

BELKIN.
OmniView^{IP*}
5216K/5232K
User Manual

PM00020 - F1DP2XXG

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INTRODUCTION

Congratulations and thank you for purchasing the Belkin OmniView IP 5216K/5232K Switch with the latest in IP KVM technology. This Switch provides a simple, quick, remote server management solution for medium to large-size businesses. The Switch allows two remote digital users and one local analog user to access and control your servers over the Internet via a standard web browser.

Combine the Switch with the Belkin Central Access Appliance 5000HQ to address the management and administration needs of more users accessing more servers across geographical locations.

The innovative technology in the OmniView IP 5216K/5232K Switch combines hardware and software technology to deliver high-performance remote access, and enables you to troubleshoot servers faster and more efficiently, reducing server downtime and service costs in mission-critical environments.

Belkin's distinctive technology provides IT professionals:

- Immediate video synchronization, allowing access through the entire boot sequence, when troubleshooting is most critical.
- Immediate video display and keyboard output to intercept systems at their earliest status upon power-up or reboot.
- Instantaneous access between multiple sessions over IP. Users experience immediate access when switching between attached systems, eliminating the delay when managing time-sensitive system access and repair.

This User Manual provides all the details you'll need to install and operate your new OmniView IP 5216K/5232K Switch, in addition to expert troubleshooting advice—in the unlikely event of a problem. For quick and easy installation, please refer to the Quick Installation Guide included in your packaging.

We appreciate your business and are confident that you will soon see for yourself why over 1 million Belkin OmniView KVM products are in use worldwide.

Key Features

High-Performance Remote Access

- Access, switch, view, and control faster than before
- Switch from one remote server to another instantly
- Quicker performance over the Internet and congested networks
- View all the information displayed during the post and boot process

Web-Browser Based

The Switch allows you to access your KVM switch and all connected servers from any computer connected to the LAN, WAN, or Internet using Firefox® or Microsoft Internet Explorer®.

Out of Band—BIOS-Level Access

The Switch allows you to remotely access the basic input/output system (BIOS) of your servers to make changes and perform reboots, regardless of network connectivity or server condition.

User-Friendly Interface

The web-based interface allows you to set up and change the Switch's functions quickly and easily through your web browser, without having to install additional software onto your servers.

Remote Serial Access

The Switch provides support for up to two serial devices, such as a managed power distribution unit (PDU), so you can remotely perform hard reboots of your servers.

Virtual-Media Technology

The Switch provides virtual-media support for up to two servers. This allows the remote user to copy files from a USB or CD-ROM drive to a target server that may be anywhere in the world. Or boot a remote server from a local USB or CD-ROM drive.

Enhanced Security

The IP device provides 128-bit Secure Sockets Layer (SSL) authentication and password protection to prevent unauthorized access to your servers and protect data transferred over the Internet. The data communication is also protected with AES 256-bit encryption.

Scalable Centralized Management

Additional Switches can be added as your data center grows and the entire inventory can be managed under the Belkin Central Access Appliance 5000HQ. This is ideal for corporations operating servers at multiple sites such as testing labs, campuses, branch offices, and multi-floor facilities.

Video Resolution

The Switch supports video resolutions of up to 1600x1200@75Hz for both local and remote consoles.

Flash-Upgradeable

Flash upgrades allow you to obtain the latest firmware updates for your Switch. These firmware updates ensure that the Switch is compatible with the latest devices.

System Contents

- 1 OmniView IP 5216K/5232K Switch
- 1 AC Power Cable
- 1 Serial-to-RJ45 Interface Cable
- 1x User Manual CD
- 1 Quick Start Guide
- 1 Set Rack-Mount Brackets and Screws

System Requirements

Host Computer Operating-System (OS) Platforms

The Switch is compatible with CPUs running on, but not limited to, the following OS platforms:

- Windows® 2000, XP, Server 2003 and 2008, Vista®
- Microsoft® DOS 5.x and above
- Red Hat® Linux® 8.x and above
- Sun™*
- Novell® 5.x
- Sun Solaris™ 8.x and above*

*USB server interface module required

Servers

- PS/2 and USB computers/servers
- VGA, SVGA, or XGA monitors

Keyboards and Mice

- USB-compatible

Monitors

- CRT and LCD (with VGA, SVGA, or XGA monitors)

Remote-Client Browser

The Switch may be accessed remotely over a TCP/IP connection from computers using the following web browsers and OS platforms:

Windows

- Microsoft Internet Explorer 6.0 and above with ActiveX® support
- Firefox 3.0 and above**

Linux (major distributions only)

- Firefox 3.0 and above**

**Firefox support may require a firmware upgrade. Visit www.belkin.com/support for more information.

Server Interface Modules

Connecting the Switch to a server requires a custom Belkin OmniView SMB Server Interface Module and a standard CAT5 patch cable.

INTRODUCTION

OmniView SMB Server Interface Modules:

F1DP101A-AP (PS/2 style)

F1DP101A-AU (USB style)

F1DP101A-AS (Legacy Sun, miniDIN8 style)

F1DP101A-AP-8PK (PS/2 style, 8-pack)

F1DP101A-AU-8PK (USB style, 8-pack)

CAT5 Cables

Belkin highly recommends you use Belkin Category 5e, FastCAT™ 5e, or Category 6 Patch Cables for your OmniView IP 5216K/5232K Switch to help ensure the superior performance of your video. These Cables offer the highest quality possible to ensure optimal data and video transmission.

Belkin UTP Patch Cables:

A3L791-XX-YYY (CAT5e)

A3L850-XX-YYY (FastCAT 5e)

A3L980-XX-YYY (CAT6)

Terminology

Below are some terms and their meanings used in this guide.

Term	Meaning
Target server	The computers/servers that are accessed remotely via the Switch.
Client computer	The PC running a remote session.
Remote session	The process of remotely accessing and controlling target servers connected to the Switch from a user workstation.

Note: Use CAT6 solid cables for optimal video at longer lengths. Product codes and availability may vary.

INTRODUCTION

Unit Display Diagrams

Figure 1 illustrates the front panel of the OmniView IP 5232K Switch.



Figure 1 OmniView IP 5232K Switch – front view

LED and button table

LED	Function
Port	Solid: Server is connected to and powered on
	Fast Blink: When a port is being accessed remotely
	Slow Blink: When a port is being accessed locally
Ready	Solid Green: When unit is available for use
Link	Blinking Green: Unit is connected to the network
Power	Power Indicator

Note: The port LEDs flash in series during boot up and during system upgrades. Allow approximately 45 seconds for boot up.

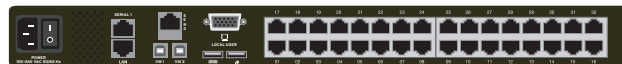


Figure 2 OmniView IP 5232K Switch – rear view

Connector table

Connector	Function
Local Console	Connect a keyboard, video, and mouse to operate the Switch locally.
Serial 1	Connect any serial device.
Serial 2	Connect any serial device.
LAN	Connect to 10/100Mb Ethernet. Yellow LED illuminates when connected to a LAN. Green LED illuminates when a remote session is in progress.
Server Ports	Connect to servers via SIMs (Server Interface Modules).
VM1	Connect to server on server port 1 via USB cable.
VM2	Connect to server on server port 2 via USB cable.

INSTALLATION

Pre-Installation Guidelines

- Place cables away from fluorescent lights, air conditioners, and machines that are likely to generate electrical noise.
- Place the Switch on a flat, clean, and dry surface.
- The Switch is not intended for connection to exposed outdoor lines.
- Ensure that the maximum distance between each computer and the Switch does not exceed 100 ft. for SIMs.

Avoiding general rack-mounting problems

Elevated operating ambient temperature

The operating ambient temperature of the rack environment may be greater than the room ambient when installing into a closed or multiunit rack assembly. Install the equipment in an environment compatible with the maximum rated ambient temperature.

Reduced airflow

Install the equipment in a rack in such a way that the amount of airflow required for safe operation is not compromised. Leave a gap of at least 5cm/2 inches on each side of the Switch.

Mechanical loading

Mount the equipment in the rack in such a way that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit overloading

When connecting the equipment to the supply circuit, consider the effect that overloading of circuits might have on over-current protection and supply wiring.

Reliable electrical grounding of rack-mounted equipment should be maintained. Provide attention to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

INSTALLATION

Rack-mounting the SMB IP KVM Switch

Rack-mount the Switch using the supplied rack-mount kit. The brackets can be placed in two possible positions (see Figure 3).

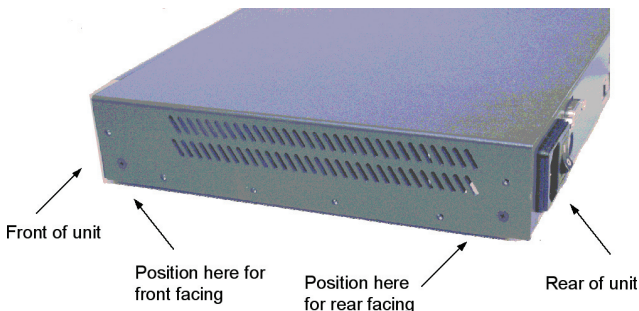


Figure 3 Bracket positions

Place the brackets toward the front of the unit so that the unit can be mounted front facing; or place the brackets toward the rear of the unit so that it can be mounted rear facing on the back of a rack. Figure 4 illustrates the bracket connected for rear facing. Screw the bracket to the Switch using the screws provided.

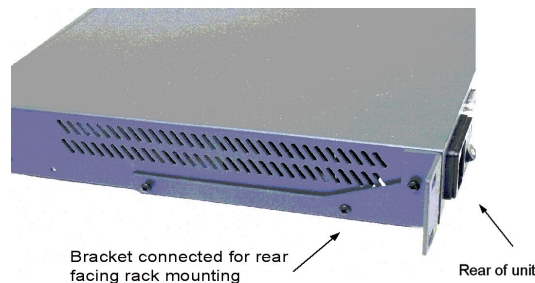


Figure 4 Bracket connected

Connecting the System

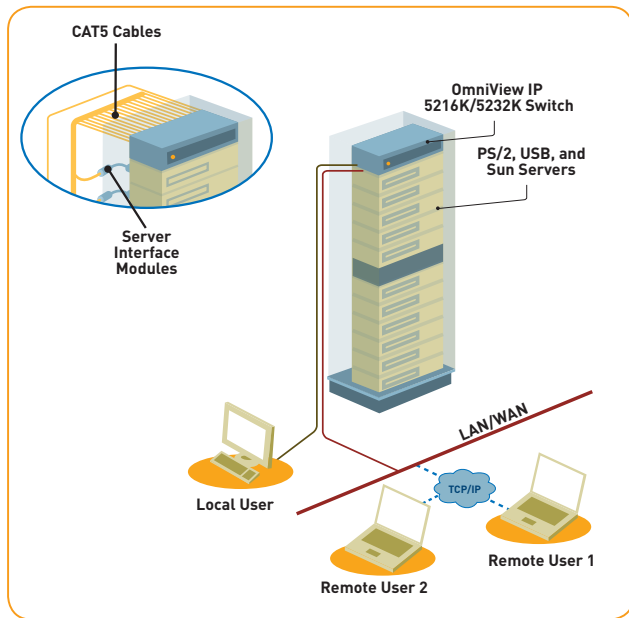


Figure 5 Switch's system overview

The Server Interface Modules (SIMs)

Each computer/server is directly connected to the Switch via the appropriate SIM using CAT5 cables in a star configuration. No external power is needed at the remote SIMs. The SIMs draw their power from the computer's keyboard port (PS/2 SIM) or from the USB port (USB SIM). The figures below illustrate the SIM PS/2 and USB.



Figure 6 USB SIM2 (part no. F1DP101A-AU)



Figure 7 PS/2 SIM (part no. F1DP101A-AP)

Connecting a PS/2 SIM

Figure 8 illustrates the PS/2 SIM connections.

1. Power down the server
2. Connect the mouse connector to the computer's mouse port.
3. Connect the keyboard connector to the computer's keyboard port.
4. Connect the video connector to the computer's VGA port.
5. Power on the server.

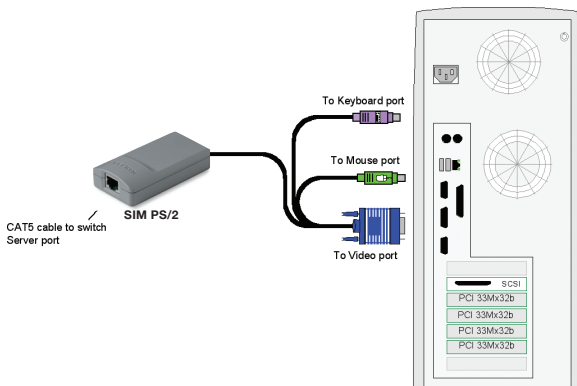


Figure 8 PS/2 SIM connections

Connecting a USB SIM

The USB SIM supports Windows 2000 and later, Sun, SGI, and all modern Linux distributions. The connections for USB SIM are exactly the same. Figure 9 illustrates the USB SIM and its connections.

To connect the USB SIM:

1. Connect the video connector to the server's VGA port.
2. Connect the USB connector to the server's USB port.

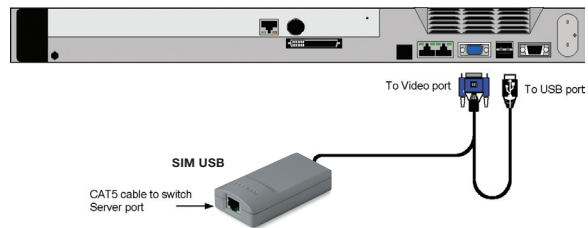


Figure 9 USB SIM

Connecting to the network

Connect the network cable to the LAN port of the Switch. This must be done before powering on the Switch.

Connecting the CAT5 cables

1. Connect one connector to the SIM's RJ45 port.
2. Connect the other connector to an available server port on the Switch.
3. Follow the steps above for each computer.

Connecting the local console

To operate the system locally, connect a local console to the Switch:

1. Connect the monitor's cable to the Switch's console monitor port.
2. Connect the keyboard's cable to the Switch's console keyboard port.
3. Connect the mouse's connector to the Switch's console mouse port.

Connecting the power supply

1. Using the power cord provided, connect the Switch to a socket outlet with a grounding connection. Only use the power cord supplied with the unit.
2. Power on the Switch. Allow approximately 45 seconds for boot up.

Setting the IP Address

By default, the Switch boots with an automatically assigned IP address from a DHCP (Dynamic Host Configuration Protocol) server on the network. The DHCP server provides a valid IP address, gateway address, and subnet mask.

You can identify the IP address from the OSD at the local position. You can set the IP address locally via the OSD where there is no DHCP server as follows:

1. From the local keyboard, press "Scroll Lock". The OSD Main window appears (see Figure 10).

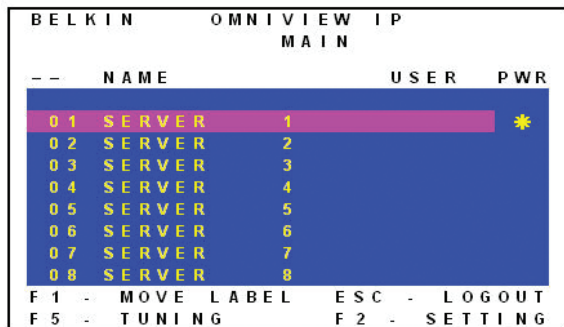


Figure 10 OSD Main window

2. Press "F2". The Settings window appears (see Figure 11).

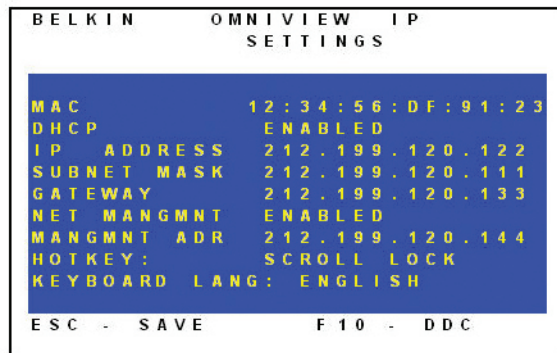


Figure 11 Settings window

In the Settings window, navigate downward using the Tab key. At the bottom of the window, press "Tab" to go to the top of the window. Change settings by typing in the selected area or by pressing the space bar—whichever is relevant.

Changing the network parameters

Enable DHCP – When a DHCP server is active on the same network to which the Switch is connected, DHCP provides automatic IP assignment.

When DHCP is disabled (Recommended) – You can assign a fixed IP address to the Switch.

Consult your network administrator regarding the use of the DHCP. When DHCP is disabled, enter the **IP Address**, **Subnet Mask**, and **Gateway** as given by your network administrator.

Once the IP address is satisfactory, log in to the web interface to complete the configuration, as explained in the next section. (Network parameters can also be changed from the remote GUI as explained on page 17).

WEB INTERFACE

Logging In to the Web Interface

Client computer operating system. Windows 2000 or higher, with Internet Explorer 6.0 or later version. 128-bit encryption support is required.

Windows Vista Note! To log in to the web configuration interface with Windows Vista, run Internet Explorer as “administrator.” To do this, right-click the Internet Explorer icon on the task bar and select “Run” as “administrator.” See figure below.

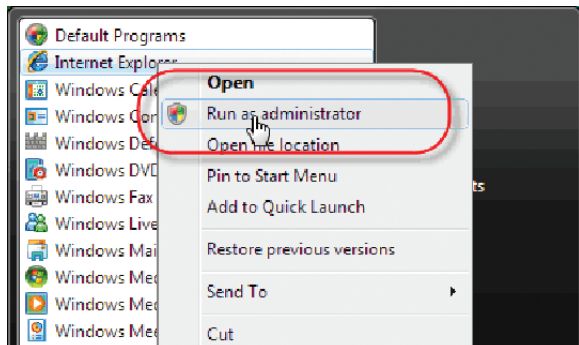


Figure 12 Select Run as administrator

SSL certificate notes

When first connecting, two browser security warnings appear. Click “Yes” to proceed.

The first warning disappears upon the first Switch client installation, when Belkin’s root certificate is installed.

On first connection, install the Belkin certificate and ActiveX control. You must be logged in as an administrator on your computer to install the ActiveX control. Once the ActiveX control is installed, all types of users can log in.

Logging in

To complete the initial setup via the web configuration interface:

1. Open your web browser (Internet Explorer version 6.0 or higher).
2. Type the Switch's system IP address—http or https://IP address/ - and press "Enter". The login page appears (see Figure 13).

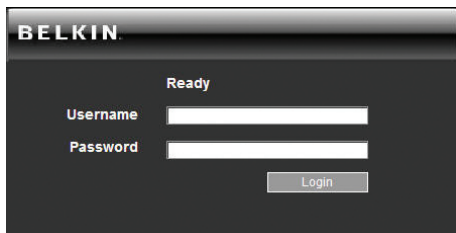


Figure 13 Login page

3. Type the default administrator user name (**admin**) and password (**SMBremote**) (case-sensitive).
4. Press "Enter". The web interface opens at the Targets page (see Figure 14).
5. Bookmark the page for easy reference.

admin: Targets

Server Name	Ports Status	Current User
Server 01	On	
Server 02	Off	
Server 03	Off	
Server 04	Off	
Server 05	Off	
Server 06	Off	
Server 07	Off	
Server 08	Off	
Server 09	Off	
Server 10	Off	
Server 11	Off	
Server 12	Off	
Server 13	Off	
Server 14	Off	
Server 15	Off	
Server 16	Off	
Telnet 01	On	
Telnet 02	On	

Figure 14 Targets page

By default, an administrator can access all connected Targets, so they all appear on the Targets page.

Columns:

Server Name – The server name can be changed in the configuration settings to give the server an identifiable name.

Port Status – Port status can be on, off, or busy (i.e., another user is accessing the server).

Current User – The current user (if any) who is accessing the target.

Connecting to a target server

To connect to a target, click the desired target in the Server Name column. The screen of the target appears inside the remote console window. The “Accessing a Target Server” section on page 28 explains how to conduct a remote session. The following sections first explain how to configure the system.

Configuring the System

Configuring the system includes setting network parameters, user and security settings, and maintenance.

From the menu, click “Configuration”. The “Network > Configuration” page, including the Configuration menu, appears:

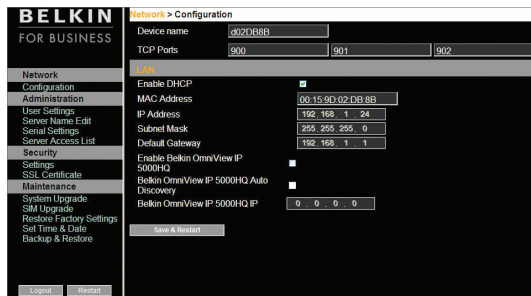


Figure 15 Network > Configuration page

Network > Configuration

Consult your network administrator for the network settings if necessary.

Device Name – Type a name for the Switch.

TCP Ports – Choose any three TCP ports between ports 800 to 65535. When the Switch is a standalone system, the ports do not have to be consecutive. (The port numbers can be changed from Central Access Appliance, if needed.)

Notes

The firewall or router security access list must enable inbound communication through the selected TCP ports for the Switch's IP address.

For client computer access from a secured LAN, the selected ports should be open for outbound communication.

LAN

Under LAN in Figure 14, is the following:

Enable DHCP – When a DHCP server is active on the same network to which the Switch is connected, DHCP provides automatic IP assignment.

When DHCP is disabled (Recommended) – You can assign a fixed IP address to Switch.

Consult your network administrator regarding the use of the DHCP.

When DHCP is disabled, enter the **IP Address**, **Subnet Mask**, and **Default Gateway** for **LAN**, as given by your network administrator. These parameters can be configured locally from the OSD as explained on page 14.

OmniView IP Central Access Appliance 5000HQ

OmniView IP 5000HQ is a centralized, IP-based system for secure control of servers and network devices, power, and user administration in the datacenter environment. The 5000HQ combines out-of-band, KVM-via-IP access with modern IT standards and requirements. It is the most comprehensive remote server maintenance solution available in the market today.

Enable OmniView IP 5000HQ – Check this option to allow the Switch to be remotely managed by Central Manager Appliance 5000HQ.

Manager Auto Discovery – When checked, 5000HQ automatically detects the Switch if it resides on the same network segment.

Manager IP – If the Switch resides on a different segment, type the static IP address of the 5000HQ management appliance. (We advise typing the static IP address of the 5000HQ management appliance even if the Switch resides on the same network segment as the 5000HQ management appliance.)

Administration > User Settings

From the menu, click “User Settings” and Figure 16 appears.

Administration > User Settings

User: Password: Block:

Permission: Administrator Confirm Password:

	User Name	Permission	Status
1	admin	Administrator	not blocked

Figure 16 User Settings

On this page, an administrator creates and edits users.

There are three levels of user access:

- Administrator
- User
- View only

Administrator

An administrator has unrestricted access to all windows and settings and can “take over” any active session. An administrator can change the name and password and target server permissions of all users.

User

A user can access/control permitted target servers, but cannot use the advanced mouse settings.


A user has no access to the web-configuration interface.

View only

“View only” can view the screen of the currently accessed target server without keyboard and mouse control. A “view only” indicator appears on the viewer’s local mouse pointer.


Adding a user

To add a user:

1. Click  and type a name and a password. The password must be at least six characters (letters or numbers), and must not include the user name, even if other characters are added.


Note! The following “special” characters: &, <, >, ", {, and } cannot be used for either the user name or password.

Depending on the security level chosen, the user name and password parameters are different. See the “Security > Settings” section on page 23.

2. Select the permission type from the “Permission” box.
3. Click  and the user will appear in the list of users. The Permission column shows the user level (Administrator, User, and View Only). The Status column shows whether the user is blocked or unblocked (explained in the “Blocking a user” section).



Editing a user

To edit a user:



1. Select the user from the user drop-down menu.
2. You can now change all the parameters—user name, permission, password, and blocking status (see the “Blocking a user” section).
3. Click . The changes are saved.

Deleting a user

To delete a user:

1. Select the user from the list.
2. Click .
3. Click  to save any changes.

Blocking a user

An alternative to deleting a user entry completely is blocking a user. This means that the user’s name and password is stored, but the user is unable to access the system. Check “Block” to block a user, and then click  to save any changes. Uncheck “Block” and click  to allow the user access.

Administration > Server Name Edit

Give the servers connected to the Switch unique names, so that users accessing the system can identify the servers easily.

To do so:

1. From the menu, click “Server Name Edit”. The Switch Configuration window appears (see Figure 17).

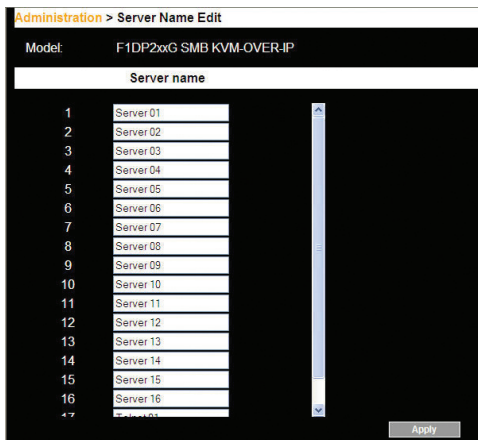


Figure 17 Switch Configuration

2. In the “Server Name” section, change the name of the connected servers by selecting the server name and typing a new name. Click to save changes.

Administration > Serial Settings

Where you have a serial device connected to the system, you must configure the serial (RS232) settings.

To do so:

From the menu, click “Serial Settings”. The Serial Settings page will appear (see Figure 18).

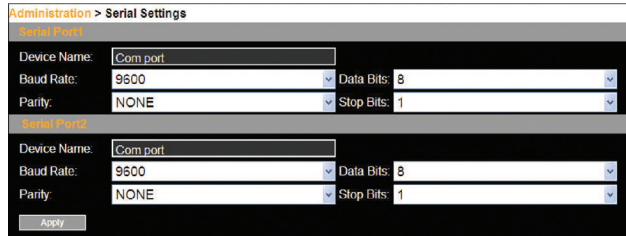


Figure 18 Serial Settings

For each serial device connected, type a device name and choose the correct device parameters.

Administration > Server Access List

By default, access is allowed to all servers for administrators. For other users, define the access rights of each user separately.

To do so:

1. From the menu, click “Server Access List”. The Access List Configuration window will appear (see Figure 19).

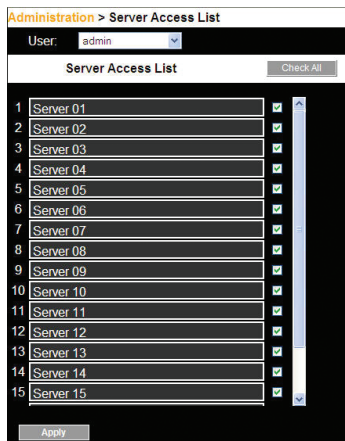


Figure 19 Server Access List Configuration

2. Select a user from the user drop-down menu.
3. Check the target servers the user can access (according to his or her access permissions). To select all target servers, click .
4. Click to save the selection.
5. Repeat the steps above for additional users.

Security > Settings

Configure the security features, such as Account Blocking, Password Policy, and Idle Timeout, as explained below.

From the Security section, click “Settings”. The “Security > Settings” page appears (see Figure 20).

Figure 20 Security Settings

Security Settings fields:

Account Blocking – Decide on the number of attempts to log in with a wrong user name or password, after which there is a time lock or a total block.

Password Policy

For local and remote users, you have the option of a standard or high security level of password. The table below shows the parameters of the two options.

Standard security policy	High security policy
6 characters or more	8 characters or more, must include at least 1 digit and 1 uppercase letter, and 1 “special” character as follows: !@#\$%^&*()_-=+[]';:~/?/
Must not include the user name	Must not include the user name

Check the box to enable the high security password policy. If left unchecked, the standard security policy applies.

OSD password enabled – For the local user, access to the OSD can be password enabled or disabled (default), with the option of a standard or high security level of password as explained above. Select the check box to enable password.

Note! The user access permissions are the same whether access is done locally or remotely.

Idle Timeout – Select the timeout inactivity period after which the user is disconnected from the system. Choose “No Timeout” to disable timeout.

Click to save any security changes.

Security > SSL Certificate

You can install an SSL certificate.

To do so:

From the menu, select “SSL Certificate”. The Install SSL Certificate page appears (see Figure 21).

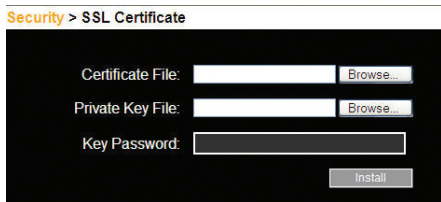


Figure 21 Install SSL Certificate page

Certificate File – Browse to locate the “cer” file (.ssl format).

Private Key File – Browse to locate the “private key” file (.pem format).

Key Password – Type the key password.

Click . The certificate installs. The device restarts automatically.

Maintenance > Switch Upgrade

Upgrade the Switch firmware to take advantage of new features. Download the firmware from the support section of Belkin’s website at www.belkin.com/support. Save the firmware file on the client computer.

From the menu, select “Switch Upgrade”. The Upgrade window will appear, showing the current firmware version (see Figure 22).

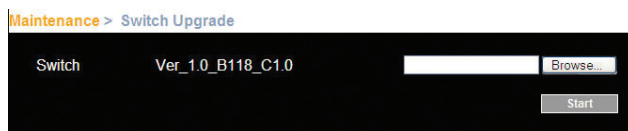


Figure 22 Firmware Upgrade

1. Locate and upload the firmware file.
2. Verify the current and uploaded version of the firmware.
3. Click to begin the upgrade process. The unit will reboot automatically. You should see the Login page reappear after about two minutes.

Note!

Depending on the type of firmware upgrade type, the following settings may be erased: user settings, server names, and mouse and video adjustments. For more information, refer to the firmware release notes.

The network settings will remain intact.

Maintenance > SIM Upgrade

Upgrade the SIM firmware to take advantage of new features. Download the firmware from the support section of the Belkin website at www.belkin.com/support. Save the firmware file on the client computer.

- From the menu, select "SIM Upgrade". The Upgrade window should appear, showing the current firmware version (see Figure 23).
- Select the servers connected to the SIM you wish to upgrade.
- Verify the current version of the firmware by clicking .
- Locate and upload the firmware file.
- Press and the firmware upgrades.

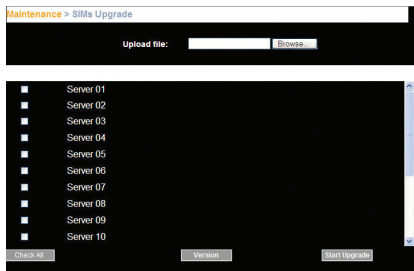


Figure 23 SIM Upgrade

Restore Factory Settings

You can restore the Switch to the factory settings. This restores the original Switch parameters, resetting all the information added by the administrators, including network settings*, servers, users, and passwords, etc.

*You have the option to preserve network settings, explained below.

Warning! Once reset the data cannot be retrieved.

To restore factory settings:

- From the menu, select "Restore Factory Settings". The Restore Factory Settings page appears (see Figure 24).

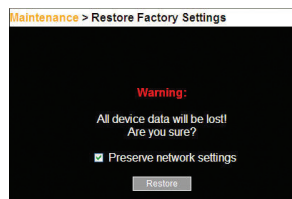


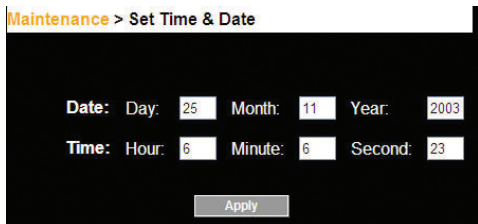
Figure 24 Restore factory settings

- Check the box if you want to preserve network settings.
- Click .

Set Time and Date

The time and date set feature is used when recording log events. To set the time and date:

From the menu, select “Time & Date” and Figure 25 appears.



Maintenance > Set Time & Date

Date: Day: Month: Year:

Time: Hour: Minute: Second:

Figure 25 Set Time & Date

Type the appropriate parameters.

Back Up and Restore

You can back up all configuration data to restore it at a later date. To do so:

From the menu, select “Backup & Restore” and Figure 26 appears.

Maintenance > Backup



Restore Configuration data:

Backup Configuration data:

Figure 26 Backup & Restore

To back up the configuration data, click to save the file.

To restore the configuration data, browse to locate the file and press . The device restarts.

Saving Changes and Logging Out

To save any configuration changes, click the relevant button on the current page. This could be or just .

To restart the Switch, press .

To exit the Configuration menu and close the session, click .

Only one administrator can log in to the Configuration area at a time. After the idle timeout (see the “Security > Settings” section on page 23), the session terminates.

REMOTE ACCESS

Accessing a Target Server

Log in to the web interface, as explained on page 16. The web interface opens at the Targets page (see Figure 14 on page 16). To connect to a target or serial device, click the desired target/device in the Server Name column. (A server being used by another user cannot be accessed.) The screen of the target/device appears inside a remote console window.

Note! For a user, only permitted targets appear on the Targets page. Figure 27 illustrates the remote console window.

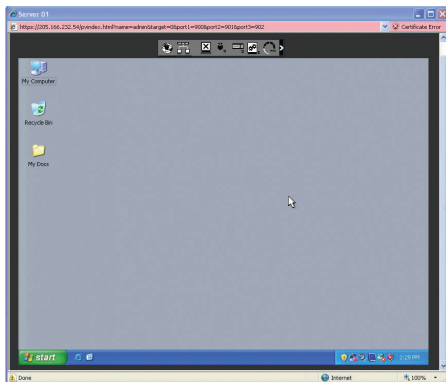


Figure 27 Remote Console window

On the remote console you have the following:

Server name – The currently accessed server identity can be checked any time by looking at the “Server name” on the Internet Explorer title bar.

Toolbar icon – This is the minimized toolbar from which you switch and configure the system.


Remote Session icon – Hold the mouse over the icon to view information about current server, connection time, and video mode.

NOTE: If a user connects to a target device with a higher screen resolution than the local computer, the remote viewer window will display a portion of the target device screen, with scroll bars for viewing the remainder of the screen. The user may view the entire screen by adjusting the resolution on the target device, the local computer, or both.

The Toolbar

To maximize the toolbar:

Click the arrow . Click again to minimize the toolbar.

When maximized, the toolbar can be dragged and dropped to anywhere on the screen, by dragging the icon . When minimized, the icon glides to a side of the screen.

To hide the toolbar, either:

Double-click the Switch system tray icon .



or

Press "F9".

To display the toolbar, repeat the action above. Also see page XX.

Switching to a different server

To connect to a different server:

1. From the toolbar, click  or right-click . A list of available servers appears. The currently connected server is highlighted in bold.
2. Click the desired server name. The screen of the selected server appears.

Changing the performance settings

You can alter the bandwidth settings from the toolbar.

To alter the settings:

From the toolbar, click . The "Settings..." dialog box appears (see Figure 28).

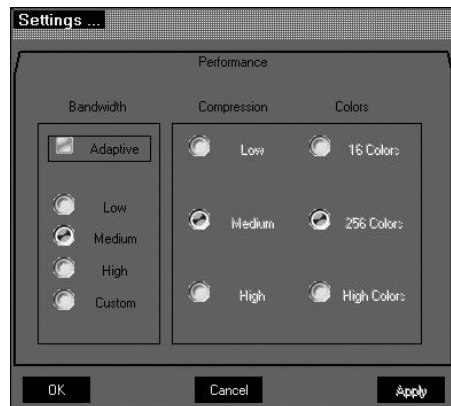


Figure 28 Settings.. Dialog box

Bandwidth

Choose from the following options:

Adaptive – Automatically adapts to the best compression and colors according to the network conditions. (Not recommended because network parameters may change frequently, impacting on user experience.)

Low – Select “Low” for high compression and 16 colors.

Medium – Select “Medium” for medium compression and 256 colors. Medium is recommended when using a standard Internet connection.


High – For optimal performance when working on a LAN, select “High”. This gives a low compression and high colors (16-bit).

Custom – You can choose your own compression and color levels.

Click “OK”. The screen of the last accessed target server appears.

Adjusting the video settings

To change the video settings:

From the toolbar, click . You have the following options:

- Refresh
- Manual Video Adjust
- Auto Video Adjust

Each option is explained below.

Refresh

Select “Refresh” to refresh the video image. Refresh may be needed when changing the display attributes of a target server.

Manual video adjust

Use the manual video adjustment for fine-tuning the target server video settings after auto adjustment. This feature should also be used for adapting to a noisy environment, a non-standard VGA signal, or when in full-screen DOS/CLI mode.

To adjust the video manually:

Click "Manual Video Adjust". The manual controls appear (see Figure 29). A red frame also appears around the screen. This represents the screen area according to the server's screen resolution. Perform the adjustments inside and relative to this frame.

Brightness/Contrast – Use the scales to adjust the brightness and contrast of the displayed image. Move the sliders to change the displayed image. Click in the area of the sliders for fine-tuning.

For the following controls, choose the appropriate measurement.

Horizontal Offset – Defines the starting position of each line on the displayed image.

Vertical Offset – Defines the vertical starting position of the displayed image.

Phase – Defines the point at which each pixel is sampled.

Scale – Defines the scale resolution of the session image.

Select Filter – Defines the filter of the input video from the server. A higher filter reduces the noise level, but makes the image heavier.

Noise Level – Represents the video "noise" when a static screen is displayed.

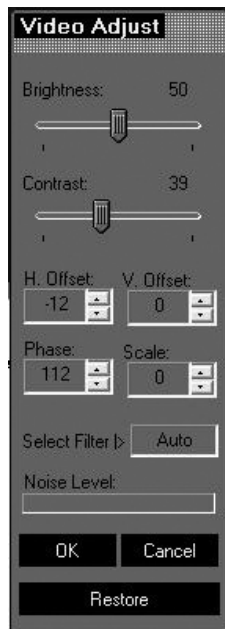


Figure 29 Manual Video Adjustments controls


Auto video adjust

To adjust the video automatically:

Click “Auto Video Adjust”. The process takes a few seconds. If the process runs for more than three times, there is an abnormal noise level. Check the video cable and verify that no dynamic video application is running on the target server’s desktop.

Perform the procedure where necessary for each target server or new screen resolution.

Keyboard key sequences

Click . A list of defined keyboard sequences appears. When clicked, these transmit directly to the target server, and will not affect the client computer.

For example, select “Ctrl-Alt-Del” to send this 3-key sequence to the target server to initiate its shutdown/login process.

To add a keyboard sequence:

Click “Add/Remove”. The Special Key Manager box appears (see Figure 30).



Figure 30 Special Key Manager box

To add a predefined sequence:

1. Click “Add Predefined”. A list of sequences appears.
2. Select the desired sequence and click “OK”. The sequence appears in the Special Key Manager box.
3. Click “OK”. The sequence appears in the Keyboard Key sequence list.

To record a key sequence:

1. From the Special Key Manager box, press “Record New”. The Add Special Key dialog box appears (see Figure 31).



Figure 31 Add Special Key Dialog box

2. Give the key sequence a name in the Label field.
3. Click “Start Recording” and click inside the main window.
4. Press the desired keys. The key sequence appears in the area provided.
5. Click “Stop Recording”.
6. Click “OK”.

To edit a key sequence:

1. From the Special Key Manager Dialog box, select the desired key.
2. Click “Edit”.
3. Click “Start Recording”.
4. Press the desired keys. The keys appear in the area provided.
5. Click “Stop Recording”.
6. Click “OK”.

Synchronizing mouse pointers

When working at the client computer, two mouse pointers appear: the client computer's is on top of the target server's. The mouse pointers should be synchronized. The following explains what to do if they are not synchronized.

Warning

Before synchronizing mouse pointers, make sure that mouse acceleration is disabled on all attached target servers (explained below); otherwise, mouse synchronization may not work.

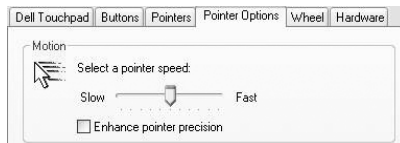
Aligning the mice pointers

Before attempting to synchronize the mouse pointer, make sure that mouse-acceleration settings for the server are properly configured in all attached servers. Below is a list of common operating system mouse-acceleration settings.

Server-mouse settings for common operating systems:

Windows 2000, XP, 2003 Server, Vista

1. Go to the Windows "Control Panel".
2. Select "Mouse" and then navigate to the "Pointer Options" tab.
3. Make sure the pointer speed slider is in the exact center between "Slow" and "Fast".



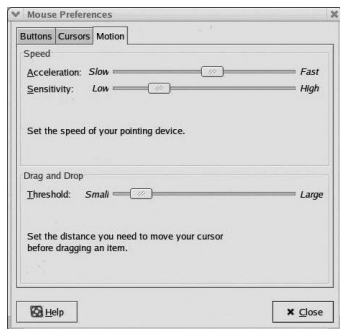
4. Uncheck "Enhance Pointer Precision". In Windows 2000, set the mouse acceleration to "None".

Note for Windows Servers

1. Windows enables mouse acceleration at the login screen by default. Make sure you are logged in to windows to check mouse synchronization.
2. Mouse acceleration can only be disabled on a per Windows user basis. If you log in to Windows with a different user name, then you will have to disable mouse acceleration separately for that user as well.

Red Hat®, Fedora, and other Linux distributions

1. Go to "Mouse Preferences".
2. Then navigate to the "Motion" tab.



3. Set the "Acceleration" to five clicks from left.
4. Set the "Sensitivity" to three clicks from left.
5. Set the "Threshold" to two clicks from left.

When accessing the target server, the mice may appear at a distance to each other.

To align the mouse pointers:

From the toolbar, click  / Align or press (left) "Ctrl+M" simultaneously. The mice will align.

Manual settings

If the mouse settings on the target server were ever changed, or when the operating system on the target server is Windows XP, 2003 Server, Vista, or 2008 Server, or Linux, Novell, SCO UNIX®, or Sun Solaris, you must configure the mouse manually.

To manually configure the mouse:

1. From the toolbar, click  / Manual Settings". The "Mouse Settings" dialog box appears (see Figure 32).

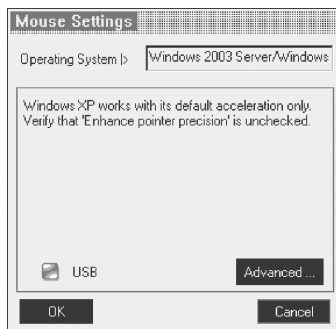


Figure 32 Mouse Settings Dialog box

2. Select the target server's operating system and click "OK". Instructions and sliders appear. Note: You must do this configuration on every port.
3. Follow the instructions and set any relevant sliders to the same values as set in the target server's "Mouse Properties" window.
4. Check USB if the SIM you are using is USB type.

Click "OK". The mouse pointers should be synchronized. There will be no need to perform this setup unless you change the server attached to the particular port.

Advanced – Mouse emulation

Click **Advanced...** and the “Mouse Emulation” dialog box appears (see Figure 33).



Figure 33 Mouse Emulation dialog box

If a 2-button mouse (older mice without wheel capability, most of the touch pads, trackballs, or integrated keyboards with mice used in most of the rack drawers) is connected to the local KVM port of the Switch, set the “Mouse Emulation” to “Standard Mouse” (see Figure 34).

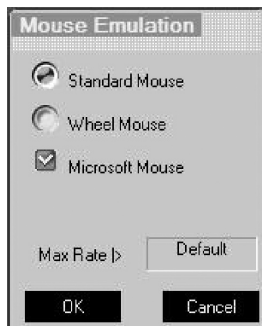


Figure 34 Mouse Emulation dialog box for use with touch pads

Press “OK” to save settings.

Note:

This “Mouse Emulation” setting is used to determine the correct reset sequence for a local mouse. Setting it incorrectly may lead to a jumpy or non-operational local console mouse after a remote user disconnects it from the Switch.

Max Rate - This defines the maximum mouse report rate. For Sun Solaris, the default value is 20 in order to support older Sun versions.

Calibrating mice pointers

A target server may have a different mouse pointer speed to the client computer. Calibrating automatically discovers the mouse speed of the target server and aligns the two pointers.

To perform the calibration when the target server's operating system is Windows NT® 4, 2000, or 98:

From the toolbar, click “ / Calibrate”. The Switch saves this alignment so calibration is only needed once per target server.

If the video noise level is above zero, calibration may not work. Go to “Video Adjustment” and try to eliminate the noise by pressing “Auto video adjust” and/or adjusting the bars in manual video adjust. Then perform the mouse calibration.

Note! If the mouse settings on the target server were ever changed, you must synchronize mouse pointers manually, as explained below.


Adjustments in general

The above adjustments, namely:

- Performance settings
- Video settings
- Keyboard key sequences
- Synchronizing mouse pointers

may have to be performed twice for each target.

Globe icon menu features

Right-click the globe icon  and a menu appears. From this menu you can access the connected devices. You also have the following features:

Disconnect – You can disconnect the session by clicking “Disconnect”.

About – Click “About to verify the Client, Firmware and Switch” file versions installed on your Switch.

Local Settings – Click “Local settings” and the “Client Configuration” dialog box appears (see Figure 35).

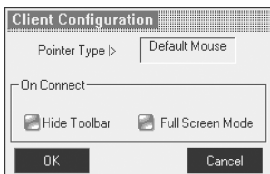



Figure 35 Client Configuration dialog box

Pointer Type – From the drop-down menu, you can change the client computer mouse pointer to appear as a dot or to not appear at all.

Hide Toolbar – Check this option to hide the toolbar from the next reconnection onward. To toggle the toolbar on and off, press “F9” or double-click the system tray icon .

Full-Screen Mode – Check this option to make the remote session screen appear in full-screen mode from the next reconnection onward. To toggle the full-screen mode on and off, press “F11” (also see the next section).

Virtual Media – Click this option to mount virtually any removable mass storage devices connected to the client computer onto the target server.

Virtual media

With virtual media, you can virtually mount removable mass storage devices connected to the client computer onto the target server.

This includes:

- Floppy drives
- CD-ROMs
- DVD-ROMs
- ISO images of CD/DVD
- USB flash drives (disk on key tokens)
- Miscellaneous USB memory sticks/cards identified by the operating system as removable mass storage devices

Setup

Virtual media is only supported by server ports 1 and 2. You must connect a separate USB cable to VM ports 1 and 2 located on the back of the Switch and match to the corresponding servers connected to server ports 1 and 2.

Mounting a Drive

1. Click “Virtual Media” and the “Virtual Media” dialog box appears (see Figure 36). All connected mass storage devices appear in the “Local Drives” section.



Figure 36 Virtual Media

2. Select the device to be mounted and click “Mount”. A remote device warning should appear.
3. Click “OK”. The device mounts onto the target server and appears as a removable or CD/DVD drive of the target server. It also appears in the “Mounted Drives” section in Figure 36. Once mounted, you can use the device during the remote session as if it is connected to the target server.

Table of Contents	SECTIONS	1	2	3	4	5	6
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Mounting an ISO file

An ISO image (.iso) is a disk image of an ISO 9660 file system, and refers to any optical disc image, even a UDF image. In addition to the data files in the ISO image, it also contains all the file system metadata, including boot code, structures, and attributes. All of this information is contained in a single file. These properties make it an attractive alternative to physical media for the distribution of software that requires this additional information as it is simple to retrieve over the Internet.

To mount an ISO file, click “Mount ISO File”, locate the file, and mount it.

Things to know about operation of the virtual media

Because virtual media emulates USB 1.1 over a TCP connection, it has a number of limitations that govern the virtual-media compatibility and operation.

- Virtual media emulates USB 1.1. It doesn't emulate USB 2.0.
- Virtual media redirects the client's local DVD/CD or removable mass storage devices to a target server during the open client session only. This means if the remote client session disconnects, the mounted drives will be automatically dismantled from the target server.
- Maximum data transfer speed of the virtual media doesn't exceed 5.0Mbps.

- Only drives identified by the client's operating system as drives with removable storage can be mounted as virtual media. Many USB-attached hard disks identify themselves to the operating system as hard-disk drives and can't be used for virtual-media mounting.
- Booting from a mounted virtual-media drive is possible only if the target server supports booting from USB-attached storage.
- Currently, it is not possible to boot a target server from Linux distribution mounted as virtual media.
- Windows CD/DVD, or its modifications such as Winternals ERD Commander, WinPE, BartPE, or similar, can be used for booting the target server when mounted as virtual media.
- Mounting removable mass storage devices such as USB flash drives (disk on key tokens) or miscellaneous USB memory sticks/cards will remove them from the client's operating system and redirect them with read/write access permissions to the target server to ensure the integrity of write operation.
- Connection timeout will not occur at the time the virtual media remains mounted.

Full-screen mode

Work on the target server as if you are working on a local computer with full-screen mode.

To work in full-screen mode:


1. Ensure that the client's computer has the same screen resolution as the target server.
2. Press "F11". The Internet Explorer window disappears, leaving the Internet Explorer menu bar at the top.
3. Right-click the Internet Explorer menu bar and check "Auto-Hide". The Internet Explorer menu bar disappears. You are in full-screen mode.

To exit full-screen mode:

Press "F11", or place the mouse at the top of the window to display the Internet Explorer toolbar and click the "Restore" button.

Note! Full-screen mode can also be activated from the toolbar menu (see page 29).

Disconnecting the remote session

To disconnect the session, click  on the toolbar. The Login page appears. You can re-log in, or close the browser window to disconnect the session.

The Targets Page Menu

When logging in to the system as an administrator or a user, you reach the Targets page (see Figure 14 on page 16). From the menu, you can:

- Change the password
- See an event log

Note! Only an administrator has the configuration option in the menu.

Changing the password

To change the password, click “Password” from the menu and the following appears.

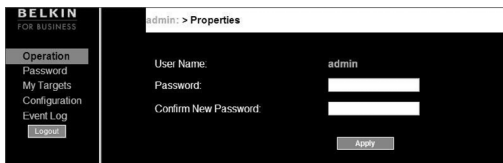


Figure 36 Password

Type a new password according to the password policy set (see page 19).

Event log

To see a log of all system events:

From the menu, select “Event Log” and the following screen appears.

User	Severity	Event	Time	Details
admin	Info	Connect succeeded	Sat 15 Nov 2003 00:53:39	Server:Server 02
admin	Info	User login succeeded	Sat 15 Nov 2003 00:53:12	Host:192.168.1.58/Peer:205.160.232.254/Level:Admin
admin	Info	Connect succeeded	Sat 15 Nov 2003 00:07:41	Server:Server 01
admin	Info	User login succeeded	Sat 15 Nov 2003 00:07:30	Host:192.168.1.54/Peer:192.168.1.54/Level:Admin
admin	Info	Config logon	Fri 14 Nov 2003 13:08:05	Peer:75.84.291.232
admin	Info	Config login succeeded	Fri 14 Nov 2003 13:07:36	75.84.291.232
admin	Info	Connect succeeded	Fri 14 Nov 2003 13:01:01	Server:Server 01
admin	Info	User login succeeded	Fri 14 Nov 2003 13:00:38	Host:192.168.1.58/Peer:75.84.291.232/Level:Admin
System	Info	System boot	Fri 14 Nov 2003 09:24:30	Version: 1.0
admin	Info	Connect succeeded	Fri 14 Nov 2003 09:21:21	Server:Server 01
admin	Info	Connect succeeded	Fri 14 Nov 2003 09:17:42	Server:Server 01
admin	Info	User login succeeded	Fri 14 Nov 2003 09:17:28	Host:192.168.1.54/Peer:192.168.1.54/Level:Admin
System	Info	System boot	Fri 14 Nov 2003 09:02:40	Version: 1.0
Total Events: 183				

Figure 37 Events log

Navigate through the event pages using the forward or backward arrows, marked as (A) in Figure 37.

From the drop-down menu, marked as (B) in Figure 37, choose the number of events that will appear on each page (10–40).

Downloading the log

You can download and save the log.

To do so, click [Download as file](#) and save as a “.csv” file. The file can be viewed using Microsoft Excel® or compatible software.

Clearing the log

To clear the log, click [Clear log](#). A prompt appears asking if you first want to save the log.

This section explains how to operate the Switch locally via the OSD.

The OSD

To display the OSD:

- From the local keyboard, press the left “Scroll Lock” key twice. The OSD Main window appears (see Figure 38). The “Pwr” column indicates the server is powered on.

BELKIN		OMNIVIEW IP	
MAIN			
--	NAME	USER	PWR
0 1	SERVER	1	☀
0 2	SERVER	2	
0 3	SERVER	3	
0 4	SERVER	4	
0 5	SERVER	5	
0 6	SERVER	6	
0 7	SERVER	7	
0 8	SERVER	8	
F 1	- MOVE LABEL	ESC	- LOGOUT
F 5	- TUNING	F 2	- SETTING

Figure 38 OSD Main window

Navigating the OSD Main window

To navigate up and down, use the up and down arrow keys.

To exit the OSD, press “Esc”.

Selecting a computer

To select a computer:

- Navigate to the desired computer line.
Or, type the 2-digit port number of the desired computer.
- Press “Enter”. The selected computer is accessed. A confirmation label appears showing which computer is accessed.

Moving the Confirmation label – F1

The confirmation OSD label that appears briefly showing which computer is currently accessed can be positioned anywhere on the screen.

To position the label from the Main window:

1. Navigate to a computer line using the up and down arrow keys.
2. Press “F1”. The selected screen image and confirmation label appear.
3. Use the arrow keys to move the label to the desired position.
4. Press “Esc” to save and exit.

Tuning – F5

Video tuning may be required if the distance between the Switch and the server is between 50 and 100 feet. You can tune the image of any computer screen from the Main window.

To adjust the screen image:

1. Navigate to the computer line you wish to adjust.
2. Press “F5”. The screen image of the selected computer appears together with the Image Tuning label (see Figure 39).

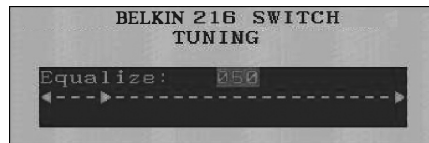


Figure 39 Image Tuning label

3. Adjust the image by using the right and left arrow keys.
4. When the image is satisfactory, press “Esc”.

Note! Picture quality is relative to distance. The farther away a remote computer is from the Switch, the lower the image quality, and the more tuning needed. We recommend that you place the higher-resolution computers closer to the Switch.

The Settings window – F2

Press “F2”. The Settings window appears (see Figure 40).

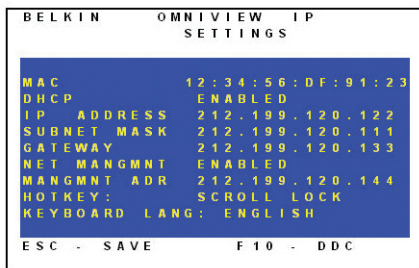


Figure 40 Settings window

In the Settings window, navigate downward using the “Tab” key. At the bottom of the window, press “Tab” to go to the top of the window. Change settings by typing in the selected area or by pressing the space bar, whichever is relevant.

From this window, you can do the following:

Changing the network parameters from the OSD is explained with the initial configuration in the “Setting the IP Address” section on page 13.

5000HQ MNG – Press the space bar to toggle between enabling and disabling management by the 5000HQ. When enabled, the Switch is remotely managed by OmniView IP Central Management Appliance 5000HQ.

5000HQ ADD – Here you can change the static IP address of the 5000HQ.

HOT KEY – Pressing “Scroll Lock” twice in quick succession will make the OSD appear. You can replace “Scroll Lock” with any of the other hot-key options following:

- Ctrl, Ctrl (left Ctrl key only)
- Ctrl, F11 (left Ctrl key only)
- Print Screen

Press the space bar to toggle between options. To display the OSD in the future, press the new hot key.

KEYBOARD LANGUAGE – Press the space bar to toggle between the language options. It can be changed to French or German.

DDC – F10

Display Data Channel (DDC) is a VESA standard for communication between a monitor and a video adapter.

From the Settings window, input the DDC information of the monitor connected to the Switch into the memories of all connected SIMs when first installing the system.

To input the DDC information:

Press "F10". "Please wait" flashes a few times and disappears. The monitor's DDC information is sent to all SIMs.

Updating the DDC information

Update the DDC information in any of the following circumstances:

- When replacing the monitor connected to the Switch
- When adding a new SIM to the system
- When reconnecting an existing SIM that was temporarily used in a different system

To update the DDC information, repeat the steps as set out above.

Saving changes to the settings

To save changes to the settings and return to the Main window, press "Esc".

ADDITIONAL INFORMATION

Technical Specifications

Operating Systems	<p>Target Server Windows, Novell, Linux, Sun Solaris</p> <p>Client Computer Windows 2000 or higher with IE 6.0 or higher and ActiveX</p>
Resolution	<p>Target Server Up to 1600x1200@85Hz</p> <p>Client Computer Recommended - resolution should be higher than on the target server</p>
Distance from Switch to SIMs	Up to 30m/99 ft.
Video and Mouse Synchronization	Both auto and manual modes
Security	128-bit SSL encryption, 256-bit AES encryption
Connections	<p>Ethernet – RJ45 – 10/100bps auto-sensing</p> <p>Serial – RJ45 x 2</p> <p>Local KVM Connection – Screen HDD15, Keyboard/ Mouse – 2 USB</p> <p>Servers – RJ45</p>
Weight	2.343kg./5.165 lbs.

Dimensions (H x D x W)	44 x 270 x 431mm/1.7 x 10.6 x 17 in.
Power Input	100–240VAC, 0.8A, 50/60Hz
Operating Temperature	0° C to 40° C/32° F to 104° F
Storage Temperature	-40° C to 70° C/-40° F to 158° F
Humidity	80% non-condensing relative humidity

	PS/2 SIM	USB SIM
Connections	VGA - HDD15 KM - MiniDIN6 System - RJ45	VGA - HDD15 KM - USB System - RJ45
Power	From keyboard port	From USB port
Product Weight	100g/0.20 lbs.	
Shipping Weight	172g/0.38 lbs.	
Dimensions	65 x 25 x 25mm/0.21 x 0.08 x 0.08 in.	

ADDITIONAL INFORMATION

Table of Contents	SECTIONS	1	2	3	4	5	6
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Video Resolution and Refresh Rates

Hz →	56	60	65	66	70	72	73	75	76	85	86
640x480		x		x	x	x		x		x	
720x400					x					x	
800x600	x	x				x		x		x	x
1024x768		x			x	x	x	x	x	x	
1152x864								x			
1152x900				x					x		
1280x720		x									
1280x768		x						x			
1280x960		x								x	
1280x1024		x				x		x	x	x	
1600x1200		x	x		x			x		x	

ADDITIONAL INFORMATION

Safety

This device contains no serviceable parts. Any servicing of the device must be performed by Belkin International, Inc.

User Manual Feedback

Your feedback is very important to help us improve our documentation. Please email any comments to: techsupp@belkin.com.

Please include the following information: Manual name, part number, and P number.

Product Registration

You may register your product online by going to <https://www.belkin.com/registration/>.

This will assist Belkin in contacting you regarding important information regarding the use of your product.

Information

FCC Statement

DECLARATION OF CONFORMITY WITH FCC RULES FOR ELECTROMAGNETIC COMPATIBILITY

We, Belkin International, Inc., of 501 West Walnut Street, Compton, CA 90220, declare under our sole responsibility that the products:

F1DP216G, F1DP232G

to which this declaration relates:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

CE Declaration of Conformity

We, Belkin International, Inc., declare under our sole responsibility that the products F1DP216G, F1DP232G, to which this declaration relates, are in conformity with Emissions Standard EN55022 and with Immunity Standard EN55024, LVP EN61000-3-2, and EN61000-3-3.

ICES

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Belkin International, Inc., Limited 2-Year Product Warranty

What this warranty covers.

Belkin International, Inc. (“Belkin”) warrants to the original purchaser of this Belkin product that the product shall be free of defects in design, assembly, material, or workmanship.

What the period of coverage is.

Belkin warrants the Belkin product for two years.

What will we do to correct problems?

Product Warranty.

Belkin will repair or replace, at its option, any defective product free of charge (except for shipping charges for the product). Belkin reserves the right to discontinue any of its products without notice, and disclaims any limited warranty to repair or replace any such discontinued products. In the event that Belkin is unable to repair or replace the product (for example, because it has been discontinued), Belkin will offer either a refund or a credit toward the purchase of another product from Belkin.com in an amount equal to the purchase price of the product as evidenced on the original purchase receipt as discounted by its natural use.

What is not covered by this warranty?

All above warranties are null and void if the Belkin product is not provided to Belkin for inspection upon Belkin’s request at the sole expense of the purchaser, or if Belkin determines that the Belkin product has been improperly installed, altered in any way, or tampered with. The Belkin Product Warranty does not protect against acts of God such as flood, lightning, earthquake, war, vandalism, theft, normal-use wear

and tear, erosion, depletion, obsolescence, abuse, damage due to low voltage disturbances (i.e., brownouts or sags), non-authorized program, or system-equipment modification or alteration.

How to get service.

To get service for your Belkin product you must take the following steps:

1. Contact Belkin International, Inc., at 501 W. Walnut St., Compton CA 90220, Attn: Customer Service, or call (800)-223-5546, within 15 days of the Occurrence. Be prepared to provide the following information:
 - a. The part number of the Belkin product.
 - b. Where you purchased the product.
 - c. When you purchased the product.
 - d. Copy of original receipt.
2. Your Belkin Customer Service Representative will then instruct you on how to forward your receipt and Belkin product and how to proceed with your claim.

ADDITIONAL INFORMATION

Belkin reserves the right to review the damaged Belkin product. All costs of shipping the Belkin product to Belkin for inspection shall be borne solely by the purchaser. If Belkin determines, in its sole discretion, that it is impractical to ship the damaged equipment to Belkin, Belkin may designate, in its sole discretion, an equipment repair facility to inspect and estimate the cost to repair such equipment. The cost, if any, of shipping the equipment to and from such repair facility and of such estimate shall be borne solely by the purchaser. Damaged equipment must remain available for inspection until the claim is finalized. Whenever claims are settled, Belkin reserves the right to be subrogated under any existing insurance policies the purchaser may have.

How state law relates to the warranty.

THIS WARRANTY CONTAINS THE SOLE WARRANTY OF BELKIN. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR, EXCEPT AS REQUIRED BY LAW, IMPLIED, INCLUDING THE IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SUCH IMPLIED WARRANTIES, IF ANY, ARE LIMITED IN DURATION TO THE TERM OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

IN NO EVENT SHALL BELKIN BE LIABLE FOR INCIDENTAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR MULTIPLE DAMAGES SUCH AS, BUT NOT LIMITED TO, LOST BUSINESS OR PROFITS ARISING OUT OF THE SALE OR USE OF ANY BELKIN PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state. Some states do not allow the exclusion or limitation of incidental, consequential, or other damages, so the above limitations may not apply to you.

BELKIN®

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