Firmware revision information for:

Wizard IP

Version 1.6

Original shipping release.

Version 1.7 Beta 3

1. When using the Wizard IP with a Sun Java Virtual Machine at the viewer end, the Wizard IP could hang under certain circumstances during the initial Java download phase. This problem was not seen with the Microsoft JVM. This problem is fixed in this release.

2. The first OSD screen could be displayed twice after a unit configuration reset – problem fixed.

3. Problems with using +PRINT in the keyboard controls menu fixed.

4. In version 1.6, if a user selects "private mode" and then exits without selecting "shared" mode, they are effectively locked out until the administrator breaks the lock. Customer feedback suggested that a preferred mode of operation would be to automatically revert to shared mode access when the "private" connection is closed. This has been implemented in version 1.7B3.

5. Macro key support has been improved. Key macros can now be up to 256 characters long. Various different key definition formats have now been implemented. For example, to press and release scroll lock, you can now use any of the definitions below. As before, all the keys are assumed to be released at the end of the line so it may not be necessary to directly specify key releases.

+SCROLL-SCROLL
+-SCROLL
+SCROLL-

The three examples above all cause the scroll lock key to be pressed and released. To reduce the length of the key definitions, any unique abbreviation for a key can now be used (e.g. "sc", "SCR" or "Scroll" all match "ScrollLock").

The following is a list of the key definitions supported.

All ASCII characters from 32 to 126 (i.e. A,B,C, … 1,2,3 etc.) with
the exception of the special characters '+', '-' and '*'

Add	KP_0	Left
Alt	KP_1	LCtrl
AltGr	KP_2	LShift
Asterisk	KP_3	LWin
Backspace	KP_4	Menu
CapsLock (Caps)	KP_5	Minus
Ctrl	KP_6	Multiply
Delete	KP_7	NumLock (Num)
Down	KP_8	PageDown
End	KP_9	PageUp
Enter	KP_Add	Pause
Escape	KP_Delete	Plus
F1	KP_Divide	PrintScreen (Print)
F2	KP_Down	RAlt
F3	KP_End	RCtrl
F4	KP_Enter	Return
F5	KP_Home	Right
F6	KP_Insert	RShift
F7	KP_Left	RWin
F8	KP_Multiply	Scrolllock (Scroll)
F9	KP_PageDown	Shift
F10	KP_PageUp	Space
F11	KP_Right	Subtract
F12	KP_Subtract	Tab
Home	KP_Up	Up
Insert	LAlt	Win

Some examples of typical KVM switch sequences are:

Example 1

+CTRL+ALT+M
(press CTRL, ALT and M together then release all keys)
(equivalent definition is +CTRL+ALT+1-CTRL-ALT-1)

Example 2

+-SCROLL+-SCROLL+1+ENTER
(press and release scroll twice, press 1 then enter then release all keys)
(equivalent definition is +SCROLL-SCROLL+SCROLL-SCROLL+1+ENTER-1-
ENTER)

Version 1.7

1. Mouse tracking for Windows XP release 2 added.

2. Video detection thresholds finely adjusted to achive imporoved video mode detection resolution (e.g. between 1024 x 768 x 72 Hz and 1024 x 768 x 75 Hz).

3. Improvements to internal interprocessor bus operation added to achieve improved operation.

Version 1.8

1.7 and 1.8 run code is the same. The differences are in the upgrade code which has been uprated to fix a problem that occurred on some systems whereby the upgrade appears to hang. In fact, the upgrades are reliable in all cases and if this symptom is seen it is safe to wait for 10 minutes and proceed as if the firmware upgrade had reported a successful upgrade. This behaviour is fixed in version 1.8. For future compatibility, the upgrade code fitted in version 1.6 and 1.7 devices will only accept a 1.6 or 1.7 upgrade image. To uprade to version 1.8 and above, it is first necessary to load an interim upgrade. Products that were originally shipped with version 1.8 or above do not need this interim upgrade to be applied and will accept upgrade images (1.8 and above) or downgrade images (1.7 and below).

The interim upgrade has two parts and is applied as follows:

(a) Apply the part1 image just like a normal upgrade using the existing maintenance mode.

(b) Reboot the Wizard (by removing the power and then re-connecting the power) with option switch 1 in the UP position. This puts up an OSD screen telling you to revisit the web browser page and apply the part2 image.

(c) Apply the part2 image.

(d) When this has completed, you are told to reboot again with option switch 1 in the DOWN position.

(e) You may now apply the 1.8 image.

Version 1.9
(September 2004)

1. A new new network driver has been used to fix rare lockup problems associated with complex network data traffic patterns (typically only seen on more complex networks or larger networks).

2. Danish and Norwegian keyboard support added.

3. OS/2 mouse tracking support added.

4. Sun mouse tracking support added.

5. Sun combined sync support added.

6. Limited support for 1600x1200 modes as 800x1200 (mouse won't calibrate in these modes). This mode has been added to enable the user to select a lower resolution if they encounter a computer with 1600 x 1200 resolution set.

7. IdleTimeout '0 error' fixed – an error previously occurred if a value of 0 was entered.

8. More robust connection handling.

9. Auto video adjustments improved.

10. Modem initialisation now waits for response to "ATH". This increases modem compatibility.

Version 1.10
(September 2004)

Norwegian and Danish keyboard support – bug relating to the keyboard key symbol "O with a slash" fixed.

Version 1.12
(September 2004)

Version 1.11 was used as an internal maintenance release. Version 1.12 has the following changes from version 1.10.

1. Support for "dead keys" added (accented characters which are made up from two key presses).

2. Small delay inserted between all key presses to fix problems with Ctrl-Alt-Del not working from F8 menu.

3. Change made to video capture engine to improve video capture characteristics

Version 1.13
(October 2004)

New option "Mouse Latency Allowance (milliseconds)" added on the advanced unit configuration page. Some KVM switches were found to have extended data transfer latency characeristics which means that the mouse cursor on the screen moves some time after the mouse data is sent. This extra latency disturbes the mouse calibration which assumes the shorter latency values found on Duo / Quadro switches. This "extra latency" value is added to the default 40ms waited after each mouse movement during calibration, thus allowing for extra mouse latency when going through slower KVM switches.

Version 1.14
(November 2004)

1. Mouse tracking added for Sun Solaris 9 (Xsun9) systems.

2. A new "mouse rate" option has been added in the advanced configuration screen. This option rate limits the number of mouse packets that can be sent per second. This option has been added to provide compatibility with certain models of KVM switch that "throw away" mouse packets if the mouse packets are sent too fast. The default option is 20ms (i.e. 50 mouse events per second). Setting this to 30 ms resolved problems seen with some varieties of KVM switch.

3. "Mouse latency allowance" can now be negative (down to -40) to speed up mouse calibration if the target device responds quickly to mouse data. BUT BEWARE! – setting this to a negative value will speed up calibration but could cause problems with detecting the mouse calibration – some trial and error may be required to find the ideal value if you chose to use anything other than the default (0) setting which is equivalent to 40ms.

4. Keyboard and mouse handling changed. Error timeout value increased to cope with very slow KVM switches that hold up the keyboard and mouse data for extended periods.

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Version 1.15
(November 2004)

1. OSD screensaver timeout can be set to "Off".

2. Maintenance mode now shows a progress bar on the web browser during a flash upgrade. This will only take effect for Wizard IPs programmed with the 1.15 upgrade code in the factory and will not occur on units that have been programmed with versions less than 1.15 in the factory and then upgraded to 1.15 (because this feature is related to the upgrade code itself which is not upgraded during a normal user upgrade).

Version 2.0 Beta 6
(February 2005)

This is a significant new firmware release that incorporates many new features and functions:

1. 'Single mouse mode' has been introduced. On fast connections, such as LANs, the host computer's cursor moves quickly and it is not necessary to have the second (local) cursor to act as a predictor for where the remote cursor will move. 'Single mouse mode' enables the local cursor to be disabled. In this mode the mouse is 'captured' within the viewer window and will not move outside the window until the user activates the 'escape' hotkeys. 'Single mouse mode' has the advantage that it is not necessary to calibrate the mouse as there is no need to synchronize two mice.

Single mouse mode is selected from the 'Controls' menu. To exit single mouse mode use the hotkey sequence 'F8　P' (i.e. press the F8 key then press the P key). Alternatively, mouse "escape" sequences may be activated. These are activated using the Configure > Unit Configuration > Advanced Unit Configuration dialog. Options are Disable, Middle+Right or Middle+Left. If Middle+Left is selected then pressing and holding down the middle mouse button whilst pressing and releasing the left mouse button then releasing the middle mouse button will cause you to exit single mouse mode. The Middle+Right option works in a similar way.

In single mouse mode, the title bar will change to indicate that the Wizard IP is in single mouse mode and inform the user of the keyboard hotkeys required to exit the single mouse mode.

2. The VNC viewer that may be downloaded from the Wizard IP now supports 1:1 pixel scaling, 'size to window' and fixed percentage scaling (e.g. 50 percent). The user also has the option to preserve the aspect ratio or not. Scaling options may be selected in the VNC options menu on the first screen or by clicking on the VNC logo in the top left corner of the viewer window and selecting Options > Scaling. If you wish this scaling to be saved and applied to future sessions then you must also select the 'Defaults' tab and select 'Save as Defaults'.

3. A number of KVM switches that have hotkey sequences that start with pressing and releasing the scroll lock or ctrl keys were found to need a delay between this action and pressing the channel selection key. This is because the units appear to require some time to activate their 'command mode' and sending keys too quickly causes the key sequence not to be recognized. To solve this, an additional command may be put into the key sequence that specifies the delay in milliseconds. For example, *500 inserts a delay of 500 ms. A typical hotkey sequence would then be:

+-SCR+-SCR*500+1+ENT

4. An information dialog has been added in the 'Controls' menu that informs the user if other users are currently attached and the screen resolution of the host computer, amongst other things.

5. A number of significant changes have been made to the way that the threshold level is calculated and managed. In previous versions, the threshold detection was calculated by looking for zero activity. The Wizard IP now looks for an activity 'plateau'. This means that the optimum threshold can still be calculated even if a KVM switch OSD reminder banner is being displayed. These typically add a small level of continuous noise to the system that could previously cause the Wizard IP to calculate a non optimal threshold setting. The threshold level is automatically increased by 50 percent when a slow link is detected to maximize performance.

6. The Wizard IP has been optimized to be used with CATx switches. CATx switches can introduce significant amounts of noise onto the video signal. The Wizard IP has been fitted with software that detects this and automatically arranges the video capture to compensate so that good performance is still achieved. Some competitive KVM-via-IP products are not able to cope well when used with certain CATx switches.

7. The mouse calibration routine is now faster and the user is given feedback on the calibration progress with the option to cancel the calibration at any point. Options to calibrate only the video or only the mouse have been added.

8. The video detection algorithm has been improved and extra video modes have been added. The Wizard IP applies an additional video mode search strategy if the video mode cannot be found by gradually changing some of the key parameters to see if a video lock can be achieved. Support for VESA GTF (Generalized Timing Formula) has also been added. The ability to download custom video mode definitions into the Wizard IP has been added (this is an advanced feature that has been added for technical support purposes and is not available on the user interface).

The following video modes have been added. The half width video modes capture every other pixel and are not generally recommended for normal use but may be used for emergency access. Half width screens can be expanded to normal width using the scaling features of the viewer.

vesa 720 x 400 @ 85Hz
vesa 640 x 480 @ 60Hz
vesa 640 x 480 @ 72Hz
vesa 640 x 480 @ 75Hz
vesa 640 x 480 @ 85Hz
vesa 800 x 600 @ 56Hz
vesa 800 x 600 @ 60Hz
vesa 800 x 600 @ 72Hz
vesa 800 x 600 @ 75Hz
vesa 800 x 600 @ 85Hz
vesa 1024 x 768 @ 60Hz
vesa 1024 x 768 @ 70Hz
vesa 1024 x 768 @ 75Hz
vesa 1024 x 768 @ 85Hz
vesa 1152 x 864 @ 75Hz
vesa 1280 x 960 @ 60Hz
vesa 1280 x 1024 @ 60Hz
vesa 1280 x 1024 @ 75Hz
vesa 1600 x 1200 @ 60Hz
vesa 1600 x 1200 @ 65Hz half-width
vesa 1600 x 1200 @ 70Hz half-width
vesa 1600 x 1200 @ 75Hz half-width
vesa 1600 x 1200 @ 85Hz half-width
vesa 720 x 400 @ 70Hz (not actually a VESA mode but a common DOS/BIOS mode)

sun 1152 x 900 @ 66Hz
sun 1152 x 900 @ 76Hz
sun 1280 x 1024 @ 67Hz

apple 640 x 480 @ 67Hz
apple 832 x 624 @ 75Hz
apple 1152 x 870 @ 75Hz

1900 x 1200 @ 60Hz may also work on some systems when the operating temperature of the Wizard IP is controlled.

9. The number of supported hosts has now been increased to 128.

10. The keyboard dialog automatically exits after keys have been sent.

11. Memory accesses have been improved to increase the performance of the unit by up to 20 percent.

12. Many improvements have been made to the operation of the modem port to increase modem compatibility and the overall system performance when used with slow modem links.

13. The 2.0 firmware will integrate with Black Box's Application Programming Interface software. The API enables software to interact with the Wizard IP and may be used by software developers to automate access and management of multiple Wizard IPs. Please contact Black Box technical support for details.

14. Improved feedback on mouse calibration status.

15. 'Disconnect whilst in private mode' bug fixed.

16. Minor error in French keyboard layout fixed - associated with the AltGr activated characters ( ) [and]

17. Numeric keypad bugs on non-US/UK keyboards fixed.

18. Swiss French (FR-CH) and Swiss German (DE_CH) keyboard layouts added.

Version 2.0 Beta 7
(March 2005)

1. This release supports the KVMADMIN administration utility which enables you to perform the following tasks by logging into the Wizard IP as the Admin user. The KVMADMIN program is essentially a command line based VNC viewer that is restricted to use by the admin user only. As such it uses the same security system as the VNC viewer supplied with the Wizard IP. It can be used to:

* get & set the Wizard IP unit configuration
* set user names and passwords
* get the event log

* get & set the host configuration
* set custom video modes

For obvious security reasons, it is not possible to retrieve user names or passwords from the Wizard IP. Notes on the use of the kvmadmin program are included with this upgrade (KvmadminNotes.doc).

2. GTF modes are restricted to between 60Hz and 120Hz to avoid spurious mode recognition while sync signals are changing.

3. Bug fixed - video signal is lost while mouse calibration message box is displayed.

4. Bug fixed - repeated pattern sometimes shown when capture fails.

5. More informative message given when authentication fails.

6. The latest Windows viewer 4.1.3X2 is included which provides better performance when run on multiple monitor systems.

Version 2.1
(April 2005)

1. Belgian keyboard layout added.

2. This version integrates with ServSwitch Uno, Duo and Quadro KVM switches with firmware versions 2.06 and higher. These KVM switches are able to report the selected port to the Wizard IP. The means that the KVM switch's OSD menu can be used to select the required port and the Wizard IP is able to detect this and apply the appropriate video capture and mouse scaling settings. In addition, ports can be selected using the same port number format that is used by the switches (i.e. without specifying hotkey codes). This is done by specifying the port number within square brackets instead of a hotkey. For example:

[16]   selects port 16 and is equivalent to hotkeys +CTRL+ALT+1+6

[4105]   selects port 5 on a KVM switch that is cascaded off port group 41 (see the KVM switch manual for more details on cascade port numbering)

When the Wizard IP receives a port change message from the KVM switch, it looks through its list of defined hosts to try and find a match. If a match is found then the matching host name will be displayed.

An option is provided to automatically add host entries into the Wizard IP's host menu if the Wizard IP detects a port that does not have a matching host entry. This option should be used with care when complex cascades of switches are being used as it may lead to more host entries being added than are strictly necessary.

Version 2.2
(May 2005)

1. Colour calibration routine improved to more accurately match the original colour.

2. Video calibration routine will accept detected vertical and horizontal positions that fall outside VESA mode specifications.

Version 3.0
(February 2006)

1. The most significant improvement in version 3.0 is the video update performance. A comprehensive review of the efficiency of both the server and viewer software has lead to an overall doubling of the update speed in normal LAN applications. To benefit from the full performance improvements you will need to apply the 3.0 upgrade to the Wizard IP and also download the latest VNC viewer from the Wizard IP.

2. A Ctrl-Alt-Del button has been added to the main menu bar to enable 'one click' activation of this common key code.

3. The hotkey sequence syntax has been changed to enable easier integration with KVM switches that often used typed names within their hotkey sequences (for example, the Avocent ® AMX switches).

   The syntax of key macros is now one of the following:

   +<key>   -<key>   +-<key>   (<chars>)

   where <key> is a key name as before, <chars> can be any
   characters on the keyboard. Note that the shift state won't be
   altered for characters so for example +shift(5%7&)-shift(5%7&)

will result in "%%&&5577" appearing. The syntax +<key>- is no
longer supported since it creates ambiguity.

For example, if you want to press and release the shift key twice and then type the name
'SERVER 1' and then press the ENTER key you would use the following sequence:

+-SHIFT+-SHIFT(SERVER 1)+ENTER

4. Sun STOP key support has been added. All the special Sun keys are now supported
when accessing a Wizard IP from a Solaris box running the Enterprise Edition VNC
viewer version E4.1.8 or later.

5. The speed of ISDN connections has been significantly improved. Updates on slow and
high-latency links are now handled more efficiently which dramatically reduces the
number of round trips that the data has to make to update screens. In extreme
circumstances, the number of round trips has been reduced from ten/fifteen to one/two.
Therefore the ISDN performance may be dramatically improved by version 3.0.

6. The automatic threshold calculation algorithm has been enhanced. The threshold
calculation now performs several captures at higher thresholds and averages them to
provide a more optimised result.

7. From version 3.0, network upgrades without the local option switch are supported. The
unit can now be put into upgrade mode via the Advanced Unit Config screen and
upgraded remotely without access to the unit. Then it can be upgraded in the normal way
using a web browser, and rebooted into the running new firmware remotely. The
upgrades are digitally signed so that an unauthorized upgrade cannot be loaded into the
unit.

8. The facility to manually calibrate colours has been added. The video settings dialog has
been redesigned to accommodate this functionality.

9. Network Time Protocol (NTP) has been added. This enables the unit to update its time
from an NTP server. This function is accessed from a new Time & Date Config screen.
Since NTP synchronises to UTC , the concept of time zones has also been added. The
"Timezone specifier" field uses the standard POSIX TZ setting as described for example
at:
http://www.gnu.org/software/libc/manual/html_node/TZ-Variable.html

Some examples are:

UK	GMT0BST,M3.5.0/1,M10.5.0/2
Central Europe	CET-1CEST,M3.5.0/2,M10.5.0/3
US Eastern (2006)	EST5EDT,M4.1.0/2,M10.5.0/2
US Pacific (2006)	PST8PDT,M4.1.0/2,M10.5.0/2
US Eastern (2007 on)	EST5EDT,M3.2.0/2,M11.1.0/2
US Pacific (2007 on)	PST8PDT,M3.2.0/2,M11.1.0/2

Explanation of the UK example:

- winter time is called "GMT" which is 0 hours different from UTC
- summer time is called "BST", starting at 1am on the last(5) Sunday(0) in March(3) and ending at 2am on the last(5) Sunday(0) in October(10)).

Note that the US ones will change in 2007.

10. Syslog server support has been added and may be configured in the 'Logging and Status' configuration screen. When a syslog server is defined, the unit will send a copy of the logged events to the syslog server as well as adding an entry in its own log.

Version 3.1
(February 2006)

This version corrects the bug in version 3.0 associated with typing a non-valid IP address into the NTP server field. In certain cases, this could cause the unit to hang and reboot every 5 seconds. This state can be corrected by using the option switch to boot the unit into upgrade mode and then performing an upgrade in the normal manner. Version 3.1 fixes this issue.

Version 3.2
(April 2006)

This version adds the following features.

* Dutch keyboard support.
* Inaccessible hosts don't appear in menu rather than being greyed out.

The following bus are fixed by this version.

* Fixed bug changing date & time with no NTP server

* Improved colour calibration (the black level is found more accurately across a broad range of systems)

Version 3.3 Beta 1
(April 2006)

This version includes a new option that defines the behaviour of the Wizard IP when new users attempt to login whilst the maximum number of sessions are already active. When the maximum number of sessions are active, non-admin users attempting to login will always be rejected. The behaviour of the admin user in this situation is defined by a new option located on the Unit Configuration > Advanced Unit Configuration page called "*Behaviour for admin connections when limit reached*". The options are:

- *Replace oldest connection* – connects the new user and disconnects the oldest of the current users
- *Replace newest connection* – connects the new user and disconnects the newest of the current users
- *Reject new connection* – does not connect the new users, does not disconnect any of the current users

Version 3.3 – (Critical Update)
(May 2006)

This version resolves a potential VNC security vulnerability and therefore has been allocated "critical update" status by Black Box. Black Box recommends that this upgrade is applied to all installations to ensure that the highest possible level of security protection is maintained.

Version 3.4
(October 2006)

1. Autologon feature - Version 3.4 enables the local port of the Wizard IP to be automatically logged on under a designated user profile when the unit is switched on. This feature avoids the need for the local user to login after each power on and ensures that the video is still displayed after a power interruption. The feature is useful for applications that involve remote monitoring of automated systems.

The feature is enabled using the kvmadmin utility. To configure the autologon parameter you need to create a file with a single line specifying the user to log on as. For example:

autologon=admin

Then run "kvmadmin -setconfig <filename> <ip-address>". The next time the unit reboots it should log in on the console as the given user. To turn the feature off, simply set the autologon parameter to empty, i.e.:

autologon=

The autologon feature only affects how the unit starts up. The user can still be logged off either explicitly or by the screen saver kicking in, after which it will be necessary to log on again. So you may also want to set the local OSD screen saver off from the unit config menu.

2. Improved calibration of phase, colour and threshold – The accurate calculation of the video threshold is critical to maintaining the very best possible video performance in terms of both speed of update and lack of screen junk (artefacts). This is particularly important when the Wizard IP is used on the front end of CATx style KVM switches that typically have much higher video noise levels. The video threshold calculation uses a more sophisticated algorithm to precisely calculate the optimum video threshold. This further improves the performance of the device when used on the front end of all KVM switches and particularly when used on the front end of CATx style KVM switches. You will typically notice a 10 to 20 percent reduction in the calculated video threshold level as compared with the original algorithm.

3. Full colour Java viewer – A full colour Java viewer is now embedded within the product. The user has the option to select a lower colour mode if required.

4. Improved keyboard auto repeat & macro behaviour.

5. Unit enables a small amount of clipboard text to be pasted via the Keyboard dialog.

6. Improved upgrade tool.

7. Highlight weak password in unit config dialog.

8. Support SysReq key in unix viewers.

9. Increase default mouse calibration delay to 60ms Fix case-sensitivity of admin login (configure button not appearing for "Admin")

HOT TIP

When using a KVM switch with an OSD reminder banner, always make sure that this is disabled before trying to calibrate the Wizard IP's video. ServSwitch Uno, Duo and Quadro switches with firmware versions 2.06 and above will do this automatically. OSD menus are not pixel-synchronised with the original video and this creates video noise. This causes the Wizard IP to detect a much higher video threshold than is needed which leads to unnecessary video artifacts. On slow modem links, OSD confirmation banners can lead to lower performance and should be disabled. If you have a KVM switch that doesn't allow the confirmation banner to be disabled you can always adjust the video threshold manually. To do this use the Controls -> Video Settings menu and alter the threshold whilst observing the video activity indicator. As a rule of thumb, the following threshold levels are typical. If you are using a CATx style KVM switch then these levels may be higher.

Resolution	Typical threshold
800 x 600	6 to 8
1024 x 768	8 to 14
1280 x 1024	20 to 25
1600 x 1200	30 to 40