GIGABIT GATEWAY
TECHNOTE

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OVERVIEW

GENERAL DESCRIPTION

PRODUCT DESCRIPTION

From Multicam 12.02, the XT3 and XS servers can be connected to an external gateway PC that offers a 10GbE connection to the network.

The gateway PC emulates the Ethernet interface of the EVS server to the network. Indeed, a service installed on the gateway PC and called "Gigabit Gateway" runs the FTP server, thus takes over the role of the former GbE interface that was located on the Gigabit-H3X board of the EVS server. The change in the connection type has no impact on the way the gigabit functionality is used.

The Gigabit Gateway software can be installed as a standalone application on the gateway PC, or share its resources with the XTAccess application.

Note
The current 1GbE ports of the gigabit module will remain available on the EVS server. However, it will not be possible to use the external 10GbE and the internal 1GbE connections at the same time.

HARDWARE AND SOFTWARE SPECIFICATIONS

The 10Gb E gateway PC shall have the following hardware specifications:

- **Motherboard:** Supermicro DP Xeon® X9DBL-3F
- **OS:** Windows 7 (32- or 64-bit) or Windows 2008 Server.
- 1 PCIe extension board and a PCIe connector
- 1 10GbE network board and 2 SFP+ connectors (for fiber or Twinax)

The 10 GbE SFP+ module (not delivered by EVS) shall be one of the following models:

- Intel® Ethernet SFP+ SR Optic (E10GSFPSR)
- Intel® Ethernet SFP+ LR Optic (E10GSFPLR)

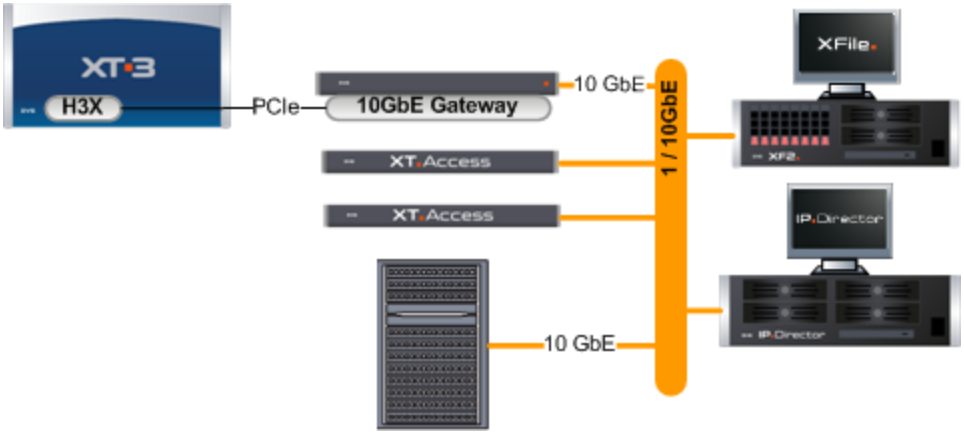
The cable SFP+ to SFP+ (not delivered by EVS) shall be Twinax DAC.

CONNECTIVITY

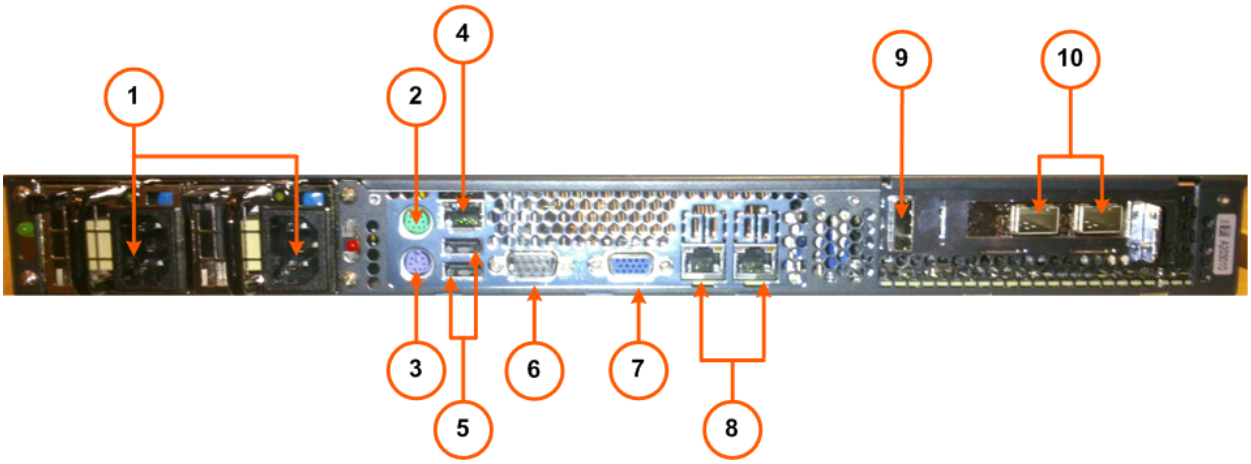
CONNECTIVITY SCHEMA

The following schema represents the gateway PC connectivity with the EVS server and the typical components of an EVS setup:

> On one side, the EVS server is connected to the gateway PC via a PCIe connection.
> On the other side, the gateway PC is connected to the network via an SFP+ module (fiber) that provides the 10GbE connection.



GIGABIT GATEWAY CONNECTIONS



The following table describes the various connectors on the rear panel of the gateway PC:

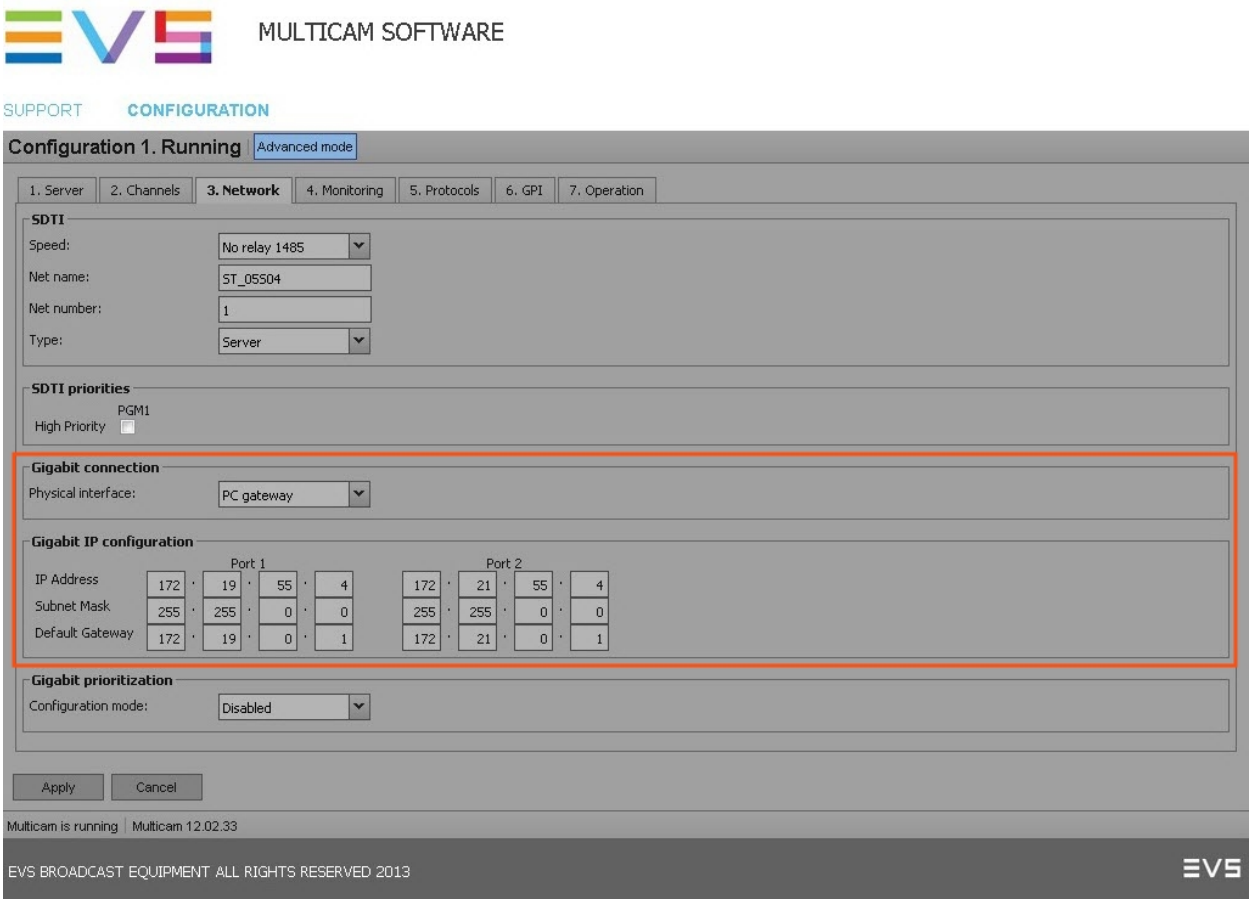
#	Connector	#	Connector
1.	Power supplies	**6.**	n.a
2.	Mouse connector	**7.**	VGA connector
3.	Keyboard connector	**8.**	1GbE connectors
4.	IPMI connector	**9.**	PCIe connector
5.	USB connectors	**10.**	SFP+ connectors to provide 2 10GbE connectors (for fiber or Twinax)

INSTALLATION

GIGABIT CONFIGURATION

CONFIGURATION IN MULTICAM

The gigabit configuration is performed exclusively in the Multicam Configuration window, in the Network tab, in the sections highlighted in the screenshot below:



Note
When using the 10GbE gateway PC, the gigabit prioritization mechanism will be disabled.

1GBE VS. 10GBE CONNECTION

The 10GbE connection is selected in the Multicam Configuration window, on the Network tab, Gigabit connections area, in the **Physical Interface** setting.

You can still use the 1 GbE connection, but not in combination with the 10 GbE connection.

The 1 GbE connection through the gateway PC (#8 on rear panel schema) provides a better bandwidth than the 1 GbE connection on the EVS server: Each external 1 GbE connection provides an average bandwidth of 75 MB/s, instead of 65 MB/s spread over both 1 GbE connectors on the EVS server (GIGABIT-H3X connectors).

IP ADDRESSES

When you use the gateway PC, the EVS server Gigabit IP and the gateway PC share the same IP addresses.

The IP addresses are configured as usual in the Multicam Configuration window, on the Network tab, in the Gigabit IP configuration area.

When you do not want to configure a default gateway on the 10 GbE adapters in Windows, you can configure the default gateway in Multicam as 0.0.0.0. See also the Windows Microsoft knowledge base for more information on configuring multiple gateways on a network.

Once the two 10GbE ports of the gateway PC are configured in Multicam, they will be automatically configured on the gateway PC. The GbE adapters have the following names: **EVS-Gigabit-1** and **EVS-Gigabit-2** on the gateway PC.

Warning
Do not change the names of the 10 GbE adapters on the gateway PC, otherwise the Gigabit Gateway will no longer be operational.

UPGRADING THE GIGABIT GATEWAY

INTRODUCTION

The Gigabit Gateway service running on the gateway PC must have the exact same version number as the Multicam application installed on the connected EVS server. The version compatibility is automatically checked each time both Multicam and the Gigabit Gateway are started.

In case of version mismatch between Multicam and the Gigabit Gateway, the version of the Gigabit Gateway is automatically upgraded or downgraded depending on the Multicam version on the connected EVS server. If a problem occurs, several fallbacks are possible, either semi-automatic or manual.

You can always check the Gigabit Gateway version in the About window accessible from the **About** command as you right-click the Gigabit Gateway icon  .

AUTOMATIC INSTALLATION

If the PC LAN of the connected EVS server is on the same VLAN as the gateway PC, the EVS Server pushes the installer onto the gateway PC through the PC LAN. It is then installed automatically and silently. The IP address of the PC LAN is communicated to the gateway PC via the PCIe connection.

If the automatic installation could not be performed using the PC LAN connection, the EVS server tries to push the installer via the PCIe connection. This installation process is still automatic, but is slightly slower.

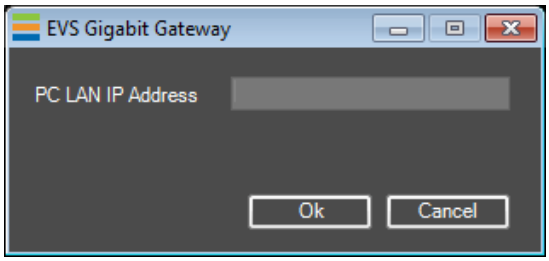
SEMI-AUTOMATIC INSTALLATION

In case the version could not be installed automatically, you will get a warning message on the gateway PC and on Multicam. You have to perform the semi-automatic installation described below.

To upgrade the Gigabit Gateway in a semi-automatic way, proceed as follows:

1. On the gateway PC, right-click the Gigabit Gateway service icon and select **Stop Gigabit Gateway** from the contextual menu.
2. From the same contextual menu, select **Install From Server**.

   The following dialog box opens:



3. Type the IP Address of the PC LAN of the EVS server to which the gateway PC is connected. It is also possible to point to another EVS server on the same VLAN.
4. Click **OK**.

If the installer is successfully downloaded, the Gigabit Gateway launches the installation in normal mode provided that it runs the same Multicam version.

If the installer cannot be downloaded, an error message is displayed. In this case, perform a manual installation.

MANUAL INSTALLATION

If the semi-automatic installation process does not succeed, you can still directly install the Gigabit Gateway executable.

The installer is named `Gateway.exe`, and you can get it from the EVS website, in the Download Center.

TROUBLESHOOTING

INTRODUCTION

This section covers the error messages you can come across while using the Gigabit Gateway. It specifies the kind of problem, and how it can be solved.

SYSTEM ERROR ON DRIVER

Message	H3X Pex4 board driver is reporting the error code 12.
Type	Error
Context/Cause	This message is displayed on the gateway PC.
Solution	To solve the problem, you can: > reboot the gateway PC > reinstall the application using the semi-automatic procedure

SOFTWARE ERROR ON DRIVER

Message	An unrecoverable error has been detected.
Type	Error
Context/Cause	This message is displayed on the gateway PC.
Solution	To solve the problem, you can: > reboot the gateway PC > reinstall the application using the semi-automatic procedure

PCIE LINK NOT FULL SPEED

Message	PCIe link width seems not correct : x2.
Type	Warning
Context/Cause	This message is displayed in the Gigabit Gateway service when the PCIe link has been negotiated at a lower speed than expected.
Solution	Operations shall continue at reduced speed. As the speed of the PCIe link is negotiated when the computer is started up, you have to reboot the computer to try to recover a normal speed on the PCIe link.

PCIE LINK LOST

Message	The PCIe connection with the server has been lost.
Type	Error
Context/Cause	This message appears in the Gigabit Gateway service when the PCIe link has been disconnected during operations.
Solution	Check that the PCIe cable is correctly plugged in, and reboot the gateway PC.

NETWORK ADAPTER NOT FOUND

Message	Network adapter(s) could not be found. The Gigabit Gateway will use network adapters named 'EVS-Gigabit-1' and 'EVS-Gigabit-2'.
Type	Error
Context/Cause	This message appears in the Gigabit Gateway service when the network adapter could not be found in Windows.
Solution	Check that the names of the 10GbE adapters are correct on the computer, and change their names into 'EVS-Gigabit-1' and 'EVS-Gigabit-2'. You can rename the network adapters via the Control Panel, in the Network and Internet, and Network Connections sections. If you do not succeed in changing the names of the 10 GbE adapters, you will probably have to delete some registry keys. In this case, contact the EVS Support team for more information.

NETWORK ADAPTER NOT UP

Message	The network adapter 'EVS-Gigabit-2' is not up. Please check cable and connectivity to the router.
Type	Error
Context/Cause	This message appears when the second network adapter board is not up.
Solution	If you want to use the second network adapter, you can solve the problem in one of the following ways: > check that the cable is plugged into the adapter > check that the link is established with the ethernet switch If you only want to use the network adapter 'EVS-Gigabit-1', you can set the network board to **Disable** in Windows, so you will no longer get this error message.

NETWORK ADAPTER NOT CONFIGURED

Message	An error occurred while setting IP configuration 172.16.20.30 - 255.255.255.0 - 172.16.0.1 to EVS-Gigabit-1.
Type	Error
Context/Cause	This message is displayed in the Gigabit Gateway service when the network adapter board cannot be configured properly.
Solution	To solve the problem, you can: > check that the gigabit settings are properly defined in the Multicam Configuration module, in the Network page > check that the IP addresses assigned on the gateway PC are the same as the ones defined in Multicam.

NETWORK ADAPTER IP ADDRESS CHANGED

Message	IP configuration of network adapter 'EVS-Gigabit-1' has been reverted to 172.16.20.30 - 255.255.255.0 - 172.16.0.1
Type	Warning
Context/Cause	This message is displayed in the Gigabit Gateway service when the user tries to manually modify the IP address definition on the gateway PC.
Solution	Change the IP address settings in Multicam Configuration module, Network page, Gigabit section, but not directly on the gateway PC.

FTP ENGINE NOT STARTED

Message	An error occurred starting the FTP engine.
Type	Error
Context/Cause	This message is displayed on the gateway PC.
Solution	To solve the problem, you can: > reboot the gateway PC > check that port 21 is not used by another process

JUMBO FRAMES SETTING NOT ENABLED

Message	Jumbo frame setting is not enabled for network adapter 172.19.20.30. Please check network adapter settings.
Type	Warning
Context/Cause	This message is displayed when the jumbo frame setting has not been enabled on the gateway PC.
Solution	Enable the Jumbo frame setting in the Control Panel, Network and Internet section, Network and Sharing Center, Change adapter settings, right-click on the Ethernet server adapter and select **Properties**. Then click **Configure** and select Jumbo Packet in the **Advanced** section.

OPERATION

PREREQUISITES

The Gigabit Gateway service will be operational when the following conditions are met:

> The gateway PC is correctly connected to the EVS server and to the network.
> The Gigabit settings have been correctly configured on the EVS server.
> The Gigabit Gateway application that matches the Multicam application on the EVS server is installed on the gateway PC.

STARTUP SEQUENCE

When the setup is properly connected, perform the following actions in the sequence specified below:

1. Switch on the gateway PC, and log in.
2. Make sure the Gigabit Gateway service is started. Otherwise, start it manually.

   The Gigabit Gateway service should start automatically, and display the status icon in the Notification bar.
3. Switch on the EVS server.

The Gigabit Gateway connection is automatically established.

Note
The service should always be running to ensure proper operation. The service includes a security mechanism to force an automatic restart in case the service stops unexpectedly.

STATUS ICON

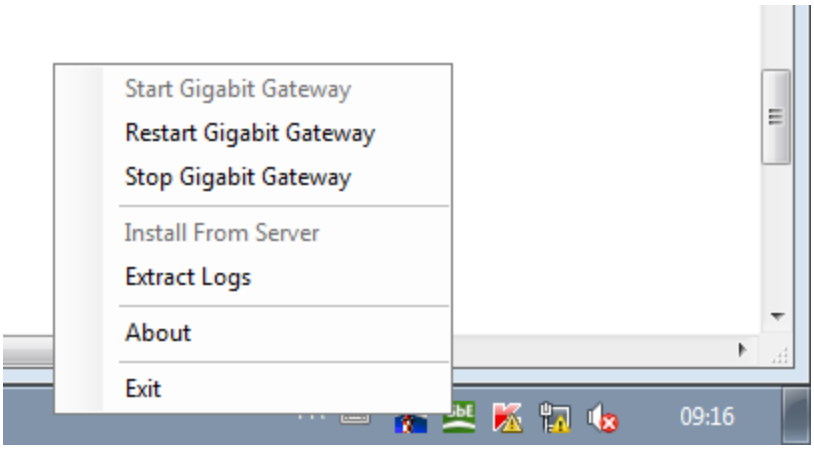
The status of the Gigabit Gateway service is visible via an icon on the right of the Windows taskbar, in the Notification area.

The icon color provides information on the service status:

Icon Color	Status
(green)	The service is running.
(orange)	The service is running, and is waiting for connection.
(red)	The service is stopped in error state. In this case, the service cannot connect to the EVS server.
(gray)	The service has been stopped by the user.

CONTEXTUAL MENU

When you right-click the Gigabit Gateway icon, the following contextual menu appears and let you perform the following actions:



Command	Description
Start Gigabit Gateway	Allows starting the service when the gateway PC is started. It is available when the service is not running. As an auto-start mechanism is implemented in the service, the service should always be running.
Restart Gigabit Gateway	Allows stopping and directly restarting the service.
Stop Gigabit Gateway	Allows stopping the service.
Install From Server	Allows the user to enter the PC LAN of the connected EVS server. It is available when the service is not running. When the gateway PC can reach the EVS server through the PC LAN, the Gigabit Gateway version corresponding to the Multicam version on the EVS server is automatically installed on the gateway PC.
Extract Logs	Allows users to extract logs and store them in the desired location.
About	Opens the About window, which specifies the Gigabit Gateway service, as well as the version of all software components, and the support phone numbers.
Exit	Exits the Gigabit Gateway service.