

October 2008

BLACK BOX® *ServSwitch DTX Family*



DTX5000
DTX5000-T
DTX5000-R
DTX5001
DTX5001-T
DTX5001-R
DTX5002
DTX5002-T
DTX5002-R

 **BLACK BOX**
NETWORK SERVICES

ServSwitch

DTX5000/5001/5002

User Guide



Instructions

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



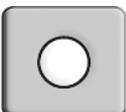
Dangerous Voltage

This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



Power On

This symbol indicates the principal on/off switch is in the on position.



Power Off

This symbol indicates the principal on/off switch is in the off position.



Protective Grounding Terminal

This symbol indicates a terminal which must be connected to earth ground prior to making any other connections to the equipment.

Welcome to the ServSwitch™ Family!

Thank you for purchasing a BLACK BOX® ServSwitch DTX system! We appreciate your business, and we think you'll appreciate the many ways that your new DTX System will save you money, time and effort.

The BLACK BOX® DTX system allows desktop users to access a full computer experience from anywhere on the corporate TCP/IP network, while maintaining the computers securely housed in a corporate data center. This desktop experience includes access for the desktop user to keyboard, mouse, both digital and analog video, and audio devices.

This solution can be deployed as a point-to-point extender system or may be over-laid on the standard 100 Mbps/1 Gbps TCP/IP network. The ServSwitch™ family from BLACK BOX—the one-stop answer for all your KVM switching needs!

*

This manual will tell you all about your new ServSwitch DTX system, including how to install, operate and troubleshoot it. For an introduction to the ServSwitch DTX system see Chapter 2.

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA

RADIO-FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

European Union Notification

Warning: This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

USA Notification

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: 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 own expense.

Canadian Notification

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Japanese Approvals

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Safety and EMC Approvals and Markings

UL, FCC, cUL, VCCI, C-Tick, CE

This equipment has also been found to comply with European standards EN50082 and EN60950.



Other Agency Approvals

USA (UL, FCC)

Canada (cUL, ICES-003)

European Union (CE)

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1. Specifications

During the course of this product's lifetime, modifications might be made to its hardware or firmware that could cause these specifications to change without notice.

DTX5000-R Product Specifications

Network	
Ethernet Standard	Ethernet II
IP Port Usage	Port 16384 - Video Port 16385 - Audio Port 16386 - Keyboard/Mouse Port 16387 - vMedia Ports 4463, 4464, 4465 - Control
Extension Ports	
Number	1
Connectors	RJ-45
User Ports	
Number	PS/2: 2; USB: 4; DVI-I video: 1; audio microphone: 1; audio line out: 1; power jack: 1
Type	PS/2, USB Type A, DVI-I video
Connectors	6-pin miniDIN, PS/2 keyboard and mouse; USB Type A, USB keyboard and mouse; DVI-I, female; 3.5 mm stereo audio jacks, line out and mic; 2.5 mm DC power jack.
Encryption	
Type	Authenticated SSL
Console Port	
Number	1
Type	Three-wire Serial interface: RX, TX, GND via 16450-compatible UART
Connectors	9-pin D-Shell (DB9)
Dimensions	
H x W x D	28 x 210 x 130 mm (1.10 x 8.27 x 5.12 in)
Weight	0.7 Kg (1.54 lb) without packaging, cables, power supply and literature

DTX5000-R Product Specifications (Continued)

Environmental	
Heat Dissipation	22 W/H
Power Consumption	20 W (including power supplied to USB ports)
AC-input power	100-240 V AC
AC-input current rating	1 A
AC-frequency	50/60 Hz
Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)
Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
Operating Humidity	10 to 90% noncondensing
Storage Humidity	5 to 95%
Supported Hardware	
Peripherals	PS/2 keyboard and mouse, USB keyboard and mouse, speakers, microphone
Keyboard	Standard 104/105/109 keyboards for PC, Macintosh, and Sun USB keyboards for PC, Macintosh and Sun Default keyboard drivers are fully supported for Microsoft Windows, MacOS, Solaris and Red Hat Linux
Mouse	2-, 3-, and 5-button; scroll and tilt wheel
Mass Storage Devices	All Mass Storage Class devices that use: SCSI mass storage subclass Bulk only transfer protocol Printers Touch screens Pen tablets Smart card readers Digital sign pads Joysticks NOTE: Check with your Black Box representative for the latest list of devices that have been tested and verified on the DTX system.

DTX5000-R Product Specifications (Continued)

Video Resolution	640 x 350 @ 85 Hz 640 x 480 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 720 x 400 @ 70 Hz, 85 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz, 85 Hz 1152 x 864 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz The following widescreen resolutions are also supported: 1360 x 768 @ 60 Hz 1280 x 720 @ 50 Hz 1280 x 720 @ 60 Hz
	Check www.blackbox.com for the latest list of supported video resolutions and refresh rates.
Video Standard	DDC version 2B
Color Depth	24 Bit
Audio Standard	PC99
Audio Performance	
High Performance	Line out: 44.1 kHz over stereo channels at a resolution of 16 bits Microphone: 44.1 kHz over a single channel at a resolution of 16 bits
Medium Performance	Line out: 8 kHz over stereo channels at a resolution of 16 bits Microphone: 8 kHz over a single channel at a resolution of 16 bits
Target Sync Types (Analog output only)	Separate horizontal and vertical
Safety and EMC Approvals and Markings	UL, FCC, cUL, VCCI, C-Tick

DTX5000-T Product Specifications**Network**

Ethernet Standard	Ethernet II
-------------------	-------------

Extension Ports

Number	1
--------	---

Connectors	RJ-45
------------	-------

Computer Ports

Number	USB: 2; DVI-I video: 1; audio microphone: 1; audio line out: 1
--------	--

Type	USB Type A, DVI-I video
------	-------------------------

Connectors	USB, male; DVI-I, male; 3.5 mm stereo audio jacks, line out and mic; 2.5 mm DC power jack.
------------	--

Encryption

Type	Authenticated SSL
------	-------------------

Dimensions

H x W x D	68 x 21 x 153 mm (2.68 x 0.83 x 6.02 in)
-----------	--

Weight	0.3 Kg (0.66 lb) including cables
--------	-----------------------------------

Environmental

Heat Dissipation	22 W/H
------------------	--------

Power Consumption	6 W
-------------------	-----

AC-input power	100-240 V AC
----------------	--------------

AC-input current rating	1 A
-------------------------	-----

AC-frequency	50/60 Hz
--------------	----------

DC-input power	5 V
----------------	-----

DC-input current rating	1.1 A
-------------------------	-------

Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)
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Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
---------------------	--

Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
---------------------	---

Operating Humidity	10 to 90% noncondensing
--------------------	-------------------------

Storage Humidity	5 to 95%
------------------	----------

Supported Hardware

DTX5000-T Product Specifications (Continued)

Video Resolution	640 x 350 @ 85 Hz
	640 x 480 @ 60 Hz
	640 x 480 @ 72 Hz
	640 x 480 @ 75 Hz
	640 x 480 @ 85 Hz
	720 x 400 @ 70 Hz
	720 x 400 @ 85 Hz
	800 x 600 @ 60 Hz
	800 x 600 @ 72 Hz
	800 x 600 @ 75 Hz
	800 x 600 @ 85 Hz
	1024 x 768 @ 60 Hz
	1024 x 768 @ 70 Hz
	1024 x 768 @ 75 Hz
	1024 x 768 @ 85 Hz
	1152 x 864 @ 75 Hz
1280 x 960 @ 60 Hz	
1280 x 1024 @ 60 Hz	

The following widescreen resolutions are also supported:

1360 x 768 @ 60 Hz
 1280 x 720 @ 50 Hz
 1280 x 720 @ 60 Hz

Check www.blackbox.com for the latest list of supported video resolutions and refresh rates.

Video Standard	DDC version 2B
----------------	----------------

Color Depth	24 Bit
-------------	--------

Audio Standard	PC99
----------------	------

Audio Performance

High Performance	Line out: 44.1 kHz over stereo channels at a resolution of 16 bits
------------------	---

Microphone: 44.1 kHz over a single channel at a resolution of 16 bits
--

Medium Performance	Line out: 8 kHz over stereo channels at a resolution of 16 bits
--------------------	--

Microphone: 8 kHz over a single channel at a resolution of 16 bits

Target Sync Types (Analog input only)	Separate horizontal and vertical
--	----------------------------------

EDID table settings	Normal aspect or wide screen resolutions
---------------------	--

DTX5000-T Product Specifications (Continued)

Safety and EMC Approvals and Markings	UL, FCC, cUL, VCCI, C-Tick
--	----------------------------

DTX5001-R and DTX5002-R Product Specifications

Network

Ethernet Standard	Ethernet II
-------------------	-------------

IP Port Usage	Port 16384 - Video Port 16388 - Video Port 16385 - Audio Port 16386 - Keyboard\Mouse Port 16387 - vMedia Ports 4463, 4464, 4465 - Control
----------------------	--

Extension Ports

Number	1
Connectors	RJ-45

User Ports

Number	USB: 4; DVI-I video: 1; audio line-out: 1; power jack: 1 (DTX5001-R user station) USB: 4; DVI-I video: 2; audio line-out: 1; power jack: 1 (DTX5002-R user station)
Type	USB Type A, DVI-I video
Connectors	USB Type A, USB keyboard and mouse; DVI-I, female; 3.5 mm stereo audio jack, line out; 2.5 mm DC power jack.

Encryption

Type	Authenticated SSL
------	-------------------

Console Port

Number	1
Type	Three-wire Serial interface: RX, TX, GND via 16450-compatible UART
Connectors	9-pin D-Shell (DB9)

Dimensions

H x W x D	28 x 210 x 154 mm (1.10 x 8.27 x 6.06 in)
-----------	---

DTX5001-R and DTX5002-R Product Specifications (Continued)

Weight	0.95 Kg (2.09 lb) without packaging, cables, power supply and literature
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Environmental

Heat Dissipation	22 W/H
Power Consumption	20 W (including power supplied to USB ports)
AC-input power	100-240 V AC
AC-input current rating	1 A
AC-frequency	50/60 Hz
Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)
Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
Operating Humidity	10 to 90% noncondensing
Storage Humidity	5 to 95%

Supported Hardware

Peripherals	USB keyboard and mouse, speakers
Keyboard	Standard 104/105/109 keyboards for PC, Macintosh and Sun USB keyboards for PC, Macintosh and Sun Default keyboard drivers are fully supported for Microsoft Windows, MacOS, Solaris and Red Hat Linux
Mouse	2-, 3-, and 5-button; scroll and tilt wheel
Mass Storage Devices	All Mass Storage Class devices that use: SCSI mass storage subclass Bulk only transfer protocol Printers Touch screens Pen tablets Smart card readers Digital sign pads Joysticks NOTE: Check with your Black Box representative for the latest list of devices that have been tested and verified on the DTX system.

DTX5001-R and DTX5002-R Product Specifications (Continued)

Video Resolution	640 x 350 @ 85 Hz 640 x 480 @ 60 Hz 640 x 480 @ 72 Hz 640 x 480 @ 75 Hz 640 x 480 @ 85 Hz 720 x 400 @ 70 Hz 720 x 400 @ 85 Hz 720 x 480 @ 60 Hz 800 x 600 @ 60 Hz 800 x 600 @ 72 Hz 800 x 600 @ 75 Hz 800 x 600 @ 85 Hz 1024 x 768 @ 60 Hz 1024 x 768 @ 70 Hz 1024 x 768 @ 75 Hz 1024 x 768 @ 85 Hz 1152 x 864 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1600 x 1200 @ 60 Hz The following widescreen resolutions are also supported: 1360 x 768 @ 60 Hz 1280 x 720 @ 50 Hz 1280 x 720 @ 60 Hz 1440 x 900 @ 60 Hz 1920 x 1080 @ 60 HZ (DVI Monitor only) 1920 x 1200 @ 60 Hz (DVI Monitor only) NOTE: 1920 x 1080 @ 60 HZ available on the DTX5002 only Check www.blackbox.com for the latest list of supported video resolutions and refresh rates.
------------------	--

Video Standard	DDC version 2B
----------------	----------------

Color Depth	24 Bit
-------------	--------

Audio Standard	PC99
----------------	------

Audio Performance

High Performance	Line out: 44.1 kHz over stereo channels at a resolution of 16 bits
------------------	---

Medium Performance	Line out: 8 kHz over stereo channels at a resolution of 16 bits
--------------------	--

Target Sync Types (Analog output only)	Separate horizontal and vertical
---	----------------------------------

Safety and EMC Approvals and Markings	UL, FCC, cUL, VCCI, C-Tick
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DTX5001-T and DTX5002-T Product Specifications

Network

Ethernet Standard	Ethernet II
-------------------	-------------

Extension Ports

Number	1
--------	---

Connectors	RJ-45
------------	-------

Console Ports

Number	USB: 1; DVI-D video: 1; VGA D-Sub 15 HD:1; audio line-out: 1 (DTX5001-T) USB: 1; DVI-D video: 2; audio line-out: 1 (DTX5002-T)
--------	---

Type	USB Type A, DVI-D video
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Connectors	USB, male; DVI-D, male; VGA; male; 3.5 mm stereo audio jack, 2.5 mm DC power jack (DTX5001-T) USB, male; DVI-D, male; 3.5 mm stereo audio jack, 2.5 mm DC power jack (DTX5002-T)
------------	---

Encryption

Type	Authenticated SSL
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Dimensions

H x W x D	28 x 127 x 200 mm (1.10 x 5.00 x 7.87 in)
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Weight	0.75 Kg (1.65 lb) including cables
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Environmental

Heat Dissipation	22 W/H
------------------	--------

Power Consumption	20 W
-------------------	------

AC-input power	100-240 V AC
----------------	--------------

AC-input current rating	1 A
-------------------------	-----

AC-frequency	50/60 Hz
--------------	----------

DC-input power	5 V
----------------	-----

DC-input current rating	1.1 A
-------------------------	-------

Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)
-----------------------	---

Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
---------------------	--

Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
---------------------	---

DTX5001-T and DTX5002-T Product Specifications (Continued)

Operating Humidity	10 to 90% noncondensing
Storage Humidity	5 to 95%
Supported Hardware	
Video Resolution	<p>640 x 350 @ 85 Hz 640 x 480 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 720 x 400 @ 70 Hz, 85 Hz 720 x 480 @ 60 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz, 85 Hz 1152 x 864 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1600 x 1200 @ 60 Hz</p> <p>The following widescreen resolutions are also supported: 1360 x 768 @ 60 Hz 1280 x 720 @ 50 Hz, 60 Hz 1440 x 900 @ 60 Hz 1920 x 1080 @ 60Hz (DVI-D computers only) 1920 x 1200 @ 60 Hz (DVI-D computers only)</p> <p>Check www.blackbox.com for the latest list of supported video resolutions and refresh rates.</p>
Video Standard	DDC version 2B
Color Depth	24 Bit
Audio Standard	PC99
Audio Performance	
High Performance	Line out: 44.1 kHz over stereo channels at a resolution of 16 bits
Medium Performance	Line out: 8 kHz over stereo channels at a resolution of 16 bits
Target Sync Types (Analog input only)	Separate horizontal and vertical
EDID table settings	Normal aspect or wide screen resolutions
Safety and EMC Approvals and Markings	UL, FCC, cUL, VCCI, C-Tick

1.1 Factory Default Settings

Black Box ServSwitch DTX5000 Extender

DTX Receiver	
Name	RX_<MAC address>
IP Address	192.168.13.1
Default Gateway	0.0.0.0
Netmask	255.255.255.0
OSD Hotkey Sequence	PRINT SCREEN
OSD Inactivity Timer	00 hours 10 minutes
OSD Inactivity Check Box	Enabled
Session Retry Timeout	1 second
Audio Performance	Medium
Network Speed	Auto-Negotiate
Password	'password'
Appliance Mode	Extender
Static/DHCP Network Configuration	Static
DTX Transmitter	
Name	TX_<MAC address>
IP Address	192.168.13.2
Default Gateway	0.0.0.0
Netmask	255.255.255.0
Audio Performance	Medium
Network Speed	Auto-Negotiate
Password	'password'
Video	DVI - Normal
Video Performance	5
Bandwidth Management	Unlimited
Static/DHCP Network Configuration	Static

Black Box ServSwitch DTX5002 Extender**DTX Receiver**

Name	RX_<MAC address>
IP Address	192.168.13.1
Default Gateway	0.0.0.0
Netmask	255.255.255.0
OSD Hotkey Sequence	PRINT SCREEN
OSD Inactivity Timer	00 hours 10 minutes
OSD Inactivity Check Box	Enabled
Session Retry Timeout	1 second
Audio Performance	Medium
Network Speed	Auto-Negotiate
Password	'password'
Appliance Mode	Extender
Static/DHCP Network Configuration	Static

DTX Transmitter

Name	TX_<MAC address>
IP Address	192.168.13.2
Default Gateway	0.0.0.0
Netmask	255.255.255.0
Audio Performance	Medium
Network Speed	Auto-Negotiate
Password	'password'
Video	DVI
Video Performance	5
Bandwidth Management	Unlimited
Static/DHCP Network Configuration	Static

2. Product Overview

2.1 Introduction

The DTX Extender System, which includes a transmitter and a user station, provides users with a full workstation desktop experience from anywhere on the corporate TCP/IP network, while maintaining the workstations securely housed in a corporate data center. Desktop users can access keyboard, mouse, video, audio, USB mass storage devices and other USB devices from remote workstations via the DTX Extender System.

NOTE:

Check with Black Box Tech Support for vUSB support on DTX5001.

NOTE:

References to the DTX Extender System in this document refer to both the receiver (DTX5000-R, DTX5001-R or DTX5002-R user stations) and the transmitter.

DTX Extender System features

Security

The DTX Extender System supports Secure Sockets Layer (SSL) over a TCP/IP connection. All media streams transmitted between the DTX user station and the transmitter are encrypted. Password protection is also provided to control access to all administration functions, such as network configuration.

Support for keyboards and mice

USB and PS/2 keyboards and mice are fully supported by the DTX Extender System. The DTX Extender System also allows for mix and match of USB and PS/2 peripherals. For example, it is possible to use a USB keyboard in conjunction with a PS/2 mouse. The default keyboard and mouse drivers of the remote workstation are fully supported. This enables the DTX Extender System to support 2, 3 and 5-button mice with scroll and tilt-wheel capability. Composite mouse and keyboard devices are also supported.

Flash upgradable

Upgrade your firmware at any time using the XMODEM or HTTP protocols to ensure that your DTX Extender System is always running the most current version available. Both the transmitter and the DTX user station are Flash upgradable. Upgrades can also be carried out via the DTX5000-CTL Management Appliance. See the DTX5000-CTL Management Appliance Installer/User Guide for more information.

Ethernet addressing

The DTX user station and the transmitter are IP-addressable devices, giving you the flexibility to locate back-racked workstations anywhere within your enterprise and at any distance from your desktop users. The DTX user station and the transmitter use standard network protocols to transfer data between the remote workstation and the peripheral devices located at the user's desk. The DTX user station can operate on a network connection of 100 Mbps or 1 Gbps. For optimum performance, a 1 Gbps connection is recommended.

USB support

NOTE:

Check with Black Box Tech Support for vUSB support on DTX5001.

USB keyboards, mice, mass storage devices and other types of USB devices are fully supported along with the following:

- Any keyboard (up to 109 keys)
 - 2, 3 and 5-button mice with scroll and tilt-wheel capability. Composite mouse and keyboard devices are also supported.
 - One CD and DVD-ROM drive or thumb drives
 - Other non-isochronous USB devices such as printers, touch screens, smart card readers, and pen tablets
-

NOTE:

The DTX system does not support isochronous USB devices such as speakers or web cams.

Support for mass storage devices is provided on the DTX5000-R, DTX5001-R and DTX5002-R user stations with no user intervention. Support for other USB devices is provided on the DTX5002-R user station automatically, but can be overridden by the user. In a DTX user station, the first device that is not keyboard, mouse or mass storage is assigned to the Virtual USB channel (vUSB channel) and passed to the remote computer. In the event you want to use the vUSB channel for a keyboard or mouse, the OSD allows the default vUSB device to be disabled and a keyboard or mouse to be assigned to that vUSB channel.

NOTE:

During normal operation, this would not be needed. The vUSB channel will only be used for devices other than the standard keyboard, mouse and mass storage devices.

Default support for other USB devices in the DTX5000-R user station is provided in place of support for a mass storage device. If you need to use mass storage in place of another vUSB device, go to www.blackbox.com and download the applicable user station firmware upgrade.

The DTX5002-R user station has the ability to support one mass storage device and one other type of USB device. These other devices include touch screens, pen tablets, smart card readers and printers.

NOTE:

A hub cannot be used to expand the number of USB ports available.

The DTX5000-T transmitter provides two USB interfaces:

- One port is low speed while the second video port is set to full speed. These ports are used for all keyboard and mouse peripheral devices interfacing with the target workstation, along with providing power for the DTX5000-T transmitter.
 - The other is a high-speed port that is used for virtual media (mass storage devices) peripheral devices or other USB devices interfacing with the target workstation, along with providing power for the transmitter.
-

NOTE:

The DTX5001-T and DTX5002-T transmitters provide a single USB interface, and uses an integrated hub within the transmitter.

Video

Video of 24-bit color depth up to a resolution of 1280 x 1024 at 60 Hz is supported by the DTX5000-R user station and DTX5000-T transmitter. Both CRT and flat-panel LCD monitors are supported, and can be connected to the DTX Extender System via a DVI-I video connector. VGA monitors can be attached to the system by using a DVI to VGA adaptor. The system supports DDC version 2B.

The DTX5001-R user station and DTX5001-T transmitter support 24-bit color depth up to a resolution of 1920 x 1200 at 60 Hz. Both DVI-D and VGA video sources are supported at the transmitter via a dual connector, allowing the user to choose the appropriate video source.

The DTX5002-R user station and DTX5002-T transmitter also support 24-bit color depth up to a resolution of 1920 x 1200 at 60 Hz. DVI-D PC video sources are supported at the transmitter. Since DVI-I is supported at the receiver, a VGA adaptor can be used to connect to a VGA monitor.

Transmitter features

The transmitter connects externally to the video, audio and USB ports of the remote workstation.

The DTX5000-T transmitter is attached directly to the remote workstation and draws its power directly from two USB ports on the remote workstation. The DTX5001-T and DTX5002-T transmitters are powered by an external power supply.

The transmitter captures, compresses and encrypts the workstation's media streams and transmits them to the receiver over a standard TCP/IP network.

Multiplatform support

The transmitter is connected to the remote workstation via USB connectors. This enables the DTX user station to interoperate seamlessly with PC, Sun[®] and Macintosh[®] target workstations. PC, Sun and Macintosh USB keyboards can be connected to the DTX user station. PS/2 keyboards and mice can also be used.

Screen aspect ratio

The transmitter can be configured through the serial console to allow either normal aspect resolutions or wide screen resolutions as the preferred setting on its EDID table.

User station features

The DTX user station enables the desktop user's keyboard, mouse, video, audio and mass storage devices to connect to the target workstation via a network connection to the transmitter that is directly connected to the target workstation.

Multiplatform support

You can attach the DTX user station to workstations running the following operating systems:

- Microsoft[®] Windows[®]
- Linux[®]

- Solaris™
- Microsoft Windows Vista®
- Mac OS®

The default keyboard drivers for these operating systems are supported by the DTX user station.

Flexible installation

The DTX user station provides you with the following flexible installation features:

- The DTX user station can be desk mounted or mounted on the back of a monitor
- Installation requires no new drivers or software
- Standard UTP cabling makes installation simple and keeps costs low

On-Screen Display (OSD)

The DTX user station includes an OSD that allows you to view information about the configuration of your system.

Operations administration and maintenance

The DTX user station incorporates a serial menu that allows you to perform administration and maintenance tasks for both the DTX user station and the transmitter. Examples of tasks you can perform include configuration of network settings and firmware Flash upgrades.

Virtual media

Mass storage devices, such as removable drives and external CD-ROM drives, can be attached to the DTX user station and will function as if they are directly connected to the remote workstation. Data can be both read from and written to these mass storage devices. You can connect both a removable drive and an external drive to an DTX user station.

The transfer speed between the mass storage device and the remote workstation is dependant on the Ethernet network. A 1 Gbps connection is required for high-performance virtual media transfer. The system is capable, however, of operating over a 100 Mbps Ethernet connection.

The following mass storage and USB devices are supported:

- Removable drives
- External USB hard drives
- External USB CD-ROM drives
- External USB DVD-ROM drives
- USB memory sticks
- USB memory sticks
- Touch screens
- Pen tablets
- Smart card readers
- Printers

Hot-plugging of USB mass storage devices is supported.

NOTE:

The system supports the default drivers for mass storage devices.

Audio

The DTX5000-R user station supports CD-quality stereo from the remote workstation to peripheral speakers, and mono-quality audio from a peripheral microphone to the remote workstation. The DTX5001-R and DTX5002-R user stations support a CD-quality stereo from the remote workstation to peripheral speakers.

Bandwidth usage (DTX5000-T)

It is possible to restrict the aggregate bandwidth used on the Ethernet link from the serial console. The bandwidth options are:

- Unlimited
- 100 MBits/s
- 50 MBits/s
- 20 MBits/s
- 10 MBits/s

User station modes

The DTX Extender System can operate in Extender Mode, Desktop Mode or Matrix Mode. The DTX user station interfaces to a DHCP server. The user station and transmitter can obtain their IP address data from a DHCP server in any of the three modes.

Extender Mode

In Extender Mode, when the DTX user station is turned on, a connection is automatically established with the remote workstation via the transmitter.

Desktop Mode

In Desktop Mode, when the DTX user station is turned on, the OSD enables the user to log in. Once logged in, users will automatically be connected to their allocated computer.

Matrix Mode

In Matrix Mode, when the DTX user station is turned on, the OSD enables the user to log in. Once logged in, the OSD displays all computers a user can access.

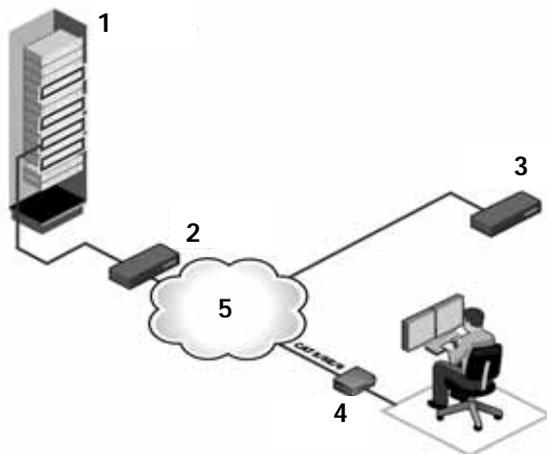


Figure 2-1. DTX Extender System - Desktop Mode

Table 2.1 Descriptions of Figure 2-1

Number	Description
1	Rack Mounted PC and Transmitter
2	Gigabit Ethernet Switch
3	DTX5000-CTL Management Appliance
4	User Station
5	Ethernet LAN

2.2 Safety Precautions

To avoid potential video and/or keyboard problems when using BLACK BOX products:

- If the building has 3-phase AC power, ensure that the workstation and monitor are on the same phase. For best results, they should be on the same circuit.

To avoid potentially fatal shock hazard and possible damage to equipment, please observe the following precautions:

- Do not use a 2-wire extension cord in any BLACK BOX product configuration.

- Test AC outlets at the workstation and monitor for proper polarity and grounding.
- Use only with grounded outlets at both the workstation and monitor. When using a backup Uninterruptible Power Supply (UPS), power the workstation and the transmitter off the same supply.

NOTE:

The AC inlet is the main disconnect.

3. Installation

3.1 Installing the DTX5000-R user station

Before installing your DTX5000-R user station, refer to the list below to ensure that you have all the items necessary for installation.

NOTE:

For installation of the DTX5000-CTL Management Appliance, see the DTX5000-CTL Management Appliance Installer/User Guide.

Needed to install the DTX5000-R user station

- DTX5000-T transmitter (ordered separately)
- External power supply for the DTX5000-R user station
- IEC power cord
- DTX5000-R User station Quick Installation Guide
- Three-wire serial cable or null modem cable (not supplied)

Needed for non-standard installations

- To connect a VGA monitor to the DTX5000-R user station: a DVI to VGA adaptor (not supplied)
- To connect the DTX5000-T transmitter to a remote workstation that has VGA video output: a VGA to DVI-I adaptor (not supplied)
- To connect the DTX5000-T transmitter to a remote workstation that has DVI-D video output: a DVI-D to DVI-I adaptor (not supplied)

Mounting option

The DTX5000-R user station mounts to the rear of a flat panel monitor via a mounting plate accessory.

NOTE:

Mounting accessories are ordered separately. Contact BLACK BOX for more information.

3.2 Installation options

CAUTION:

To reduce the risk of electric shock or damage to your equipment, disconnect the power from the DTX5000-R user station by unplugging the power supply from the electrical outlet. To reduce the risk of electric shock or damage to your equipment, turn on the remote workstation and the DTX5000-R user station in the order described in the following procedures.

You can install the DTX Extender System with the DTX5000-R user station either by a point-to-point or networked configuration.

Point-to-point installation

The following instructions will enable you to install your DTX Extender System in a point-to-point configuration. In a point-to-point configuration, no administrator setup of the DTX5000-T transmitter or the DTX5000-R user station is required. This enables you to install the system quickly, directly out-of-the-box. However, in the point-to-point

configuration, you can install only one DTX5000-T transmitter and DTX5000-R user station pair on a subnet and you must locate both on the same subnet as well.

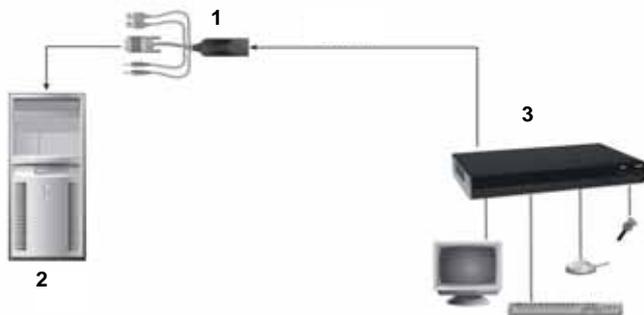


Figure 3-1. Point-to-Point Installation (DTX5000-R User Station)

Table 3.1 Descriptions of Figure 3-1

Number	Description
1	DTX5000-T Transmitter
2	Remote Workstation
3	DTX5000-R User station

To connect the DTX5000-T transmitter:

Before connecting the DTX5000-T transmitter to the remote workstation, ensure that the resolution and the refresh rate of the remote workstation are supported by the DTX5000-R user station. Set the screen resolution and refresh rate of the remote workstation. Unsupported settings will cause blank video at the user station.

NOTE:

Go to www.blackbox.com for updated information on supported resolutions and refresh rates.

1. Turn off the remote workstation.
 2. The DTX5000-T transmitter has two USB connectors. Connect each of these connectors to a corresponding USB port on the remote workstation.
 3. Connect the video connector on the DTX5000-T transmitter to the appropriately labeled port on the back of the workstation.
-

NOTE:

A VGA-only workstation can be connected to the DTX5000-T transmitter using a VGA to DVI-I adaptor (Black Box Part No. FA462). You must configure the DTX5000-T transmitter video settings for VGA through the serial menu.

- Connect the DTX5000-T transmitter's audio and microphone connectors to the appropriately labeled ports on the back of the workstation.

NOTE:

For CD-quality audio, you must configure the DTX5000-T transmitter and the user station using the serial menu.

- Connect one end of the UTP cable to the DTX5000-T transmitter's RJ-45 connector and turn on the workstation.
- Route the other end of the UTP cable to the location you have chosen for the DTX5000-R user station. If necessary, you can extend the UTP cable via junctions or a hub (subject to normal Ethernet cabling practices).



Figure 3-2. DTX5000-T Transmitter

Table 3.2 Descriptions of Figure 3.2

Number	Type of Connector
1	vMedia and vUSB
2	Low speed for K/M
3	Mic
4	Line-out

Table 3.2 Descriptions of Figure 3.2 (Continued)

Number	Type of Connector
5	Video

To connect the DTX5000-R user station:

1. Connect your keyboard, monitor, mouse and other peripherals cables to the appropriately labeled ports on the back of the DTX5000-R user station.
2. Connect the UTP cable to the RJ-45 port on the back of the DTX5000-R user station.
3. Turn on the DTX5000-R user station. A connection will be automatically established with the remote workstation.

NOTE:

VGA monitors can be connected to the DTX5000-R user station by using a DVI-I to VGA adaptor (Black Box Part No. FA461).

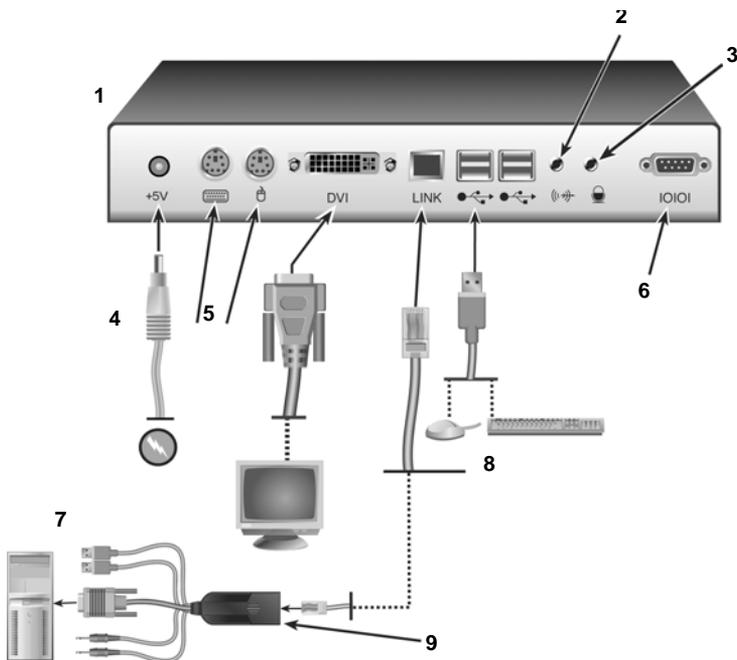


Figure 3-3. DTX5000-R User Station and DTX5000-T Transmitter Installation

Table 3.3 Descriptions of Figure 3-3

Number	Description
1	DTX5000-R User Station
2	Microphone Port

Table 3.3 Descriptions of Figure 3-3 (Continued)

Number	Description
3	Speaker Port
4	External Power Supply
5	PS/2 Port
6	Serial Port
7	Remote Workstation
8	Local Peripherals (attached via USB)
9	DTX5000-T transmitter

Connecting power

The DTX5000-R user station features an external power supply. A DC power jack is located on the rear of the DTX5000-R user station.

NOTE:

Use only the power supply provided by BLACK BOX.

To connect power to the DTX5000-R user station:

1. Plug the external power supply's 2.5 mm connector into the DC power jack on the rear of the DTX5000-R user station.
2. Connect the detachable IEC power cord to the power supply.
3. Plug the IEC power cord into an appropriate wall outlet.

Networked installation

The following instructions will enable you to install your DTX5000-R user station and DTX5000-T transmitter in a networked configuration. In this installation, multiple DTX5000-T transmitters and DTX5000-R user stations are attached via the same Ethernet network. In this case, it is important for each unit to be configured with a unique IP address.

NOTE:

In Desktop and Extender Modes, the DTX5000-R user station and DTX5000-T transmitter can obtain their IP address data from a DHCP server.

DTX5000-T transmitters and DTX5000-R user stations may be configured for use on a single subnet or for use across routers. Use of routers, however, will cause a slight increase in end-to-end latencies, which may not be acceptable for all applications.

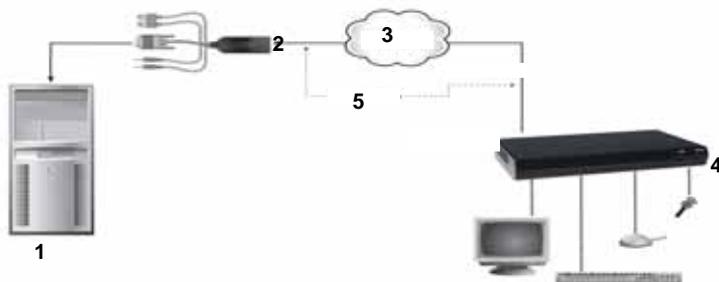


Figure 3-4. Networked Installation

Table 3.4 Descriptions of Figure 3-4

Number	Description
1	Remote Workstation
2	DTX5000-T transmitter
3	IP Network
4	DTX5000-R User Station
5	UTP Cable

The DTX5000-R user station has been preconfigured with factory-default network settings. If you install only one DTX5000-R user station and one DTX5000-T transmitter on a subnet, you do not need to change these default network settings. If you install multiple units on the same subnet, you will need to assign a unique IP address to each unit or configure them for DHCP. This can be done via the serial port and must be carried out before displaying multiple devices on the same network. See Chapter 3 for more information.

NOTE:

The DHCP server must be configured to assign IP addresses to the user station that do not expire. Do not change the mode to DHCP unless the equipment is connected to a DHCP server.

Default Network Settings (DTX5000-R User station)

Component	IP Address	Type	Default Gateway	Subnet Mask
DTX5000-R User station	192.168.13.1	Static	0.0.0.0	255.255.255.0
DTX5000-T transmitter	192.168.13.2	Static	0.0.0.0	255.255.255.0

To install the DTX Extender System on a network with the DTX5000-R user station:

1. With the DTX5000-T transmitter already connected to the remote workstation, connect it to the LAN via the unit's RJ-45 connector.
2. Connect the DTX5000-R user station to the peripherals. Use UTP cable to connect the DTX5000-R user station to the Ethernet network via the RJ-45 connector on the rear of the DTX5000-R user station.
3. Turn on the DTX5000-R user station. A connection will be automatically established with the remote workstation.
4. Use the serial menu to reconfigure the network settings for the DTX5000-T transmitter.

NOTE:

If the DTX5000-R user station and DTX5000-T transmitter are to be located on different subnets, configure their network settings before you connect to the network.

NOTE:

If there are already DTX5000-T transmitter and DTX5000-R user station pairs operating on the subnet, configure network settings of new DTX5000-T transmitter and DTX5000-R user station pairs before connecting them to the network.

5. Use the serial menu to reconfigure the network settings for the DTX5000-R user station.
6. Repeat this procedure for each DTX5000-T transmitter and DTX5000-R user station pair you wish to install on the network.

To install the DTX Extender System on a network in Desktop Mode:

1. Ensure that each DTX5000-T transmitter and DTX5000-R user station has a unique IP address.
2. Using the DTX5000-CTL Management Appliance, locate and add the units to the DTX5000-CTL Management Appliance database. For information on how to do this, refer to the DTX5000-CTL Management Appliance Installer/User Guide.

3.3 Installing the DTX5001-R and DTX5002-R User Stations

Before installing your DTX5001-R and DTX5002-R user stations, refer to the list below to ensure that you have all the items necessary for installation.

Needed to install the DTX5001-R and DTX5002-R user stations

- Two external power supplies
- Two IEC power cords
- Applicable Quick Installation Guide
- KVM cable
- UTP cable (not supplied)
- Three-wire serial cable or null modem cable (not supplied)

Needed for non-standard installations (DTX5002-R user station only)

To connect a VGA monitor to the user station, a DVI to VGA adaptor is required (not supplied).

3.4 Mounting option

The user station mounts to the rear of a flat panel monitor via a mounting plate accessory.

NOTE:

Mounting accessories are ordered separately. Contact BLACK BOX for more information.

3.5 Installation options

CAUTION:

To reduce the risk of electric shock or damage to your equipment, disconnect the power from the DTX5001-R or DTX5002-R user station by unplugging the power supply from the electrical outlet. To reduce the risk of electric shock or damage to your equipment, turn on the remote workstation and the DTX5001-R or DTX5002-R user station and DTX5001-T or DTX5002-T transmitter in the order described in the following procedures.

You can install the DTX Extender System with the DTX5001-R or DTX5002-R user station either by a point-to-point or networked configuration.

Point-to-point installation

The following instructions will enable you to install your DTX Extender System in a point-to-point configuration. In a point-to-point configuration, no administrator setup of the transmitter or the user station is required. This enables you to install the system quickly, directly out-of-the-box. However, if you choose the point-to-point configuration, you can install only one transmitter and user station pair on a subnet and must also locate both on the same subnet as well.

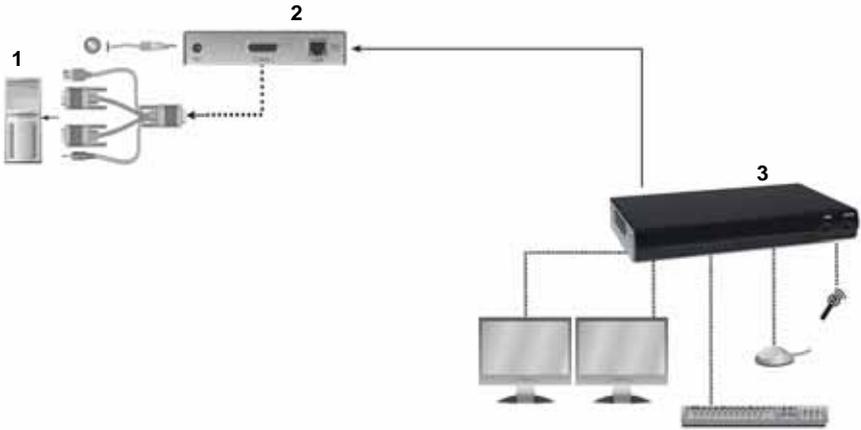


Figure 3-5. Point-to-Point Installation (DTX5002-R and DTX5002-T)

Table 3.5 Descriptions of Figure 3-5

Number	Description
1	Remote Workstation
2	DTX5002-T transmitter
3	DTX5002-R User station

To connect the DTX5001-T or DTX5002-T transmitter:

Before connecting the DTX5001-T or DTX5002-T transmitter to the remote workstation, ensure that the resolution and the refresh rate of the remote workstation are supported by the DTX5002-R user station. Set the screen resolution and refresh rate of the remote workstation. Unsupported settings will cause blank video at the receiver.

NOTE:

Visit www.blackbox.com for updated information on supported resolutions and refresh rates.

1. Turn off the remote workstation.
2. Connect the USB connector on the transmitter to the corresponding USB port on the workstation.
3. Connect the video connector and audio connector on the DTX5001-T or DTX5002-T transmitter to the appropriately labeled ports on the back of the workstation.

NOTE:

For CD-quality audio, you must configure the transmitter and the user station using the serial menu.

4. Connect one end of the UTP cable to the transmitter's RJ-45 connector and turn on the workstation.
5. Route the other end of the UTP cable to the location you have chosen for the user station. If necessary, you can extend the UTP cable via junctions or a hub (subject to normal Ethernet cabling practices).

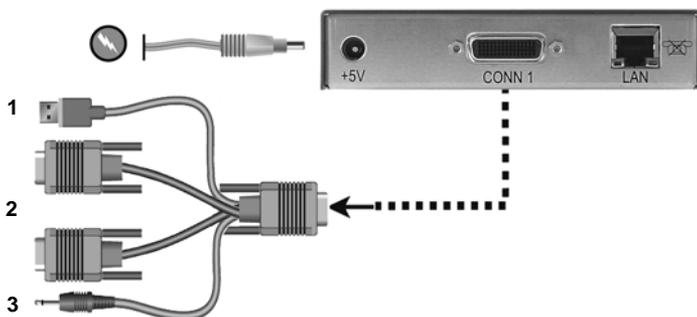


Figure 3-6. DTX5002-T transmitter

Table 3.6 Descriptions of Figure 3-6

Number	Description
1	USB
2	Video
3	Line-out

NOTE:

The DTX5001-T transmitter features one DVI-D connector and one VGA connector

To connect the DTX5001-R or DTX5002-R user station:

1. Connect your keyboard, monitor, mouse and other peripherals cables to the appropriately labeled ports on the back of the user station.
2. Connect the UTP cable to the RJ-45 port on the back of the user station.

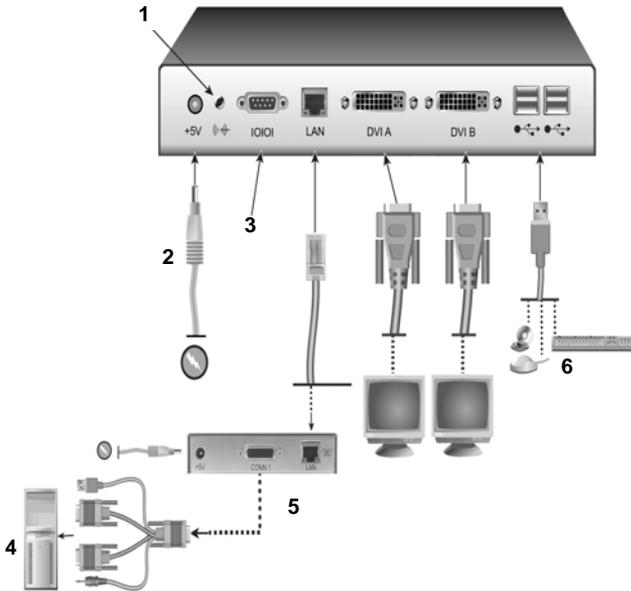


Figure 3-7. DTX5002-R User station and DTX5002-T transmitter Installation

Table 3.7 Descriptions of Figure 3-7

Number	Description
1	Speakers
2	External Power Supply
3	Serial Port
4	Remote Workstation
5	DTX5002-T transmitter
6	Local Peripherals attached via USB

Connecting power

Both the DTX5001-R and DTX5002-R user station and associated transmitters feature an external power supply. A DC power jack is located on the rear of each.

NOTE:

Use only the power supply provided by BLACK BOX.

To connect power to the user station and transmitter:

1. Plug the external power supply's 2.5mm connector into the DC power jack on the rear of the user station and transmitter.
2. Connect the detachable IEC power cord to the power supply.
3. Plug the IEC power cord into an appropriate wall outlet.

Networked installation

The following instructions will enable you to install your user station and transmitter in a networked configuration. In this installation, multiple transmitters and user stations are attached via the same Ethernet network. In this case, it is important for each unit to be configured with a unique IP address.

NOTE:

In Desktop and Extender modes, DTX5001-R and DTX5002-R user stations and DTX5001-T and DTX5002-T transmitters can obtain their IP address data from a DHCP server.

Transmitters and user stations may be configured for use on a single subnet or for use across routers. Use of routers, however, will cause a slight increase in end-to-end latencies, which may not be acceptable for all applications.

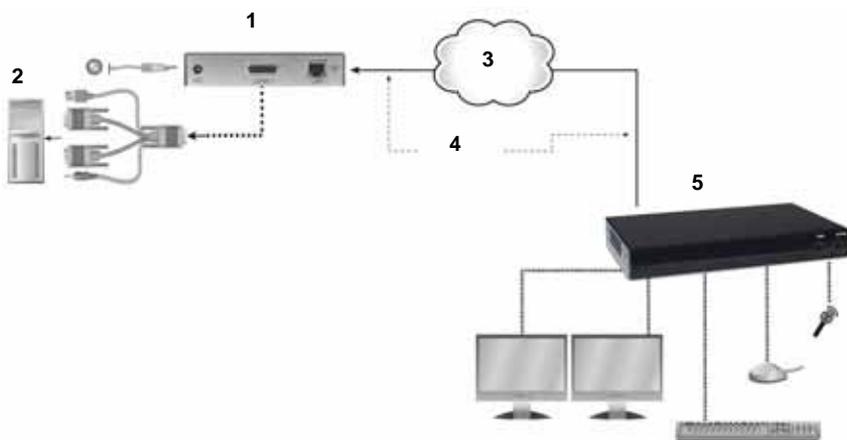


Figure 3-8. Networked Installation

Table 3.8 Descriptions of Figure 3-8

Number	Description
1	DTX5002-T transmitter
2	Remote Workstation
3	IP Network

Table 3.8 Descriptions of Figure 3-8 (Continued)

Number	Description
4	UTP Cable
5	DTX5002-R User station

The DTX5001-R and DTX5002-R user stations have been preconfigured with factory-default network settings. If you install only one DTX5002-R user station and one DTX5002-T transmitter on a subnet, you do not need to change these default network settings. If you install multiple units on the same subnet, you will need to assign a unique IP address to each unit or configure them for DHCP. This can be done via the serial port and must be carried out before displaying multiple devices on the same network.

NOTE:

The DHCP server must be configured to assign IP addresses to the user station that do not expire. Do not change the mode to DHCP unless the equipment is connected to a DHCP server.

Table 3.9 Default Network Settings (DTX5002-R User station)

Component	IP Address	Type	Default Gateway	Subnet Mask
DTX5002-R User station	192.168.13.1	Static	0.0.0.0	255.255.255.0
DTX5002-T transmitter	192.168.13.2	Static	0.0.0.0	255.255.255.0

To install the DTX5001-R or DTX5002-R user station and DTX5001-T and DTX5002-T transmitter on a network:

1. Connect the transmitter to the remote workstation. Connect one end of the UTP cable to the transmitter's RJ-45 connector. Connect the other end of the UTP cable to the Ethernet network.
2. Connect the user station to the peripherals. Use a length of UTP cable to connect the user station to the Ethernet network via the RJ-45 connector on the rear of the user station.
3. Turn on the user station. A connection will be automatically established with the remote workstation.
4. Use the serial menu to reconfigure the network settings for the transmitter.

NOTE:

If the DTX5002-R user station and DTX5002-T transmitter are to be located on different subnets, configure their network settings before you connect to the network.

NOTE:

If there are already transmitters and user stations operating on the subnet, configure network settings of the new transmitter and user station pair before connecting them to the network.

5. Use the serial menu to reconfigure the network settings for the user station.
6. Repeat this procedure for each transmitter and user station pair you wish to install on the network.

To install the DTX Extender System on a network in Desktop Mode:

1. Ensure that each transmitter and user station has a unique IP address.
2. Using the DTX5000-CTL Management Appliance, locate and add the units to the Management Appliance database. For information on how to do this, refer to the DTX Control User Guide.

4. Operations

4.1 Overview

Operating a workstation through the DTX Extender System is no different than working directly connected to your workstation. All peripherals operate as if directly connected, even though the workstation is located at a distance. When you turn on the DTX user station, a connection is automatically established with the workstation.

While the default settings of your DTX Extender System will work in most environments, you may configure the settings to better fit your system. Internal settings such as connection settings can be configured via the serial menu. You can also upgrade the DTX Extender System via the serial menu. See “Flash Upgrading your DTX Extender System” on page 55 for more information.

The administrator can configure Matrix Mode so that there is a fixed association between a user and the target PC. A user can have a fixed association with a specific target PC or have access to other target PCs. The user may choose which target PC to connect to via the OSD.

LED identification

Front panel

There are two blue LEDs on the front panel of an DTX user station. The *PWR* LED will light up when the user station has been turned on. The *ACTIVE* LED will blink slowly until the user station establishes a connection with the transmitter. When a connection has been established between the user station and transmitter, the *ACTIVE* LED will stop blinking and will remain lit.

Rear panel

Two LEDs are built into both the RJ-45 connector on the rear of the user station and into the RJ-45 connector on the transmitter.

Table 4.1 RJ-45 Connector LEDs

LED	Indication	Meaning
LED 1	Green static	Linked at 1 Gbps
	Green flashing	Linked at 100 Mbps
	Green off	No Link
LED 2	Yellow static	Linked but no activity
	Yellow flashing	Transmit/receive activity

4.2 Accessing the System

When an DTX user station is turned on, it will automatically initiate a connection with the remote workstation. A series of messages will be displayed on the screen to inform you of

the progress of the connection. You will be able to interact with the remote workstation as if it were located at your desk.

NOTE:

If the remote workstation has been turned off, the DTX user station cannot establish a connection.

4.3 OSD functions

The DTX user station incorporates an On-Screen Display (OSD) that allows you to view information about the configuration of your system in Matrix Mode or Extender Mode.

Displaying system information using the OSD

The OSD enables you to display the firmware release of the user station and the transmitter. For optimum performance, keep your firmware current. The OSD also enables you to view the IP address and MAC address of both the DTX user station and transmitter.

To display system information:

1. Press **Print Screen** and select the *User* tab to display user information for your DTX user station.

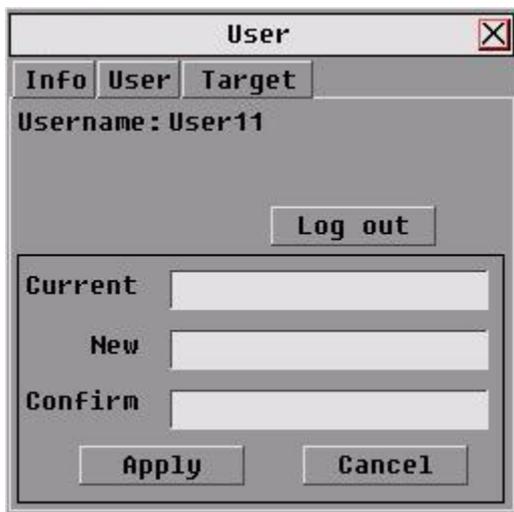


Figure 4-1. User Dialog Box (Matrix Mode)

- If the user has access to a list of target PCs, the Target dialog box will appear when the *Target* tab is selected. The Target dialog box displays a list of target PCs to which the user has access.



Figure 4-2. Target Dialog Box

- Click the *Info* tab to view system information for your user station and transmitter.
- Click the *Rcvr* radio button to view the system information for your user station.

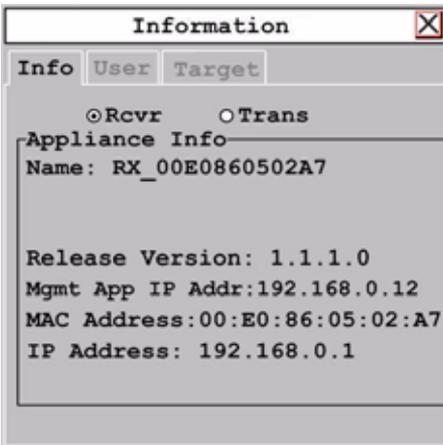


Figure 4-3. User Station Connected to Transmitter

-or-

Click the *Trans* radio button to view the system information for your transmitter.

NOTE:

If there is no transmitter connected, the Trans radio button option will display as *No Target*.

To initiate a connection with a remote PC in Matrix Mode:

1. Press **Print Screen**.
2. Enter the Login Name and Password, ensuring that the appropriate keyboard has been selected.
3. Click the *OK* button to accept the changes. If the user has access to only one target PC, the login progress message will then appear and a connection will be established.



The image shows a 'Login' dialog box with the following fields and controls:

- Login Name:** An empty text input field.
- Password:** An empty password input field.
- Keyboard Country:** A dropdown menu currently displaying 'US English'.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

Figure 4-4. Login Screen

4. If the user has access to more than one target PC, then the list of target PCs is presented to the user via the OSD.
5. Click on the *Connect* button or on a target device in the list to establish a connection.

To initiate a connection with a remote PC in Matrix Mode:

1. Press **Print Screen**.
2. Enter the Login Name and Password, ensuring that the appropriate keyboard has been selected.
3. Click the *OK* button to accept the changes.
4. In Matrix Mode, the Target window displays.



Figure 4-5. Target Screen (Matrix Mode)

5. Select the remote PC to which you wish to connect and click *Connect*.

NOTE:

Once a remote PC has been selected, Matrix Mode denies access to any other user.

Access through Auto-Login Mode

Using the DTX5000-CTL Management Appliance, an administrator can enable Auto-Login Mode. Once this step is complete, the DTX user station is reset by the DTX5000-CTL Management Appliance and it attempts to connect to the specified transmitter. A login progress message will be seen at this point.

NOTE:

The OSD will clear after a defined period of inactivity. To reactivate the OSD, enter a valid hotkey sequence.

To display system information in Extender Mode:

1. Press **Print Screen**. In Extender Mode, the Information tab displays user information for your DTX user station by default.

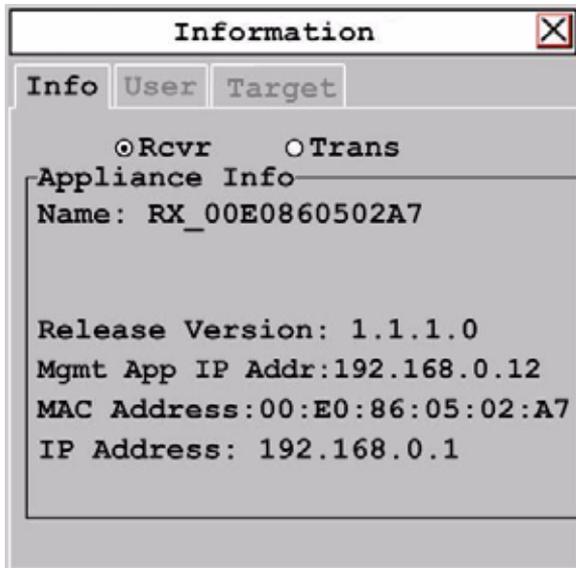


Figure 4-6. DTX User station Connected to Transmitter

2. Click the *Rcvr* radio button to view system information for your DTX user station.

-or-

Click the *Trans* radio button to view the system information for your transmitter.

NOTE:

If there is no transmitter connected, the Trans radio button option will display as *No Target*.

To close the OSD:

Press **ESC** or use the mouse to click the X button on the top right-hand corner of the OSD.

4.4 The Serial Menu

The DTX user station incorporates a serial menu that allows you to:

- Configure network settings for the DTX user station
- Configure network settings for the transmitter
- Set or change passwords
- Upgrade your firmware for the DTX user station and transmitter
- Reset to factory defaults
- Set a session time-out value
- Change the audio performance settings
- Configure the transmitter for normal aspect or wide screen resolutions

Accessing the serial menu

You can access the serial menu via the serial port on the back of the DTX user station. All terminal commands are executed through a terminal or PC running HyperTerminal[®] emulation software or equivalent. By default, two passwords are required to access the DTX user station via the transmitter. One password controls access to the user station, the other password controls access to the transmitter. In both cases, the default password is **password**.

Items needed to access the serial menu

- Networked workstation with a serial port
- Null-modem serial cable (male DB9) or three-wire serial cable
- HyperTerminal emulation software or equivalent

NOTE:

When utilizing the serial menu screens, the DTX user station is sometimes referred to as the receiver.

To access the serial menu:

1. Connect one end of the serial cable to the serial port on the back of the DTX user station.
2. Connect the other end of the serial cable to the serial port of your PC.
3. Launch HyperTerminal.
4. Within the COM1 Properties Port Settings tab, configure the HyperTerminal session for 57600 bits per second, 8 data bits, no parity, 1 stop bit and no flow control.

NOTE:

Software (XON/XOFF) flow control is supported. However, it should not be used when using XMODEM.

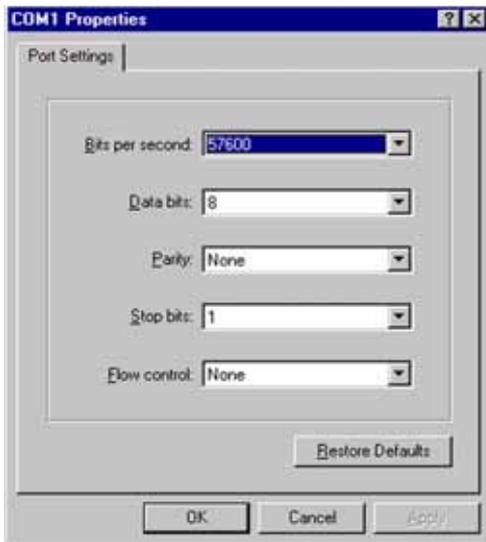


Figure 4-7. Com1 Properties

5. Confirm the HyperTerminal settings and click *OK*.
6. Press **Enter** to display the serial menu. The Appliance Selection Menu will be displayed.

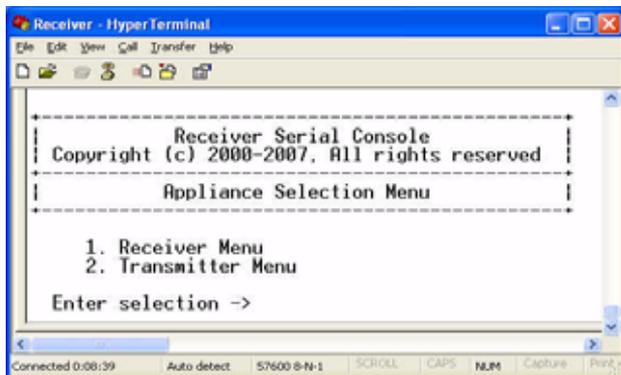


Figure 4-8. Appliance Selection Menu

7. Select the Receiver or Transmitter Menu by pressing **1** or **2** and pressing **Enter**. You will be prompted to enter a password.
8. Type the password and press **Enter**.

NOTE:

If there is no transmitter connected to the DTX user station, an error message will display and you will be returned to the Appliance Selection Menu.

Navigating the serial menu

To navigate through the serial menu, type the number or letter that corresponds to the option you wish to choose and press **Enter**. This action will bring you to a sub-menu or to a screen where you can make configuration changes. To exit a menu or screen and to confirm any configuration changes you have made, type **0** (zero) and press **Enter**. To navigate back up through the menus, continue to type **0** and press **Enter** at each screen.

4.5 Configuring Network Settings

Each DTX Extender System component is shipped with default network settings preconfigured for your DTX user station and transmitter. You can change the default values for your system using the serial menu. If you wish, you can place the user station on a different subnet from the transmitter.

NOTE:

IP address data can be obtained by DHCP or can be set to Static.

NOTE:

It is recommended that you configure the network settings for the transmitter before you configure the network settings for the DTX user station.

To configure network settings for the transmitter:

1. Press **Enter** to display the serial menu. The Appliance Selection Menu displays.

2. Press **2** to access the Transmitter Menu. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.



Figure 4-9. Transmitter Main Menu

NOTE:

The Reset Appliance option in the Transmitter Main Menu applies only to network settings.

4. Press **1** to select the Network Configuration option and press **Enter**. The Network Configuration Menu will appear.



Figure 4-10. Network Configuration Menu

- Press **1** to select the Transmitter Network Config option and press **Enter**. The Transmitter Network Configuration Menu will appear.

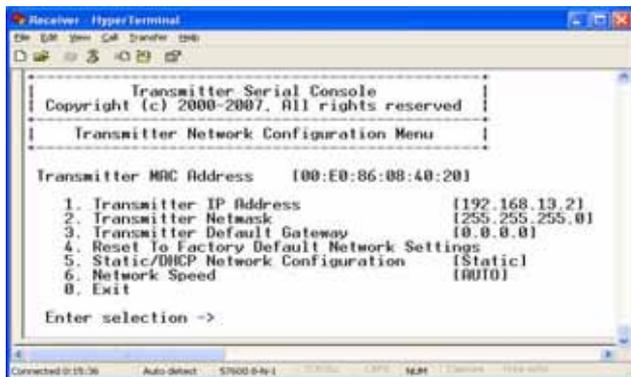


Figure 4-11. Transmitter Network Configuration Menu

NOTE:

For option 5, the administrator can configure the transmitter IP address as DHCP or Static. Static is the default configuration.

- Press **1** to select the Transmitter IP Address option and press **Enter**.
- Type a valid IP address. Press **Enter** to return to the Transmitter Network Configuration Menu.
- Press **2** to select the Transmitter Netmask option and press **Enter**.
- Type a valid Transmitter Netmask. Press **Enter** to return to the Transmitter Network Configuration Menu.
- Press **3** to select the Transmitter Default Gateway option and press **Enter**.
- Type a valid Transmitter Default Gateway. Press **Enter** to return to the Transmitter Network Configuration Menu.
- Type **0** (zero) and press **Enter** to return to the Network Configuration Menu. If you made a mistake and do not wish to save the changes you made to the network settings, type **C** and press **Enter**.
- A system message will appear that states *Connection to the Transmitter is lost*. You will be automatically returned to the Appliance Selection Menu screen.
- Press option **1** to access the Receiver Menu (user station menu) and press **Enter**. If the password option is enabled, you will be prompted for a password.
- Type the password and press **Enter**. The Receiver Main Menu will appear.

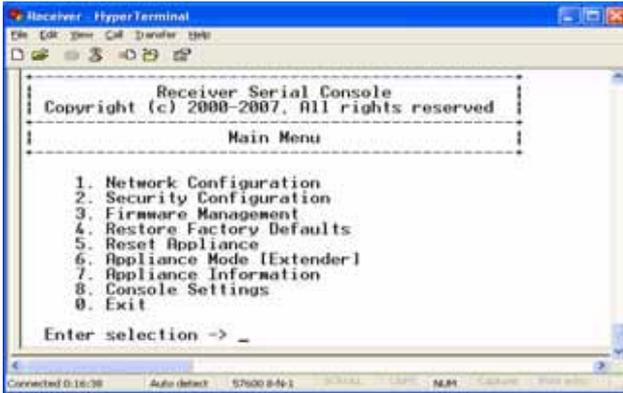


Figure 4-12. Receiver Main Menu

NOTE:

The Network Configuration Menu is different for the Extender and Matrix modes.

To access the Network Configuration Menu in Extender Mode:

1. Press **1** to select the Network Configuration option and press **Enter**. The Network Configuration Menu (Extender Mode) appears.

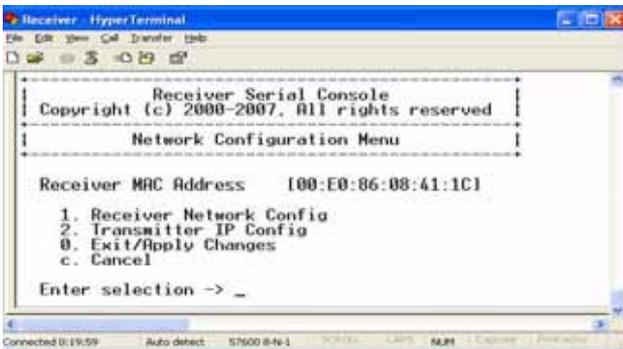


Figure 4-13. Network Configuration Menu (Extender Mode)

- Press **2** to select the Transmitter IP Config option and press **Enter**. The Transmitter IP Config menu will appear. The old Transmitter IP address is displayed beside menu option 1.

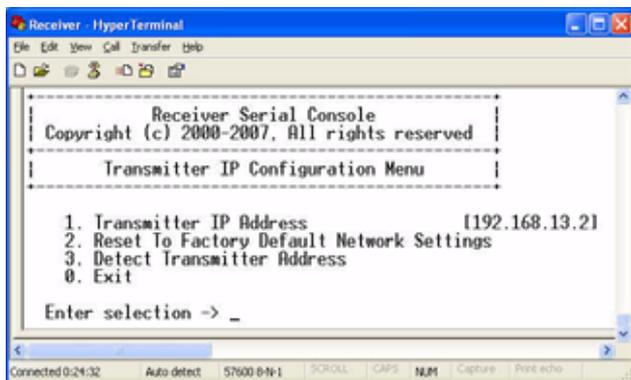


Figure 4-14. Transmitter Configuration Menu on the DTX User station

- Press **1** to select the Transmitter IP Address option and press **Enter**. Type the new IP address for the transmitter and then press **Enter** to return to the Transmitter IP Configuration Menu.
- Type **0** (zero) and press **Enter** to return to the Network Configuration Menu. If you made a mistake and do not wish to save the changes you made to the network settings type **C** and press **Enter**.

The DTX user station will now automatically reset to apply the new network configuration. You will be automatically returned to the Appliance Selection Menu screen. The connection to the transmitter will be automatically restored.

To access the Network Configuration Menu in Desktop Mode:

- Press **6** to select Appliance Mode in the Receiver Main Menu and press **Enter**. The Appliance Mode Menu will appear.
- Press **2** to select the Desktop Mode and press **Enter**.
- To confirm your changes and apply those settings, type **0** (zero) and press **Enter**. You are now in Desktop Mode.

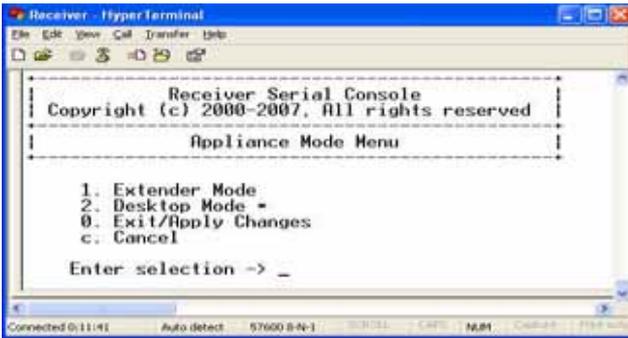


Figure 4-15. Appliance Mode Menu

4. Press **Enter** to activate the serial menu. The Appliance Selection Menu displays.
5. Press **1** to access the Receiver menu. If the password option is enabled, you will be prompted for a password.
6. Type the password and press **Enter**. The Receiver Main Menu (Desktop Mode) will appear.
7. Press **1** to select the Network Configuration option and press **Enter**. The Network Configuration Menu (Desktop Mode) will appear.

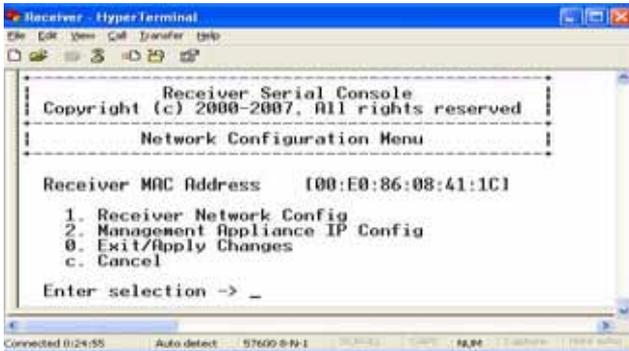


Figure 4-16. Network Configuration Menu (Desktop Mode)

To configure the network settings for the user station:

1. Press **1** to select the Receiver Network Config option in the Network Configuration Menu (in either Extender or Matrix Mode).

2. Press **Enter**. The Receiver Network Configuration Menu will appear.



Figure 4-17. Receiver Network Configuration Menu (Extender and Matrix Mode)

NOTE:

The Receiver Network Configuration Menu is identical in both Extender and Matrix modes.

NOTE:

The reset option in the Receiver Network Configuration Menu applies only to network settings.

3. Press **1** to select the Receiver IP Address option and press **Enter**.
4. Type a valid IP address. Press **Enter** to return to the Receiver Network Configuration Menu.
5. Press **2** to select the Receiver Netmask option and press **Enter**.
6. Type a valid Receiver Netmask. Press **Enter** to return to the Receiver Network Configuration Menu.
7. Press **3** to select the Receiver Default Gateway option and press **Enter**.
8. Type a valid Receiver Default Gateway. Press **Enter** to return to the Receiver Network Configuration Menu.
9. Press **5** to select the Static/DHCP Network Configuration option to toggle between Static and DHCP mode. Press **Enter**.
10. Type **0** (zero) and press **Enter** to return to the Network Configuration Menu. If you made a mistake and do not wish to save the changes you made to the network settings, type **C** and press **Enter**.

NOTE:

Changes to network configurations are applied only after you exit the Network Configuration Menu.

The DTX user station will now automatically reset to apply the new network configuration. During reset, the DTX user station will drop its connection to the transmitter. You will be returned to the Appliance Selection Menu screen. The connection will be restored.

To access the Network Speed Menu:

1. Press **6** to select the Network Speed option in the Receiver Network Configuration Menu.

- Press **Enter**. The Network Speed Menu will appear.



Figure 4-18. Network Speed Menu

NOTE:

The currently selected network speed, Auto-Negotiate, is marked with an asterisk.

To access the DTX5000-CTL Management Appliance IP Configuration Menu:

- Press **6** to select the Appliance Mode option in the Receiver Main Menu.
- Press **Enter**. The Appliance Mode Menu will appear.
- Select the number for Matrix Mode and press **Enter**. You are now in Matrix Mode.
- Activate the serial menu.
- Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
- Type the password and press **Enter**. The Receiver Main Menu (Matrix Mode) will appear.
- Select the number for Network Configuration and press **Enter**. The Network Configuration Menu (Matrix Mode) will appear.

- Press **2** to select the Management Appliance IP Configuration Menu in the Network Configuration Menu (Matrix Mode) and press **Enter**. The Management Appliance IP Configuration Menu will appear.

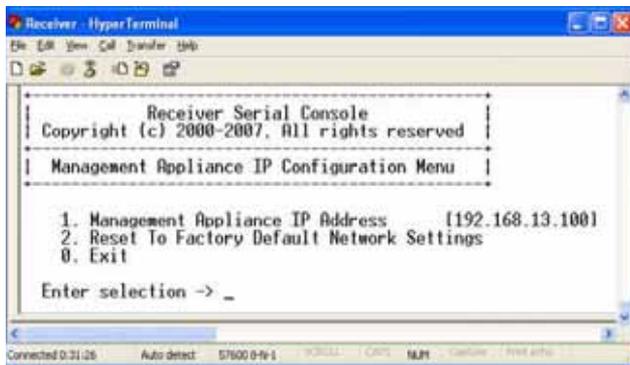


Figure 4-19. DTX5000-CTL Management Appliance IP Configuration Menu

Detecting a transmitter IP address

In the event that you forget the IP address of a transmitter, you can use the serial menu to detect the IP address of a transmitter that is connected to the DTX user station.

NOTE:

This can only be done if the transmitter has been assigned a static IP address.

To detect the IP address of a connected transmitter:

- Turn off the transmitter and directly connect it to the user station.

NOTE:

If the transmitter receives its power from an external power supply, disconnect the transmitter from that external power supply.

- Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.

3. Type the password and press **Enter**. The Receiver Main Menu will appear.



Figure 4-20. Receiver Main Menu

4. Press **1** to select Network Configuration and press **Enter**. The Network Configuration Menu will appear.



Figure 4-21. Network Configuration Menu

- Press **2** to select Transmitter IP Config and press **Enter**. The Transmitter IP Config menu will appear. The old Transmitter IP address is displayed beside menu option 1.

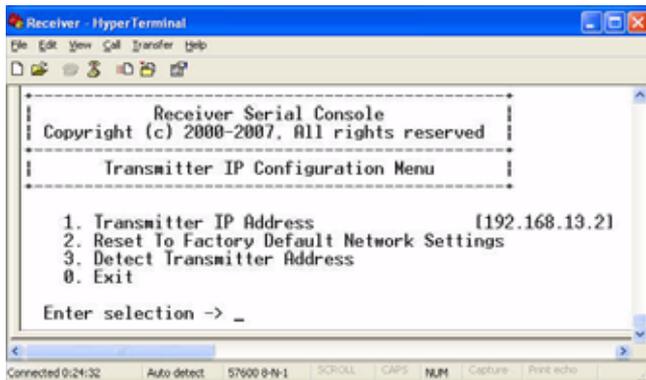


Figure 4-22. Transmitter IP Configuration Menu on the DTX User station

NOTE:

This screen is available only in Extender Mode.

- Press **3** to select Detect Transmitter Address and press **Enter**.
- Turn on the transmitter.
- The DTX user station will detect and save the IP address of the connected transmitter. The Transmitter IP Configuration Menu will refresh, and the current IP address of the connected Transmitter will be displayed beside menu option 1.
- To save your changes and exit the menu, type **0** (zero) and press **Enter**.

4.6 Authentication

By default, two passwords are required to access the DTX Extender System via the serial menu. One password is for access to the serial menus that control the DTX user station. The other password is for access to the serial menus that control the transmitter. In both cases, the default password is **password**.

Authentication for the DTX user station

You can change the password settings for the DTX user station through the serial menu via the Receiver Security Configuration Menu.

To access the Receiver Security Configuration Menu:

- Press **Enter** to display the serial menu. The Appliance Selection Menu will be displayed.
- Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
- Type the password and press **Enter**. The Receiver Main Menu will appear.

- Press **2** to select the Security Configuration option and press **Enter**. The Security Configuration Menu will appear.

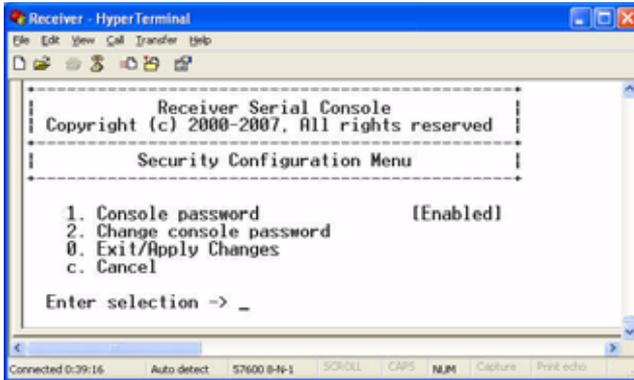


Figure 4-23. The Receiver Security Configuration Menu

To disable or enable the DTX user station password:

- Press **1** to select Console password and press **Enter**. If a password had been enabled, this action will disable the password.
- If a password had been disabled, you will be prompted to enter a password.
- Type the new password and press **Enter**.

NOTE:

Each password must consist of ASCII characters and contain between 6 and 64 characters.

- Confirm the new password. If successful, you will see a message stating that the password has been changed.
- Press **Enter**.
- To save your changes and exit the menu, type **0** (zero) and press **Enter**.

To change the user station password:

- Press **2** to select Change console password and press **Enter**. You will be prompted to enter your current password.
- Type your current password and press **Enter**. You will be prompted to enter the new password.
- Type the new password and press **Enter**.

NOTE:

Each password must consist of ASCII characters and contain between 6 and 64 characters.

- Confirm the new password. If successful, you will see a message stating that the password has been changed.
- Press **Enter**.
- To save your changes and exit the menu, type **0** (zero) and press **Enter**.

To reset your user station password:

If you lose your user station password, you can reset the system to the default password with the help of BLACK BOX Technical Support.

1. Press **Enter** to display the serial menu.
2. Press **1** to access the user station menu (if you lose your transmitter password, press **2** and continue with the following steps). Press **Enter**.
3. You will be prompted to enter your current password.
4. Type **??????** (six question marks) and press **Enter**. The serial menu will generate a code and display it to you. The code is a 16 character hex sequence. The serial menu will also prompt you to enter a Key.
5. Contact BLACK BOX Technical Support to obtain the Key.
6. In the serial menu at the Key prompt, type the new 16 character hex sequence provided by BLACK BOX Technical Support. Press **Enter**.
7. The default password is now active.

Authentication for the transmitter

You can change the password settings for the transmitter through the serial menu using the Transmitter Security Configuration Menu.

To access the Transmitter Security Configuration Menu:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **2** to access the Security Configuration menu and press **Enter**. The Security Configuration Menu will appear.



Figure 4-24. Transmitter Security Configuration Menu

To disable or enable the transmitter password:

1. Press **1** to access the Console password menu on the Security Configuration Menu and press **Enter**. If a password has been enabled, this action will disable the password.
2. If a password has been disabled, you will be prompted to enter a password.
3. Type the new password and press **Enter**.

NOTE:

Each password must consist of ASCII characters and contain between 6 and 64 characters.

4. Confirm the new password. If successful, you will see a message stating that the password has been changed.
5. Press **Enter**.
6. To save your changes and exit the menu, type **0** (zero) and press **Enter**.

To change the transmitter password:

1. Press **2** to access the Change Console password menu on the Security Configuration Menu and press **Enter**. You will be prompted to enter your current password.
2. Type your current password and press **Enter**. You will be prompted to enter the new password.
3. Type the new password and press **Enter**.

NOTE:

Each password must consist of ASCII characters and contain between 6 and 64 characters.

4. Confirm the new password. If successful, you will see a message stating that the password has been changed.
5. Press **Enter**.
6. To confirm the new password and exit the screen, type **0** (zero) and press **Enter**.

4.7 Flash Upgrading your DTX Extender System

You can Flash upgrade your DTX user station and transmitter using either XMODEM or HTTP. The DTX user station and transmitter are upgraded separately using individual upgrade files. The upgrade files are supplied by BLACK BOX. For optimum system performance keep your firmware versions current.

NOTE:

Do not use software (XON/XOFF) flow control when using XMODEM.

NOTE:

It is recommended that you flash upgrade the transmitter before you flash upgrade the DTX user station. Transmitters and user stations should have the same version for guaranteed operation.

To Flash upgrade your transmitter using XMODEM:**NOTE:**

Black Box recommends using HTTP Flash upgrade for faster upgrade times. See "To Flash upgrade your DTX user station using HTTP:" on page 58

1. Download the transmitter upgrade file from BLACK BOX.
2. Press **Enter** to display the Serial Menu.
3. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
4. Type the password and press **Enter**. The Transmitter Main Menu will appear.

- Press **5** to access the Firmware Management Menu and press **Enter**. The Firmware Management Menu will appear.

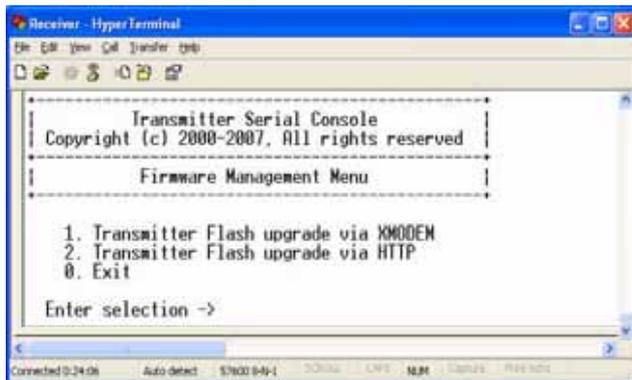


Figure 4-25. Transmitter Firmware Management Menu

- Press **1** to select the Transmitter Flash upgrade via XMODEM menu. Press **Enter**
- Specify the location of the upgrade file and initiate the file transfer.
- When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance*. During reset the transmitter will drop the connection to the DTX user station. A second system message will appear that states: *Connection to the transmitter is lost*. You will be automatically returned to the Appliance Selection Menu screen.

NOTE:

If the transmitter determines that the upgrade file is invalid, the transmitter cancels the upgrade and maintains the previous firmware version. A message displays indicating that the upgrade has failed. The serial upgrade procedure might take 20 minutes or more per unit. Do not turn off power during upgrade.

To Flash upgrade your transmitter using HTTP:

- Download the Transmitter upgrade file from BLACK BOX.
- Press **Enter** to display the serial menu.
- Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
- Type the password and press **Enter**. The Transmitter Main Menu will appear.
- Press **5** to access the Firmware Management Menu. The Firmware Management Menu will appear.
- Press **2** to select Transmitter Flash upgrade via HTTP and press **Enter**. You will be prompted to enter the URL for the upgrade file.
- Enter the URL for the upgrade file using the following syntax:
`http://<server ip address>[:server port]/<upgrade file path>`
 For example:
http://192.168.13.3:8080/TX.dld

NOTE:

If the server is set up on standard port 80, the port information can be omitted.

8. To initiate the file transfer, press **Enter**. The connection to the transmitter will be dropped.
9. When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance*. During reset the transmitter will drop the connection to the DTX user station. A second system message will appear that states: *Connection to the Transmitter is lost*. You will be automatically returned to the Appliance Selection Menu screen.

NOTE:

If the transmitter determines that the upgrade file is invalid, the transmitter cancels the upgrade and maintains the previous firmware version. A message displays indicating that the upgrade has failed.

To Flash upgrade your DTX user station using XMODEM:**NOTE:**

It is recommended that you flash upgrade the transmitter before you flash upgrade the DTX user station. Black Box recommends using HTTP Flash upgrade for faster upgrade times. See "To Flash upgrade your DTX user station using HTTP:" on page 58

1. Download the DTX user station upgrade file from BLACK BOX.
2. Press **Enter** to display the serial menu.
3. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
4. Type the password and press **Enter**. The Receiver Main Menu will appear.
5. Press **5** to access the Firmware Management Menu and press **Enter**. The Firmware Management Menu will appear.

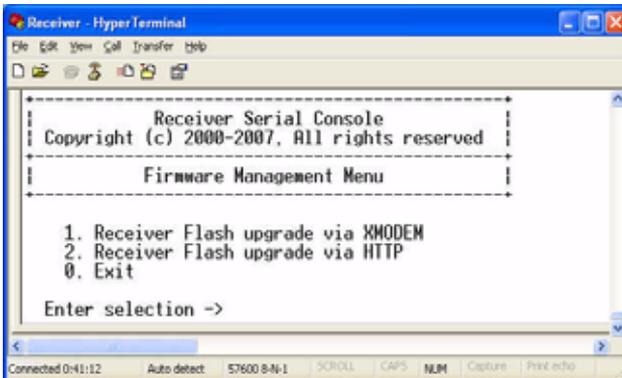


Figure 4-26. Receiver Firmware Management Menu

6. Press **1** to select Receiver Flash upgrade via XMODEM and press **Enter**. The connection to the transmitter will be dropped.
7. Specify the location of the upgrade file and initiate the file transfer.
8. When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance*.
9. The connection to the DTX user station will be restored.

NOTE:

If the DTX user station determines that the upgrade file is invalid, the DTX user station cancels the upgrade and maintains the previous firmware version. A message will display indicating that the firmware upgrade has failed. The serial upgrade procedure might take 20 minutes or more per unit. Do not turn off power during upgrade.

To Flash upgrade your DTX user station using HTTP:

1. Download the DTX user station upgrade file from BLACK BOX.
2. Press **Enter** to display the serial menu.
3. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
4. Type the password and press **Enter**. The Receiver Main Menu will appear.
5. Press **5** to access the Firmware Management Menu and press **Enter**. The Firmware Management Menu will appear.
6. Press **2** to select Receiver Flash upgrade via HTTP and press **Enter**. You will be prompted to enter the URL for the upgrade file.
7. Enter the URL for the upgrade file using the following syntax:
http://<server ip address>[:server port]/<upgrade file path>
For example:
http://192.168.13.3:8080/RX.dld

NOTE:

If the server is set up on standard port 80, the port information can be omitted.

8. To initiate the file transfer, press **Enter**. The connection to the transmitter will be dropped.
9. When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance.*
10. The connection to the transmitter will be restored.

NOTE:

If the DTX user station determines that the upgrade file is invalid, the DTX user station cancels the upgrade and maintains the previous firmware version. A message will display indicating that the firmware upgrade has failed.

4.8 Restoring Factory Default Settings

The serial menu enables you to easily restore the factory default settings of both the DTX user station and the transmitter.

NOTE:

Restoring factory default settings will also reset network settings. Before restoring factory default settings, assess whether this is likely to cause conflicts with other devices on the network.

To restore the DTX user station or transmitter factory default settings:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu or press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver or Transmitter Main Menu will appear.

4. Press **4** to access the Restore Factory Defaults menu and press **Enter**.
5. Defaults will now automatically reset. You will be automatically returned to the Appliance Selection Menu.
6. During reset, the DTX user station will drop the connection to the transmitter. When reset is complete, the DTX user station will restore the connection to the transmitter using the new settings.

4.9 Resetting the DTX Extender System

To reset the DTX user station:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. The Receiver Main Menu will appear.
4. Press **5** to access the Reset Appliance Menu and press **Enter**. The Reset Appliance Menu will appear.

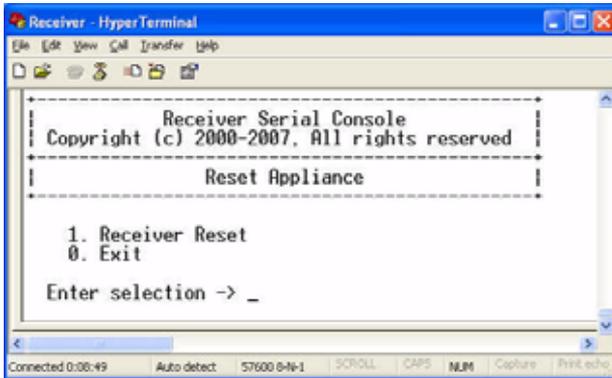


Figure 4-27. Receiver Reset Appliance Menu

5. Press **1** and **Enter** to access the Receiver Reset menu to initiate the reset. A message will be displayed on the serial menu that states *Resetting appliance*. During reset, the connection to the transmitter is dropped. When the reset is complete, you will be automatically returned to the Appliance Selection Menu. The connection to the transmitter will be automatically restored.

To reset the transmitter:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password. The Transmitter Main Menu will appear.
3. Press **5** to access the Reset Appliance menu and press **Enter**. The Reset Appliance Menu will appear.
4. Press **1** and **Enter** to access Receiver Reset Menu to initiate the reset. A message will be displayed on the serial menu that states *Resetting appliance*. During reset, the transmitter will drop the connection to the user station. A second system message

will appear that states: *Connection to the Transmitter is lost*. You will be automatically returned to the Appliance Selection Menu. The connection will be automatically restored.

4.10 Viewing System Information

The serial menu enables you to display the firmware release and details of the DTX user station and of the transmitter.

To view DTX user station system information:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **7** to access the Appliance Information menu and press **Enter**. The Appliance Information Menu will appear.

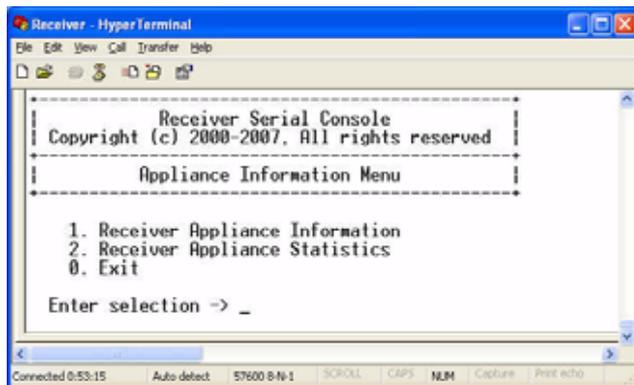


Figure 4-28. Appliance Information Menu

5. Press **1** to access the Receiver Appliance Information Menu and press **Enter**. The Receiver Appliance Information Menu appears.

NOTE:

The term “receiver appliance” is used interchangeably with “user station.”

The Receiver Appliance Information Menu screen contains the following information and all values are read-only:

- user station name
- EID number
- release version
- application
- boot and FPGA firmware version numbers
- manufacturing part number

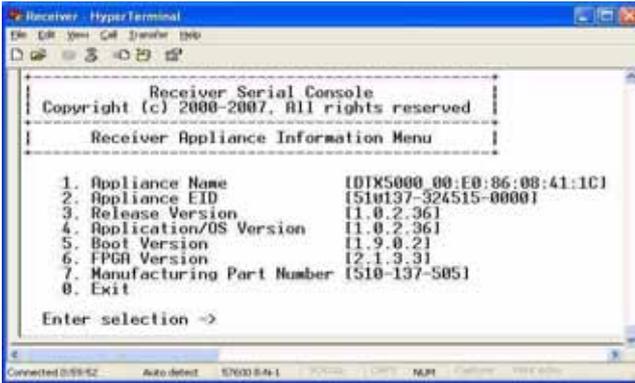


Figure 4-29. Receiver Appliance Information Menu

To view transmitter system information:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **6** to access the Appliance Information Menu and press **Enter**. The Appliance Information Menu will appear.
5. Press **1** to access the Transmitter Appliance Information Menu and press **Enter**. The Transmitter Appliance Information Menu will appear.

The Transmitter Appliance Information Menu screen contains the following information and all values are read-only:

- transmitter name
- EID number
- release version
- application
- boot and FPGA firmware version numbers
- manufacturing part number

4.11 Configuring Video Input Settings

The DTX5000-T and DTX 5001-T transmitters are capable of transmitting either digital (DVI) or analog video (VGA) from the remote workstation to your monitor. The DTX5002-T transmitter is capable of transmitting DVI only from the remote workstation to your analog digital monitor. The DTX Extender System will normally operate well when set on its default settings. The DTX5000-R user station needs the transmitter to be set for the dedicated video type to operate correctly.

NOTE:

Video-display problems may occur if video input settings are not configured correctly,

To configure video input settings:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **7** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will display. The current video input setting is displayed beside menu item 1.

NOTE:

Under Video Performance, the number 1 signifies a lower quality video with the least bandwidth consumed, while 5 signifies the highest video quality, with the most bandwidth consumed.

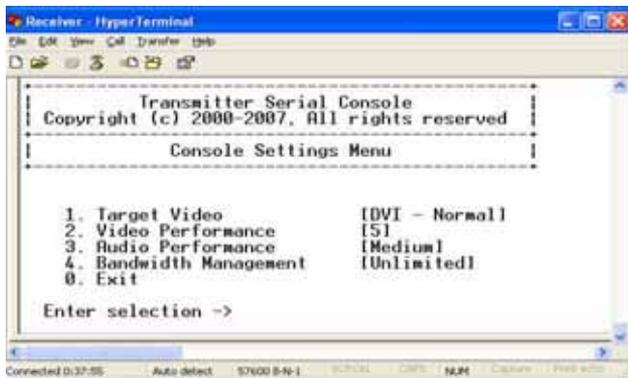


Figure 4-30. Transmitter Console Settings Menu

5. Press **1** to access the Target Video and press **Enter**. The Target Video Menu will display.

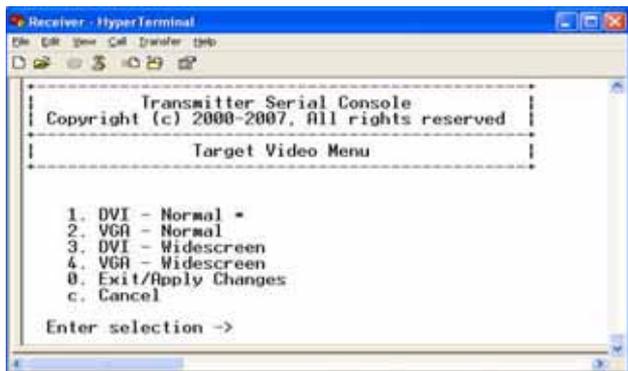


Figure 4-31. Transmitter Target Video Menu

6. Press **1** to select DVI Normal and press **Enter**.
7. Select the appropriate menu item.
8. To save your changes and exit the menu, type **0** (zero) and press **Enter**. The unit resets.

4.12 Session Retry Settings

The DTX user station is designed to automatically establish a connection between the DTX user station and the remote workstation. By default, if the DTX user station cannot immediately establish a connection with the remote workstation it will retry once per second until a connection is successfully established. You can change the default session retry settings using the serial menu.

To access the Session Retry Menu:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear.
5. Press **1** to access the Session Retry Menu and press **Enter**. The Session Retry Menu will appear.

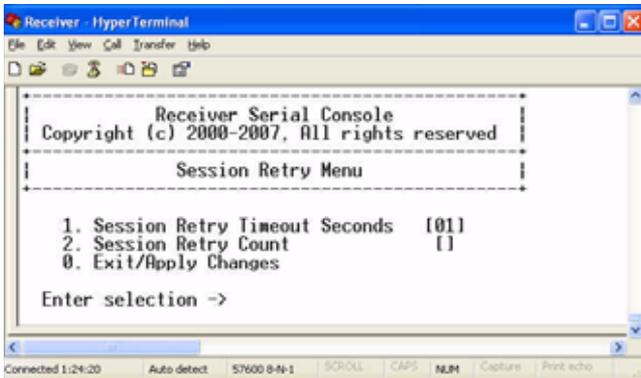


Figure 4-32. Session Retry Menu

To change the retry settings:

1. Access the Session Retry Menu via the serial menu as described above.
2. To change the time interval between retry attempts, press **1** to choose the Session Retry Timeout Seconds option and press **Enter**. You will be prompted to enter a new timeout value in SS (seconds) format.
3. Type a value between 1 and 60 (inclusive) and press **Enter**.

To confirm your selection and exit the screen, type **0** (zero) and press **Enter**.

4.13 Configuring the OSD Hotkey Sequence

To change the hotkey sequence that activates your OSD:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.

3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **8** to access the Console Setting Menu. The Console Settings Menu will appear. Your currently selected OSD hotkey sequence is displayed beside menu item 1.

NOTE:

The layout of the Console Settings Menu is different for the Desktop and Extender modes. In this example, the screen is in Extender mode.

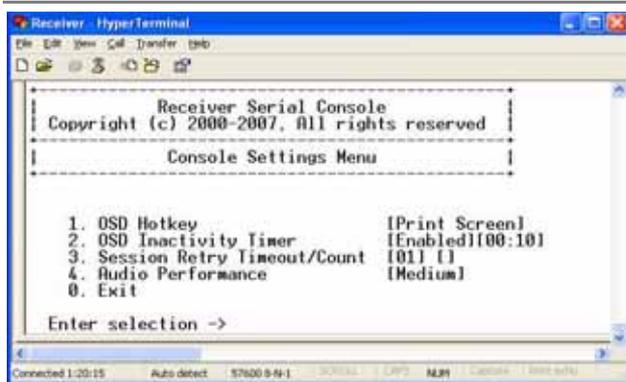


Figure 4-33. Receiver Console Settings Menu (Extender Mode)

5. Press **1** to access the OSD Hotkey Menu and press **Enter**. The OSD Hotkey Menu will appear. This menu shows you the hotkey sequences that you can choose from. The current hotkey sequence is indicated by an asterisk symbol.

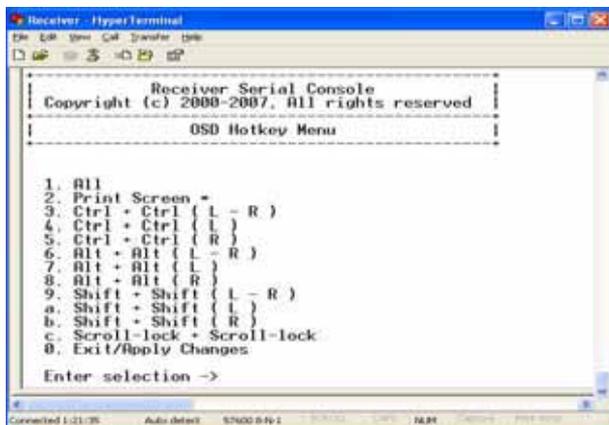


Figure 4-34. OSD Hotkey Menu

6. Type the number that corresponds to the hotkey sequence you wish to apply and press **Enter**.

- To confirm your selection and exit the screen, type **0** (zero) and press **Enter**.

Table 4.2 OSD Hotkey Sequences

Hotkey Sequences	
All	Print Screen (Default)
Ctrl + Ctrl (L - R)	Ctrl + Ctrl (L)
Ctrl + Ctrl (R)	Alt + Alt (L - R)
Alt + Alt (L)	Alt + Alt (R)
Shift + Shift (L - R)	Shift + Shift (L)
Shift + Shift (R)	Scroll Lock + Scroll Lock

4.14 OSD Inactivity Timeout

By default, the DTX user station is configured to dismiss the OSD after an inactivity period of 10 minutes. To reactivate the OSD, you must enter a valid OSD hotkey sequence.

Using the serial menu, you can modify the default configuration. You can disable the OSD timeout or you can change the time-out period to any value between zero minutes and 10 hours. Setting the time-out period to zero means that the OSD will not timeout. The maximum time-out period that can be configured is 9 hours and 59 minutes.

NOTE:

You can dismiss the OSD at any time by pressing **ESC**.

To change the OSD timeout period:

- Press **Enter** to display the serial menu.
- Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
- Type the password and press **Enter**. The Receiver Main Menu will appear.

- Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear. The current OSD Timeout configuration is displayed beside menu item 2.

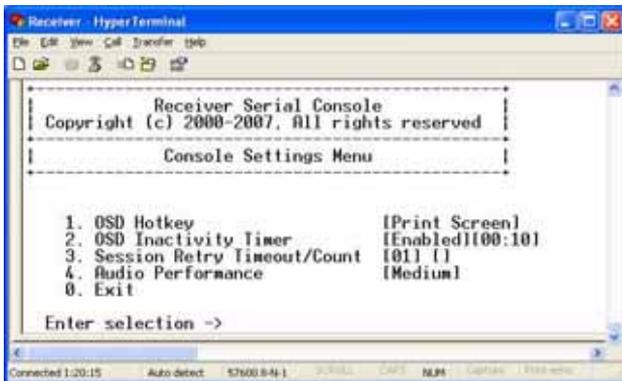


Figure 4-35. Receiver Console Settings Menu

- Press **2** to access the OSD Inactivity Timer and press **Enter**. The OSD Inactivity Timer Menu will appear.

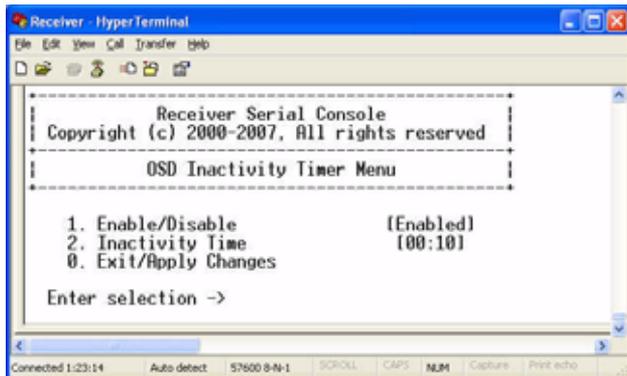


Figure 4-36. OSD Inactivity Timer Menu

- Press **2** to choose Inactivity Time and press **Enter**. You will be prompted to enter a time-out period in the format hours:minutes (HH:MM). The maximum time-out period you can enter is 9 hours and 59 minutes (09:59).
- Type the time-out period and press **Enter**.
- To confirm your selection and exit the screen, type **0** (zero) and press **Enter**.

NOTE:

To disable the OSD timeout, choose *Disable* in the OSD Inactivity Timer Menu.

4.15 Audio Performance Settings

You can use this option to modify the audio performance settings or to disable audio support. There are three settings available: high, medium and off. The high setting

provides the best audio performance and should be used when high network bandwidth is available. The medium setting should be used if network bandwidth is limited or if the network latency is high. If you choose *off*, audio support will be disabled.

NOTE:

To ensure that audio operates correctly, configure the DTX5000-R user station and the transmitter with identical audio performance settings.

To change the audio performance setting for the transmitter:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear. The current audio performance setting is displayed beside menu item 3.

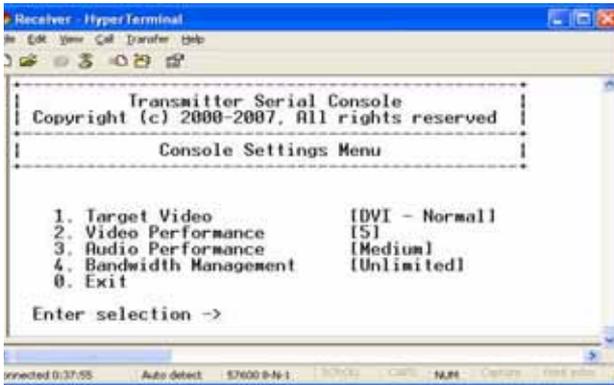


Figure 4-37. Transmitter Console Settings Menu

- Press **3** to access the Audio Performance Menu and press **Enter**. The Audio Performance Menu shows you the audio settings that you can choose from. The current setting is indicated by an asterisk symbol.

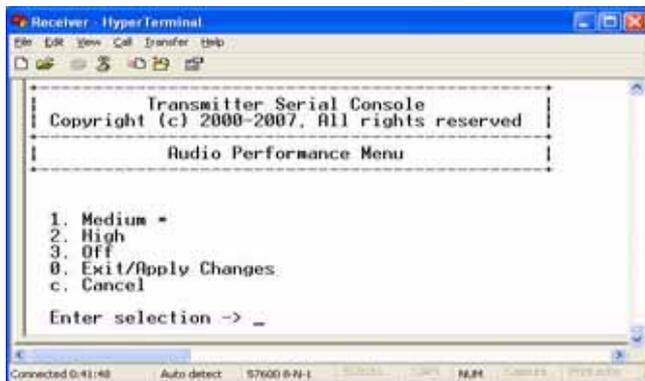


Figure 4-38. Transmitter Audio Performance Menu

- Type the number that corresponds to the audio setting you wish to apply and press **Enter**.
- To confirm your selection and exit the screen, type **0** (zero) and press **Enter**. The unit resets after you press **Enter**.

To change the audio performance setting for the DTX user station:

- Press **Enter** to display the serial menu.
- Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
- Type the password and press **Enter**. The Receiver Main Menu will appear.
- Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear. The current audio performance setting is displayed beside menu item 4, Audio Performance.

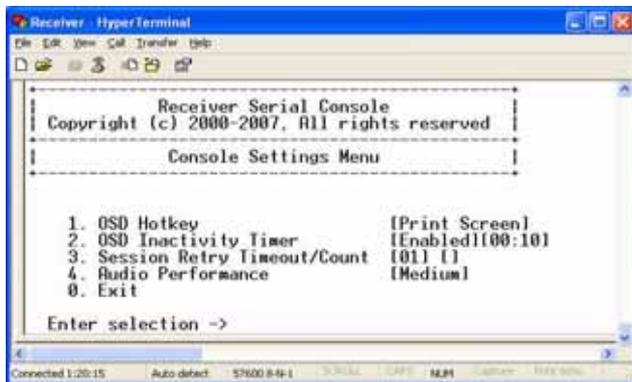


Figure 4-39. Receiver Console Settings Menu

- Press **4** to access the Audio Performance Menu and press **Enter**. The Audio Performance Menu will appear. This menu shows you the audio settings that you can choose from. The current setting is indicated by an asterisk.

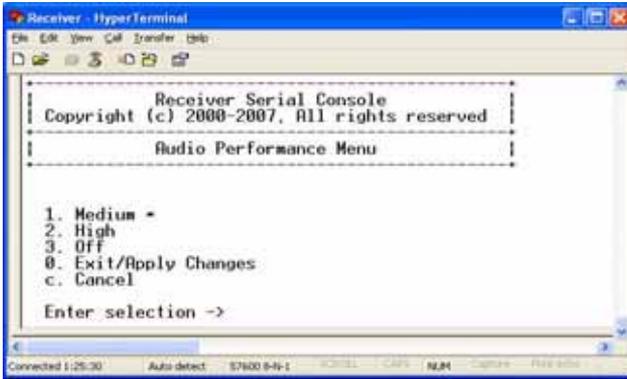


Figure 4-40. Receiver Audio Performance Menu

- Type the number that corresponds to the audio setting you wish to apply and press **Enter**.

NOTE:

If you choose *off*, audio support will be disabled.

- To confirm your selection and exit the screen, type **0** (zero) and press **Enter**. The unit resets after you press **Enter**.

Appendix A: Technical Support

Our Technical Support staff is ready to assist you with any installation or operating issues you encounter with your Black Box product. If an issue should develop, follow the steps below for the fastest possible service.

To resolve an issue:

1. Check the pertinent section of this manual to see if the issue can be resolved by following the procedures outlined.
2. Check our web site at www.blackbox.com/support to search the knowledge base or use the on-line service request.
3. Call the Black Box Technical Support location nearest you.

NOTE:

Please have the product serial number available when contacting Black Box Technical Support.

Appendix B: Troubleshooting

No power status light on DTX user station

- Verify that the power supply is plugged in correctly.
- Ensure that the power cable from the BLACK BOX-supplied power supply is securely plugged into the DTX user station.

No video on monitor attached to DTX user station

- Verify that the monitor attached to the DTX user station has power.
- Ensure that the video cable from the monitor is securely plugged in to the correct connector on the DTX user station.
- Verify that the remote computer is turned on.
- Confirm that a network connection exists between the transmitter and DTX user station.
- Verify that the address of the target transmitter that is configured in the user station is correct.
- Confirm that the IP address used by the transmitter has not been assigned to a second device on the network.
- Confirm that the IP address used by the DTX user station has not been assigned to a second device on the network.
- Verify that the transmitter is drawing sufficient power from the USB connections on the remote workstation and that it has booted correctly:
 - If the green LED on the transmitter is on, the transmitter is drawing sufficient power.
 - If the transmitter cannot draw sufficient power from the remote workstation you will need to obtain an external power supply unit for the transmitter from BLACK BOX. If connected through a USB hub, ensure that the hub can supply enough power.
- Verify that the correct video setting has been configured in the transmitter serial menu:
 - If the remote workstation provides DVI-only video, verify that the transmitter serial menu has been configured for DVI. Then restart the remote workstation.
 - If the remote workstation provides VGA-only video, verify that the transmitter serial menu has been configured for VGA. Then restart the remote workstation.
- The transmitter has an internal fan. Verify that the fan is functioning.
- Turn the DTX user station on, then off again. An informational message should appear on the monitor for a brief moment. If the message does not appear, check the monitor by plugging the video cable from the monitor directly into the remote workstation to verify that the monitor is working and that the remote workstation is generating active video. If this is functioning, check that the display settings for your remote workstation are set no higher than a resolution of 1280 x 1024 at 60 Hz refresh rate. If the monitor does not function correctly, replace it.
- If the transmitter has been power cycled (by unplugging the USB cables), ensure that all other cables are disconnected before reconnecting the transmitter. Ensure that you connect the USB cables first.

No mouse or keyboard operation from peripherals attached to DTX user station

- Ensure that the mouse and keyboard cables are connected to the correct PS/2 or USB ports on the DTX user station. Match the connector color codes (green for mouse and purple for keyboard).
- Ensure that both of the USB connectors from the transmitter are securely connected to the correct connectors on the remote workstation.
- If the remote workstation can provide only one USB port for the transmitter:
 - Use an external power supply for the transmitter
 - Ensure that the transmitter USB cable labeled “2” is attached to the available USB port of the remote workstation
- Ensure that the correct keyboard layout is configured on the remote workstation for the keyboard you are using.
- Retest the mouse and keyboard by connecting them directly to the remote workstation and rebooting. If one does not function correctly, replace it.

No audio from speakers attached to DTX user station

- Ensure that the audio cable is securely plugged into the line-out port of the remote workstation (should be color-coded green).
- Ensure that the speaker cable is securely plugged into the line-out port of the DTX user station.
- Verify that the audio sample rate has not been set to “off” for either the transmitter or the DTX user station.
- Ensure that the same audio sample rate has been set for both the transmitter and the DTX user station.
- Verify that the speakers are turned on.
- Retest the speakers by connecting them directly to the remote workstation. If they do not function correctly, replace them.

Poor sound quality from speakers attached to DTX user station

- Ensure that the same audio sample rate has been set for both the transmitter and the DTX user station.

Poor video quality on monitor attached to DTX user station

- Reset video by pressing <F11>.
- Ensure that the video cable from the monitor is securely plugged in to the correct connector on the DTX user station.
- Check the video quality using a different monitor.

No response from USB mass media device attached to the

DTX user station

- Ensure that the mass media device is connected directly to one of the USB connectors on the DTX user station. If the mass media device is connected to the DTX user station via a USB hub, it will not be possible to access it.
- Ensure that both of the USB connectors from the transmitter are securely connected to the correct ports on the remote workstation.
- Verify that the mass media device is functioning correctly by attaching it to the USB port on another computer. If the mass media device is not functioning correctly, replace it.

Slow file transfer rate from or to the USB mass media device

- Check if at least one of the transmitter USB cables is connected to a high speed USB port on the remote computer. The transmitter will operate with Low Speed and Full Speed USB, but the file transfer rate will be slower.

Connection to remote workstation is lost

- Verify that the network cable is securely connected to the RJ-45 connector at the rear of the DTX user station.
- Verify that the DTX user station is linked to the network and that it is receiving data.
- Verify that the remote computer is turned on.
- Ensure that both of the USB connectors from the transmitter are securely connected to the correct connectors on the remote workstation.
- Verify that the transmitter is drawing sufficient power from the USB connections on the remote computer and that it has booted correctly:
 - If the green LED on the transmitter is on, the transmitter is drawing sufficient power.
 - If the transmitter cannot draw sufficient power from the remote workstation, obtain an external power supply unit for the transmitter from BLACK BOX.
- The transmitter has an internal fan. Verify that the fan is functioning.
- Ping the transmitter from another PC on the network to ensure it is connected.
- Reset the transmitter.
- Reset the DTX user station.
- Verify that the Ethernet network is fully operational.

Transmitter disconnected from DHCP server (Extender Mode)

- Attempt to reconnect to DHCP server (new IP address should be visible).
- Return to the Network Configuration Menu on the user station and select the Transmitter IP Address option and press **Enter**.
- Enter new IP address as specified on the DHCP server.

Transmitter disconnected from DHCP server (Matrix Mode)

To connect transmitter to DHCP server (Matrix Mode):

1. In the DTX5000-CTL Management Appliance Explorer Window area, select *Units* to add a single unit.
2. Select the product without an IP address.
3. Select *No, the Transmitter does not have an address*.
4. Plug the DTX5000-T transmitter into the network and turn it on.
5. Enter the network settings of the transmitter that you wish to locate.
6. Click *Save* and *Close*.

Appendix C: Login Error Messages

The following table lists error messages that may appear when using the DTX5000-R user station.

Table C.1: DTX5000-CTL Management Appliance and User Station Initiated Error Messages

User station Login Error Messages	Description
Login failed User not found	User attempts to log in to the DTX5000-CTL Management Appliance. The username has not been added to the internal authentication service of the DTX5000-CTL Management Appliance.
Login failed Invalid password	User enters an invalid password.
Login failed User account is disabled	User account has explicitly been disabled by a DTX5000-CTL Management Appliance administrator.
Login failed Target device not available	User cannot be connected to their target device. No target devices are available for the user to access.
Login failed User station is not managed by DTX5000-CTL Management Appliance	User logs in from a user station that the DTX5000-CTL Management Appliance does not manage. Administrator must ensure that the user station is added to the DTX5000-CTL Management Appliance before a user can log in from that user station.
Login failed transmitter already in use	Transmitter already in use. A user is attempting to log in to a target workstation; however, the DTX5000-CTL Management Appliance already has a record of an active media session involving a different user who is currently using the same transmitter as part of their active media session.
Login failed user station already in use	User station already in use. A user is attempting to log in to a target workstation; however, the DTX5000-CTL Management Appliance already has a record of an active media session involving a different user who is currently using the same user station as part of their active media session.
Login failed Cannot send session certificate to user station	Cannot send media session certificate to user station.
Login failed Cannot send session certificate to transmitter	Cannot send media session certificate to transmitter.

Table C.1: DTX5000-CTL Management Appliance and User Station Initiated Error Messages (Continued)

Login warning Different appliance release versions	A warning which may be received when a successful connection was made between the user station and transmitter. The warning indicates that the transmitter and user station have different firmware release versions.
Login failed Could not contact DTX5000-CTL Management Appliance	Cannot contact DTX5000-CTL Management Appliance.
Login failed DTX5000-CTL Management Appliance not specified	IP address not set for DTX5000-CTL Management Appliance.
Login failed Timeout	The user station access to the transmitter has timed out.
Login failed Out of service	This message appears when a login attempt is made while the user station is being upgraded.
Login failed Internal error	This message appears when the login fails but no error text is received from the DTX5000-CTL Management Appliance. This should not occur during normal operation.

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