PRIMERGY BX Blade Server Systems

RemoteView Management Blade
User Interface Description

Edition November 2007

Comments… Suggestions… Corrections…

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Certified documentation according to DIN EN ISO 9001:2000

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2000.

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1 Introduction

The PRIMERGY BX Blade Server Systems accommodate two hotswapable, redundant RemoteView management blades: an integrated management solution for complete remote administration of the blade server system. For a complete feature list, see section "Features of the RemoteView Management Blade" on page 10.
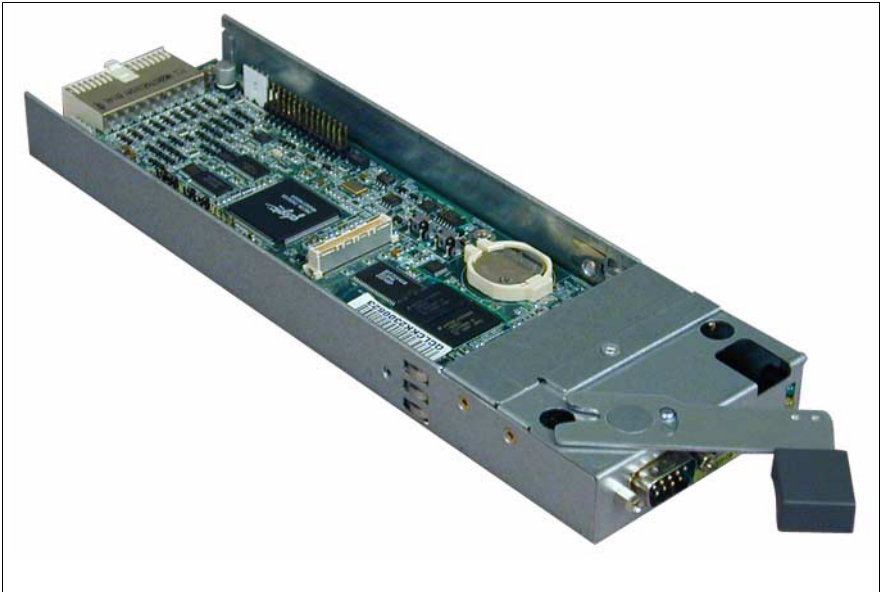
Figure 1: RemoteView management blade

Further information is provided on the PRIMERGY ServerBooks CD:

– PRIMERGY BX300 Blade Server System – Operating Manual

– PRIMERGY BX600 Blade Server System – Operating Manual

– PRIMERGY Server Systems – RemoteDeploy

– PRIMERGY BX Blade Server Systems – LAN Switch Blade

– ServerView User Guide

> **i** For further information on updating BX components please refer to the Operating Manual of your BX system.

1.1 Notational Conventions

The following notational conventions are used in this manual:
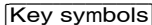
⚠	**Caution**	This symbol points out hazards that can lead to personal injury, loss of data, or damage to equipment.
i		This symbol highlights important information and tips.
►		This symbol refers to a step that you must carry out in order to continue with the procedure.
italic		Commands, menu items, names of buttons, options, file names, and path names are written in *italic* letters in text.
<italic>		Marked variables that must be replaced by current values.
fixed font		System output is written using a `fixed font`.
semi-bold fixed font		Commands to be entered through the keyboard are written in a semi-bold fixed font.
Key symbols		Keys are presented according to their representation on the keyboard. If capital letters are to be entered explicitly, then the Shift key is shown, e.g. SHIFT - A for A.
		If two keys need to be pressed at the same time, then this is indicated by placing a hyphen between the two key symbols.

Table 1: Notational conventions

If there are references to text or sections of text in this manual, then the chapter or section heading is placed in the reference, and the page stated refers to the page on which the chapter or section begins.

1.2 Target Group

This manual is intended for system administrators, network administrators, and service technicians that have a basic knowledge of hardware and software. The manual informs the reader of the fundamentals of blade server monitoring and documents the requirements for the use of the RemoteView management blade.

2 PRIMERGY BX Blade Server Systems - Overview

In this chapter an overview is given of the blade server system. The concept underlying this system is explained, and its major features are described. Furthermore, the system component is described that enables the user to communicate with the system.

2.1 The Blade Server Concept

A traditional server is a device that includes a multitude of components to do many different jobs at the same time. Servers like this are distinguished by the number of CPUs they use, the number of hard disks that can be plugged in, and the number of PCI cards that can be used to connect them to other devices such as external storage systems or networks.

Further development has made it necessary to treat the issues of CPU power and storage capacity separately. Rack optimized servers enable the system administrator to make adjustments in both fields according to the level that is needed.

At the next step, the blade server concept is reached, where I/O functions, too, are separated from the CPU. A blade server system typically consists of a number CPU boards, known as server blades, together with some switch blades, which are the I/O modules, and finally a redundantly configured pair of RemoteView management blades, enabling the user to monitor and control the system on the whole.

All data traffic moving to and from the system is handled via TCP/IP over a LAN cable.

The outsourcing of the power supply unit and the use of low-voltage CPUs help to reduce the size of a server blade. Thus, a high density is achieved for the system with very little power consumption compared to traditional servers.

2.2 Blade Server Management

When performing administrative tasks for the blade server system, the user relies on functions provided by a system component called the RemoteView management blade. There are two RemoteView management blades in a blade server system, in order to ensure redundancy.

The user gets access to the functions provided by the RemoteView management blade, either via a web user interface, or via a console menu using the Telnet protocol. Both ways of communication are described in more detail in the next two chapters of this manual (see chapter "Telnet interface" and chapter "Web user interface").

2.2.1 Features of the RemoteView Management Blade

Within the blade server system the RemoteView management blade is equipped with a number of features, which are described in this section.

Controller

The RemoteView management blade is equipped with a Qlogic Zircon V2 controller.

Supported programs

The RemoteView management blade is compliant with IPMI (Internet Protocol Multicast Iniative) 1.0. It supports schemes like FRU (Field replaceable Units), SEL (System Event Log), and SDR (Sensor Data Records). It also allows the configuration of a watchdog timer.

Communication with the server blades

The RemoteView management blade communicates with the server blades via an I^2C bus. An IPMB interface is provided to support the user, when performing hardware monitoring tasks for the server blades.

Communication with the switch blades

To enable communication with the switch blades, a CLI interface is provided. It allows to configure settings of the switch blades, such as the IP address, the IP mask, or the IP gateway address.

Hardware monitoring

The hardware monitoring functions provided by the RemoteView management blade include:

– Monitoring voltage and temperature of each server blade via the IPMB interface

– Monitoring the status of the system fans

– Monitoring intrusion into the system fans, i. e. if they have been opened, and other impacts on air flow conditions

– Setting the the system fans to an optimum speed

– Monitoring the status ot the power supply modules

– Monitoring the temperature of the switch blades via the I^2C bus

Event repository

To store messages on events that occur in the system environment, the RemoteView management blade is equipped with an event repository, providing a 16 KB access EEPROM.

Auto configuration

The management function auto configuration is used to back up system parameters to a ROM, which is located on the management blade. It also provides the possibility to restore these paramters if required. This reduces the risk if system configuration data have been corrupted or lost.

SSL (Secure Socket Layer)

The Manager Blade provides SSL for network data privacy for Telnet as well as for HTTP connections.

2.2.2   Redundancy of the RemoteView Management Blade

Of the two RemoteView management blades within the blade server system, one will take over the role of the master, who is in charge of the server management, while the other one will remain in a standby status as a redundant component. The two components have the same IP address, but their MAC adresses differ from each other.

When the system is powered up, it depends on which of the two RemoteView management blade first outputs a heartbeat. This is then the one that will be the master.

The master blade and the redundant blade communicate symmetrically with each other via a TX/RX serial interface. As soon as the master fails to work properly, for instance, when unplugged by the system administrator, the standby component will take over control of the server management.

Fail-over scenario

When the redundant RemoteView management blade takes over control from the master, it will behave according to the following scenario:

– Issue an ICMP broadcast ping to update the ARP table and switch the IP filtering table, in order to adjust them with regard to the new MAC address

– Define a proprietary protocol in L2, which is used for remote communication

If communication between master and redundant component via the serial interface has broken down, these components can continue to communicate by sending IP broadcast packages, using the MAC addresses.

2.2.3   Console Redirection

When using the console redirection feature, the management of the blade server system may be executed in remote control mode. To support this mode, the RemoteView management blade acts as the console redirection agent.

The KVM (Keyboard/Video/Mouse) input is captured and sent to the RemoteView management blade. The RemoteView management blade will in turn send this input to a server blade, where the appropriate actions will be executed.

With the adv. KVM blade, advanced server management functions are available, such as graphic mode console redirection and remote USB CD-ROM and floppy disk emulation (PRIMERGY BX600 only).

3 Telnet interface

Within the blade server system a console menu is provided for server management, using the Telnet protocol. A number of configuration activities can be performed via this menu, e. g. IP address configuration or hardware status monitoring. The menu is described in this chapter.

3.1 Entering the console mode

To enter the console mode a connection from a PC to the serial port of the blade server system has to be established first. For this purpose a RS232 cable (null modem cable) is used. An RX/TX signal will then be exchanged via this cable.

After the connection has been established, the HyperTerminal option is called up on the PC.

The parameters for this option are to be set as follows:

Baud rate	115200
Parity bits	None
Data bits	8
Stop bits	1
Flow control	None
Terminal type	VT100

The console mode can also be entered via LAN. In this case, the Telnet client is called up, and the login procedure is performed using the management blade IP address.

The settings are then as follows:

Host IP address	192.168.224.10 (example for a management blade address)
Telnet port	Same as the Telnet port configured for the management blade (default port: 3172)
Connected protocol	TCP/IP (Winsock)
Terminal type	VT100

After these parameters have been set, the blade server system is started.

When using the serial port, firstly a number of messages concerning the system appears on the screen.

After approximately five seconds a welcome screen is displayed.

The user is requested to enter a user name and eventually a password, to be admitted to the console main menu:
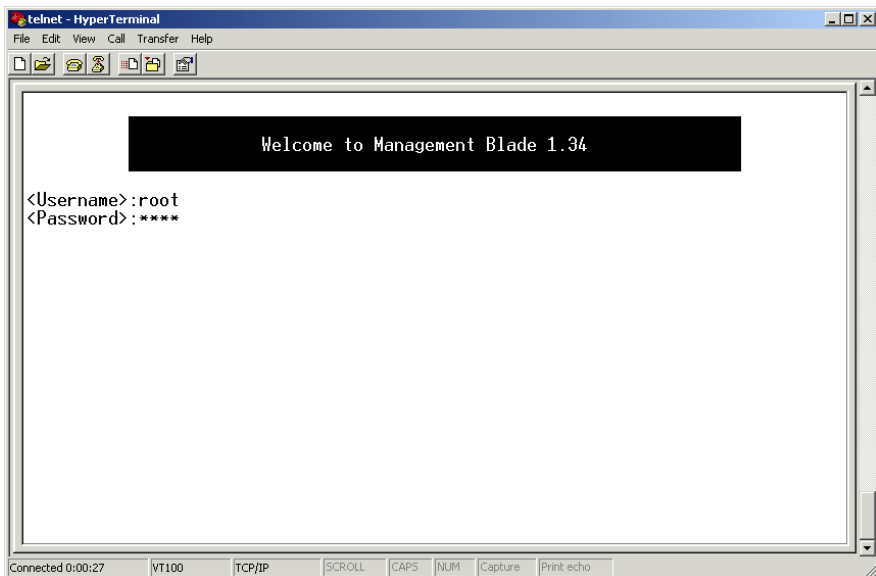
Figure 2: Welcome screen for access to the console menu

3.2   Console main menu

The console main menu looks like this:
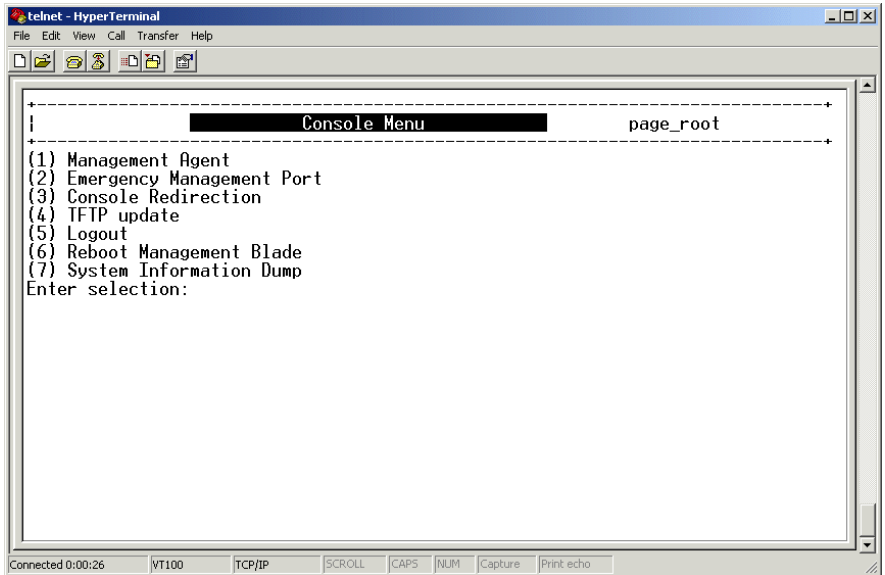
Figure 3: Console main menu

There are seven items in the console main menu:

–   Management Agent (see 3.3 on page 19)

    This item provides several options for the management of the whole blade
    server system, including management blades and switch blades.

–   Emergency Management Port (see 3.4 on page 55)

    This item provides an interface to send IPMI messages to a management
    blade in case of an emergency. It can also be used for debugging purposes.

–   Console Redirection (see 3.5 on page 57)

    This item is used to configure the console redirection mode. The selected
    console redirection target will be active after the next boot.

–   TFTP Update (see 3.6 on page 59)

    This item is used to update the management blade firmware.

– Logout (see)

This item is used to logout from the system.

– Reboot Management Blade (see)

This item is used to perform a reboot of the system. The reboot is executed immediately.

– System Information Dump (see)

This item is used to display consecutive lists of information.

The items of the console main menu are described in more detail in the following sections.

3.3   Management Agent

The following items provided in the Management Agent sub-menu for server management:
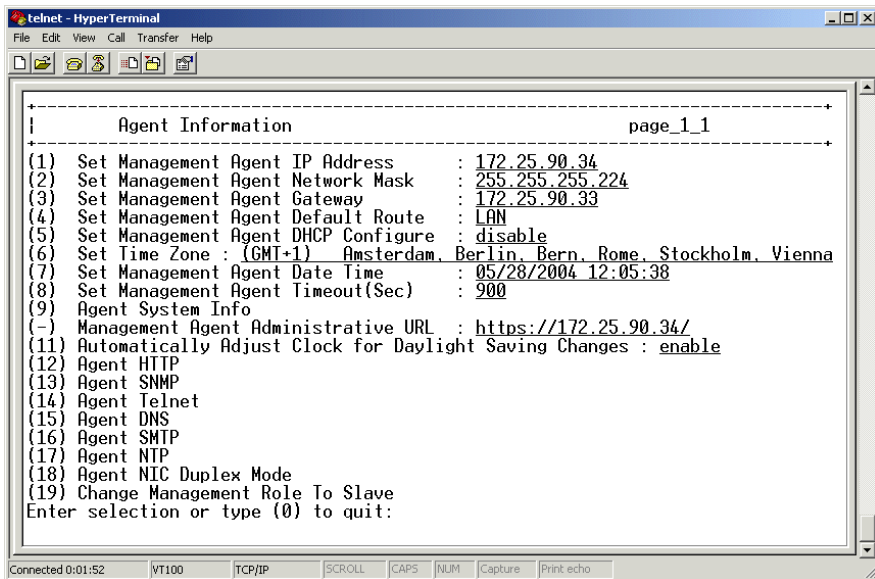
– Management Agent Information (see 3.3.1 on page 20)

– Management Blade (see 3.3.2 on page 24)

– System Information (see 3.3.3 on page 26)

– Server Blade (see 3.3.4 on page 28)

– Switch Blade (see 3.3.5 on page 35)

– Username And Password (see 3.3.6 on page 37)

– Blue Screen (see 3.3.7 on page 38)

– Event Log (see 3.3.8 on page 38)

– Set System Default (see 3.3.9 on page 41)

– Server Blade CMOS Backup/Restore (see 3.3.10 on page 43)

– Switch Blade Configuration Backup/Restore (see 3.3.11 on page 45)

– Deployment Parameter (see 3.3.12 on page 46)

– Power Consumption (see 3.3.13 on page 49)

– PPP and Modem Setting (see 3.3.14 on page 51)

3.3.1   Management Agent Information

This item provides several options to configure and display parameters of the management agent, such as the network IP address, Telnet and SMTP parameters, or date and time.

There are options that are used to set a single parameter, while others are used to set more than one. For the former group of parameters their current values are displayed, too.

Altogether, the menu for these options looks like this:

Figure 4: Agent Information menu

These options are used to perform the following activities:

Option	Description
Set Management Agent IP Address	Configuration of the management blade IP address.
Set Management Agent Network Mask	Configuration of the management blade IP network mask.
Set Management Agent Gateway	Configuration of the management blade IP gateway address.
Set Management Agent Default Route	Configuration of the default route: *LAN* or *PPP*.
Set Management Agent DHCP Configure	Configuration of the auto-assigned IP address mask and enabling of the gateway via DHCP.
Set Time Zone	Configuration of the time zone for the management blade, which is selected from a time zone table.
Set Management Agent Date Time	Configuration of date and time for the management blade.
Set Management Agent Timeout	Configuration of the time-out value for login to the console menu.
Agent System Info	Settings used in SNMP for the management blade: – system name – system location – system contact
Management Agent Adminis-trative URL	Display of the home page URL for the management blade.
Automatically Adjust Clock for Daylight Saving Changes	Configuration of the adjustment for daylight saving changes (*enable/disable*, *start date, end date*). See also section "Daylight Saving Time Format Example" on page 82.
Agent HTTP	Configuration of the HTTP settings, including port number assignment, HTTP protocol enabling/disabling and HTTP SSL security control.

Option	Description
Agent SNMP	Configuration of the SNMP settings, including SNMP enabling/disabling, selecting an SMNP community string and a destination from the SNMP trap table.
Agent Telnet	Configuration of the Telnet server settings, including Telnet port assignment and Telnet enabling/disabling.
Agent DNS	Configuration of the DNS server address and enabling/disabling DNS support.
Agent SMTP	Configuration of the SMTP settings for mail sending, including SMTP enabling/disabling, SMTP sender, SMTP relay server and mail user account.
Agent NTP	Configuration of the NTP (network time protocol) service. You can enable or disable the NTP service, set the NTP server's IP address and choose the Sync Mode: – *Sync Afterwards* Only if the management blade time is ahead of NTP server time, the management blade syncs the time from NTP server. – *Sync Always* The management blade always syncs the time from NTP server, no matter whether the NTP server time is behind or ahead of management blade.
Agent NIC Duplex Mode	Setting of the management blade's NIC duplex mode (*full duplex* or *half duplex*). *Execution Mode* displays the current duplex mode, *Setting Mode* allows you to specify which duplex mode should be active after the next reset.

Option	Description
Change Management Role To Slave	Change the role of the master management blade to slave (only displayed if there are two management blades installed).

3.3.2   Management Blade

Within the blade server management system there are two management blades. One of them is active as the master of the server management system. The other one is in standby mode to ensure the availability of the system.

A number of parameters relating to the management blades is displayed to the user, showing their current values (see next figure):

Figure 5: Management Blade menu

The following parameters are displayed:

Parameter	Description
Management Blade Run Mode	Displays whether the management blade is run in master mode or slave (standby) mode.
Management Blade Status	Displays the health status of the management blade. A message will be displayed if this status is disturbed.
Management Blade Manufacture	Displays the name of the manufacturer of the management blade.

Parameter	Description
Management Blade Manufacture Date	Displays the date of manufacture for the management blade.
Management Blade Serial Number	Displays the serial number of the management blade.
Management Blade Product Name	Displays the product name of the management blade.
Management Blade Model Name	Displays the name of the management blade model.
Management Blade Hardware Version	Displays the hardware version of the management blade.
Management Blade Firmware Version	Displays the firmware version of the management blade.
Management MAC Address	Displays the NIC physical address of the management blade.

3.3.3   System Information

The System Information option provides information on all components of the blade server management system, such as power supply, fans, temperature, KVM (= keyboard/video/mouse).

The menu for this option looks like this:
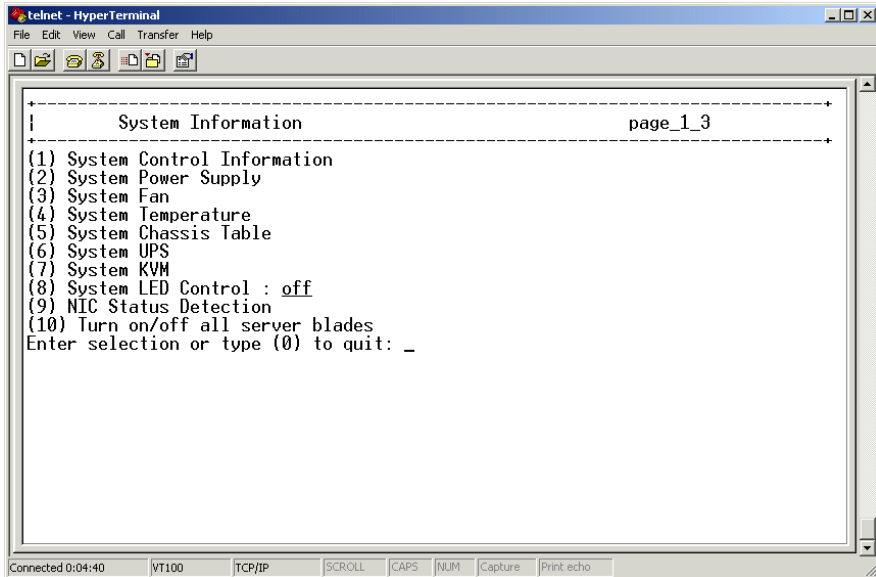
Figure 6: System Information menu

The menu offers the following subordinate options to the user:

Parameter	Description
System Control Information	Displays the number of system fans, power supply groups and temperature sensors, as well as the status of all system components, excepting CPU blades and switch blades.
System Power Supply	Displays information on the power supply units.

Parameter	Description
System Fan	Displays information on the number and status of the system fans, including parameters like nominal speed, current speed, speed threshold and failure reaction. A fan test is also provided, supporting the fan life time monitor.
System Temperature	Displays information on the system temperature, including current value, warning level, critical level, sensor status and critical temperature reaction.
System Chassis Table	Displays information on the system chassis, including the chassis serial number and if there has been any intrusion into the inside of the chassis.
System UPS	Displays chassis UPS (uninterruptable power supply) information, including UPS number, vendor, type, IP address, connect port, and SNMP community.
System KVM	Specifies, which server blade should get accessed via KVM.
System LED Control	Displays the status of the system control: on, off, or blinking.
NIC Status Detection	Detect whether the network signal of the management blade's NIC is *ok* or *fail*. *NIC Status Detection enable* If management blade NIC detection is *fail* for the master and *ok* for the slave, the master sends out an event log message and the roles of the management blades are changed. The role change takes place after the NIC Detection Timeout has expired. *NIC Status Deteiction disable* The NIC Status Detection is disabled.
Turn on/off all server blades	Turns on or turns off all server blades.

3.3.4   Server Blade

The Server Blade option provides information on the server blades, i. e. information on CPUs, memory modules, voltage, temperature, CMOS configuration and watchdog timers.

The menu for this option looks like this:
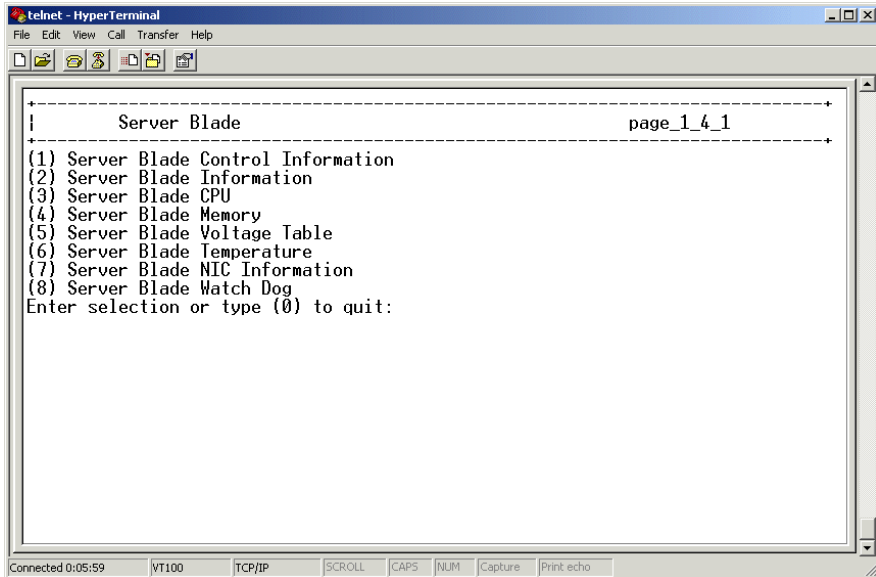
Figure 7: Server Blade menu

3.3.4.1   Server Blade Control Information

This option enables the user to set the following parameters:

Parameter	Description
Server Power	Set server power: (1) on (2) off (3) power-cycle (4) reset (5) NMI (6) force off

Parameter	Description
Set Server Maximum Restart Retries	Configuration of the maximum number for server restart retries. If the failure count reaches this value, the configured reaction will be executed.
Server LED Control	Configuration of the LED control at the front of the blade server: blinking or off.
Server CPU Mode	Configuration of the CPU mode: battery or performance mode. If the parameter is set to battery mode, this will save electric power.
Server Administrative URL	Configuration of an URL address for the server.

3.3.4.2   Server Blade Information

This option displays some information on the server blade parameters. The following parameters are included:

Parameter	Description
Server Blade Status	Displays the server blade health status.
Server Blade Manufacture	Displays server blade manufacture vendor information.
Server Blade Manufacture Date	Displays server blade manufacture date information.
Server Blade Serial Number	Displays server blade serial number information.
Server Blade Product Name	Displays server blade product name information.
Server Blade Product Version	Displays server blade product version information.
Server Blade Model Name	Displays server blade model name information.
Server Blade Hardware Version	Displays server blade hardware version information.
Server Blade BIOS Version	Displays server blade BIOS version information.
Number of CPU Socket	Displays how many CPU sockets are available on the server blade.

Parameter	Description
Number of Memory Socket	Displays server blade memory information.
ServerBlade OS Type	Displays the OS platform currently running on the server blade.
ServerBlade OS Version	Displays the version of the OS currently running on the server blade.
Server Blade BMC Firmware Version	Displays server blade BMC firmware version.
Server Blade PCI Add-In Card	Displays whether a PCI card is installed.
Server Blade FC Daughter Card	Displays whether a FC (Fibre Channel) daughter card is installed (only relevant for BX600 Blade Server Systems).

3.3.4.3   ServerBlade CPU

This option displays some information on the server blade CPU parameters. The following parameters are included:

Parameter	Description
CPU Type	Displays the CPU type.
CPU Frequency	Displays the CPU frequency.
CPU Step	Displays the CPU stepping.

Parameter	Description
CPU Status	Display the CPU status. The values displayed will be: - OK - NOT_PRESENT - ERROR - CRITICAL - MISSING_TERMINATION
CPU Name	Displays the CPU name.
CPU Socket Designation	Displays the CPU socket designation.
CPU Manufacturer	Displays information on the CPU manufacturer.
CPU Clock	Displays the CPU clock.

3.3.4.4   Server Blade Memory

This option provides information on the server blade memory. The information is displayed in two tables:

Table	Description
Server Blade Memory Information Table	Displays information on the total size of the memory, as well as on the error count, the error reset record and the error count start time.
Server Blade Memory Modules Table	Displays the status of each memory module, together with memory type and error information.

3.3.4.5   Server Blade Voltage Table

This option provides information on the server voltage. The following param-
eters are displayed:

Parameter	Description
Server Voltage Designation	Displays the voltage designation for the server blade.
Server Voltage Status	Displays the voltage status for the server blade. The values displayed will be: - *NOT_AVAILABLE* - *OK* - *TOO_LOW* - *TOO_HIGH*
Server Voltage Minimum Value	Displays the minimum voltage value for the server blade.
Server Voltage Maximum Value	Displays the maximum voltage value for the server blade.
Server Voltage Current Value	Displays the current voltage value for the server blade.
Server Voltage Nominal Value	Displays the nominal voltage value for the server blade.

3.3.4.6   Server Blade Temperature

This option provides information on the server temperature. Some of the param-
eters displayed can also be set by the user:

Parameter	Description
Server Temperature Sensor Designation	Displays the designation of the temper-ature sensor for the server blade.
Server Temperature Sensor Status	Displays the status of the temperature sensor. The values displayed will be: - *SENSOR_DISABLED* - *SENSOR_FAIL* - *WARNING_TEMP_WARM* - *CRITICAL_TEMP_WARM* - *NOT-AVAILABLE*

Parameter	Description
Server Temperature Upper Warning Level	This parameter can be set to configure the upper warning level of the temperature sensor for the server blade.
Server Temperature Upper Critical Level	This parameter can be set to configure the upper critical level of the temperature sensor for the server blade.
Server Temperature Lower Warning Level	This parameter can be set to configure the lower warning level of the temperature sensor for the server blade.
Server Temperature Lower Critical Level	This parameter can be set to configure the lower critical level of the temperature sensor for the server blade.
Server Temperature Current Value	Displays the current temperature value for the server blade.

3.3.4.7   Server Blade NIC Information

This option displays the NIC1 and NIC2 physical addresses of the server blade.

3.3.4.8   Server Blade Watch Dog

This option is used to configure the watchdog timers for the server blade. There are two timers that can bet set here:

Timer	Description
Server Blade Software Watchdog	This timer is used to monitor the operation system and the software applications. A watchdog timer agent that resets the timer must be implemented in the operation system. When the time-out is reached, a time-out routine will be started.
Server Blade Boot Watchdog	This timer is used to monitor the server blade POST. It will be reset by the BIOS in periods configured within the POST code. When the time-out is reached, a time-out routine will be started.

3.3.5 Switch Blade

The Switch Blade option is used to display information on the switch blades that are part of the blade server system.

The menu for this option looks like this:

Figure 8: Switch Blade menu

The following parameters are displayed:

Parameter	Description
Administrative URL	Displays the URL of the switch blade.
Switch Blade Status	Displays the status of the switch blade. This status can be retrieved by the management blade via a CLI command.
Switch Blade Manufacture	Displays information on the manufacturer of the switch blade.
Switch Blade Manufacture Date	Displays the manufacturing date for the switch blade.

Parameter	Description
Switch Blade Serial Number	Displays the serial number of the switch blade.
Switch Blade Product Name	Displays the product name of the switch blade.
Switch Blade Model Name	Displays the name of the switch blade model.
Switch Blade Hardware Version	Displays the version of the switch blade hardware.
Switch Blade Firmware Version	Displays the version of the switch blade firmware.
Switch Blade MAC Address	Displays the MAC address of the management port for the switch blade.
Switch Blade IP Address	Displays the current IP address of the management port for the switch blade.
Switch Blade Subnet Mask	Displays the current subnet mask of the management port for the switch blade.
Switch Blade Gateway	Displays the current gateway of the management port for the switch blade.
Switch Blade IP Address Setting Value	Specifies a new IP address of the management port for the switch blade.
Switch Blade Subnet Mask Setting Value	Specifies a new Subnet Mask of the management port for the switch blade.
Switch Blade Gateway Setting Value	Specifies a new Gateway of the management port for the switch blade.
Apply Network Setting	Activates the specified setting values (IP, Subnet, Gateway) - either immediately or - if the UART Port is used by another user - as soon as this port is available. For example: If another user runs console redirection at the moment, the settings will not be changed until the console redirection has been completed.
Switch Blade LED Control	Sets the LED of the switch blade off or blinking.
Reboot Switch Blade	Reboots the switch blade.

3.3.6   Username and Password

The Username and Password option is used to change and display information on the access rights of individual users. A user is selected via his or her user ID.

The menu for this option looks like this:
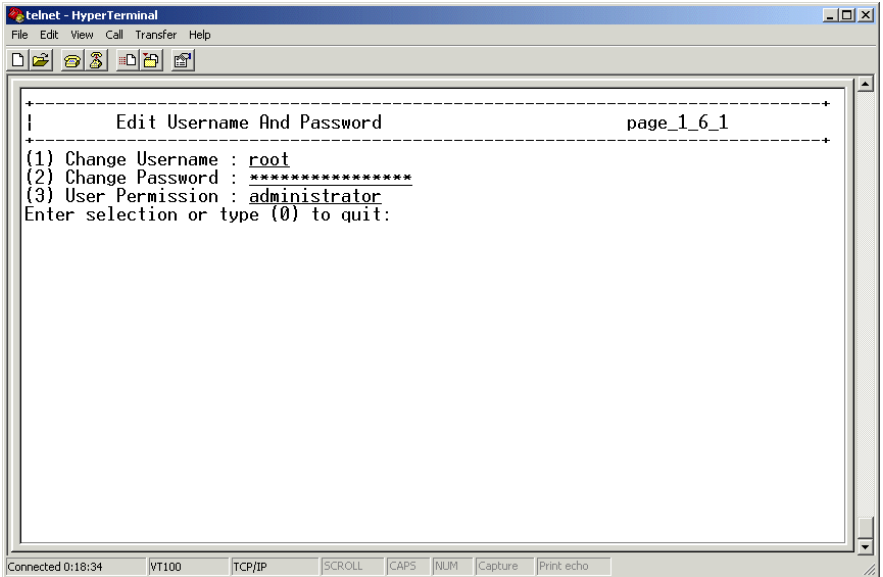
Figure 9: Username and Password menu

The following actions can be performed via this menu:

Parameter	Description
Change Username	A username may only be changed by the administrator.
Change Password	A password may be changed by the administrator or by the user that has been assigned this password.
User Permission	User permissions may only be changed by the administrator.

3.3.7   Blue Screen

The Blue Screen option is available, if the operating system used supports the blue screen feature, as provided by UART (Windows 2000).

The option will then display which server blades are currently in blue screen status.

3.3.8   Event Log

The Event Log option is used to display the events that have been logged on the management blade and the server blades.

The menu for this option looks like this:
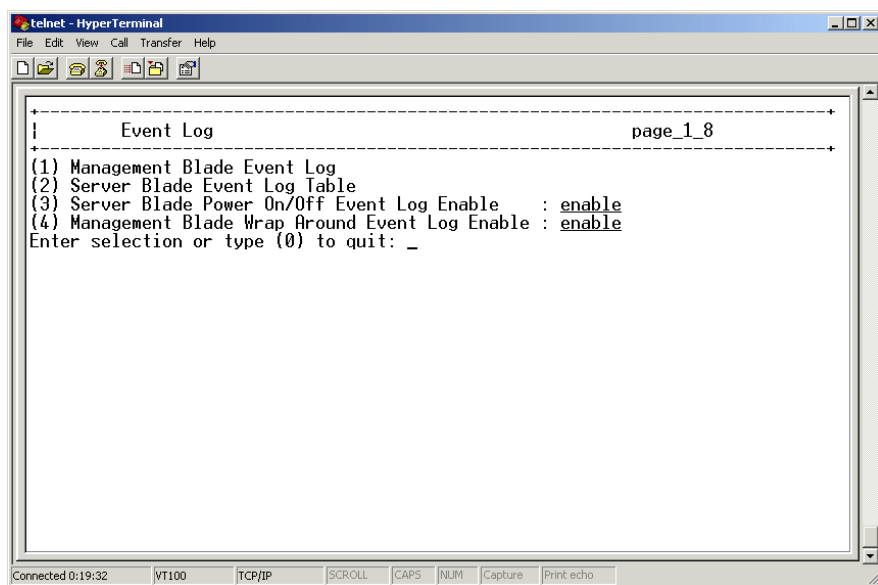
Figure 10: Event Log menu

Information is displayed for:

–   Events that were logged on the management blade event log

–   Events that were logged on a server blade event log

3.3.8.1   Management Blade Event Log

This sub-option is used to display the events that have been logged on the management blade event log.

The following parameters are displayed:

Parameter	Description
All Event	All events that have been logged on the management blade.
Informational Event	The informational events that have been logged on the management blade.
Minor Event	The minor events that have been logged on the management blade.
Major Event	The major events that have been logged on the management blade.
Critical Event	The critical events that have been logged on the management blade.
Clear All Entries	This parameter is used to clear all events from the management blade event log.

3.3.8.2   Server Blade Event Log

This sub-option is used to display the events that have been logged on a server blade event log.

After a server blade has been selected, the following parameters are displayed:

Parameter	Description
All Event	All events that have been logged on the server blade.
Informational Event	The informational events that have been logged on the server blade.
Minor Event	The minor events that have been logged on the server blade.
Major Event	The major events that have been logged on the server blade.

Parameter	Description
Critical Event	The critical events that have been logged on the server blade.
Clear All Entries	This parameter is used to clear all events from a server blade event log.

3.3.8.3   Server Blade Power On/Off Event Log Enable

This option is used to specify, whether power on/off events for the server blades should be listed in the event log.

3.3.8.4   Management Blade Wrap Around Event Log Enable

This option is used to specify, whether the wrap-around functionality for the event log should be used or not.

enable

> When the event log repository is full, new event log entries replace the old ones beginning with the first event log entry.

disable

> When the event log repository is full, no event log entries are written any longer.

3.3.9   Set System Default

The Set System Default option is used to restore the default values.

The menu for this option looks like this:
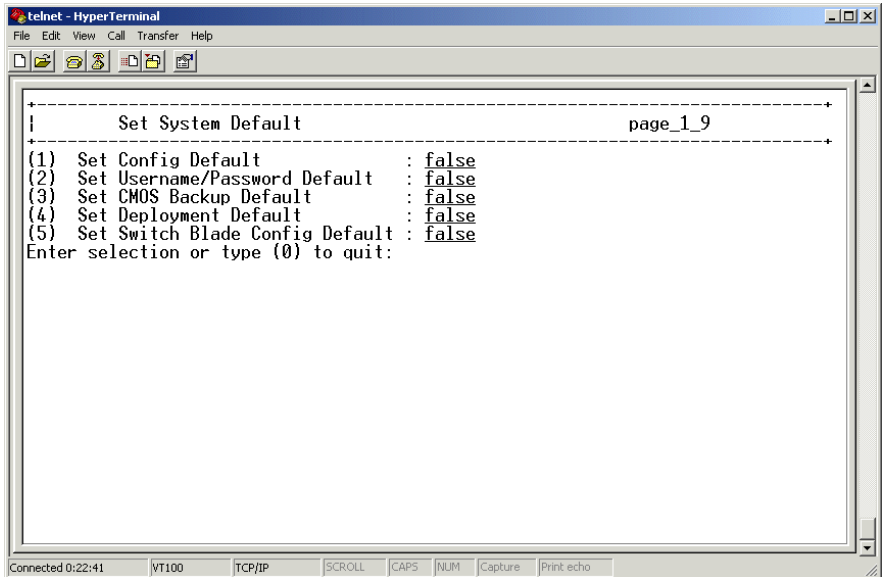
Figure 11: Set System Default menu

The following parameters can be set:

Parameter	Description
Set Config Default	The configuration of the management blade is set to the default values.
	⚠ Please note that all configured values are lost and the management blade has to be configured newly after using this option.
Set Username/Password Default	All configured user names with the exception of *root* are deleted. The password for the user *root* is set to the default ("*root*").
Set CMOS Backup Default	All switch blade configuration backups and all server blade BIOS backups are deleted.
Set Deployment Default	The deployment parameters (see section "Deployment Parameter" on page 46) are set to the default values.
Set Switch Blade Config Default	All switch blade configuration backups are deleted.

3.3.10   Server Blade CMOS Backup/Restore

This option is used to backup and restore server blade BIOS parameters. The server blade must be powered on before backup/restore processing. If the backup is successful, the backup file will be displayed in the CMOS backup file table.

After selecting the server blade whose BIOS is to be backed up or whose backup file is to be restored, the *Server CMOS Configure* option is displayed:
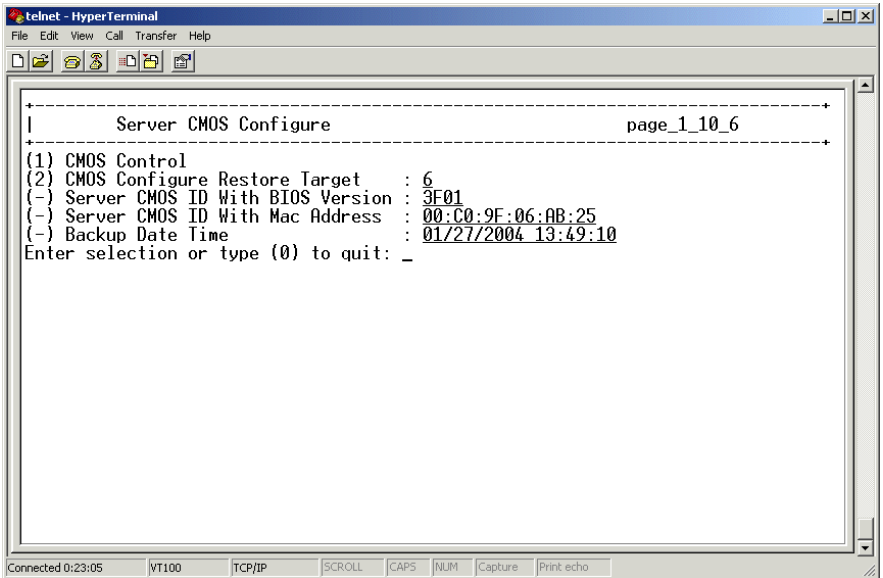
Figure 12: Server CMOS Configure menu

The following parameters are displayed:

Parameter	Description
CMOS Control	Specifies the backup/restore policy: *backup* The BIOS parameters of the selected server blade are backed up. *smart-restore* After the slot id, BIOS version and MAC address have been verified, the backup file of the selected server blade is restored. *force-restore* The backup file is restored without verification.
CMOS Configure Restore Target	Specifies the server blade whose BIOS parameters are to be restored.
Server CMOS ID With BIOS Version	Displays the CMOS ID with BIOS version.
Server CMOS ID With Mac Address	Displays the CMOS ID with MAC address
Backup Date Time	Displays date and time of the backup file generation.

3.3.11   Switch Blade Configuration Backup/Restore

This option is used to backup/restore the configuration values of the
management blade.
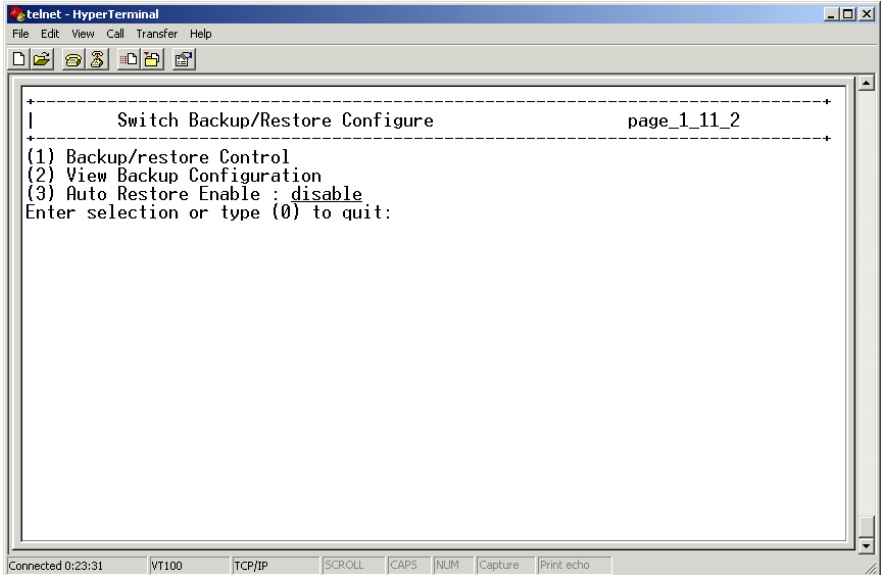
Figure 13: Switch Blade Configuration Backup/Restore

The following parameters are displayed:

Parameter	Description
Backup/Restore Control	Specifies whether a backup process or a restore process is to be started.
View Backup Configuration	Displays the stored backup configuration values.
Auto Restore Enable	Specifies whether after a hot-swap action the new management blade is to be configured automatically according the stored backup configuration values.

3.3.12   Deployment Parameter

This option is used to display or set the deployment configuration of the server blades.

The menu for this option looks like this:
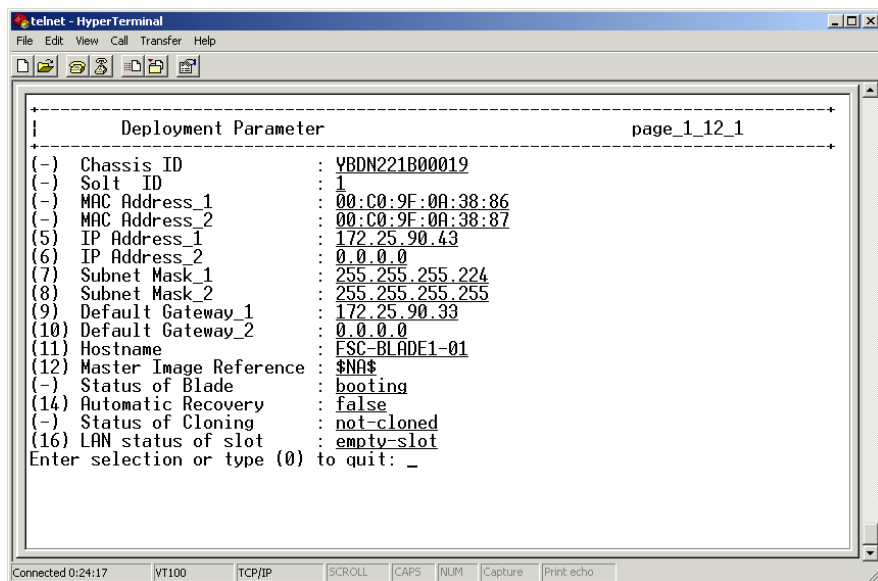
Figure 14: Deployment Parameter menu

The following parameters are displayed:

Parameter	Description
Chassis ID	Serial number of the blade server chassis.
Slot ID	Identification of the server blade slot. If no server blade is plugged in, no MAC address is available. The slot id is the only way to assign and store slot related system information. This is useful for hot replace functionality.
MAC Address_1 / _2	MAC addresses of the server blade's two LAN ports.
IP Address_1 / _2	IP addresses of the server blade's two LAN ports.
Subnet Mask_1 / _2	Subnet masks of the server blade's two LAN ports.

Parameter	Description
Default Gateway_1 / _2	Default gateways of the server blade's two LAN ports.
Hostname	Hostname for cloning purpose. Allows the clone agent to patch the right hostname into OS image during cloning process.
Master Image Reference	URL in UNC notification (but in ASCII) of the remote image file (with the extensions of `*.img`, `*.cfg`, `*.txt`): *\\server-name\subpath\ img-name*
Status of Blade	Current status of the server blade. Possible values: ***!!bitte genau prüfen, die Werte sind in der Spec nicht explizit beschrieben und an der Oberfläche nicht testbar!!*** *power-down* *stand by* *system boot failure* *booting* *online*

Automatic Recovery	Specifies whether after the hot-replacement of a server blade deployment activities should be started automatically.
	
	 false
	     After the hot-replacement of a server blade no automatic deployment activities should be started.
	
	 true
	     After the hot-replacement of a server blade RemoteDeploy is triggered to check in the server list, whether the old MAC address was assigned to a backup image. If so, the backup image is used for automatically cloning the new CPU blade (assumed the same HW is used). If there is no backup image, another check is made whether a master image is assigned to, and if so, this master image is used for cloning.

Parameter	Description
Status of Cloning	Specifies the status of the cloning process:
	not-cloned The server blade does not contain a valid configuration of an OS.
	cloning The cloning process is running. The status will switch to cloned when the process will have been completed.
	cloned The assigned image was successfully cloned.
LAN status of slot	empty-slot When a new server blade is plugged in, the IP settings defined in the deployment parameter table are NOT used. You have to configure the IP settings manually. It is recommended to set the *LAN Status of Slot* to *preset-slot* afterwards.
	preset-slot The settings defined in the deployment parameter table are the reference for the LAN configuration. If a new or already installed blade is plugged in, these values are used for the installation/adaptation.

3.3.13   Power Consumption

The menu for this option looks like this:
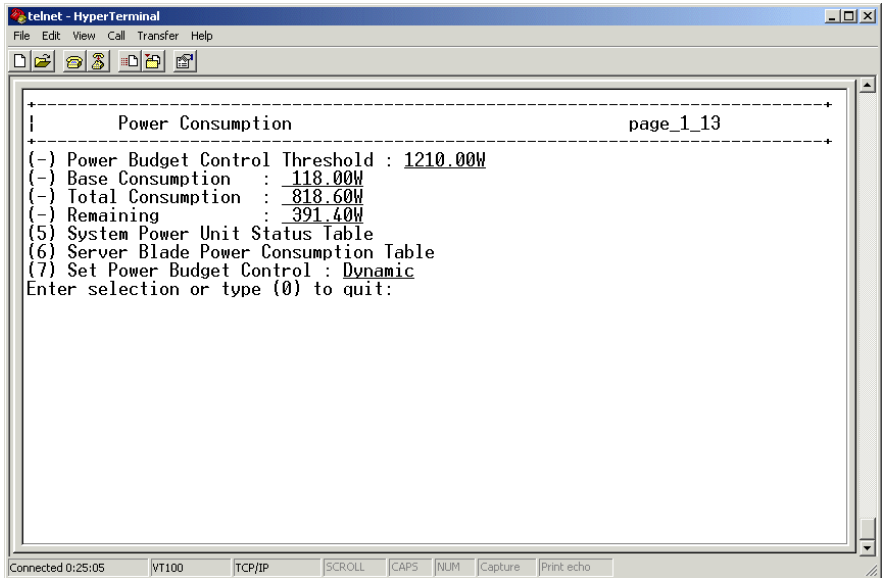
Figure 15: Power Consumption menu

The following parameters are displayed:

Parameter	Description
Power Budget Control Threshold	Displays the max. active power of the redundant power supply.
Base Consumption	Power consumption of the base system: The base system includes four switch blades, two management blades and all fan moduls.
Total Consumption	Current power consumption of the whole blade server system (including server blades).
Remaining	Difference between *Power Budget Control Threshold* and current *Total Consumption*.
System Power Unit Status Table	Displays the max. active power and the voltage range of the power supply units.

Parameter	Description
Server Blade Power Consumption Table	Displays the current power consumption value of each server blade.
Set Power Budget Control	*dynamic* The power control dynamically takes into account the current actual power consumption. *static* The power control statically takes into account the worst case power consumption.

3.3.14 PPP and Modem Setting

The menu for this option looks like this:
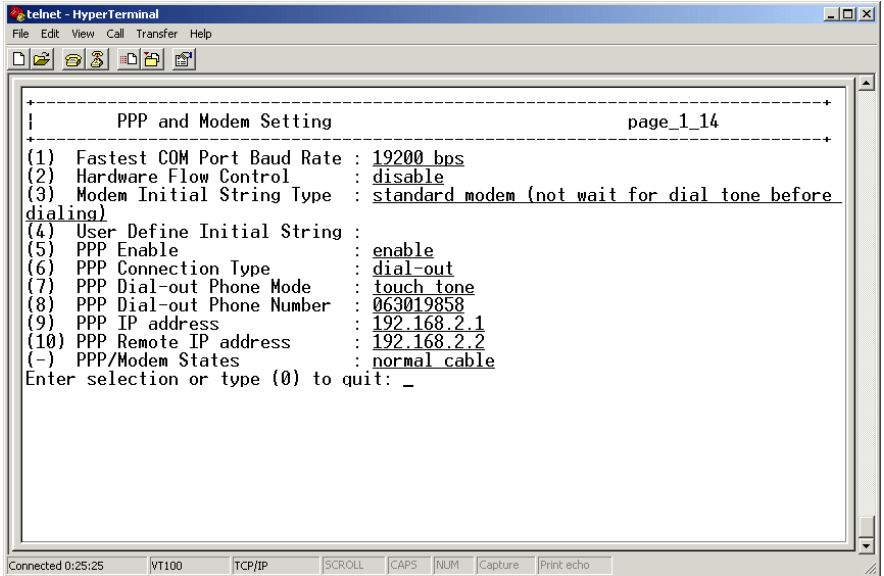
Figure 16: PPP and Modem Setting menu

The following parameters are displayed:

Parameter	Description
Fastest COM Port Baud Rate	The following COM Port Baud Rates are supported: - 19200 bps - 38400 bps - 57600 bps - 115200 bps (default value) **i** If you use no modems but a direct cable connection, only the default value 115200 bps is supported. If you choose *PPP Enable* to be *enable* and use modems for connecting, the maximum baud rate is 57600 bps.
Hardware Flow Control	The default value *disable* is recommended for connections via LAN. Enable *Hardware Flow Control* to avoid buffer overflows for connections via modem.
Modem Initial String Type	The default is *standard modem*. The management blades support 56 K standard modems. In general this default value will work successfully. If any non-standard modem is used, you need to specify a *User Define Initial String* for initializing the modem.
User Define Initial String	Here you can specify any AT command your modem supports.
PPP Enable	The default is *disable*. If you set *enable* the PPP protocol is used with the setting specified in *PPP Connection Type*.

Parameter	Description
PPP Connection Type	Possible values:
	direct (default value) Direct connection via the COM port (no modem used).
	dial-out If a modem is installed and *PPP Enable* is set to *enable*, the dial-out phone number is used to establish a PPP connection.
	dial-in If a modem is installed and *PPP Enable* is set to *enable*, the management blade waits for an incoming call.
	callback If a modem is installed and *PPP Enable* is set to *enable* the management blade checks the authentication of incoming calls and uses the dial-out phone number to call back.
	callback extension In difference to callback, the specified dial-out phone number isn't used: The remote caller is prompted to specify his modems phone number after the incoming call has been authenticated.
PPP Dial-out Phone Mode	Possible values: - *touch tone* (default value) - *pulse dialing*

Parameter	Description
PPP Dial-out Phone Number	If *PPP Connection Type* is set to *dial-out*, the management blade uses this phone number to dial out. Max length: 32.
	i You can set commas (",") between the digits to cause one second delays during dialing.
PPP IP Address	PPP IP address of the management blade (default: 192.168.2.1).
PPP Remote IP Address	PPP IP address of the remote side (default: 192.168.2.2).

PPP/Modem States	Displays the PPP connection and modem status:
	
	modem ready
	    A modem is plugged in the management blade's COM port.
	
	null modem cable
	    A null modem cable is plugged in the management blade's COM port.
	
	normal cable
	    A 9-pin pass through cable or no connection media is connected to the management blade's COM port.
	
	try to dial-out
	    PPP dial-out process is running.
	
	PPP on-line
	    PPP connection has been established.

3.4   Emergency Management Port

The Emergency Management Port (EMP) provides a basic range of remote server management with virtually no additional cost. It operates on top of the management blade firmware.

Commands for IPMI messages can be sent directly via the EMP agent.

The following facilities are provided:

– Server power up/down

– System reset

– Viewing of critical event logs stored in the non-volatile memory (NVRAM)

– System Event Log (SEL): logging of all critical server events, to be used for server monitoring and management

– Sensor Data Records (SDR): listing of all sensor fields programmed in the firmware of the Baseboard Management Controller (BMC), to be used for server monitoring and management

– Field Replaceable Units (FRU): listing of all replaceable components of the system by serial number

The starting page for these option looks like this:
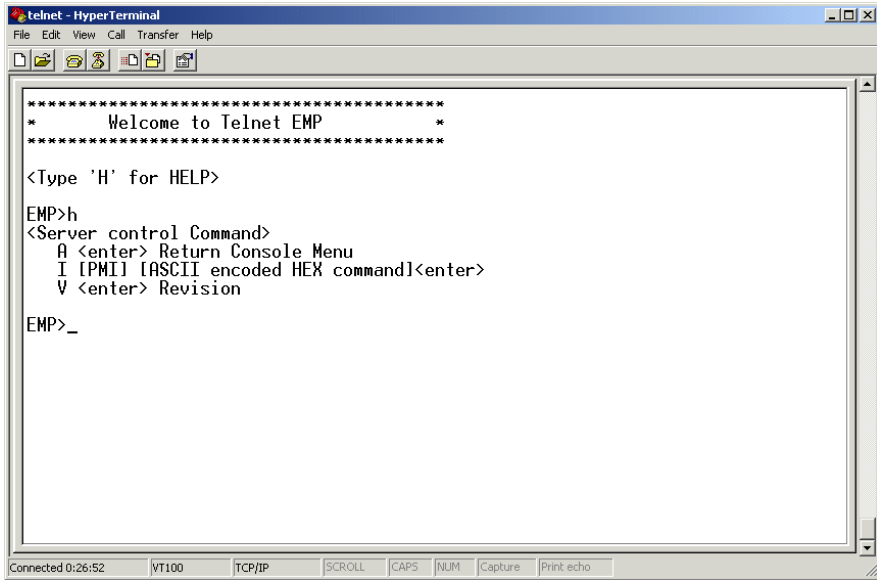
Figure 17: Starting page for Emergency Management Port option

3.5   Console Redirection

There is one console port (serial port interface) within the blade server system. Console redirection can be configured for server blades or switch blades.

The menu for this option looks like this:
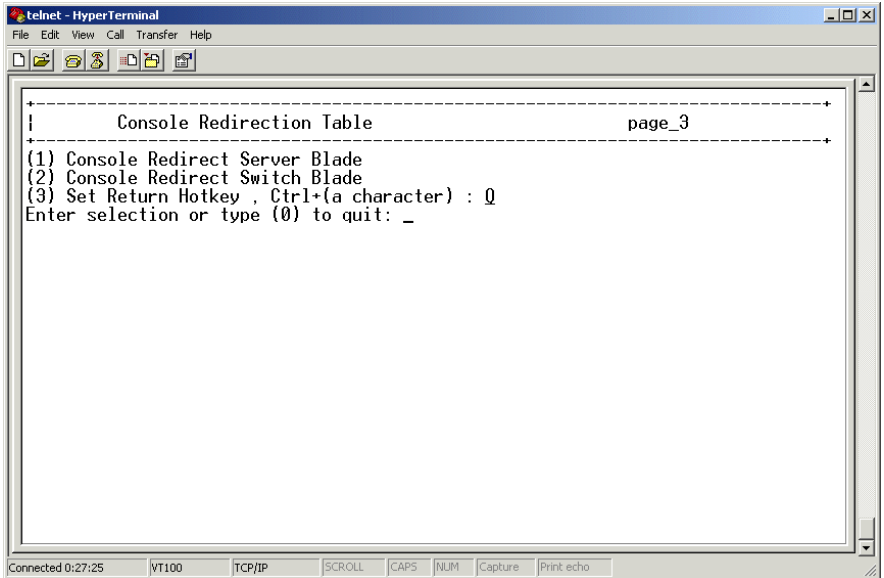
Figure 18: Console Redirection menu

There is a sub-option of console redirection for server blades and one for switch blades. Furthermore, a return hotkey can be configured:

Sub-option	Description
Console Redirection Server Blade	This option is used to configure a server blade for console redirection.
Console Redirection Switch Blade	This option is used to configure a switch blade for console redirection.

Sub-option	Description
Set Return Hotkey	This option is used to configure a return hotkey.
	To do this, a character from A-Z is chosen, excluding M. The hotkey to exit console redirection and return to the previous mode is then Ctrl + the character that has been set here, e. g. Ctrl + R.
	The default character used for the return hotkey is Q.

3.6   TFTP Update

The TFTP Update option is used to perform an update of the management blade firmware.

i	For further information on updating BX components please refer to the Operating Manual of your BX system.

The menu for this option looks like this:
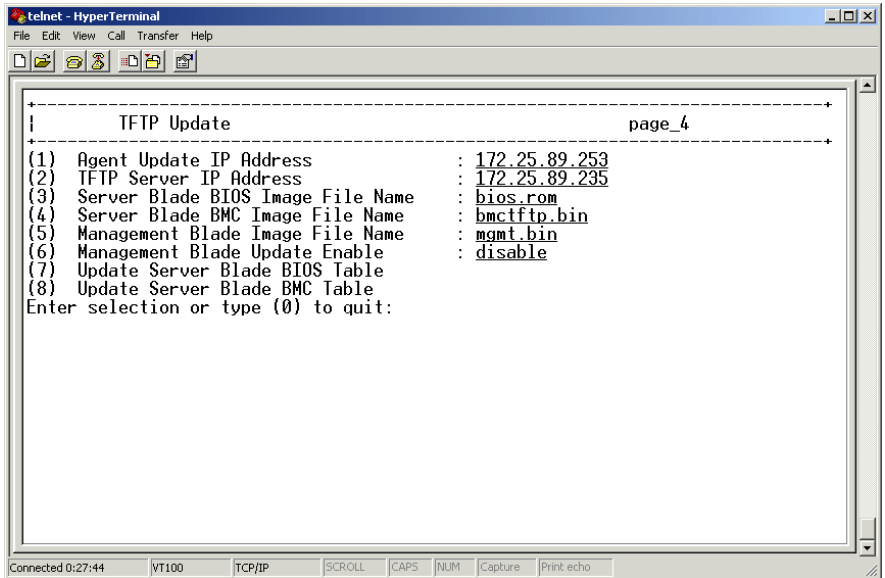
Figure 19: TFTP Update menu

The following parameters can be set:

Parameter	Description
Agent Update IP Address	Setting of an agent IP address.
	i The IP address to be supplied in the field Agent Update IP Address is only temporarily used. Enter any IP address which is not used in the LAN segment of the server.
TFTP Server IP Address	Setting of an IP address for the TFTP server.
Server Blade BIOS Image File Name	Setting of a file and path name for the BIOS image.
Server Blade BMC Image File Name	Setting of a file and path name for the BMC image.
Management Blade Image File Name	Setting of a file and path name for the management blade image.
Management Blade Update Enable	Upgrading of the management blade firmware.
	The default value for this parameter is disable. After setting the parameter to enable, the TFTP server must be started, and the management blade must be rebooted.
	The update will then be performed as the system powers up.
Update Server Blade BIOS Table	Upgrading of the Server Blade BIOS. This option is used to enable/disable the update and to display the TFTP status.
Update Server Blade BMC Table	Upgrading of the Server Blade BMC firmware. This option is used to enable/disable the update and to display the TFTP status.

3.7   Logout

This option is provided to perform a logout from the Telnet console menu.

3.8   Reboot Management Blade

This option is provided to perform the reboot of a management blade. The reboot is executed using a Zircon internal reset logic module.

3.9 System Information Dump

This option is used to display the event logs of management blades or server blades and to display consecutive lists of configuration/status information.

The menu for this option looks like this:
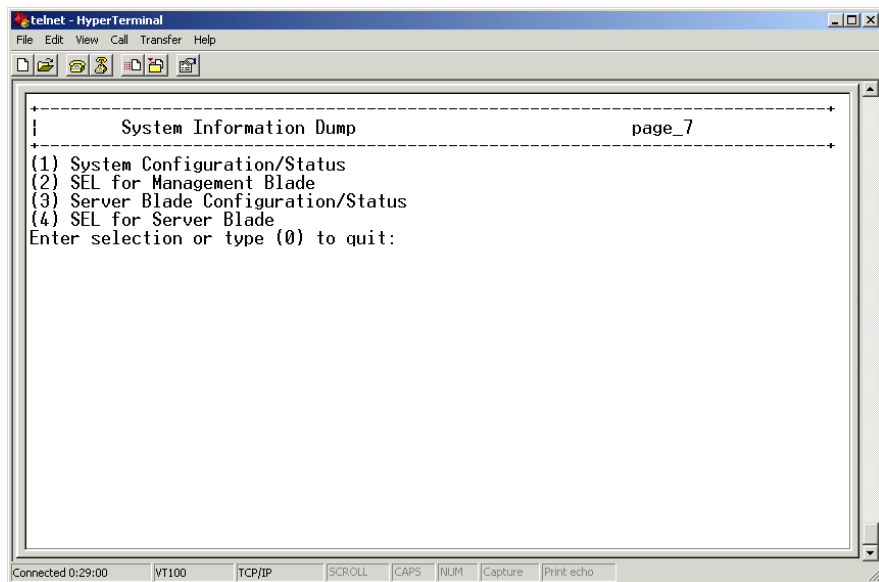
Figure 20: System Information Dump menu

The following parameters are displayed:

Parameter	Description
System Configu- ration/Status	Displays a consecutive list of system infor- mation, e.g. status, IP address, MAC address and firmware version of the switch blades.
SEL for Management Blade	Displays the management blade event log.
Server Blade Configu- ration/Status	Displays a consecutive list of information about the server blades, e.g. status, BIOS version, BMC firmware version, OS type and OS version.
SEL for Server Blade	Displays the server blade event log.

4 Web user interface

On the web server an interactive and user-friendly web user interface, known as web console, is provided for server management. It does not depend on any special operating system for a platform. Login to this interface is made via the web browser.

The options of this interface are explained in this chapter.

4.1 Overview

After login has been made successfully, a home page is displayed to the user, giving an overview over the system configuration, i.e. the installed components and their actual states. The navigation frame on the left side of the window shows options applying to the system properties, by which the system configuration may be modified, as well as options for working with the different kinds of blades that are embedded into the system.

Altogether, the options of the web user interface have been arranged into the following main groups:

– System Property (see 4.2 on page 66)

– Management Blade (see 4.3 on page 85)

– Switch Blade (see 4.4 on page 86)

– Adv. KVM Blade[1] (see 4.5 on page 88)

– Server Blade (see 4.6 on page 98)

In the *Server Blade* and *Switch Blade* groups there is a sub-directory displayed for every blade. Thus, the user may see at a glance how many blades there are currently embedded in the system.

The figure next page shows the home page of the web user interface of the BX300, giving an overview over its options (the BX600 has some slightly modified hardware components):

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[1] PRIMERGY BX600 only
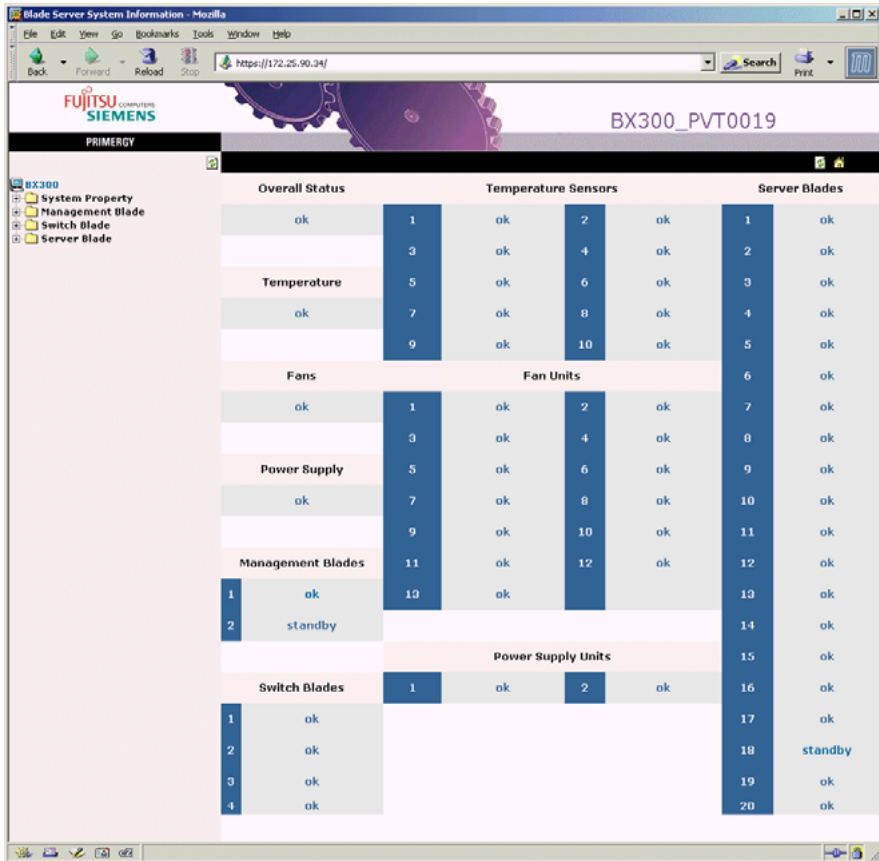
Figure 21: Home page of the web user interface for a BX300 system

Standard icons

There are icons displayed on the pages of the web user interface, so that the user may perform some standard actions like scrolling, or using the help function. These icons are also displayed on the other pages of the web user interface.

The meaning of these icons are as follows:

▪	Display a help page.
↑	Go to the upper part of the page.
↓	Go to the lower part of the page.
⟳	Refresh the page.
⌂	Go to the home page (if currently on another page).

4.2   System Property

By working with the option *System Property* the user can apply changes to the system configuration.

The settings of the system configuration that can be modified by the user have been grouped into six fields. Corresponding to these are the following options:

– System Events Log (see 4.2.1 on page 66)

– Environment/Maintenance (see 4.2.2 on page 69)

– LAN Interface (see 4.2.3 on page 76)

– SNMP Interface (see 4.2.4 on page 79)

– Console Redirection (see 4.2.5 on page 80)

– System Information (see 4.2.6 on page 82)

– User Accounts (see 4.2.7 on page 82)

– Deployment Table (The parameters are very similar to those of the corresponding Telnet option, thus you can refer to the description in 3.3.12 on page 46).

– PPP and Modem Setting (The parameters are very similar to those of the corresponding Telnet option, thus you can refer to the description in 3.3.14 on page 51).

4.2.1   System Event Log

The *System Event Log* option provides information on events that happened on the system. Alarms can be configured for events in such a way that an e-mail is sent whenever an event of a certain kind occurs.

The option comprises two sub-options:

– Event Log

– Alarm Handler

4.2.1.1   Event Log

This option displays all system events to the user. The events displayed can be filtered according to the blade system that they are related to, or to the error type.

The events are shown in the following format:

Option	Description
Time stamp	Month – day – year.
Error type	Informational event, minor event, major event, critical event.
Error code	Error code with class.
Content	Error message description.

There is a *Clear all entries* option, which will clear all entries from the event repository. The user is prompted to confirm this action, before it is executed.

4.2.1.2   Alarm handler

This option is used to configure the e-mails that are sent as alarms after an event has occurred on the system and to configure the event log.

The following parameters are configured for an e-mail:

Parameter	Description
To	Mail receiver address.
From	Mail sender address.
Host	SMTP server address (IP address or host name).
Subject	Mail subject (Read only, PRIMMAIL).
Administrator name	System administrator name.
Phone number	System administrator phone number.

Error Forwarding

Here you select which topics should be considered for error forwarding and specify the minimum error level to entail forwarding.

Server Blade Power On/Off Event Log Enable

This option is used to specify, whether power on/off events for the server blades should be listed in the event log.

Management Blade Wrap Around Event Log Enable

This option is used to specify, whether the wrap-around functionality for the event log should be used.

enable

> When the event log repository is full, new event log entries replace the old ones beginning with the first event log entry.

disable

> When the event log repository is full, no event log entries are written any longer.

4.2.2   Environment/Maintenance

This option is used to adjust the settings of the environment modules. These modules monitor power supply, chassis and fans of the system. The system administrator can configure a reaction to be executed when a critical threshold value is reached for a module.

There are the following sub-options:

– Firmware Update

– Power Supply

– UPS

– Chassis

– Fans

– Reset Management Blade

4.2.2.1   Firmware Update

This option is used to perform firmware updates for the blade server system. The upgrades are performed via the TFTP service.

There are three different kinds of updates:

– Management blade

– Server blade BMC

– Server blade BIOS

> **i** For further information on updating BX components please refer to the Operating Manual of your BX system.

Management Blade BMC Update

To perform a management blade BMC update, the following parameters can be set:

Parameter	Description
TFTP Server IP Address	Address of the TFTP server providing the image file for the management blade firmware.
Agent Update IP Address	Setting of an agent IP address. **i** The IP address to be supplied in the field Agent Update IP Address is only temporarily used. Enter any IP address which is not used in the LAN segment of the server.
Boot Image File Name	File name for the management blade image file.
TFTP Upgrade Enable	This parameter is set to enable the TFTP update for the management blade system.

Server Blade BMC Update

To perform a server blade BMC update, the following parameters can be set:

Parameter	Description
TFTP Server IP Address	Address of the TFTP server providing the image file for the management blade firmware.
Boot Image File Name	Path and file name for the management blade image file.

Select in the list on the right side of the window the server blades you want to be updated and click on the ADD>> button. They are moved into the update list on the right side. You can remove server blades from the update list by selecting them and clicking on the DEL<< button.

Server Blade BIOS Update

To perform a server blade BIOS update, the following parameters can be set:

Parameter	Description
TFTP Server IP Address	Address of the TFTP server providing the image file for the management blade firmware.
Boot Image File Name	Path and file name for the management blade image file.

Select in the list on the right side of the window the server blades you want to be updated and click on the ADD>> button. They are moved into the update list on the right side. You can remove server blades from the update list by selecting them and clicking on the DEL<< button.

4.2.2.2   Power Supply

This option contains a number of displays indicating states and faults regarding the power supply of the system. On delivery, the BX600 is usually set up for power supply redundancy of 2 + 1. This means that two power supply units (PSUs) are available for powering the complete blade server system unit. The third and fourth PSUs serve as redundant PSUs.

In the maximum configuration (maximum configuration per server blade), it may be necessary to change the power supply redundancy from 2 + 1 to 3 + 1. In this case, the fourth PSU serves as the redundant one. You can configure this setting the *System Power Supply Redundancy Mode* parameter, see below.

The following parameters are displayed:

Parameter	Description
Power Switch	Turns on, turn off or shuts down gracefully the blade server system.
Group status	Current status of the power supply modules. If there is only one module installed, degraded mode will be indicated.
Power Redundancy	Indicates whether redundant power supply is assured.

Parameter	Description
System Power Supply Redundancy Mode	With this parameter the power supply redundancy mode is set to *2+1* or *3+1*. Default is *2+1*. **i** This function is available as of management firmware Release >= 2.11 and if four PSUs are installed.
Fan1 fault	Rotational speed status of fan 1. The value displayed for this parameter will either be *ok* or *fail*. If *fail* is displayed the rotational speed is below 1500 RPM (+ − 200).
Fan2 fault	Rotational speed status of fan 2. The value displayed for this parameter will either be *ok* or *fail*. If *fail* is displayed the rotational speed is below 2700 RPM (+ − 200).
Fan3 fault	Rotational speed status of fan 3. The value displayed for this parameter will either be *ok* or *fail*. If *fail* is displayed the rotational speed is below 2700 RPM (+ − 200).
Thermal High fault	Ambient temperature of the system. The value displayed for this parameter will either be *ok* or *fail*. If *fail* is displayed the ambient temperature is over 60 °C (+ − 5).
OVP12V fault	Over voltage protection in 12V output. The value displayed for this parameter will either be *ok* or *fail*.
UVP12V fault	Under voltage protection in 12V output. The value displayed for this parameter will either be *ok* or *fail*.
OCP12V fault	Over current protection in 12V output. The value displayed for this parameter will either be *ok* or *fail*.
Current Share fault	Current share. The value displayed for this parameter will either be *ok* or *fail*.
PWOK status	Power O. K. signal. The value displayed for this parameter will either be *ok* or *not ok*.
EPOW status	Early Power Off Warning signal. The value displayed for this parameter will either be *ok* or *not ok*.
AC Range status	AC range. The value displayed for this parameter will either be 180 – 264 V or 90 – 137 V or 200 - 240 V.

Parameter	Description
Temperature	Ambient temperature for the system.
Life Time	Displays the total working time of the battery (hours) since the latest click on the *Reset* button.
Life Time Limited Count	Configures a max value for the battery working time.
OVP 12V fault reaction	Specifies the reaction to an over voltage fault in 12V output: *continue* or *shutdown-and-poweroff*.
OCP 12V fault reaction	Specifies the reaction to an over current fault in 12V output: *continue* or *shutdown-and-poweroff*.
Server Blade Power Switch	Powers on/off all server systems sequentially.

4.2.2.3   UPS

Displays chassis UPS (uninterruptable power supply) information, including Number of installed UPSs, UPS number, vendor, type, Agent IP Address, connect port, and SNMP community.

4.2.2.4   Chassis

This option displays information on the chassis status of the blade system, including front fans panel and rear fans panel. In addition, the environment temperature is displayed for the system. A reaction can be configured to be executed whenever this temperature reaches a critical threshold value.

The following parameters are displayed and can be set:

Parameter	Description
System LED	Controls the System LED: *on, off* or *blinking*.
Door Status (BX300) Rear Fan Door Status (BX600)	Intrusion status of fan panels. The value displayed will either be closed or open.
Ambient Temperature	Ambient temperature as detected by the sensors of the system. A reaction may be selected for each sensor to be executed whenever this temperature reaches a critical threshold value. The location of the sensors is as follows: 1: Located at the right of the middle plane housing 2: Located at the center of the middle plane housing 3: Located at the left of the middle plane housing 4: Located at the right of the front fans panel 5 to 8: Located at the switch blades 1 to 4 9 to 10: Located at the PSUs 1 and 2 10 to 11 (only BX600): Located at the PSUs 3 and 4

4.2.2.5   Fans

This option displays all fans that have been integrated into the system.

The fans are numbered, with the fan located at the left most of the modules being counted as the first one, while looking at the front side of the system.

The following parameters can be set:

Parameter	Description
Fans fail reaction control	These parameters are used to select a reactions in case of fan failures (*continue* or *shutdown-and-poweroff*).
Fans Test	This parameter is used to set the time for the daily testing of the fan performance.
Fans Life Time Counter	Displays the total working time of the fan since the latest click on the Reset button.
Fans Limited Count	Configures a max value for the fan working time.

4.2.2.6   Reset Management Blade

This option is used to reboot the management blade. The reboot does not impact the operation of the blade system.

4.2.3 LAN Interface

Within the management blade system a network service is provided, including web server, telnet interface, send mail facilities and DNS service. The option *LAN Interface* is used to handle the network configuration setting.

For this purpose several sub-options are offered, which are grouped in the following way:

– Internet Protocol

– Domain Name Server

– HTTP

– Telnet

– NTP

– SSL

– Duplex Mode

4.2.3.1 Internet Protocol

This option is used to configure the IP address for the management blade. The configuration may be carried out manually, or automatically using the DHCP service.

The following parameters can be set:

Parameter	Description
Use DHCP	This parameter is set to *enable* or *disable* the DHCP service.
IP Address	IP address for the management blade.
Subnet Mask	Subnet mask of the IP address for the management blade.
Gateway	IP gateway address.
Default Route	Specifies the default route: *LAN* or *PPP*.

4.2.3.2   Domain Name Server

This option is used to configure the Domain Name Server for the management blade. Actually, there are two server systems provided to perform this service: DNS Server 1 and DNS Server 2.

The following parameters can be set:

Parameter	Description
DNS Server 1	IP address of the first server system for the DNS service.
DNS Server 2	IP address of the second server system for the DNS service.

4.2.3.3   HTTP

This option is used to configure a HTTP port. There is one parameter to be set:

Parameter	Description
HTTP Port	HTTP port number.

4.2.3.4   Telnet

This option is used to configure the Telnet interface.

The following parameters can be set:

Parameter	Description
Port	Telnet port number. Default: 3172.
Drop Time	Time-out for the Telnet connection. Default: 900 seconds. After the time-out has elapsed, the user will have to perform another login.

4.2.3.5   NTP

This option is used to configure the NTP (network time protocol) service. You can enable or disable the NTP service, set the NTP server's IP address and choose the Sync Mode:

– *Sync Afterwards*
   Only if the management blade time is ahead of NTP server time, the management blade syncs the time from NTP server.

– *Sync Always*
   The management blade always syncs the time from NTP server, no matter whether the NTP server time is behind or ahead of management blade,

4.2.3.6   SSL

This option is used to enable/disable SSL for HTTP or Telnet connections.

4.2.3.7   Duplex Mode

This option is used to configure the management blade's NIC duplex mode. It should be *full duplex* or *half duplex*.

Parameter	Description
Execution Mode	Displays the current execution mode.
Setting Mode	Specifies which duplex mode should be active after the next reset.

4.2.4   SNMP Interface

To configure the SNMP interface two sub-options are used:

– SNMP Communities

– SNMP Trap Destination

4.2.4.1   SNMP Communities

The *SNMP Communities* option is used to show existing SNMP communities, as well as to add and delete communities.

After the option has been selected, the SNMP communities table is displayed. By typing in a community name and clicking the *New Community* button, a new community is added to those already existing. The maximum number of communities in the table is five.

An existing community is deleted from the table by selecting its name, marking the field *Delete* and submit with the Apply button.

4.2.4.2   SNMP Trap Destination

The SNMP Trap Destination option is used to show existing SNMP trap destinations, as well as to add and delete destinations.

After the option has been selected, the SNMP trap destination table is displayed. By typing in a destination address and clicking the *New Trap Destination* button, a new destination is added to those already existing. The maximum number of destinations in the table is five.

An existing destination is deleted from the table by selecting its name, marking the field *Delete* and submit with the Apply button.

4.2.5 Console Redirection

The console redirection option is used to perform KVM
(= Keyboard/Video/Mouse) switching. There are two sub-options:

– KVM Switch for Local

– IP Filters for Telnet, HTTP and SNMP

| **i** | For controlling console redirection via adv. KVM blade on PRIMERGY BX600 see section "Adv. KVM Blade" on page 88. |

4.2.5.1 KVM Switch for Local

Within the blade system for server management there are three ways to switch KVM (Keyboard/Video/Mouse) locally. One is by pressing the switch button at the front end of the system, the second is switching via a keyboard hotkey sequence, and the third one is to switch via the web or telnet user interface.

If KVM switching is performed via the web user interface, the following parameter is to be set:

Parameter	Description
Select KVM	Used to perform a KVM switch.

4.2.5.2 IP Filters for Telnet, HTTP and SNMP

To perform a remote KVM switch, a new IP address is made known to the system. An existing IP address can be deleted from the selecting table.

The following parameters can be set:

Parameter	Description
IP Filter For Telnet/HTTP/SNMP	Used to select an IP address for Telnet/HTTP/SNMP connection filtering that is to be deleted.
New Allowed IP	Used to enter a new IP address, which is added to the IP addresses known to the system.

| **i** | Note that the number 255 has a function similar to a wildcard character: |

If for example the IP filter list contains the IP filter `255.255.255.255`, the system handles **all** possible IP addresses as known. An IP filter like `192.168.255.255` would handle all IP addresses beginning with `192.168.` as known.

4.2.6 System Information

This option contains agent information, daylight saving time, controller time, and time-zone configuration.

Daylight Saving Time Format Example

● Start Date Example: `M03.5.0/02`

M03	March (**M**onth **03**; range: M01-M12)
5	last week (range: 1-5)
0	Sunday (range: 0-6)
02	2:00 o'clock am (range: 00-23)

Meaning: set the clock ahead one hour at 02:00 am on the Sunday of the last week of the third month.

● End Date Example: M10.4.1/03

M10	October (**M**onth **10**; range: M01-M12)
4	the fourth week (range: 1-5)
1	Monday (range: 0-6)
03	3:00 o'clock am (range: 00-23)

Meaning: set the clock back one hour at 03:00 am on the Monday of the fourth week of the tenth month.

4.2.7 User Accounts

Within the server management facilities there is a user database provided to enable user authentication control. New user accounts are added to this database via the *Add New User Account* option.

There is a static root user, who has full authorization to perform any activities in the user database and cannot be deleted. The default password for this root user is *root*.

When adding a new user account via the *Add New User Account* option the following parameters are to be set:

Parameter	Description
Name	User name.
Password	User password.
Confirm password	This field is used to confirm the password entered above.
Permissions	The user access rights are set by clicking the options explained below:
	Read Only – The user cannot change any settings except the password.
	Modify values – The user can change any setting, but is not allowed to add a new user account.
	Configure users – The user can change any setting, and is also allowed to add a new user account.
	Reset/Switch off – The user can switch the system on/off.
	Access EMP via CLI – The user can access the *Emergency Management Port* via CLI.
	$\boxed{\mathbf{i}}$ The following settings refer to the adv. KVM blade, which is only supported by the PRIMERGY BX600.
	Adv. KVM User (incl KVM configuration rights) – The user can configure the adv. KVM blade and access the server blades marked below.
	blade 1 ... blade 10 – The user can access the marked server blades via *Global Viewer*.
	KVM perm expiration date – Indicates the date when the adv. KVM blade user permissions expire.

4.2.8   Deployment Table

This option is used to display and to set the deployment configuration for each server blade. The particular server blade can be selected from a pull-down list. The parameters are very similar to those of the corresponding Telnet option, thus you can refer to the description in 3.3.12 on page 46).

4.2.9 PPP and Modem Setting

This option is used to configure the settings for PPP connections and to configure the modem. The parameters are very similar to those of the corresponding *Telnet* option, thus you can refer to the description in 3.3.14 on page 51).

4.3   Management Blade

The Management Blade option is used to display the number of management blades that have been embedded into the blade system for server management. There are up to two management blades in the system. One of these plays the master role for server management, and the other one is there to ensure redundancy. It is essential that there is at least one management blade installed to handle server management.

If there are two management blades, one of them will be selected for the master role in the boot phase. Both management blades will then start to boot up at the same time. The management blade that is the first to have its heartbeat detected will be the master.

The following parameters can be displayed or set:

Parameter	Description
Play Role	Present role of the management blade: Master or redundant management blade.
Manufacture	Information on the manufacturer of the management blade.
Produce Date	Date of management blade production.
Serial Number	Serial number of the management blade.
Product Number	Product number of the management blade.
Model Name	Name of the management blade model.
MAC Address	NIC address of the management blade.
Firmware Version	Version of the management blade firmware.
Hardware Version	Version of the management blade hardware.
Change Management Blade Role	Used to change the present role of the management blade from master to slave, i. e. from controlling to redundant management blade.

4.4   Switch Blade

The *Switch Blade* option is used to display the number of switch blades that have been embedded into the blade system for server management.

There are two GB NIC ports for each server blade, which connect to two separate switch blades. This has been arranged to ensure LAN connection redundancy.

Up to four switch blades can be installed into the blade system for server management. In each switch blade there are 10 ports for interconnection to the server blades and three ports for outbound links.

4.4.1   Switch Blade Info

The following parameters are displayed for information on a switch blade:

Parameter	Description
Located LED	Switch on/off the located LED.
Manufacture	Information on the manufacturer of the switch blade.
Produce Date	Date of switch blade production.
Serial Number	Serial number of the switch blade.
Product Number	Product number of the switch blade.
Model Name	Name of the switch blade model.
Board Version	Version of the switch blade board.
Firmware Version	Version of the switch blade firmware.
Network Setting	Information on the network setting for the switch blade, including the URL address of its web home page.
Mac Address	NIC address of the switch blade.
URL	URL address of the web home page for the switch blade.

IP Address	*Setting Value:*
	        Specifies a new IP address for the switch blade.
	
	Current Value:
	        Displays the current IP address of the switch blade.

Parameter	Description
Subnet Mask	*Setting Value:* Specifies a new subnet mask for the switch blade. *Current Value:* Displays the current subnet mask of the switch blade.
Gateway Address	*Setting Value:* Specifies a new gateway for the switch blade. *Current Value:* Displays the current gateway of the switch blade.
Apply	Activates the specified setting values (IP, Subnet, Gateway) - either immediately or - if the UART Port is used by another user - as soon as this port is available. For example: If another user runs console redirection at the moment, the settings will not be changed until the console redirection has been completed.
Reload	Refreshes the page. After applying the IP setting values you can use *Reload* to check whether the new settings are active already.

4.4.2   Backup/Restore

This option is used to backup/restore the configuration values of the management blade.

Parameter	Description
Backup/Restore	Specifies whether a backup process or a restore process is to be started.
View Backup File	Displays the stored backup configuration values.
Auto Restore	Specifies whether after a hot-swap action the new management blade is to be configured automatically according the stored backup configuration values.

4.5 Adv. KVM Blade

This option is used to administrate the *adv. KVM blade*. The *adv. KVM blade* is one of two types of KVM switch that can be installed in a PRIMERGY BX600 system unit. Both KVM switches - the *standard KVM blade* and the *adv. KVM blade* - provide VGA and PS2 keyboard and mouse pass-through connection to the server blades for local administration.

The *adv. KVM blade* additionally provides the following features:

– Web-based console redirection in graphic mode using the OSX application *Global Viewer*, see page 90.

– Remote USB CD-ROM emulation

– Remote USB floppy disk emulation

– Remote boot via emulated USB devices

– Management-blade-controlled user authentication

For information on installing and connecting the *adv. KVM blade*, please see the operating manual "PRIMERGY BX600 Basic Unit".

4.5.1 Adv. KVM Blade Info

The following parameters are displayed to provide information on the adv. KVM blade:

Parameter	Description
Adv. KVM blade Manufacture	Information on the manufacturer of the adv. KVM blade.
Adv. KVM blade Manufacture Date	Date of adv. KVM blade production
Adv. KVM blade Serial Number	Serial number of the adv. KVM blade
Adv. KVM blade Product Name	Product number of the adv. KVM blade
Adv. KVM blade Model Name	Name of the adv. KVM blade model
Adv. KVM blade Hardware Version	Version of the adv. KVM blade hardware

4.5.2   Adv. KVM Blade Configuration

This option is used to configure the network settings for the *adv. KVM blade* and to launch the redirection of a server blade console. The network configuration may be carried out manually, or automatically using the DHCP service.

The following parameters can be set:

Parameter	Description
Use DHCP (For KVM IP Address)	This parameter is set to *enable* or *disable* the DHCP service.
KVM IP Address	IP address for the adv. KVM blade.
KVM Gateway	IP address of the gateway.
KVM Subnet Mask	Subnet mask of the IP address for the adv. KVM blade.
KVM HTTP Port	Basic HTTP port of the adv. KVM blade. This port and the three subsequent ports will be occupied by the adv. KVM blade when launched.
KVM Redirection	[*Launch*] – Used to start the redirection of a server blade console. *Adv. KVM had been launched by <user>[<date> <time>]* – indicates that the server blade console redirection has already been launched by *user* at *date* and *time*.

4.5.3   Global Viewer

For the redirection of a server blade VGA screen, the *adv. KVM blade* provides the *Global Viewer*. The *Global Viewer* is an OSX application that will be downloaded from the *adv. KVM blade* when the user selects *KVM Redirection – launch* from the *KVM Configuration* menu. Via a drop-down menu, *Global Viewer* provides all the functions needed to select the server blades and emulated volumes and to configure the video screen redirection.

4.5.3.1   Requirements

Global Viewer requires the Microsoft Windows operating system running on the client computer. Internet Explorer must be used for the management blade web user interface session when launching *Global Viewer*.

Also make sure that *ActiveX* controls are enabled on the client computer before launching Global Viewer.

> **i**   For safety reasons it is recommended to restrict *ActiveX* controls to trusted sites. Proceed as follows to add the *adv. KVM blade* to the trusted sites and to enable *ActiveX* controls for the trusted sites.

► Go to the Internet Explorer menu *Tools - Internet Options - Security*.

► Select *Trusted sites*.

► Click *Sites* to open the *Trusted sites* menu.

► Enter `http://`*address* into the field *Add this site to the zone*, where address is the IP address of the *adv. KVM blade*.

► Click the *Add* button to confirm the entry.

► Click the *Close* button to exit the *Trusted sites* menu.

► Select *Custom Level*.

► Enable all the security options for downloading and executing *ActiveX* controls.

On the server blade to be redirected, the *mouse pointer acceleration* must be disabled. This is necessary for the synchronization of the server blade mouse and the client computer mouse. The settings for this purpose depend on the operating system of the redirected server blade.

If **Windows** is running on the server blade, select the *mouse properties* menu from the control panel.

Win2000:

▶ Go to the *Motion* menu.

▶ Deactivate the *mouse pointer acceleration*.

▶ Set the mouse speed to the default of 50%.

Win2003/WinXP:

▶ Enter the *Pointer Options* menu.

▶ Disable *Enhance pointer precision*.

If a **Linux** *X Window* session is running on the server blade, enter the command `xset m 1`.

It is recommended that you insert this command in the */etc/profile* of the server blade to automate this setting. Use the following statement for this setting:

```
if [ $DISPLAY ] ; then
    xset m 1
fi
```

> **i**   When installing RedHat or SuSE Linux on a server blade via *adv. KVM blade*, you should use a text mode, keyboard-based installation program instead of a graphical installation program. This is why mouse synchronization is not feasible during that phase.

> **i**   You must disable *mouse pointer acceleration* for each server blade that is to be redirected via *adv. KVM blade*.

4.5.3.2 Global Viewer Control Elements

This section describes the control elements of the *Global Viewer* user interface.

Drop-down menu

The *Global Viewer* drop-down menu provides the following functions:

File – Exit
>   Close the Global Viewer Session

HotKey – (Fullscreen | Ctrl-Enter | Alt-Escape | Alt-F4 | Alt-Space | Alt-SysReq | Alt-TabCtrl-Escape | Ctrl-Tab | Print Screen | Ctrl-Alt-Backspace | Ctrl-Alt-Delete | Ctrl-Alt-Escape | Ctrl-Alt-F1 | Ctrl-Alt-F2 | ... | Ctrl-Alt-F10)
>   Emulate entering reserved key codes by pointing to the appropriate menu item

Control – KVM Switch – (Blade 1 | Blade 2 | ... | Blade 10)
>   Select the server blade to be redirected. The selected server blade is indicated by a check mark. Empty slots are indicated by grayed-out menu items.

Control – USB Switch – (Blade 1 | Blade 2 | ... | Blade 10)
>   Select the server blade to be connected with emulated USB devices (floppy and/or CD-ROM). Grayed-out menu items indicate empty slots.

>   The selected server blade is indicated by a check mark.

>   Pointing to a selected server blade again causes the USB devices to be unplugged

Control – Image Response Time – (Fast | High | Middle | Low)
> Select the video image response time. Higher frame rates require more LAN bandwidth.

Control – Image Sampling – (4:1:1 | 4:4:4).
> Select the color depth. The default value is 4:1:1 and requires lower bandwidth.

Control – Image Quality – (Best | High | Better | Normal)
> Select the image quality (sharpness, etc.). Better quality requires more LAN bandwidth or results in lower frame rates.

Control – Connection timeout setting
> Timeout for reconnecting Global Viewer if the connection would be lost. The default timeout value is 30 seconds.

Control – Mouse Sync
> Synchronize the mouse pointer between client and server blade.

Storage – USB CDROM – CDROM Emulation
> Select a CD-ROM drive of the client to be connected to the selected server blade as an emulated USB device.
>
> Select *No Emulation* for no CD-ROM emulation.

Storage – USB Floppy – Floppy Emulation
> Select a floppy drive of the client or HDD stored floppy image. The contents of the selected floppy or floppy image will be loaded into the adv. KVM blade. Then the adv. KVM blade is able to emulate the floppy for the selected server blade.
>
> Select *No Emulation* for no floppy emulation.

Storage – USB Floppy – Mount Floppy Drive
> Plug in the emulated USB floppy drive. The selected server blade gets access to the floppy image stored in the *adv. KVM blade*. The text of the menu item toggles to *Unmount Floppy Drive*.

Storage – USB Floppy – Unmount Floppy Drive
> Unplug the emulated USB floppy drive. Now the local USB floppy drive can be accessed by the server blade. The text of the menu item toggles to *Mount Floppy Drive*.

Storage – USB Floppy – Save Image To
> Save the contents of the emulated floppy. This will cause the floppy image to be saved from the *adv. KVM blade* to a selected floppy drive or as an image file to the specified file on an HDD of the client.

Video – Brightness

> Opens a menu for adjusting the brightness of the Global Viewer window by means of scale bars for base signal and red, green and blue separately.

Video – Contrast

> Opens a menu for adjusting the contrast of the *Global Viewer* window by means of scale bars for base signal and red, green and blue separately.

Video – Auto Adjust

> Video settings will be adjusted automatically. This will require ten seconds, during which Global Viewer will be locked.

Video – Load Default Setting

> The factory settings will be loaded.

Video – Save Configuration

> The current video settings will be stored permanently.

Help – About

> Displays the *Global Viewer* firmware version.

Status bar
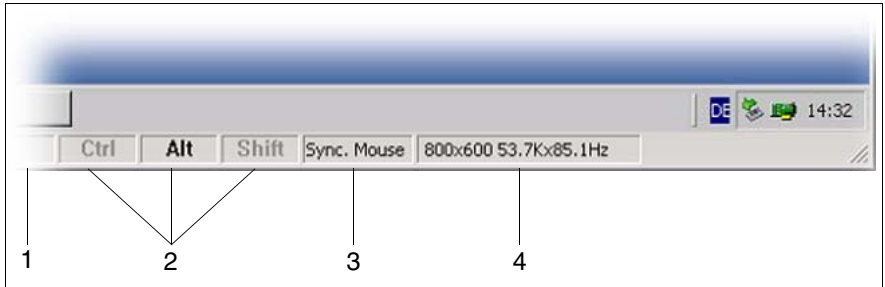
1	Multi-function region for printing miscellaneous messages.
2	These fields enable the user to enter reserved key code sequences using a combination of mouse clicking and pressing a key. A left click on *Ctrl*, *Alt* and/or *Shift* emulates toggling the corresponding key. Activated keys are highlighted.
3	A left click in this field will synchronize the local and remote mouse pointers.
4	In this field the video settings of the redirected screen are displayed.

4.5.3.3   Global Viewer Operating Tasks

User authentication

Accessing the KVM redirection via the *adv. KVM blad*e is restricted to the users defined via the management blade account administration, see section "User Accounts" on page 82.

To start the KVM redirection proceeed as follows:

► Select the menu *Adv. KVM blade - KVM Configuration*, see .

► Click *launch*.

The *Global Viewer Authentication* menu appears.

► Enter the *Username* and *Password* defined via the menu *System Property – Console Redirection – User Accounts.*

The *Global Viewer* window opens with the redirected console of the server blade selected in the last session.

Synchronizing the mouse

To operate the redirected console smoothly, you must synchronize the mouse pointer of server blade ( ) with the mouse pointer of the management client ( ).

⚠ **CAUTION!**

Make sure that *mouse pointer acceleration* is disabled on the server blade to be redirected, see section "Requirements" on page 90. With *mouse pointer acceleration* enabled, mouse synchronization is not feasible.

There are four ways to synchronize the mouse:

– Select *Control – Mouse Sync* from the *Global Viewer* drop-down menu.

– Left-click in the *Sync. Mouse* field of the *Global Viewer* status bar.

– Double-click the left and right mouse buttons simultaneously.

– Move the mouse pointer over any boundary (menu bar, scroll bar or status bar) of the activated *Global Viewer* window.

i You must synchronize the mouse every time you activate the *Global Viewer* window.

How to select a server blade for console redirection

► Select the menu *Control – KVM Switch*.

► Select the server blade to be redirected.

How to select a server blade for USB volume emulation

► Select the menu *Control – USB Switch*.

► Select the server blade to be connected to a CD-ROM drive or floppy disk drive of the remote client via USB volume emulation.

How to specify a remote CD-ROM drive to be connected to a server blade

► Select the menu *Storage – CDROM Emulation*.

► Select the CD-ROM drive to be emulated as a remote USB volume.

► If no CD-ROM drive is to be emulated, select No Emulation.

How to specify a remote floppy disk drive to be connected to a server blade

► Select the menu *Storage – USB Floppy – Floppy Emulation*.

► Select the floppy disk drive or the floppy disk image to be emulated as a remote USB volume of a server blade.

   The selected floppy disk drive or floppy disk image will be copied into the memory of the *adv. KVM blade* to be emulated as a remote USB floppy of a specified server blade until the end of the *Global Viewer* session.

   To connect the emulated USB floppy drive to a selected server blade you must execute the function *Mount Floppy Drive*, see below.

► Select *Mount Floppy Drive* to emulate plugging the remote floppy in the specified server blade.

► Select *Unmount Floppy Drive* to emulate unplugging the remote floppy from the specified server blade.

► Select *Save Image to* ... to save the emulated floppy from the adv. KVM blade to the specified floppy drive or an image file on a hard disk.

4.5.4   Adv. KVM Blade Update

This option is used to perform a firmware update for the *adv. KVM blade*. The upgrade is performed via the *TFTP* service. The current *adv. KVM blade* firmware version is printed at the top of the menu.

To perform an adv. KVM blade update, you can set the following parameters:

Parameter	Description
Image Name	File name of the adv. KVM blade image file.
TFTP Server IP Address	Address of the *TFTP* server providing the image file for the *adv. KVM blade* firmware.
Update Firmware	Used to start the firmware update process.
Firmware Update Status	Used to display the progress of the update process in a new window.

4.6   Server Blade

The web user interface for server management provides a number of options to display information on the server blades that have been embedded into the system. The maximum number of server blades that can be embedded is 20 for BX300 Systems and 10 for BX600 Systems.

In front of each server blade system that is displayed on the web page there is an icon showing the power status of the server blade and the KVM (= Keyboard/Video/Mouse) location.

The following icons are used for this purpose:

Means that the server blade is in power off state.

Means that the server blade is in power on state.

Means that the server blade is in power off state and KVM is located at this blade.

Means that the server blade is in power on state and KVM is located at this blade.

There are two parameters that can be set to activate or deactivate the server blades collectively:

Parameter	Description
Turn on all server blades	Power on all server blades sequentially.
Turn off all server blades	Power off all server blades sequentially.

4.6.1   Recovery

The recovery options provided by the system for server management have been arranged into four groups:

– Automatic Server Restart (ASR)

– Auto Configuration

– Power Control

– Boot Option

4.6.1.1   Automatic Server Restart (ASR)

Using this option the Boot Watchdog timer can be enabled or disabled and a time-out can be configured. When the time-out has been reached, the *Watchdog Action* is executed. The restart is retried until the boot is successful or until the value *Maximum restart retries* is reached.

4.6.1.2   Auto Configuration

There is one parameter that can be set to backup the CMOS configuration of the server blades, and another one to restore it:

Parameter	Description
CMOS Backup	Used to generate a backup of the BIOS parameters for the server blade. The server blade must be powered up, before the backup can be generated. If the backup has been generated successfully, it will appear in the CMOS file selecting table.
CMOS Restore	Used to restore the server blade parameters. To do this, a CMOS file is selected and the *Restore Policy* parameter is set. If the special option *smart Restore* is selected, the server blade parameters will be restored with MAC address and slot ID.

4.6.1.3 Power Control

Using this option, the power on/off procedure can be configured for the server blades. It is then performed according to a schedule table, instead of having power on and off performed manually.

4.6.1.4 Boot Option

Using this option, a boot option can be selected for the server blade. If the PXE boot option is selected, the server blade will try to boot up from the PXE server.

4.6.2 Blade Info

The *Blade Info* options have been arranged into four groups:

– Blade Info

– Memory Module

– Voltage

– Temperature

This option is used to display information on the server blades and their configuration.

4.6.2.1 Blade Info

The following parameters are displayed:

Parameter	Description
Blade Status	Displays the server blade health status.
Server LED	Configuration of the LED control at the front of the blade server: blinking or off.
OS Type	Displays the OS platform currently running on the server blade.
OS Version	Displays the version of the OS currently running on the server blade.
Model	Name of the server blade model.
Serial Number	Serial number of the server blade.
BIOS Version	Version of the server blade BIOS.

Parameter	Description
Firmware Version	Version of the server blade firmware.
KME Version	Version of the keyboard/mouse emulation.
Hardware Version	Displays server blade hardware version information.
Product Name	Displays server blade product name information.
Product Version	Displays server blade product version information.
Manufacture Date	Displays server blade manufacture date information.
PCI Add-In Card	Displays whether a PCI card is installed.
FSC Daughter Card	Displays whether a FC (Fibre Channel) daughter card is installed (only relevant for BX600 Blade Server Systems).
Processors	Information on the CPUs, including type, frequency, CPU stepping, and socket type.
Network Interface Card	Displays physical addresses and IP address of the server blade's network interface cards.

4.6.2.2   Memory Module

The following parameters are displayed:

Parameter	Description
Status	Displays the status of the memory module. Possible values: *ok* or *not-available*.
Module Size	Displays memory module size.
Type	Displays the type of the memory module (e.g. *ECC.DIMM.SDRAM)*.
Speed	Displays the speed of the memory module (e.g. *133*).
Socket Designation	Displays the designation of the memory module (e.g. *DIMM1*).

4.6.2.3 Voltage

This option is used to display a voltage summary of the server blade.

4.6.2.4 Temperature

This option is used to display a voltage summary of the server blade.

Related publications

PRIMERGY manuals are available in PDF format on the ServerBooks CD. The ServerBooks CD is part of the ServerStart Bundle delivered with each server system.

The PDF files for the manuals can also be downloaded free of charge from the Internet. The overview page showing the online documentation available in the Internet can be found via the URL:

http://manuals.fujitsu-siemens.com

> **i** You will find further useful information in the documentation for your operating system.

[1] **PRIMERGY BX 300 Blade Server System**
Operating Manual

[2] **PRIMERGY BX600 Basic Unit**
Operating Manual

[3] **PRIMERGY BX Blade Server Systems**
LAN Switch Blade - User Interface Description
User Guide

[4] RemoteDeploy
User Manual

[5] **BIOS-Setup**
Reference Manual

[6] ServerStart
User Guide

[7] **RemoteView**
User Guide

[8] **ServerView**
User Guide

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