontinue support for any OS with or without notice.

Chapter 2: Hardware Information

2.1 What is SMDC

The Tyan Server Management Daughter Card (**SMDC**) is a powerful, yet cost-efficient, solution for high-end server management hardware packages. The SMDC provides remote system monitoring and control even when the operating system is absent or fails, and empowers server boards with advanced industry standard features. It effectively enables IT Managers to have remote and multi-interface access to **monitor**, **control**, and **diagnosing** activities.

The SMDC is powered by an intelligent controller known as the Baseboard Management Control (**BMC**). The BMC is a standalone mini-CPU that runs on its own Real Time Operating System (**RTOS**) to complete a variety of tasks. Backed by QLogic's reliable ARM7 technology, systems are consistently monitored and supported.

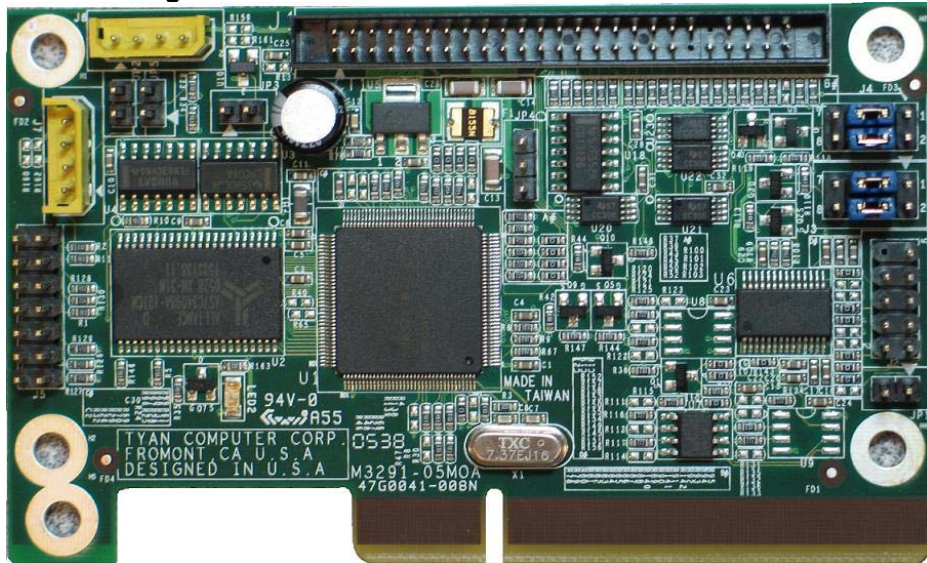
Unlike regular cards such as AGP cards, network cards or SCSI cards, the SMDC is not a peripheral card that requires any hardware specific driver. As long as standby power supports the system, the SMDC will monitor the system.

The Tyan SMDC M3291 provides many diverse methods to communicate with the hardware. There is flexibility to choose among *Keyboard Controller Style (KCS)*, *Intelligent Platform Management Bus (IPMB)* and *standard IPMI-Over-LAN* communication as defined in latest IPMI 2.0 specification. The Tyan SMDC M3291 is compatible with all IPMI-compliant software as well as with the Tyan System Operator™ (TSO) 2.0 software package. The SMDC hardware is OS-independent and TSO is fully compatible with all major Operating Systems.

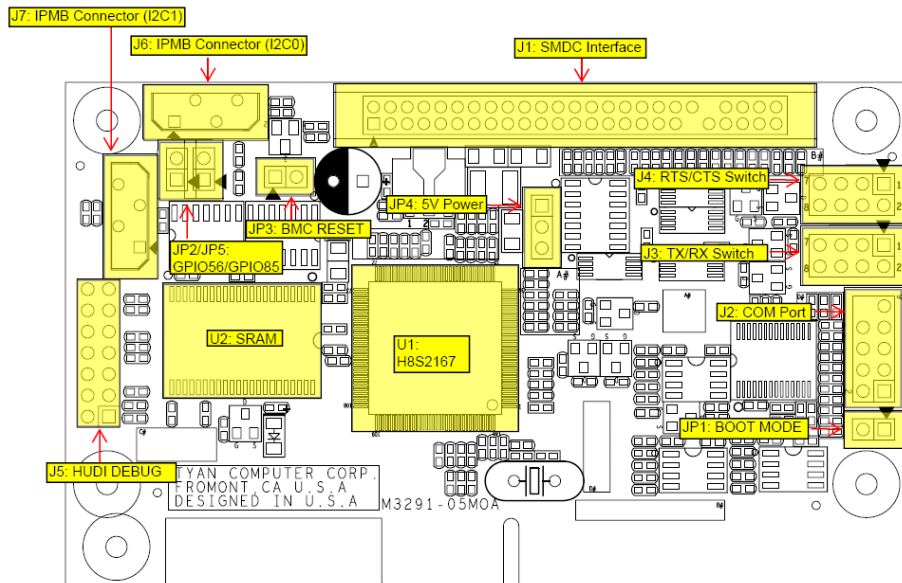
General Features of SMDC

Feature	Description
BMC	Renesas H8 2167
IPMI	Version 2.0 Spec
FRU	"Field Replaceable Unit" Information Storage
SDR	Sensor Data Record
SEL	Sensor Event Log
GPIO	"General Purpose Input and Output" lines for future expansion.
IPMB	Intelligent Platform Management Bus
IPMI-Over-LAN	Remote sensor monitor, host control and system diagnose
Remote Host Control	Power up, down, reset, power cycle or NMI through LAN port
Remote Sensor Monitor	SMDC provides sensor information as long as BMC receives enough operating power.
Remote Diagnostic	SMDC allows for system diagnostic when the system is not in operation (both intentionally or accidentally) through remote IPMI command execution.
BMC Firmware Update	SMDC supports onboard update of the BMC firmware.
ASF	Alert Standard Forum
TSO	Tyan System Operator TM

2.2 Card Images



2.3 Card Layouts



2.4 Jumper Setting

Label	Header Type/Part	Description	Pin Layout	
J1	HDR25X2_SVM_A	SVM Edge Connector A		
J2	COM Port	Signal remapped for M/B COM2 (9Pin GND)	Pin 1	DTR
			Pin 2	DTR
			Pin 3	TX
			Pin 4	CTS
			Pin 5	RX
			Pin 6	RTS
			Pin 7	NC
			Pin 8	NC
			Pin 9	GND
J3/J4	TX/RX Switch RTS/CTS Switch	BMC Serial redirect	3-5,4-6 Close	BMC serial connects to J2
			1-3,5-7, 2-4,6-8 Close	BMC serial connects to Serial MUX
J5	HUDI	For ICE debug use		
J6	IPMB Connector	Connect with I2C0 of BMC	Pin 1	SDA
			Pin 2	GND
			Pin 3	SCLK
			Pin 4	NC
J7	IPMB Connector	Connect with I2C1 of BMC	Pin 1	SDA
			Pin 2	GND
			Pin 3	SCL
			Pin 4	NC
JP1	HDR2	BOOT Mode	Close to set BMC in Boot Mode	
JP2	HDR2	GPIO56	Pin 1	GPIO56
			Pin 2	GND
JP3	HDR2	BMC Reset	Close to Set BMC in Reset	
JP4	HDR3	5V power backup	Pin 1	GND
			Pin 2	5V
			Pin 3	GND
JP5	HDR2	GPIO85	Pin 1	GPIO85
			Pin 2	GND

2.5 Card Features

The SMDC M3291 is equipped with the following features:

- Hardware Monitoring**
- Protocol and Standard**
- Enhanced Authentication**
- Encryption Support**
- Firmware Firewall**
- Auxiliary Communication Interface**
- Auxiliary SMBus / I²C buses**
- Teamed with other IPMB Devices (PMCs and EMCs)**
- Remote Monitor, Control and Diagnostics**
- Remote Console Redirect over LAN(SOL)**
- Sensor Data Record**
- System Event Log**
- Field Replaceable Unit Information Storage**
- Upgrade BMC firmware**
- “Always Ready”**
- TYAN System Operator™ (TSO)**
- Standard or OEM Drivers**

Hardware Monitoring

The latest hardware from TYAN is equipped with Baseboard Management Controller (BMC) from Renesas H8 which provides not only system monitoring but also remote manageability. The BMC can always monitor the hardware regardless of how the operating system is running. With the BMC onboard, any IPMI-compliant software can monitor, control or diagnose the hardware locally, or from a remote site.

Protocol and Standard

- Intelligent Platform Management Interface (IPMI) 2.0
- Remote Management and Control Protocol (RMCP) for IPMI-Over-LAN
- Alert Standard Forum (ASF)

Auxiliary Communication Interface (Other standard devices that the SMDC communicates with)

- IPMB = Intelligent Platform Management Bus
- LAN = Local Area Network

Enhanced Authentication

Support new algorithms that provide more robust key exchange process for establishing sessions and authenticating users.

Encryption Support

IPMI message and other payload carried over RMCP+ can be encrypted. This enable confidential remote configuration of parameters such user passwords and transfer of sensitive payload data over SOL.

Firmware Firewall

Firmware Firewall is the name for a collection of commands that enable a BMC implementation to restrict the ability to execute certain commands or functions from a given interface. This can be used to protect against operations that errant or malicious software may be used to affect the managed system or other systems.

Auxiliary SMBus / I²C buses

The SMDC provides 4 dedicated and independent buses for user expansion. Many devices including Northbridge, Southbridge, Super I/O, Hardware Monitor, LAN controller, etc., provide I²C communication. These I²C buses bridge the proper communication between these devices.

Teamed with other IPMB Devices (PMCs and EMCs)

Numerous devices in the market already support IPMB communication. BMC facilitates the control and management of these devices. PMC stands for Peripheral Management Controller and EMC stands for Enclosure Management Controller.

Depending on the overall set up of the system, the SMDC could initialize and communicate with other PMC/EMC residing on the same IPMB bus. Simply connect the devices to the designated IPMB connector. Available PMC/EMC options include:

- Satellite controller - SCSI RAID controller unit
- Power supply - power supply unit that has a hardware monitoring chip inside

Remote Monitor, Control and Diagnostics

Sensor Monitor

- Voltage
- Temperature
- Tachometers
- Fan Speed Control / PWM
- Chassis Intrusion

Control Command Set

- Power Up
- Power Down
- System Reset
- System Power cycle
- System NMI
- Watchdog Timer

Diagnostic Command Set

- Power-Good Detection
- CPU Voltage Identification (CPU VID)
- ACPI State Detection
- Request Message Redirection through IPMB
- Remote Console Redirection over LAN

Remote Console Redirect over LAN

Remote Console Redirection allows IT managers to effectively control and maneuver text console of a remote machine. Serial console information goes through the M3291 SMDC and is processed over the network. TSO software then reproduces the exact text console at a remote location. For example, someone may own a group of servers

at a remote location and could change options of those servers from a completely separate location. Another example is that one may log in to the Linux serial console through M3291 SMDC over the network. See SMDC installation section for details.

Sensor Data Record (SDR)

Each sensor has its own corresponding characteristics. They are built according to IPMI standard to provide users the most information possible about a sensor. Details such as measuring units and calibration factors are available while they are not provided in traditional hardware monitoring systems.

SDR is specific to motherboard. Tyan provides a utility to easily upgrade the BMC firmware to support each motherboard model.

System Event Log (SEL)

A complete history of system events such as POST events are stored and secured in non-volatile memory. Critical events within the server detected by the BMC are recorded in the SEL. Certain pre-programmed actions may take place such as system reboot or system shutdown.

Field Replaceable Unit Information Storage (FRU)

Chassis, Board, Product and other important service information are stored and secured in an area generally known as FRU.

Upgrade BMC Firmware

The BMC supports Firmware Flash through IPMI firmware commands. The Firmware is stored in boot block flash part. The boot block section code is normally programmed in-factory and it provides protection against accidental flash failure or power loss.

BMC Firmware may be upgraded from a remote console running Tyan System Operator (TSO). See TSO section for details.

“Always Ready”

SMDC runs on stand-by power; all monitoring and alerting operations of BMC can begin full operation by using only standby power.

Tyan System Operator™ (TSO)

TSO is a software tool created specifically for IPMI-compliant systems with SMDC. It intends to provide IT managers the ability to monitor, control and diagnose their Tyan server boards with ease and flexibility in a remote configuration. See *Chapter 3: Software Information* for further details.

Standard or OEM Drivers

M3291 can use standard IPMI driver on Windows on LINUX.

Tyan may provide driver support for other third party software at request. Contact your Tyan support representative for more details.

2.6 Card Installation

Before you begin, please take the following precautions:

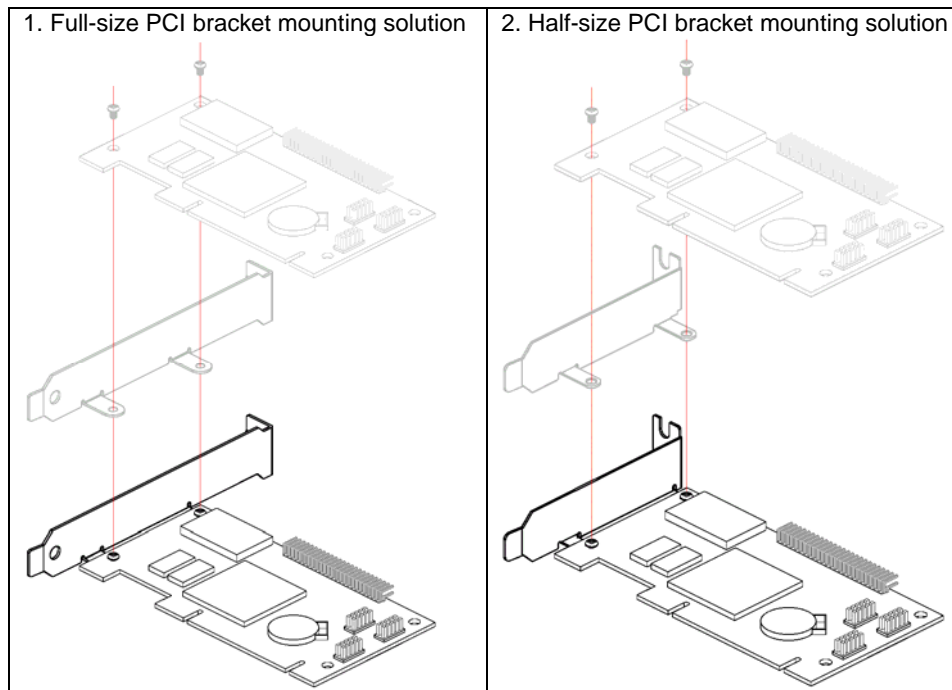
- (1) Ground yourself properly before removing the SMDC from the antistatic bag. Unplug the power cord from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, TYAN recommends wearing a static safety wrist strap.
- (2) Hold the SMDC by its edges and do not touch the bottom of the card.
- (3) Avoid touching the SMDC components such as IC chips or connectors.
- (4) Place the SMDC on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
- (5) Inspect the card for damage.

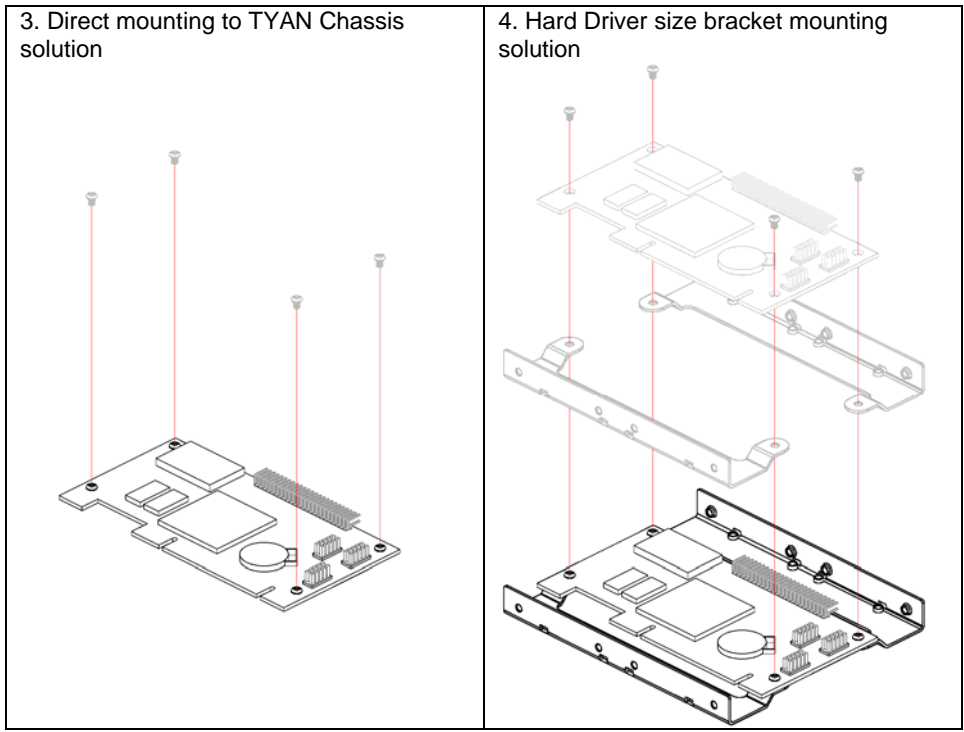
Note: This installation guide assumes that the user has already completed installing their motherboard and chassis.

You can install the SMDC card to your motherboard in three easy steps. Make sure your system is powered off first.

Step 1:

Find the dedicated location to mount the SMDC.
There are four possible ways to mount the SMDC card.

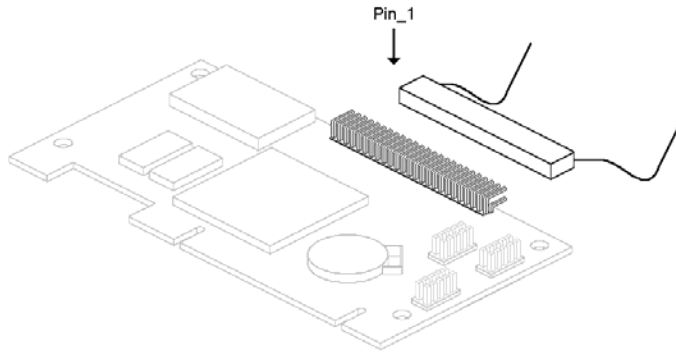




Step 2:

Connect 2x25 ribbon cable between **Tyan motherboard SMDC connector** and **Tyan SMDC J1**.

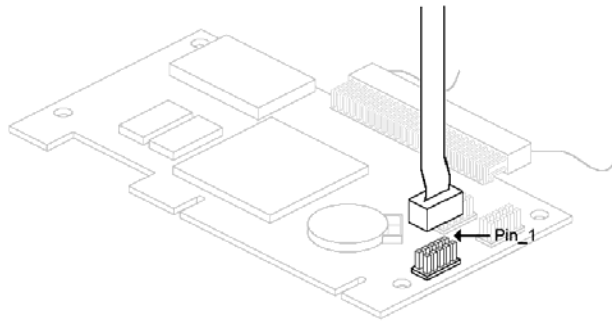
Make sure that the key on the ribbon cable aligns with the key on the connector, and that the red line on the ribbon aligns with pin 1 of the connector.



Step 3:

Connect 2x5 ribbon cable between **Tyan motherboard COM2 connector** and **Tyan SMDC J2**. (Check with www.tyan.com SMDC FAQ for J2 connector)

Make sure that the key on the ribbon cable aligns with the key on the connector, and that the red line on the ribbon aligns with pin 1 of the connector.



Step 4:

Locate the onboard “**SMDC-Link**” **Network Interface Controller (NIC)** on Tyan motherboard. (M3291 uses one of motherboard onboard NIC for **IPMI out-of-band**. Before using, please make sure which port M3291 used.

You can refer to http://www.tyan.com/support/html/faq_tso.html motherboard Illustration Picture)

Chapter 3: Software Installation

3.1 - Firmware Update

1. Verify/flash Tyan motherboard system BIOS with the SMDC support

M3291 need BIOS support. So before using M3291, please make sure BIOS you used is IPMI enabled. If not, please update BIOS first.

Users can refer to http://www.tyan.com/support/html/faq_tso.html M3291 Support List. If you want to know the detail about BIOS for IPMI, please refer the M3291 FAQ.

2. Broadcom NIC Firmware Update

Some motherboards use Broadcom NIC as IPMI NIC. User must load Broadcom NIC ASF firmware to enable the IPMI function. Users can get them from M3291 Driver CD or Tyan website.

- 1) copy all file to floppy
- 2) boot to DOS
- 3) run "asf5704.bat" or "asf5721.bat" to flash the Broadcom NIC firmware

```
C:\>cd m3291
C:\M3291>cd bc5721
C:\M3291\BC5721>cd 6.09
C:\M3291\BC5721\6.09>dir

Volume in drive C has no label
Volume Serial Number is 2E7C-3AB4
Directory of C:\M3291\BC5721\6.09

.                <DIR>                10-21-05  2:20p
.                <DIR>                10-21-05  2:20p
ASF5721  BAT                9  08-18-05 11:23a
AUTOEXEC  DO                46  01-14-05  4:38p
B329A609  BIN            131,072  09-11-03 12:36a
B57DIAG  EXE            291,038  09-01-04  4:38p
README  TXT                456  08-18-05  2:17p
RELEASE  TXT            20,047  08-19-04  6:40a
        6 file(s)        442,668 bytes
        2 dir(s)        9,095,168 bytes free
C:\M3291\BC5721\6.09>asf5721_
```

4) After flashing finish, choose [9] save and exit

```
File Name : b329a609.bin
File Size : 131072
Offset : 0x0000
Bytes Read : 131072
Restoring original MAC address 00-E0-81-2E-09-6C
Reading current NVRAM ... OK
Restoring original Serial Number: 0123456789
Programming... 131072

loading data from NVRAM

0. Save to file
1. ASF Settings
2. ASF Alert Info
3. ASF Alert Data for Legacy Sensors
4. ASF Remote Control Data
5. ASF Capabilities Supported
6. ASF SMBus Addresses
7. ASF 2.0 (Secure RMCP)
8. SMBus Init Data
9. Save and Exit
10. Exit without Saving
Enter your choice -> 9_
```

3. M3291 Firmware Update

When M3291 production, it will load one default firmware. But it's impossible to fit every motherboard. So before using M3291, User also need update M3291 motherboard specified firmware.

M3291 Driver CD contains the firmware file. User also can get the latest firmware from Tyan website.

Tyan provide both DOS and Linux utility for firmware updating. The firmware release packages include these two utility already. User only need execute "dosfls" or ".linuxfls"

```
5350R09 BIN 374,664 09-15-05 6:24p
5350R07 SDR 5,613 08-29-05 12:03p
TV5350^2 SDR 5,613 08-29-05 12:03p
UH8L 49,940 09-15-05 10:26a
DOSFLS BAT 62 10-21-05 2:30p
LINUXFLS 68 08-31-05 4:39p
UH8D EXE 80,086 08-29-05 7:46p
8 file(s) 522,386 bytes
2 dir(s) 9,089,024 bytes free

C:\M3291\S5350\REV09>dosfls

C:\M3291\S5350\REV09>uh8d /sdr=5350r07.sdr /nrst
BMC Utility on Dos For M3291 version 0.1
Copyright 2005 TYAN Computer Corp.
writing SDR.....
Update successfully

C:\M3291\S5350\REV09>uh8d /rom=5350r09.bin
BMC Utility on Dos For M3291 version 0.1
Copyright 2005 TYAN Computer Corp.
Update Firmware with File 5350r09.bin
Enter Downloader.....OK
.....
```

```

[root@RAPHAEL-RH8 rev09]# ll
total 0
-rwx----- 1 root    root      6340 Sep 15 14:01 3291note.txt
-rwx----- 1 root    root     374664 Sep 15 18:24 5350r09.bin
-rwx----- 1 root    root       62 Oct 21  2005 dosfls.bat
-rwx----- 1 root    root       68 Aug 31 16:39 linuxfls
-rwx----- 1 root    root      5613 Aug 29 12:03 ty5350r07.sdr
-rwx----- 1 root    root     80086 Aug 29 19:46 UH8D.EXE
-rwx----- 1 root    root      49948 Sep 15 10:26 uh81
[root@RAPHAEL-RH8 rev09]# ./linuxfls _

```

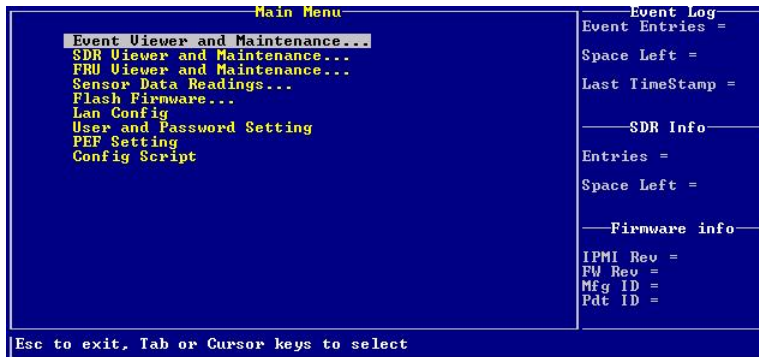
3.2- Configuration

Before using M3291, users need do some configuration first, such as IP Address. Otherwise some IPMI function won't work. Users can use the standard IPMI software to set. And Tyan also provide some utilities to do them.

The most important configuration are **LAN Configuration** and **User Password Setting**. File "m3291.cfg" contains the default setting value of M3291. User can use utility to load this configuration file and restore the M3291 default setting.

Tyan provide following utilities.

- 1) **UH8.EXE**
M3291 Full Version Utility on DOS. \
It supports SEL, SDR, FRU, SENSOR viewer and editor.



- 2) **UH8D.EXE**

M3291 Thin Version Utility on DOS
 It support do configuration via command line.
 "uh8d /?" for the detail usage.

```
C:\M3291>uh8d /?
BMC Utility on Dos For M3291 version 0.2
Copyright 2005 TYAN Computer Corp.
Usage: uh8d [option]
/?          Display this help screen
/h          Display this help screen
/rom=filename  Update firmware with the specified file
/sdr=filename  Update sdr with the specified file
/cfg=filename  execute configuration file
/dhcp        Enable DHCP
/sp1[=xxx]    Set the password of user id 1
/sp2[=xxx]    Set the password of user id 2
/sp3[=xxx]    Set the password of user id 3
/sp4[=xxx]    Set the password of user id 4
/d           Display the LAN Configuration
/ip=xxx.xxx.xxx.xxx  Set IP Address
/mac=xx:xx:xx:xx:xx:xx  Set MAC Address
/net=xxx.xxx.xxx.xxx  Set Net Mask
/gateway=xxx.xxx.xxx.xxx  Set gate way
/arp=0/1      Enable/Disable Gratuitous ARP
/seldump=filename  Dump SEL to the specified file
```

3) UH8L

M3291 Utility on Linux.

It use its own user space driver. So don't use any other IPMI driver when using this utility

"/uh8l -h" for detail usage.

```
BMC Utility on Linux For M3291 version 0.8
Copyright 2003-2005 TYAN Computer Corp.
Usage: uh8l [-?] [-h] [-u filename] [--sp1[=xxx]] [-d] [-i ipaddr] [-m macaddr]
[-e Net/LUN CMD DATA]
-?          Display this help screen
-h          Display this help screen
-u filename  Update firmware with the specified file
--sdr filename  Update sdr with the specified file
--cfg filename  execute configuration file
--dhcp        Enable DHCP
--sp1[=xxx]    Set the password of user id 1
--sp2[=xxx]    Set the password of user id 2
--sp3[=xxx]    Set the password of user id 3
--sp4[=xxx]    Set the password of user id 4
-d           Display the LAN Configuration
-i xxx.xxx.xxx.xxx  Set IP Address
-m xx:xx:xx:xx:xx:xx  Set MAC Address
-n xxx.xxx.xxx.xxx  Set Net Mask
-g xxx.xxx.xxx.xxx  Set gate way
--arp=0/1      Enable/Disable ARP
-a           Auto check and set the ip address
            Util will read the MAC Address from BMC and check whether it exist on mother
            board.And auto set the BMC IP Address with the system ip address if found
-e Net/LUN CMD DATA  Execute IPMI command
[root@2723-RH72 uh8l]#
```

4) UH8W.EXE

M3291 Utility on Windows
UH8W.EXE depends on the Intel IPMI Reference Driver. So users must install it when using this utility.
About Intel IPMI Reference Driver installation, please refer to M3291 FAQ.

1. LAN Configuration

1) IP Address

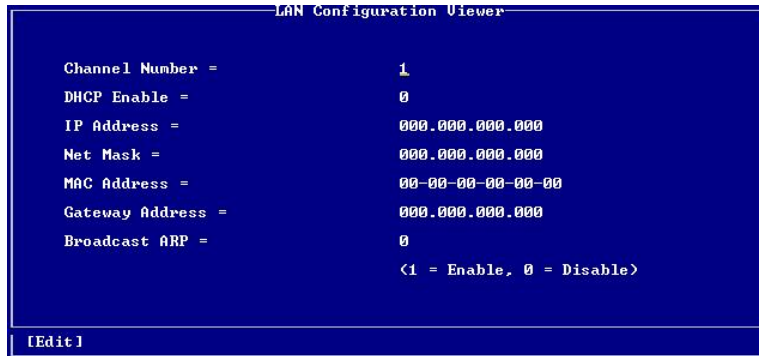
Users can set M3291 IP Address as they want. M3291 share the LAN port with system OS. But IP address on M3291 can be either same or different with system IP address.

Following is the instruction about how to set IP with Tyan utilities.

```
"uh8d /ip=xxx.xxx.xxx.xxx"
```

```
"/uh8l -l xxx.xxx.xxx.xxx"
```

```
"uh8w /ip=xxx.xxx.xxx.xxx"
```



2) MAC Address

Normally user need not set MAC address, but users need check if the MAC address is right.

For Intel 82551 and 82546 NIC, M3291 use the same MAC address with system OS. Tyan IPMI enabled BIOS will load it automatically. If not, user can set it manually

For Broadcom 5704 and 5721 NIC, M3291 use the different MAC address with system OS. Every M3291 will be assigned one unique MAC when production. When users flash firmware, parameter "imac" will load this MAC from M3291 and write to LAN Configuration.

3) Net Mask, Gateway and Broadcast ARP

Users need check if these parameter are correct.

If use Intel 82551 and 82546 as IPMI NIC, Broadcast ARP must be enabled

4) DHCP

Due to NIC hardware limitation, not all the IPMI NIC support DHCP. Right now, only Broadcom 5704 and 5721 support DHCP.

5) Broadcom NIC 2nd MAC mode

On Broadcom NIC, M3291 use the 2nd MAC address mode. It's to say, M3291 use different MAC with system OS. You can take them as different

logical entity, they use different MAC, different IP. But they share the same physical port.

2. User Password Setting

M3291 default supports 5 users:

NULL User ID 1, user name is empty
Operator User ID 2
Admin User ID 3
Callback User ID 4
User. User ID 5

Their default passwords are same with the user name.
Users can change M3291 username and password as they want.
But Tyan utility only support user password changing.



3.3- Open Sourced IPMI Software

1. IPMITOOL

IPMITOOL is an open source IPMI software(<http://ipmitool.sourceforge.net>) . It supports Linux and Solaris. Users can use it to view most of IPMI jobs remotely. Detail please refer to ipmitool man page: <http://ipmitool.sourceforge.net/manpage.html> . IPMITool 1.8.2 have some issue and only partly work on M3291. Please use the latest code from CVS server.
Following are some examples.

SEL

```
C:\WINDOWS\system32\cmd.exe
D:\Software\ipmitool-1.8.3>ipmitool -I lanplus -H 192.168.100.122 -U Admin -P Admin sel list
min sel list
 1 | 07/08/2005 | 18:22:29 | Temperature #0x35 | Upper Critical going high
 2 | 07/08/2005 | 18:22:30 | Temperature #0x25 | Upper Critical going high
 3 | 07/08/2005 | 18:22:30 | Temperature #0x27 | Upper Critical going high
 4 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 5 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 6 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 7 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 8 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 9 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 a | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 b | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
 c | 07/09/2005 | 12:32:36 | Temperature #0x35 | Upper Critical going high
 d | 07/09/2005 | 12:32:39 | Temperature #0x35 | Upper Critical going high
 e | 07/09/2005 | 12:33:10 | Temperature #0x35 | Upper Critical going high
 f | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
10 | 07/09/2005 | 12:57:55 | Fan #0x3a | Lower Critical going low
11 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
12 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
13 | Pre-Init Time-stamp | Fan #0x3b | Lower Critical going low
14 | Pre-Init Time-stamp | Fan #0x39 | Lower Critical going low
15 | Pre-Init Time-stamp | Fan #0x3a | Lower Critical going low
16 | Pre-Init Time-stamp | Temperature #0x35 | Upper Critical going high
```

Power Control

```
C:\WINDOWS\system32\cmd.exe
D:\Software\ipmitool-1.8.3>ipmitool -I lanplus -H 192.168.100.122 -U Admin -P Admin chassis power off
min chassis power off
Chassis Power Control: Down/Off

D:\Software\ipmitool-1.8.3>ipmitool -I lanplus -H 192.168.100.122 -U Admin -P Admin chassis status
min chassis status
System Power           : off
Power Overload         : false
Power Interlock        : inactive
Main Power Fault       : false
Power Control Fault    : false
Power Restore Policy   : always-off
Last Power Event       :
Chassis Intrusion      : inactive
Front-Panel Lockout    : inactive
Drive Fault            : false
Cooling/Fan Fault      : true
Self Test Results      : passed

D:\Software\ipmitool-1.8.3>
```

Serial Over LAN (SOL)

```
C:\WINDOWS\system32\cmd.exe
D:\Software\ipmitool-1.8.3>ipmitool -I lanplus -H 192.168.100.122 -U Admin -P Admin sol activate_
```

```
C:\WINDOWS\system32\cmd.exe - ipmitool -I lanplus -H 192.168.100.122 ...
PhoenixBIOS Setup Utility
Main  Advanced  Security  Power  Boot  Exit
-----
System Time:      [01:03:28]
System Date:      [10/20/5005]
Legacy Diskette A: [1.44/1.25 MB 3/"]
> IDE Channel 0 Master [None]
> IDE Channel 0 Slave [None]
> IDE Channel 1 Master [None]
> IDE Channel 1 Slave [None]
> IDE Channel 2 Master [None]
> IDE Channel 3 Master [None]
Memory Cache
> Boot Features
System Memory:    624 KB
Extended Memory: 260608 KB
-----
F1  Help  ^v  Select Item  -/+  Change Values  F9  Setup Defaults
Esc Exit  <>  Select Menu  Enter  Select > Sub-Menu  F10  Save and Exit
```

Chapter 4: Software Information

Tyan System Operator (TSO) is an IPMI-aware management tool for systems based on TYAN motherboards. Through TSO, Users have an easier way to remotely access system health information, do system maintenance and make the running systems much safer.

3.1 What is TSO

Three Components

The specially designed software TSO (Tyan System Operator) includes three components:

- TSO MANAGER
- TSO AGENT(optional)
- TSO CONSOLE

TSO supports the following operating system:

Windows 2000, Windows XP Pro (32/64-bit) and Windows Server 2003 (32/64-bit)

RedHat 7.2, 7.3, 8.0 and 9.0, Server 2.1, 3.0 and 4.0 (32/64-bit)

SuSE Server 8.0, 9.0, Professional 9.0, 9.1, 9.2 and 9.3 (32/64-bit)

MANAGER

MANAGER is the core component of TSO. It provides communication between CONSOLE and AGENT. MANAGER is normally installed at the gateway or proxy machine in the subnet

AGENT(optional)

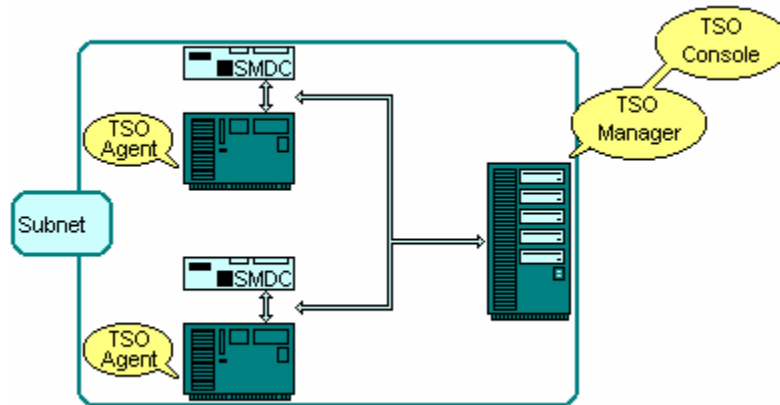
AGENT runs on a target system which is to be managed. AGENT is normally installed at a data-server or email-server machines. As IPMI improvement, most of IPMI function can be done under out-of-band, users don't need install AGENT normally.

CONSOLE

CONSOLE provides GUI (Graphic User Interface) for an administrator to perform all management functions.

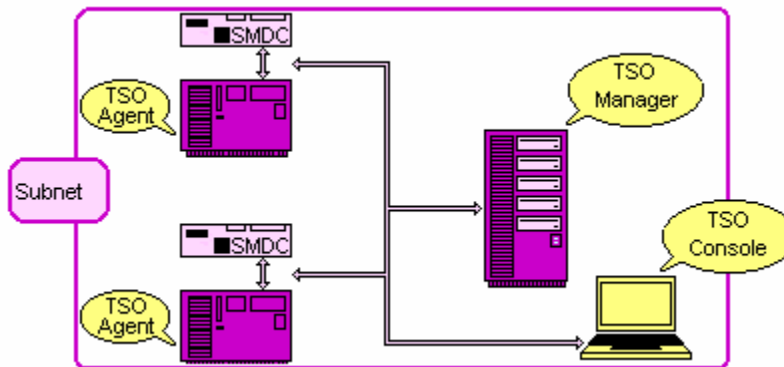
3.2 TSO Connection Models

3.2.1 Simple Intranet Model-1



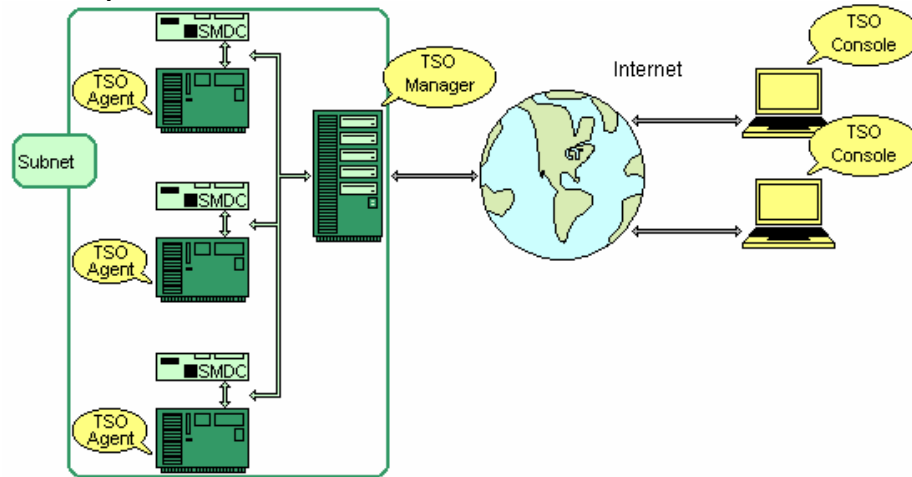
- TSO MANAGER and CONSOLE can be loaded onto the same system
- TSO AGENT can only work over Tyan server motherboards
(Check www.tyan.com TSO FAQ)

3.2.2 Simple Intranet Model-2



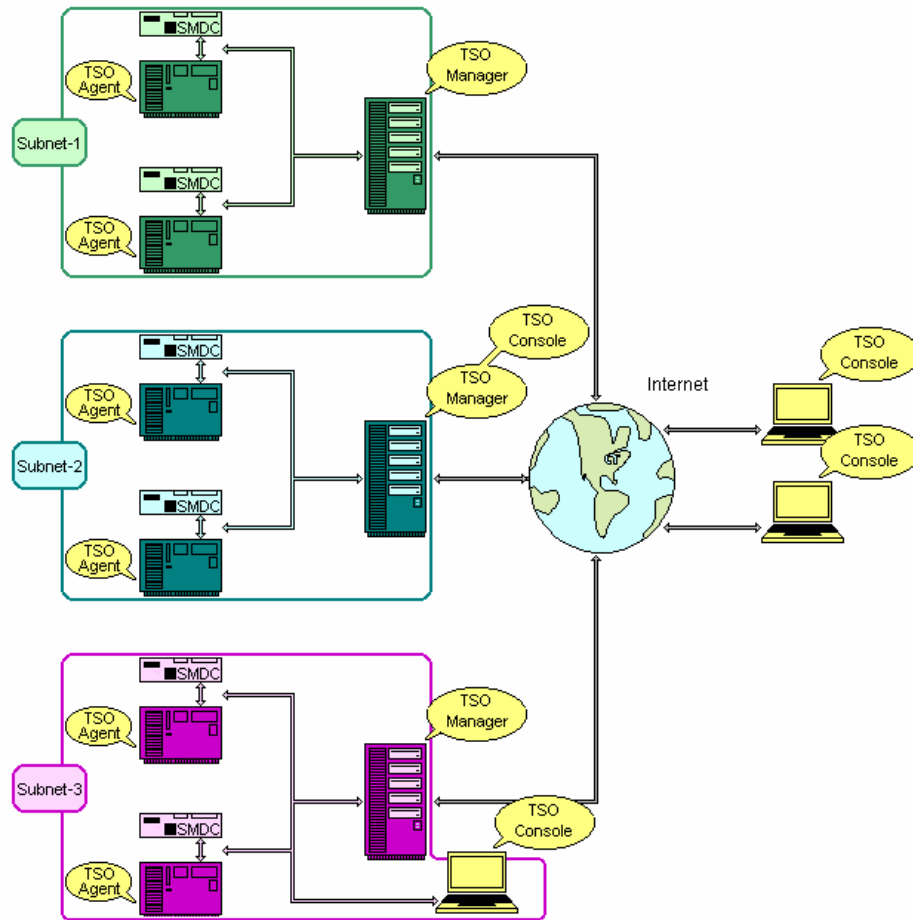
- TSO MANAGER and CONSOLE can be loaded onto two separate systems
- TSO AGENT can only work over Tyan server motherboards
(Check www.tyan.com TSO FAQ)

3.2.3 Simple Internet Model-3



- TSO MANAGER and CONSOLE can be loaded onto two separate systems
- TSO AGENT can only work over Tyan server motherboards

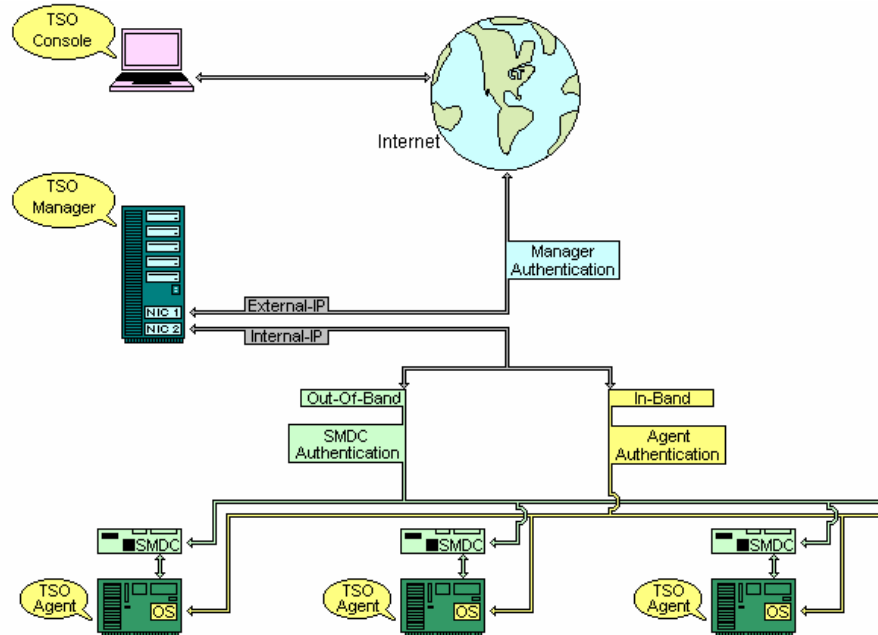
3.2.4 Complex Internet Model



- TSO MANAGER and CONSOLE can be loaded onto separate systems
- TSO AGENT can only work over Tyan server motherboards
(Check www.tyan.com TSO FAQ)
- All TSO CONSOLE systems can log in different MANAGER to read/control AGENT systems

3.3 TSO Access Model

- In-Band
 - MANAGER talks to AGENT system through the OS and AGENT services
 - In-band can only function when the OS and AGENT services are running
- Out-Of-Band
 - MANAGER talks to AGENT system through the BMC chip of the SMDC
 - Out-of-band can function with or without the OS and Agent services.
- Access Authentication
 - MANAGER/AGENT/SMDC Authentication
- In-Band Access
 - CONSOLE needs to
 - (1) pass the MANAGER Authentication and
 - (2) pass the AGENT Authentication to access all In-Band features
- Out-Of-Band Access
 - CONSOLE needs to
 - (1) pass the MANAGER Authentication and
 - (2) pass the SMDC Authentication to access all Out-Of-Band features
- External-IP and Internal-IP



3.4 Features

Remote System Health Monitoring & Alerting

Remote monitor system's health, including voltage, temperature, fan and so on. Log event when error occurs and alert by beeping, emailing administrator, or doing power down/reboot, according to customizable settings.

- IPMI related information browsing
Browse FRU, SDR, Sensor Reading and SEL. Both raw data and interpreted data are displayable, and selectable by user
- System status reporting
Report system health information in fixed period. Report system power state (On/Off). Report system information source (BMC or Hardware Monitor).
- Remote IPMI command execution
Remote execute IPMI command according to IPMI specification.

Remote System Maintenance

- Remote update BMC firmware if BMC is available.(optional)
- Modify SDR information to affect system monitoring and alerting
User can modify the event triggered thresholds per sensor and set alert actions per sensor. So as to customize the system's IPMI settings.
- Watchdog
User can enable the watchdog to doing reboot when OS is dead.
- Gracefully system power control
Remote power down / reboot the system gracefully. Wake the system on LAN.

Hard system power control through IPMI-over-LAN

Remote power up/power down/reboot the system through IPMI-over-LAN. BMC must be available.

- Server Grouping
Servers under monitoring can be grouped according to user's demands.
- Server viewing based on group
Servers are organized in different groups. User can do the grouping according to the demands.

Security

Actions taken on the server are authenticated based on the user privilege.

- User account management
Add, modify and delete user. Assign privilege to user on the specific server.

3.5 Pre-setup and Installation

3.5.1 Pre-setup

Authentication and Privilege

TSO provides security access with MANAGER Authentication, Agent Authentication and SMDC Authentication. User needs to prepare the privilege information (user-name and password) for each system in order to access target system.

- No password is prohibited
- Case sensitive under Linux and Out-of-Band

Internal-IP and External-IP

TSO requires Internal-IP and External-IP setup by user during the TSO installation. User needs to make sure the IP matching with Network Interface Controllers (NIC).

- Configuration I
If CONSOLE is often being used outside of the subnet in which all/some machines are equipped with SMDC, the machine that runs MANAGER would have 2 NIC's. MANAGER will likely be installed at the gateway or proxy machine in the subnet.
 - Configure **Internal IP** to be a valid IP under this subnet. This subnet is typically known as a Local Area Network (LAN). The IP would look like this for example: 192.168.1.1, 192.168.1.254
 - Configure **External IP** to be a valid IP under the main network. This main network is typically known as a Wide Area Network (WAN). This IP would be a 'true' IP, meaning it is the one and only one among all the machines in the world. The IP would look like this for example: 206.13.28.12, 216.239.53.99
- Configuration II
If CONSOLE is being used inside the same subnet, the machine that runs Manager may have only 1 NIC. MANAGER can be located on any machine in the network. Notice that MANAGER and CONSOLE need not be installed on the same machine even though they can/may be install on the same machine.
 - Configure **Internal IP** to be a valid IP under this subnet.
 - Configure **External IP** to be the same as Internal IP.
- Firewall
Firewall setup information:
TSO MANAGER and CONSOLE will use the following 4 ports for firewall setup.
 - TCP:
 - 20010
 - 21020

```
21021
21030
21031
➤ UDP
624
7777
20040
20060
```

For RedHat Firewall (IPTABLES) Setup

1. Type "setup" to execute the setup utility
2. Select "Firewall Configuration"
3. Select "Customize"
4. Select "Other Ports"
5. Type "20010:tcp, 20040:udp, 20060:udp, 21020:tcp"
6. Select "OK"

3.5.2 Installation

- **Installation Procedures under Linux System (via KDE or Gnome GUI Interface)**

Put the TSO CD into the CD-ROM drive. You will see a TSO CD-ROM icon on the screen.

1. Click on TSO CD-ROM
2. Click on the menu "install.sh"
3. You will see the screen of "Run or Display". Choose and click "Run in Terminal". You will see the screen with four choices: TSO Agent/TSO Manager/TSO Console/Exit. Type the number you want to install.

```
[root@RAPHAEL-RH8 cdrom]# ls
autorun.inf  install.sh  Launch.exe  License.txt  tsoconsole  uninstall.sh
bin         jdk        Launch.ini  Rev_Log.txt  tzomanager  version
[root@RAPHAEL-RH8 cdrom]# ./install.sh
-----INSTALL TSO 2.0-----
1) TSO Manager
2) TSO Console
3) Exit
#? _
```

Agent:

- Select one of network interfaces to bundle (0 or 1).
- Press Enter to complete installation.

Manager:

- Select one of external network interface to bundle.
- Press Enter to complete installation.

```

1) TSO Manager
2) TSO Console
3) Exit
#? 1
srcdir = .
targetdir = /opt/tso/2.0/manager
workdir = /var/tsomsd
package j2sdk-1.4.1_02-fcs is already installed
javahome = /usr/java/j2sdk1.4.1_02

Following is active network connecting:
0: Name: eth0 IP:192.168.100.181 MAC:00:0C:29:F4:2F:D9
Please select one of above as External Network Interface:0
You select eth0 as External Interface
Please select one of above as Internal Network Interface:0
You select eth0 as Internal Interface

Installation complete
Starting tsoxnsd: [ OK ]
Starting tsoxmsd: [ OK ]
Symbolic links created
1) TSO Manager
2) TSO Console
3) Exit
#?

```

Console:

- Select one of external network interfaces to bundle.
- Press Enter to complete installation.

```

[root@RAPHAEL-RH8 cdrom]# ./install.sh
-----INSTALL TSO 2.0-----
1) TSO Manager
2) TSO Console
3) Exit
#? 2
srcdir = .
targetdir = /opt/tso/2.0/console
package j2sdk-1.4.1_02-fcs is already installed
javahome = /usr/java/j2sdk1.4.1_02

Following is active network connecting:
0: Name: eth0 IP:192.168.100.181 MAC:00:0C:29:F4:2F:D9
Please select one of above as External Network Interface(0,1,2...):0
You select eth0 as External Interface

Installation complete
execute tsoconsole in terminale to run the TSO Console
1) TSO Manager
2) TSO Console
3) Exit
#? -

```

- 4. After finishing the installation, select Exit to leave the screen.

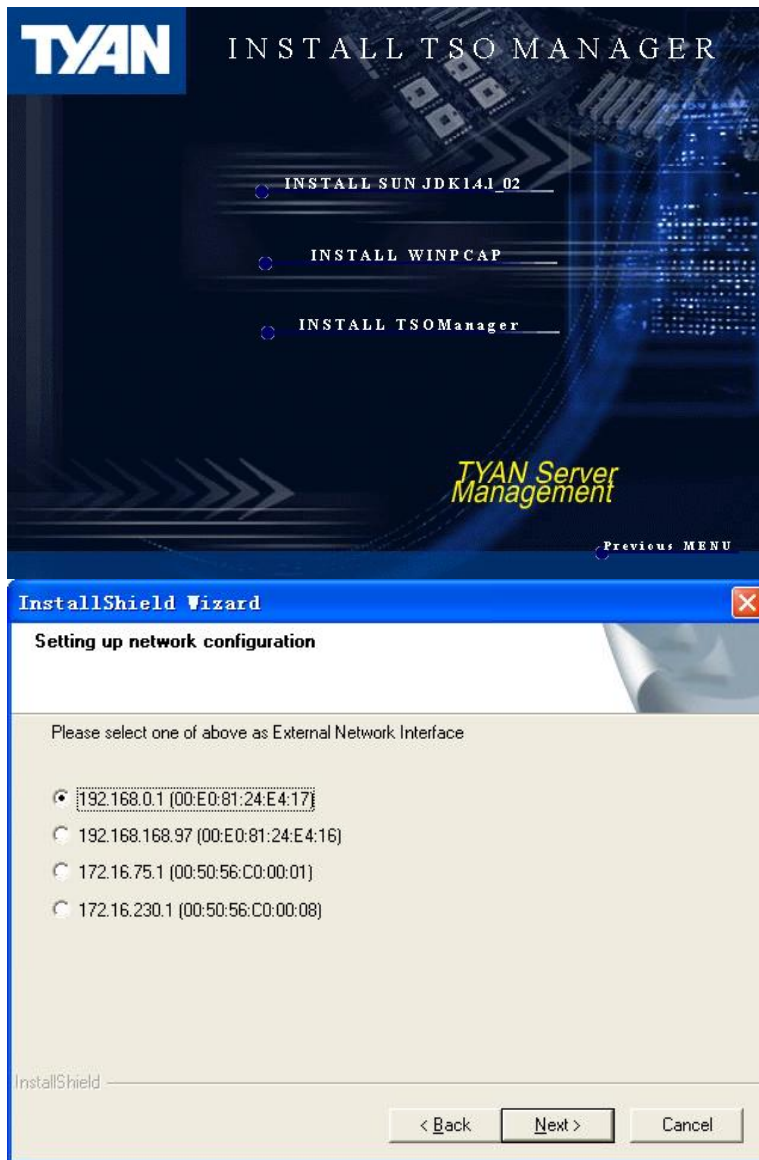
- **Installation Procedures under Windows System**

Agent

1. Put the TSO CD in the CD-ROM drive.
2. Click on the "TSO" item. Select "TSO Server Agent".
3. Click on "Next" to start the installation procedure.
4. Indicate the Server Agent's computer name.
5. A License Agreement menu will pop up. Click "Yes".
6. Click on "Next" after confirming the use of destination directory.
7. Click on "Next" to confirm the setting.
8. Click on "Finish" to finish the installation.

Manager

1. Insert TSO CD into CD-ROM drive. Select "TSO".
2. Double click "TSO Manager".
3. Double click "INSTALL SUN JDK1.4J_02".
4. You will see a Welcome menu. Click "Next".
5. A License Agreement menu will pop up. Click "Yes".
6. After confirming the destination location of software, click "Next".
7. Select all the components and then click "Next".
8. The software will link with IE. Click "Next".
9. Click "Finish" to finish "Javk2 SDK installation".
10. Go back to TSO manager installation menu. Select "INSTALL WINPCAP".
11. Installation Wizard will show up. Click "Next".
12. Click "Next" if you agree with License Agreement.
13. Click "OK" to finish WinPcap 3.0 installation.
14. Go back to TSO manager installation menu. Select "INSTALL TSOManager".
15. A welcome message will pop up. Click "Next".
16. Click "Yes" if you agree with the TSO License Agreement.
17. After filling in user and company names, click "Next".
18. Click "Next" after confirming the destination location of software.
19. Click "Yes" to reboot the system to initiate TSO Manager.
20. Click "Finish" to finish the TSO manager installation.



Console

1. Put "TSO" CD into CD-ROM drive. Click "TSO Console".
2. Click on "INSTALL SUN JDK 1.4J_02".
3. A Welcome message will appear. Click "Next".
4. A License Agreement menu will show up. Click "Yes".
5. After confirming the destination location of software, click "Next".
6. Select all the components and then click "Next".

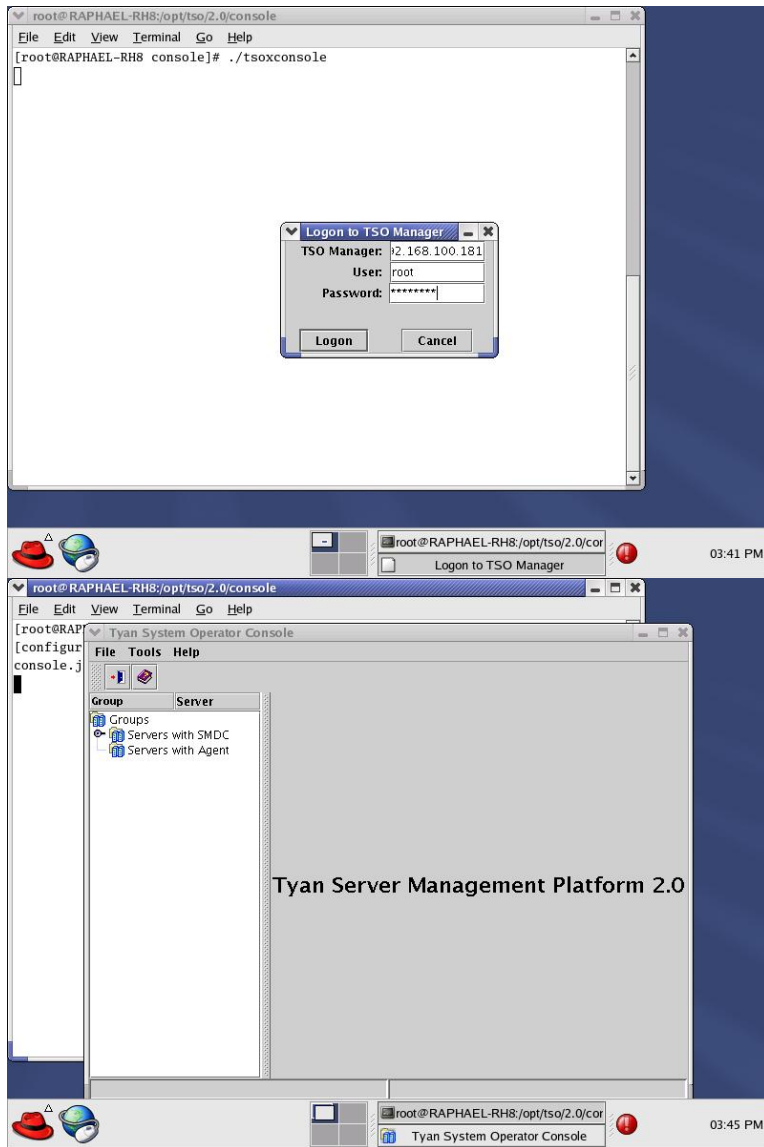
7. The software will link with IE. Then click "Next".
8. Click "Finish" to finish Javk2 SDK installation.
9. Go back to "INSTALL TSO CONSOLE" menu. Select "INSTALL TSO Console".
10. A Welcome Message will pop up. Click "Next".
11. A License Agreement menu will show up. Click "Yes".
12. After typing user and company names, click "Next".
13. After confirming the destination location of software, click "Next".
14. Choose the match LAN port IP and MAC for SMDC cards. Then click "Next".
15. Click "Finish" to finish TSO Console installation.



3.5.3 Run TSO

- In Linux, go to /opt/tso/1.6/console, and run ./tsoxconsole
- In Windows, open start->programs->TSO

In TSO login window, the first field is your management system IP, and the second field is OS user ID and password same as you login the OS that runs console .

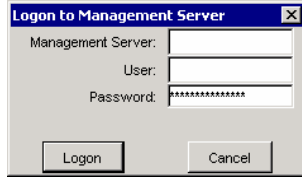


3.6 TSO Access

TSO provides two ways (In-Band and Out-Of-Band) for reading and controlling AGENT systems.

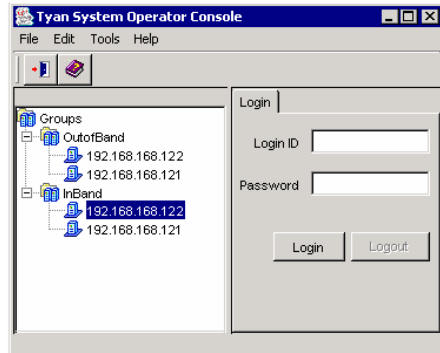
3.6.1 In-Band Access

- **Log in MANAGER**



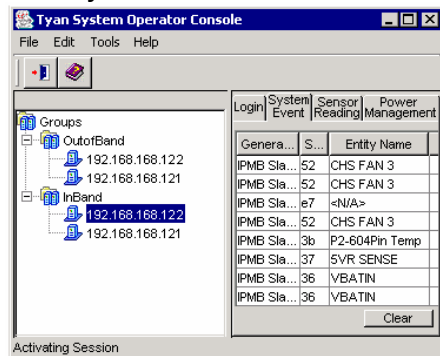
- Log in MANAGER from CONSOLE with the privilege ID, user name and password

- **Log in AGENT**



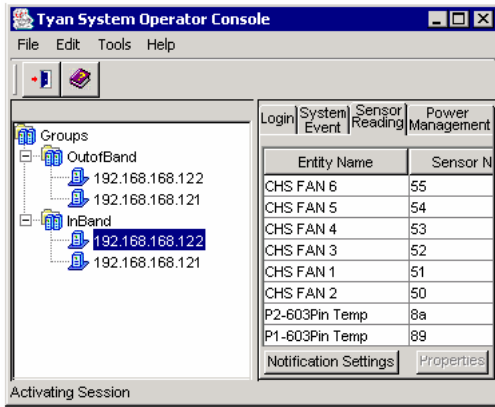
- Highlight the IP of the target system (Under In-Band)
- Log in AGENT of the target system with the privilege ID and password

- **System Event Panel**

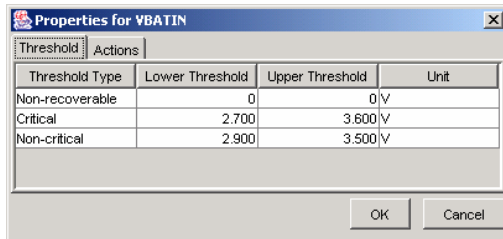


- Click "System Event Panel" to read all event log of the target system
- "Clear" Icon
Click the icon to clear system event log

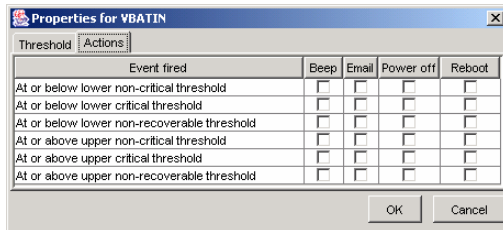
- **Sensor Reading Panel**



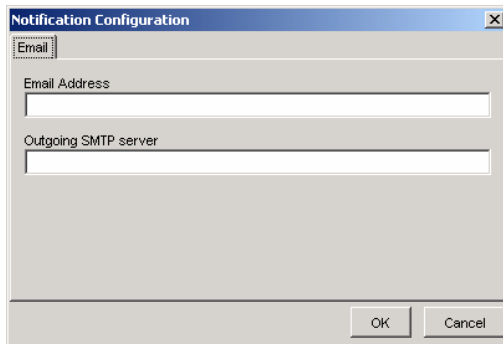
- Click “Sensor Reading Panel” to read all sensor data record of the target system
- “Notification Setting” Icon
 - Highlight any row in the SDR window
 - Click the icon to set Sensor Threshold
- “Properties” Icon
 - Highlight any row in the SDR window
 - Click the icon to set Sensor Alert Action



- Sensor Threshold
 - Make changes to lower and upper thresholds

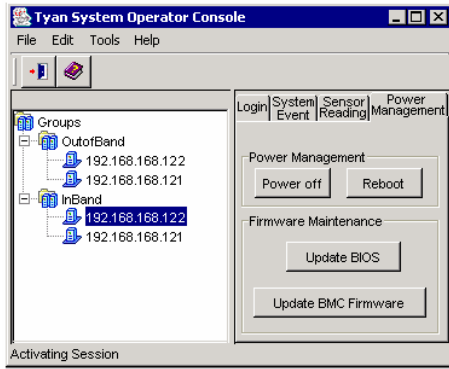


- Sensor Alert Action
 - Check the desired alert method



- Notification Configuration
 - Input a valid e-mail address
 - Input a valid SMTP server
 - Email information will be used if email event action is desired

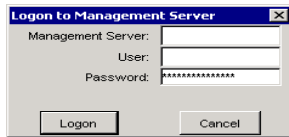
- **Power Management Panel**



- Click “Power Management Panel” to access all In-Band power management features of the target system
- “Power Off” Icon
 - Click the icon to have the target system do graceful shutdown
- “Reboot” Icon
 - Click the icon to have the target system do graceful reboot
- “Update BIOS” Icon
 - Click the icon to flash the system BIOS of the target system
- “Update BMC Firmware” Icon
 - Click the icon to flash the SMDC BMC firmware of the target system

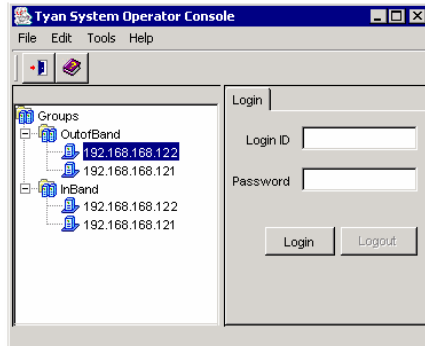
3.6.2 Out-Of-Band Access

- **Login MANAGER**



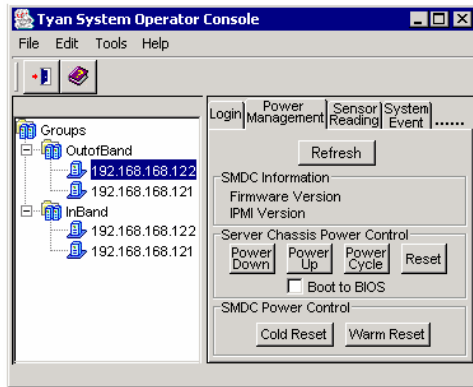
- Log in MANAGER from CONSOLE with the privilege ID, user name and password

- **Login SMDC MANAGER**



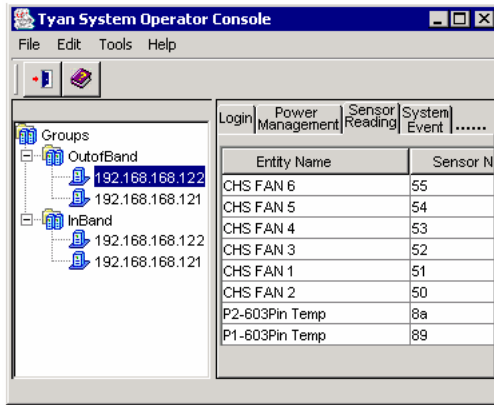
- Highlight the IP of the target system (Under Out-Of-Band)
- Log in SMDC with the privilege ID and password
- Privilege Names: Administrator, User, Callback, and Operator (**case sensitive**)

- **Power Management Panel**



- Click “Power Management Panel” to access all Out-of-Band power management features of the target system
- “Refresh” Icon
 - Click the icon to instantly update SMDC Information
- “Power Down” Icon
 - Click the icon to hard shutdown the target system
- “Power UP” Icon
 - Click the icon to power up the target system
- “Power UP” Icon with “Boot to BIOS” checked
 - Click the “Power UP” icon with “Boot to BIOS” checked to get into the target system BIOS setup when system is powered up
- “Power Cycle” Icon
 - Click the icon to power cycle the target system
(Target system would power down for a few seconds then power up)
- “Reset” Icon
 - Click the icon to reset the target system
- “Reset” Icon + “Boot to BIOS” checked
 - Click the icon with “Boot to BIOS” checked to get into target system BIOS after system is reset
- “Cold Reset” Icon
 - Click the icon to cold reset SMDC
- “Warm Reset” Icon
 - Click the icon to warm reset SMDC

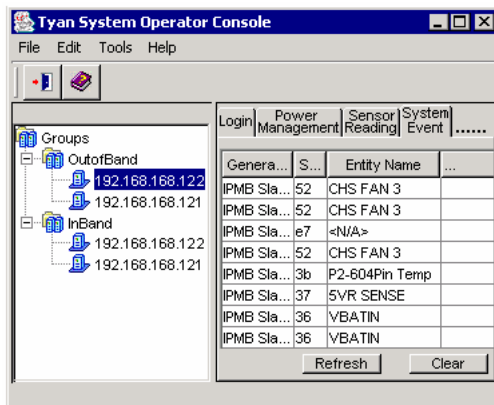
- **Sensor Reading Panel**



- Click “Sensor Reading Panel” to read all sensor data record of the target system

- The initial access of the sensor reading panel will take about one minute and all readings will be updated there after every 15 seconds.

- **System Event Panel**



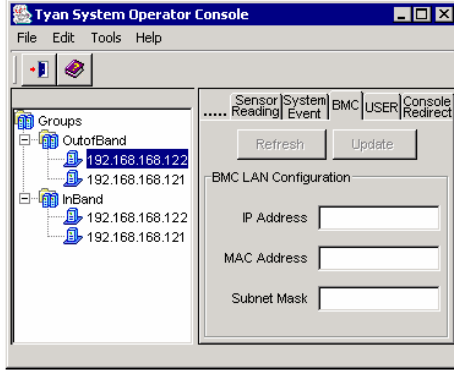
- Click “System Event Panel” to read all event log of the target system

- The initial access of the system event panel will take about one minute and all system events will be updated there after every 15 seconds.

- “Refresh” Icon
Click the icon to refresh system event log

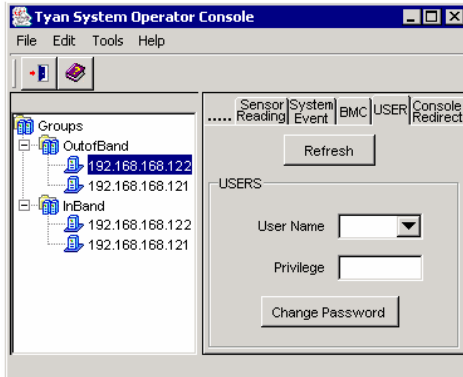
- “Clear” Icon
Click the icon to clear system event log

- **BMC Panel**



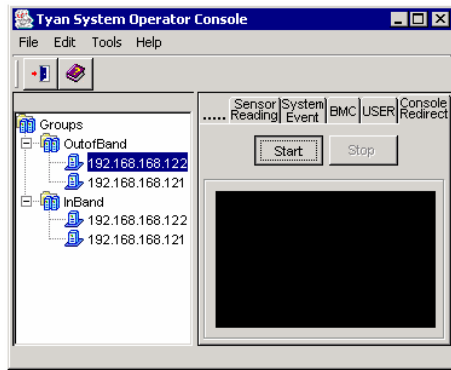
- Click “BMC Panel” to read all BMC LAN configurations of the target system
- “Refresh” Icon
 - Click the icon to review IP Address, MAC Address and Subnet Mask
- “Update” Icon
 - Make all desired changes about IP Address, MAC Address and Subnet Mask
 - Click the icon to update new values into SMDC

- **User Panel**



- Click “User Panel” to access SMDC privilege of the target system
- “Refresh” Icon
 - Click the icon to review available users
- “User Name” Bar/Drag Down
 - Click the button and scroll to the desired user
- “Privilege” Field
 - Review privilege for corresponding user
- “Change Password” Icon
 - Click the icon to update password

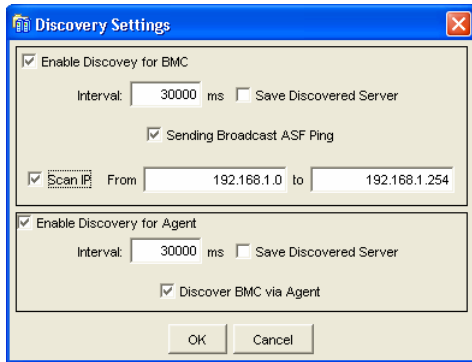
- **Console Redirect Panel**



- Click “Console Redirect Panel” to begin console redirect via LAN feature of the target system
- “Start” Icon
 - Click the icon to start console redirect via LAN feature of the target system
- “Stop” Icon
 - Click the Stop icon to stop the console redirect via LAN feature of the target system.

3.6.3 Discovery Setting

- **Discovery setting dialog**



- Enable or Disable discover BMC or TSO Agent
- Set the interval between the two to discover action
- Enable or Disable save the discovered system record on TSO Manager
- When an OS is running on a server with BMC, the Broadcast ASF Ping will be ignored by the OS TCP/IP stack. You will need to enable the “Scan IP” function to discover the BMC.
- If you install the TSO Agent on the server with BMC, you also can “Discover the BMC via Agent” while the OS is running.

Chapter 4: Troubleshooting

The following provides the general problems and solutions you will meet in setting up the SMDC card. For more information, please visit our website <http://www.tyan.com>.

Question: What are SMDC and TSO?

Solution: SMDC means System Management Daughter Card. It's an embedded system, independent of the operating system, using the SMBus to monitor hardware sensors. TSO means Tyan System Operator. It is installed on different operating systems and allows remote or local monitoring.

Where can I find information about SMDC/TSO on the Tyan Website?

You can find a page of information for all related motherboards and SMDC/TSO needs at the following link: http://www.tyan.com/support/html/faq_tso.html

Where can I find information about bios versions that are needed for my motherboard so it supports SMDC/TSO correctly?

You can find listing of the bios versions for the various motherboards at the following link: <ftp://ftp.tyan.com/software/tso/bios/>

Where can I find information about firmware versions that are needed for my motherboard so it supports SMDC/TSO correctly?

You can find a listing of all the firmware versions at the following link: <ftp://ftp.tyan.com/software/tso/firmware/>

Where can I find information about utilities that are needed for my motherboard so it supports SMDC/TSO correctly?

You can find the utilities at the following link: <ftp://ftp.tyan.com/software/tso/utility/>

Where can I find information about utilities that are needed for my motherboard so it supports TSO correctly?

You can find the TSO software at the following link: <ftp://ftp.tyan.com/software/tso/tso/>

Where can I find the link to the manual?

You can find the manual at the following link: <ftp://ftp.tyan.com/software/tso/manuals>

Question: Does your SMDC support OpenIPMI?

Solution: Yes. Please enable Gratuitous ARP when using OpenIPMI and other IPMI compliant software.

Question: Do you provide a 64-bit version of the TSO Agent?

Solution: Yes

Question: Why can I not discover the SMDC card?

Solution: There may be many reasons why the SMDC card is not located:

- Check the SMDC light. Make sure that when the computer is on it is in "power on" status (light continually on and not flashing). This assures that the SMDC firmware is functioning properly. When the computer is off the light should be

flashing. If it is not flashing, you may need to reset the comes (2 pins next to the battery).

- Use Util.exe in DOS mode to check IP and MAC address. Make sure they are set correctly on the SMDC card.
- Check the setting of “discovery” in Console tool menu. Assure that the IP addresses are within the range indicated. Also make sure this function is enabled.
- Use Util.exe in DOS mode to assure that the firmware version and board model are correct. If you do not have the correct firmware you may need to download it from the TYAN SMDC ftp site.
- Make sure the correct SMDC firmware for the Broadcom Lan chip is flashed. Also assure you are using the correct NIC port which is supported for this board.

Read “Readme” first and also use Util.exe to enable ARP broadcast.

Question: Does SMDC support the ARP protocol?

Solution: Yes, SMDC supports the Gratuitous ARP and broadcasts the ARP package periodically.

Question: What are the password and user name for protected SMDC firmware?

Solution:

For out of Band –As specified by IPMI there are 4 security accounts: “Operator, Admin, Callback, User and Null (blank)”. Use Util.exe to set this password. You can change this password using the remote console function ‘Change Password’. The username and password are case-sensitive.

For in band –Log into the monitored system using a valid username and password as required by the respective operating system.

Question: What’s the M3291 Driver

Solution:

As IPMI is OS-independent, normally users don’t need load any driver when using M3291. But some times, when users want to use some in-band utility or application, IPMI driver is needed.

Windows:

M3291 can use the Intel IPMI Reference Driver. Users can get it at:
<http://www.intel.com/design/servers/ipmi/tools.htm>

Install driver automatically

execute "win2kinstall path\imbdrv.inf *imbdrv"

sometimes, it will fail. It’s not M3291 issue. It’s driver installation issue. you have to install driver manually.

Install driver manually

Control Panel->Add Hardware

Select “No, I have already connected the hardware”

Select “add a new hardware device”

Select “Install the hardware the I manually select from a list”

Select “System Devices”

Select "Have Disk"
Select "Browse"
Select file "imbdrv.inf"

Linux:

M3291 can use the OpenIPMI driver in Linux Kernel. But as M3291 KCS port is CA8:CAC, version V33 is needed.

```
modprobe ipmi_devintf  
modprobe ipmi_si
```

If "ipmi_si" module load fail, you can try to add parameter:

```
modprobe ipmi_si type=kcs ports=0xca8 irqs=0 regspacings=4
```

Question: How can I use SMDC function before OS is installed and running?

Solution: Follow the steps below:

1. Connect the AC power.
2. Boot the system into BIOS and shutdown the BIOS – this step only need to be done once after one SMDC is installed in the mainboard, and SMDC needs the information of MAC address from mainboard.
3. Install the TSO manager and TSO console correctly in client machine.
4. Start TSO console and use Tool/Discovery setting to make sure the SMDC discovery is enabled (including broadcast discovery).
5. All systems with SMDC installed will show up. Correctly set the IP address.
6. Now you can use the Power/Off and other SMDC functions

Question: What Linux OS does TSO support?

RedHat 7.2, 7.3, 8.0 and 9.0, Server 2.1, 3.0 and 4.0(32/64-bit)
SuSE Server 8.0, 9.0, Professional 9.0, 9.1, 9.2 and 9.3(32/64-bit)

Question: Why and how to flash Broadcom firmware?

2. Broadcom firmware download link:

[*ftp://tsosmdc2:7ctfeb@66.122.195.2/driver_device/TSOSMDC/TSO_012204/fw/BroadcomNIC/Share_MAC&IP/\(ask James about this Link\)*](ftp://tsosmdc2:7ctfeb@66.122.195.2/driver_device/TSOSMDC/TSO_012204/fw/BroadcomNIC/Share_MAC&IP/(ask_James_about_this_Link))

3. See readme. So far Broadcom only supports Dos utility to flash.

Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then Tyan Computer Corporation can help. Besides designing innovative and quality products for over a decade, Tyan has continuously offered customers service beyond their expectations. Tyan's website (www.tyan.com) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. Tyan also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, Tyan serves multiple market segments with the industry's most competitive services to support them.

"Tyan's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com

Please feel free to contact us directly for this service at techsupport@tyan.com

Help Resources:

1. See the **beep codes** section of this manual.
2. See the **TYAN website** for FAQ's, bulletins, driver updates, and other information: <http://www.tyan.com>
3. Contact your dealer for help **BEFORE** calling TYAN.
4. Check the **TYAN user group**:
alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor **FIRST** for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.

**Notice for the USA**

Compliance Information Statement (Declaration of Conformity Procedure) DoC

FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

- 1) This device may not cause harmful interference
- 2) This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and the receiver.
 - Plug the equipment into an outlet on a circuit different from that of the receiver.
 - Consult the dealer on an experienced radio/television technician for help.

Notice for Canada

This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux normes de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'interference radio.)

**Notice for Europe (CE Mark)**

This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

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