



Omnicast Directory Failover System

Installation & Configuration Procedure for Omnicast 4.x

Genetec Technical Support 4/30/2010

www.genetec.com

© 2009 Genetec Inc. All rights reserved.

Genetec Inc. distributes this document with software that includes an end–user license agreement and is furnished under license and may be used only in accordance with the terms of the license agreement. The contents of this document are protected under copyright law.

The contents of this guide are furnished for informational use only and are subject to change without notice. Genetec Inc. assumes no responsibility or liability for any errors or inaccuracies that may appear in the informational content contained in this guide.

This publication may not be copied, modified, or reproduced in any form or for any purpose, nor can any derivative works be created there from without Genetec Inc.'s prior written consent.

Genetec Inc. reserves the right to revise and improve its products as it sees fit. This document describes the state of a product at the time of document's last revision, and may not reflect the product at all times in the future.

In no event shall Genetec Inc. be liable to any person or entity with respect to any loss or damage that is incidental to or consequential upon the instructions found in this document or the computer software and hardware products described herein. The use of this document is subject to the disclaimer of liability found in the end–user license agreement.

"Genetec", "Omnicast", "Synergis", "AutoVu", "Federation", the Genetec stylized "G" and the Omnicast, Synergis and AutoVu logos are trademarks of Genetec Inc., either registered or pending registration in several jurisdictions. "Security Center" and the Security Center logo are trademarks of Genetec Inc. Other trade names used in this document may be trademarks or registered trademarks of the manufacturers or vendors of the respective products.

All specifications are subject to change without notice.

Document Title: Omnicast Directory Failover System Documentation Number: Date: April 30, 2010

Table of Contents

1.	General Information	4
1.1.	Document Revision	4
1 2	Contacting Technical Assistance	5
1.2.	Contacting Technical Assistance	5
2.	Basics of Directory Failover	6
3.	Preparation	6
3.1.	License Verification	6
3.2.	Time Synchronization	7
3.3.	Network Connectivity	7
4.	Server Installation on the Primary and Failover Servers	7
5	Scenario #1: Simple Scenario	0
Ј.		.0
5.1.	Configuration on the Primary Server 1	.0
5.2.	Configuration on the Failover Server 1	.3
5.3.	Verifying the Omnicast services in the Config Tool 1	.7
5.4.	Running the DFC Wizard 1	.8
C	Connersia #2. Local Directorias	12
6.	Scenario #2: Local Directories 2	.3
6.1.	Configuration on the Primary Server 2	.4
6.2.	Configuration on the Failover Global Directory Server 2	.4
6.3.	Configuration on the Failover Local Directory Server 2	.4
6.4.	Verifying the Omnicast services in the Config Tool 2	9
6.5.	Running the DFC Wizard	0
_		_
7.	Fallover synchronization process	5
8.	Troubleshooting Directory Failover Issues	8
8.1.	Clients do not connect to failover Directory	8
8.2.	Directory on failover server is always started	1
8.3.	Status shows "Software Broken"	4
9.	Appendix A: Scenario #3: Global Directories With No Multicast	.5
9.1.	Configuration on the Primary Server 4	-5
9.2.	Configuration on the Failover Local Directory Server 4	-5
9.3.	Verifying the Omnicast services in the Config Tool 4	5
9.4.	Running the DFC Wizard	6
9.5.	Modifying the Gateway on Failover Server	8

Omnicast Directory Failover System

Installation & Configuration Procedure for Omnicast 4.x

1. General Information

The purpose of this document is to guide integrators and Omnicast system administrators on how to install and configure an Omnicast Directory Failover system (FOS).

This article applies only to Omnicast 4.x versions. The screenshots were taken from an Omnicast 4.5 system so there may be minor differences if your system is another version. This should not have an effect on the procedure unless specified.

1.1.Document Revision

Date	Description
2007-10-05	Initial version for Omnicast 4.1 (by Ismael Picot).
2010-01-01	Updated document.
2010-02-12	Update local Directories diagram.
2010-04-30	Added public address config; Added Appendix A.

1.2. Contacting Technical Assistance

Customers can reach Genetec's Technical Assistance Center (GTAC) using any one of the following methods:

Log in to Genetec's Technical Assistance Portal (GTAP) <u>https://GTAP.genetec.com/</u>

Send questions, via e-mail, to: support@genetec.com

Telephone questions to the GTAC at: 1-514-856-7100 or 1-866-338-2988 (Canada and US only) FAX questions to the GTAC at: 1-514-332-1692

From Monday to Friday, 8:00 AM to 8:00 PM (Eastern time, GMT -5h)

No matter which method is used to reach the GTAC, customers should be ready to provide all relevant information describing the problem or question, including System ID and version information.

2. Basics of Directory Failover

In Omnicast, the Directory is responsible for the system configuration and user authentication. In the event that the Directory server fails or becomes unavailable, no client applications will be able to login. For the system to be more fault-tolerant, Omnicast has a feature called the Directory Failover Coordinator which stops or starts the backup or failover Directory, depending on the state of the primary Directory.

The Directory Failover Coordinator (DFC) is responsible for the following functions:

- Keeps the Failover Directory databases (containing configurations and alarms) up to date while on standby.
- Starts and stops the local Directory services when appropriate, based on the failover list and the polling of Directories
- Upon primary Directory failure, the next available Directory in the failover list takes over as the main Directory

When the primary Directory is restored and functional:

- The primary Directory pushes its configurations to all failover Directories (from Omnicast 4.1 and on).
- Changes made to the failover Directories during failover are lost (unless a shared SQL server architecture is used) (from Omnicast 4.1 and on).
- Alarms are not lost after failback, as the Alarm DB synchronization is bidirectional.

3. Preparation

This section details steps that should be performed prior to installing or configuring the Directory FOS.

3.1.License Verification

The Directory Failover is a license option as it is with many other Omnicast features. Please verify that the failover server has one **Failover directory server** option.

License Contents

Part Number	Description	Qty
Om-E-1FOD-41*	1 Failover directory server	1

This license option should create the same Directory options on the failover Directory as on the primary Directory.

3.2.Time Synchronization

Prior to installing the Failover Directory server, the time synchronization between the two servers must be checked. Please ensure that your Directory servers are synchronized on the same time source.

If you do not have a time source on your network, please refer to the Knowledge Base article **KB00000022** in the Genetec Technical Assistance Portal (GTAP).

Failure to synchronize the time between your servers could result in registry and database corruption and unexpected behaviour.

The time synchronization is CRITICAL. Please do not proceed any further unless you are sure your two servers are time synchronized.

3.3. Network Connectivity

Verify that the Omnicast servers have network connectivity between them (i.e. "ping" successfully).

4. Server Installation on the Primary and Failover Servers

Please perform the following steps to install the necessary Omnicast services on the primary and failover services:

- 1) Run the setup.exe (Server option) from the Omnicast install package.
- 2) When you reach the Setup Type screen, choose **Custom**.

Genetec Omn	cast Server 4.5 - InstallShield Wizard	×
Setup Type Choose the set	up type that best suits your needs.	
C <u>Typical</u>	This will install the most commonly used server components consisting of the following services: Directory, Gateway, Archiver, Virtual Matrix and WatchD	og.
○ <u>A</u> rchiver	This will install all necessary components for a server operating only as an Archiver.	
• Custom	Choose which program features you want. Recommended for advanced users.	
tallShield ———	< <u>B</u> ack <u>N</u> ext > Cancel	

- 3) The following services are **MANDATORY** for the FOS:
 - Directory
 - Directory Failover Coordinator
 - Gateway

These three services **MUST** be installed on **BOTH** servers (the primary server and the failover server). The other services, like Archiver or Virtual Matrix, are optional.

🙀 Genetec Omnicast Server 4.5 - InstallShield Wizar	d 🔀
Custom Setup Select the program features you want installed.	
Click on an icon in the list below to change how a feature is in	nstalled.
Services Directory Failover Coordinator Archiver Restore Archiver Gateway Federation Server Metadata Engine Virtual Matrix Install to: C:\Program Files (x86)\Genetec Omnicast Server 4.5\	Feature Description Service installed on every Directory server to guarantee the continuity of the Directory service in the context of a failover configuration. This feature requires 3181KB on your hard drive.
Instalibilied	

Once finished, click Next.

- 4) When you reach the Failover System Installation screen:
 - On the primary server, choose "Primary Directory server".
 - On the failover server(s), choose "Backup Directory server".



🚏 Genetec Omnicast Server 4.5 - InstallShield Wizard	
Failover System Installation Please specify the Failover System installation options.	
You have selected to install a Failover System. Please specify if the machine you are installing is designated as the primary Directory server or a backup Directory server.	
Primary Directory server	
C Backup Directory server	
InstallShield	

Once finished, click Next.

5) On the failover server, since you chose "Backup Directory server", you will have to enter the IP address of the primary Directory server in the next screen.

🙀 Genetec Omnicast Server 4.5 - I	nstallShield Wizard	i	×
Failower System Installation Please specify the Failover System in	nstallation options.		
You are installing a backup system. I local Gateway should connect and if	Please specify the ser it is a Directory or a G	vice's name and por ateway.	t where the
Primary System:			
10.0.19.16			
Directory	address of		
C Gateway pri	mary server		
InstallShield			
	< <u>B</u> ack	<u>N</u> ext >	Cancel

In Omnicast versions 4.2 and higher, the connection type Directory or Gateway can be selected here. If multicast is supported on the network, select Directory. If multicast is not supported, select Gateway. This option can be changed later using the Directory Failover Coordinator (DFC) wizard in the Config Tool.

Once finished, click Next.

6) Click Next until the installation finishes.

5. Scenario #1: Simple Scenario

The configuration of the servers for a Directory FOS can be different depending on many different factors. The following sections describe different scenarios which should depict most of the FOS possibilities. Please choose the scenario that best matches your setup.

The "simple" scenario typically applies on most systems. This scenario has the following requirements:

- 1) Only two servers are involved in the Directory FOS: Primary server and failover server
- 2) Multicast must be supported on the network
- 3) Both servers are on a LAN with good network bandwidth (100 Mbps or higher)



5.1. Configuration on the Primary Server

Please perform the following steps on the primary server:

1) Verify that the **Directory**, **Directory Failover Coordinator** and **Gateway** services are started, as seen in the Omnicast Server Admin:

Genetec Omnicast Server Admin				_ 🗆 ×	
tem <u>A</u> ction <u>T</u> ools <u>H</u> elp					
CPU					
Video 31/12/2009 4:27:41 PM	Start Ston Rest			OMNICAST	
				Children	
System		🔲 License 🔤 SMTP	Network		
S Directory					
🕋 Directory Failover Coordinato Valio	dation key: 📳	Company name: Genetec I)emo		
🔮 Gateway		System ID: DEM-411	868-345994268		
8 Federation Activ	ate license: 🧿 📃 🌄	Package name: DEMO NO	T FOR RESALE		
Archiver		Expiration: 24/12/20			
ACTi Extension		Technical support: 1-866-33	8-2988		
Arecont Extension					
AXIS Extension		Directory options Archive	roptions		
Bosch Extension					
Generic Extension Access ri	ghts			_	
Geneter Extension	er of cameras / analog monitors	<i>6</i> 408			
	er of standby Directories	<i>()</i> 1			
Active	e Directory integration	🖌 Supported			
Optenecion - NKF extension	er of Gateways	102			
Mumb	er of Media Gateways	<i>()</i> 100			
Verint Extension	er of Archivers	<i>💮</i> 3			
🛑 Auxiliary Archiver 🛛 🔒 Stand	by Archivers	Supported		=	
📕 Restore Archiver 🛛 🚽 Redur	ndant archiving	🖌 🖌 Supported			
📕 Metadata Engine 👘 Numb	er of Virtual Matrices	102			
👋 Virtual Matrix 👘 🎦 🖓 Stand	by Virtual Matrices	🗹 Supported			
📕 🖬 Numb	er of Metadata Engines	<i>💮</i> 100			

2) Verify that the startup type for these three services is set to **Automatic**. You can access the Windows services by going to Control Panel / Administrative Tools / Services

🍓 Services							×
<u>File Action V</u> iew	Help						
← → 💽 😭 🕻	∄ 🛱 🔮 🕨 ■ 🗉 ■						
Services (Local)	Services (Local)						
	Genetec Omnicast Directory	Name /	Description	Status	Startup Type	Log On As	^
		Genetec Omnicast Archiver	Genetec O		Automatic	.\OmnicastSvcUsr	
	Stop the service	Genetec Omnicast Auxiliary Archiver	Genetec O		Automatic	.\OmnicastSvcUsr	-
	Restart the service	Genetec Omnicast Directory	Genetec O	Started	Automatic	.\OmnicastSvcUsr	
	Lange and an and a second second	Genetec Omnicast Directory Failover Coordinator	Genetec O	Started	Automatic	.\OmnicastSvcUsr	
	Description:	Genetec Omnicast Federation Server	Genetec O		Automatic	.\OmnicastSvcUsr	
	Genetec Omnicast Directory	Genetec Omnicast Gateway	Genetec O	Started	Automatic	.\OmnicastSvcUsr	~
		<				>	
	Extended Standard						-

3) The Gateway must have a "Directory" as the Connection Type. In the Directory field, leave it blank or put the local IP address:



4) All the other services (like Directory Failover Coordinator, Archiver, Virtual Matrix, etc.) must point to the local Gateway using the local IP address or leaving it blank.

v Genetec Omnicast Server Admin				_ = ×
System Action Tools Help				
CPU Video 03/02/2010 10:27:01 AM	Start Stop	S Restart	Undo Ap	
 System Directory Directory Failover Coordinato Gateway Federation Archiver ACTi Extension 	General Archiving Gateway: Network card: <u>10.0.19.1</u>	Backup 6 - Intel(R) PRO/10	Security	Logging

5) Verify that the Gateway is configured with the following **Outgoing UDP data** port range: 8000-9000. If not, please change it.



🔅 Genetec Omnicast Server Admin				_ 🗆 ×
ystem <u>A</u> ction <u>T</u> ools <u>H</u> elp				
03/02/2010 10:29:21 AM	CPU II	5top Restart	Undo Apply	OMNICAST
 System Directory Directory Failover Coordinato Gateway Federation Archiver Archiver Archiver ACTI Extension Arcont Extension AXIS Extension Generic Extension Genetec Extension Genetec Extension Genetec Extension Optelecom -NKF Extension Optelecom -NKF Extension Verint Extension Verint Extension Verint Extension Auxiliary Archiver Restore Archiver Metadata Engine 	Connection type General settings Connection type Directo Network can Port settings Incoming TCP commar Incoming TCP vide Multicast connection test settings Gateway transmission	Logging Advar	aced IP filtering RC/1000 MT Network Cont going UDP data: 8000	nection •
Virtual Matrix	Client transmission a	ddresses: <mark>10</mark> fr	om 224 4 0	. 2
<	Client transmission addresses	are from 224.4.0.2 to 224.	4.0.11	

6) Go to System > Network and set the public IP address.

🧐 Genetec Omnicast Server Adn	nin						_ 🗆 ×
System Action Tools Help							2011
4/30/2010 11:49:50 AM	CPU III Video	Start	Stop	Restart	Undo	Apply	OMNICAST
🧶 System			License	🐱 SMTP	Vetwork	Ĭ	
Gateway	Loca	al machine na	ame: supj	port-16			
Archiver		Public add	ress: 10.0	.19.16			

5.2. Configuration on the Failover Server

Please perform the following steps on the Failover Server:

1) Verify that the Directory service is stopped and its startup type is set to "Manual". The Directory Failover Coordinator and Gateway services should be started.



etec Omnicast Server Adr	min	_ 🗆 ×
<u>}ction Iools H</u> elp 12/31/2009 4:43:49 PM .	CPU Video Start Stop Restart Undo Apply	OMNICAST
n rectory	🖼 General 🔤 Email 🧧 Logging 🔋 Active Directory 🕅 Passwor	d
ectory Failover Coordinat	General settings	
way iiver	Directory port 7998	
AXIS Extension	Start multicast address: 224 . 16 . 17 . 1 Port 47806	
	Directory database	
	Data server: (local)\Omnicast 🕴 💽 🗟	
	Database: DirectorySQL C C + X 🖻	
	Alarm database	
	Data server: (local)\Omnicast O 💽 👼	
	Database: AlarmSQL O 😋 🛨 🗙 🖼	~~~~
	Keep history for: 90 days	123

You can access the Windows services by going to Control Panel / Administrative Tools / Services:

🍓 Services						- 🗆 ×
File Action View	Help					
$\leftarrow \rightarrow $	〕 🖳 🛛 😫 🕨 🔲 💷 💷 🖦					
Services (Local)	🐞 Services (Local)					
		News (Description	Chabus	Charler Trune	l tan On Al
	Genetec Omnicast Directory	Name A	Description	Status	Startup Type	
	Charle Man and the	New Fax	Enables you t		Automatic	Local S ¹
	Start the service	Senetec Omnicast Archiver	Genetec Omni	Started	Automatic	.\Omnic—
		Senetec Omnicast Directory	Genetec Omni		Manual	.\Omnic
	Description:	🍓 Genetec Omnicast Directory Failover Coordinator	Genetec Omni	Started	Automatic	.\Omnic
	Genetec Omnicast Directory	Genetec Omnicast Gateway	Genetec Omni	Started	Automatic	.\Omnic
		Genetec Omnicast Virtual Matrix	Genetec Omni	Started	Automatic	.\Omnic
		Genetec Watchdog	Provides monit	Started	Automatic	Local S
		Help and Support	Enables Heln a	Started	Automatic	Local S
		4				•
	Extended Standard /					

2) The Gateway must have "Directory" as the Connection Type. In the Directory field, put the IP address of the primary server.

@ Genetec Omnicast Server Admi		
Syndism Action Icols Help 12/81/2009 459:58 PM	CPU Video Statt Stop Restart Undo Apply OMNICAST	
 System Directory Failover Coordinato Goteway Archiver AVS Extension Virtual Matrix 	General settings Connection type: Directory Gateway Directory Directory: 10.019.204 Mirrosoft Virtual Machine Bus Network Adapter #2	
	Inscenting TCP command. 5001. Outgoing UDP data 80000 to 12000 Incoming TCP video: 5002	
	Multicast connection test settings Gateway transmission addresse: 224 . 4 . 0 . 1 Client transmission addresses: 10 from 224 . 4 . 0 . 2 Client transmission addresses are from 224.4.0.2 to 224.4.0.11	

3) All the other services (like Directory Failover Coordinator, Archiver, Virtual Matrix, etc.) must point to the local Gateway using the local IP address or leaving it blank.

Genetec Omnicast Server Admin			_ _ ×
System Action Iools Help	CPU I	Undo Apply	OMNICAST
System Directory Gateway AXIS Extension Virtual Matrix	Gateway: Gateway: Network card: 10.0.19.204 - Micros	Archiving Backup Security Log: Coft Virtual Machine Bus Network Adapter #2	ping)

4) Since there are multiple Gateways in this scenario, it is better to allocate different test addresses and UDP ports to avoid any conflicts. The following settings need to be changed. The values indicated are suggested (they can be different depending on your system):

Gateway > General

- a. Outgoing UDP data: 9001-10000
- b. Gateway transmission address: 224.4.1.1
- c. Client transmission addresses from: 224.4.1.2

Gateway > Advanced

a. Device UDP port: 29000

www.genetec.com



5) Go to System > Network and set the **Public address** with its local IP address.

🔅 Genetec Omnicast Server Admin		
System Action Tools Help		
CPU Video Video 4/30/2010 11:57:35 AM	Start Stop Restart Undo Apply	
System Directory	🖬 License 🔤 SMTP 📑 Networ	
	Local machine name: SUPPORT-	
Generation Coordinato		
Gateway	Public address: 10.0.19.204	
Geteway Gateway Sederation	Public address: 10.0.19.204	
Gordinato Gateway Sederation Gatewide Advisory Archiver Virtual Matrix	Public address: 10.0.19.204	

5.3. Verifying the Omnicast services in the Config Tool

Please perform the following to verify that the Omnicast services on both servers have been properly configured and detected by the main Directory:

- 1) Open the Config Tool / Physical View.
- 2) Verify that both the primary and failover servers have the following services:
 - a. Directory Failover Coordinator
 - b. Gateway
- 3) Verify that both Gateways appear in the same level under the Directory.

Senetec Omnicast Config Tool		_ 🗆 ×
System Action View Iools Help		
Admin @ 100.1916 CPU III	Current entity	Ô
Video UIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Support-16 - Gateway Undo Apply	OMNICAST
Physical View	🗔 Identity 💦 Connections 🗏 Actions	
🜍 support-16	Type: Gateway	
General Support-16 - Gateway Gateway	Name: support-16 - Gateway	
	Description:	
	Logical ID: Not Applicable	
	Logical parent: Not Applicable	
	Physical parent. 🔮 support-16 Find	

- 4) Go to the Physical View / Gateway / Connections.
- 5) In BOTH Gateways, all the services under both the "From Gateway" and "To Gateway" columns should have **Mc**, **Udp**, **Tcp**. Do not continue if you do not see Mc, Udp, Tcp in both columns as this scenario does not apply to your system.

Primary Gateway:	
www.gopotec.com	17

Genetec Omnicast Config Tool <u>Action View Tools Heb</u> Admin @ 1001916 Video Infinition 31/12/2009 S1301 PM	Current en	no port-16 - Gateway	Apply			
support-16 support-16- Gateway support-16- Audilary Archiver support-16- Netadata Engine support-16- Netadata Engine support-16- Netadata Engine support-16- Netadata Engine support-20- Archiver support-20- Archiver support-20- Archiver support-16- Federation Sever support-20- Archiver support		Application RLEE - Config Tool support-16 - Directory Failover Co support-16 - Virtual Matrix support-204 - Archiver	Name Admin	Connections Act Act From Gateway Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp	To Gateway Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp	

Failover Gateway:

CPU Innum System Action Yew Tools Help Admin @ 10.0.19.16 CPU Innum Signal Admin @ 10.0.19.16 Video Innum Signal Admin @ 10.0.19.16 CPU Innum	Contre terty Support-204 - Gatew	
Physical View support-16 support-16 - Gateway support-16 - Auxiliary Archiver support-16 - Metadata Engine support-16 - Metadata Engine support-16 - Netwal Matrix support-16 - Archiver support-204 - Archiver support-204 - Archiver support-204 - Gateway support-204 - Gateway support-204 - Gateway support-204 - Directory Failover Coordinator	Identity Connections Application Name From Gateway To Gateway support-16 - Archiver Mc, Udp, Tcp Mc, Udp, Tcp support-16 - Federation Server Mc, Udp, Tcp Mc, Udp, Tcp SUPPORT-17 - Directory Admin Mc, Udp, Tcp Mc, Udp, Tcp Support-204 - Directory Failover C Mc, Udp, Tcp Mc, Udp, Tcp	

Note: It is possible that some services will not connect to its local Gateway and appear under the other Gateway (like support-204 Archiver shown in the above screenshots). Since multicast is supported on the network, it does not matter which Gateway the services actually connect to.

5.4. Running the DFC Wizard

The next step is to run the Directory Failover Configuration (DFC) Wizard to configure the failover list. Please perform the following steps:

- 1) In the Config Tool, go to Tools / **Configure Directory Failover**. The Directory Failover Configuration Wizard will pop open.
- 2) Uncheck the box "Use default failover configuration".
- 3) Check both servers and make them **Global**. The order of the list is important: the first server in the list is the primary; the second server in the list is the failover or backup.



Dire	Ctory Fallover Cont								
		Step #1: Directory failow	er list						
		Define priority and scope	of each D	irectory					
\$	Directory failover list	Use default failover configu	ration						
		Directory Failover Coordinat	Global	Local	Local address	Public addr	Port		
		🗹 🔂 support-16 - Directory	٢	0	support-16		7999		
	Gateway Connections	☑ 🧰 support-204 - Director	٢	0	support-204		7999		
	Client Connections								
								_	
								-	

- 4) Click Next.
- 5) Step #2 in the DFC Wizard is to configure the Gateway connections. This step will define the order each Gateway will try to connect to the Directory.

From the drop down list, select the **primary Gateway**. Using the up and down arrows, change the order of the list to have the primary Directory first and the backup Directory second. The Gateway machine should NOT be checked in this scenario. Check the two Directories as follows:

	Step #2: Gateway Connec	tions				
	Accient a Directory access pat					
	Assign a Directory access par	in to each gateway				
Directory	Current gateway: 🧕 sup	port-16 - Gateway	0			
failover list						
	Connections	Local address	Public address	Port		
	Support-16 - Directory	support-16		7998		
🐤 Gateway	Support-204 - Directory	support-204		7998		
Connections	□ 🔮 support-204 - Gateway	support-204		5001	_	
Client						
connections					~	

6) From the drop down list, select the Gateway on the failover server. The list should be configured the same as the primary Gateway as in the previous step.

Assign a Directory access path to each gateway Current gateway: Support-204 - Gateway failover list Connections Gateway Connections Gateway Connections Gateway Connections Connections Gateway Connections Connectio	Port 7998 7998 5001		
 ✓ Directory failover list ✓ Gateway Connections ✓ Gateway Connections ✓ Support-16 - Directory Support-16 - Directory Support-204 - Directory Support-16 ✓ Support-16 	Port 7998 7998 5001		
Gateway Connections Local address Public address Gateway Support-16 - Directory Support-204 Support-204 Connections Support-16 - Gateway Support-16 Client Client Connections Connections	Port 7998 7998 5001		-
Connections Local address Public address Public address Connections Support-16 - Directory Support-16 U Support-204 - Directory Support-204 - Directory Support-16 U Support-16 - Gateway Support-16	Iress Port 7998 7998 5001		-
Gateway Connections Connections Client	7998 7998 5001		
Gateway Connections Gitent	7998 5001		
Connections Givent	5001		
Client			
Client			
Client			
Connections			1000
Last configuration update: 31/12/2009 4:58:28 PM Cancel		< Back	Next >

www.genetec.com

7) Click Next.

8) Step #3 in the DFC Wizard is to configure the client connection list. Since there are only two Gateways, the alternate connection is always the other Gateway. Just ensure the connection list is similar to the following:

Dire	ctory Failover Configu	ration Wizard								
Ů		Step #3: Client Connections								
		Assign a backup list to each g	gateway							
~		Current gateway: 🖉 sup	port-16 - Gateway	0						
		Alternate connections	Local address	Public address	Port					
		🗹 🔮 support-204 - Gateway	support-204		5001					
~	Gateway Connections									
Dire	ctory Failover Configu	ration Wizard			_					
l	7	Step #3: Client Connection	15							
		Assign a backup list to each g	ateway							
~		Current gateway: 🦉 supp	port-204 - Gateway	0						
		Alternate connections	Local address	Public address	Port					
		🗹 🔮 support-16 - Gateway	support-16		5001					
~	Gateway Connections									

- 9) Click **Finish**. After clicking this button, the DFC services will restart and the synchronization process will begin. Please refer to the next section for a description of the synchronization process.
- 10) In the Physical View, the primary DFC should appear under the same level as the Gateways and the failover DFC should appear under its local Gateway.

Senetec Omnicast Config Tool n Action Yiew Tools Help Imin @ 1001916 CPU Imin @ 1001916 Video 31/12/2009 5.43.44 PM (4) (4) (5)	Comparative Comparative Support-204 - Gatew	a J	
Physical View	Ide	entity 🔗 Connections 🗏 Ac	tions
support-16 • Gateway upport-16 - Okatway support-16 - Metadata Engine support-16 - Netadata Engine support-16 - Virtual Matrix support-204 - Archiver support-204 - Gateway support-204 - Gateway support-204 - Oriectory Failover Coordinator support-204 - Virtual Matrix support-204 - Directory Failover Coordinator	Application support-10 - Archiver support-10 - Federation Sever SUPPORT-17 - Directory support-204 - Directory Failover C	Name From Gateway Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp	То Gateway Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp Mc, Udp, Tcp

www.genetec.com

6. Scenario #2: Local Directories

In this scenario, there are more than 2 servers involved in the FOS. Since only 2 global Directories are recommended, the remaining Directories will have to be configured as local. In most cases, the local Directory server is at a remote location where the network bandwidth to the global Directory servers is limited. The two global Directory servers are at the "head end" location where multicast is supported and network bandwidth is not a problem.

This scenario has the following requirements:

- 1) Two servers acting as global Directories; remaining servers acting as local Directories
- 2) Multicast is only supported on the network with the global Directories
- 3) Good network bandwidth between the global Directories (100 Mbps or more)
- 4) Bandwidth is limited to the local Directory server (minimum 1.5 Mbps or higher to each local Directory)



Note that using Federation may be a better option for you if you are considering using Local Directories. Please contact us or one of our Sales Engineers to discuss this option.

6.1. Configuration on the Primary Server

The configuration on the primary server is the same as in the Simple scenario (refer to section 5.1).

Please perform these additional steps:

 Since the bandwidth on the WAN is limited, it may be necessary to increase the Client connection timeout to a maximum of 300 sec and the Client application poll timeout to 60 sec. If the failover Gateway often loses connection to the primary server, then it is necessary to increase this timeout.

Genetec Omnicast Server Admin		_ _ ×
Vit 13/01/2010 6:05:54 PM	Start Stop Restart	Undo Apply OMNICAST
 System Directory Directory Failover Coordinato Gateway Federation 	Detection parameters Image: Constraint of the second sec	\land Advanced 🤤 😨 IP filtering
Archiver ACTi Extension ACTi Extension Arecont Extension AXIS Extension Bosch Extension Generic Extension	Timeouts Directory poll timeout Client application poll timeout Client connection write timeout Client connection test timeout	Value 10 sec 60 sec 300 sec 2 sec
Genetic Extension Genetic Extension GilQinVision Extension GilQinVision Extension GilQinVision Extension GilQinVision Extension	Enable video redirection Default supported connection: Automatic of the support of the suport of the support	detection
Verint Extension Auxiliary Archiver Restore Archiver Metadata Engine Virtual Matrix	Device UDP port: 28000	the second second

6.2. Configuration on the Failover Global Directory Server

Since the Failover Global Directory server meets the requirements of Scenario #1 (Simple), it should be configured the same way. Please perform the steps described in section 5.2.

6.3. Configuration on the Failover Local Directory Server

Please perform the following steps on the Failover Local Directory Server:

1) Verify that the Directory service is stopped and its startup type is set to "Manual". The Directory Failover Coordinator and Gateway services should be started.

Genetec Omnicast Server Admin		_ — ×
stem <u>Action Loois H</u> elp 12/31/2009 4:43:49 PM	CPU Video Start Stop Restart Undo Apply OMM	
System	🖼 General 🔤 Email 📮 Logging 🧧 Active Directory 🕅 Password	
- Directory - 🔂 Directory Failover Coordinato	General settings	
Gateway Archiver	Directory port 7998	
AXIS Extension	Start multicast address: 224 . 16 . 17 . 1 Port: 47806	
	Directory database	
	Data server: (local)\Omnicast O	
	Database: DirectorySQL O 😳 🕂 🗙 🖼	
	Alarm database	
	days	

You can access the Windows services by going to Control Panel / Administrative Tools / Services:

🍇 Services						- 🗆 🗙
Eile Action View	Help					
$\leftarrow \rightarrow \blacksquare \textcircled{2}$) 🖫 😫 🕨 🗉 🗉 🖦					
🆓 Services (Local)	🐞 Services (Local)					
	Genetec Omnicast Directory	Name 🛆	Description	Status	Startup Type	Log On 🔺
		Sax Fax	Enables you t		Automatic	Local S [,]
	<u>Start</u> the service	🆓 Genetec Omnicast Archiver	Genetec Omni	Started	Automatic	.\Omnic—
		Senetec Omnicast Directory	Genetec Omni		Manual	.\Omnic
	Description:	🎇 Genetec Omnicast Directory Failover Coordinator	Genetec Omni	Started	Automatic	.\Omnic
	Genetec Omnicast Directory	🎇 Genetec Omnicast Gateway	Genetec Omni	Started	Automatic	.\Omnic
		🎇 Genetec Omnicast Virtual Matrix	Genetec Omni	Started	Automatic	.\Omnic
		🎇 Genetec Watchdog	Provides monit	Started	Automatic	Local S [.]
		Help and Support	Enabler Heln a	Startad	Automatic	Local S
	Extended Standard					

2) In a Reverse Gateway configuration, the Gateway must have "Gateway" as the Connection Type. In the Gateway field, put the IP address of the primary server.

stem <u>A</u> ction <u>T</u> ools <u>H</u> elp						
1/4/2010 11:12:52 AM	CPU Video	Start St	top Restart	Un	do Apply	
System Directory Directory Failover Coordinato	General settings	(🖼 General	🧧 Logging	🛧 Advanced	🔏 IP filtering
Gateway Archiver		Connection type	e O Directory O Gateway			
->>> Virtual Matrix		Gateway	10.0.19.16		IP address primary se	s of rver
		Network card	10.0.19.204 - Mi	crosoft Virtual M	lachine Bus Networ	Adapter #2

3) All the other services (like Directory Failover Coordinator, Archiver, Virtual Matrix, etc.) must point to the local Gateway using the local IP address or leaving it blank.



4) Since the bandwidth on the WAN is limited, it may be necessary to increase the Client connection timeout to a maximum of 300 sec and the Client application poll timeout to 60 sec. If the failover Gateway often loses connection to the primary server, then it is necessary to increase this timeout.



5) Since there are multiple Gateways in this scenario, it is better to allocate different test addresses and UDP ports to avoid any conflicts. The following settings need to be changed. The values indicated are suggested (they can be different depending on your system):

Gateway > General

a. Outgoing UDP data: 10001-11000 (increments of 1000 for each additional Gateway)

- b. Gateway transmission address: 224.4.2.1 (increments of 1 in the 3rd octet for each additional Gateway)
- c. Client transmission addresses from: 224.4.2.2 (increments of 1 in the 3rd octet for each additional Gateway)

Gateway > Advanced

d. Device UDP port: 30000 (increments of 1000 for each additional Gateway)

Genetec Omnicast Server Admi	in	_ 🗆 ×
2/3/2010 7:59:51 AM	CPU Video Start Stop Restart Undo Apply	WNICAST
 System Directory Directory Failover Coordinato Gateway Archiver Virtual Matrix 	General Cogging Advanced IP filtering General settings Connection type: O Directory O Gateway Gateway: 10.0.19.16	
	Network card: 10.0.19.206 - Microsoft Virtual Machine Bus Network Adapter	0
	Incoming TCP command: 5001 Outgoing UDP data 10001 to 11000	
	Multicast connection test settings Gateway transmission address: 224 . 4 . 2 1 Client transmission addresses: 10 from 224 . 4 . 2 . 2	
x >	Client transmission addresses are from 224.4.2.2 to 224.4.2.11	





6) Since the bandwidth is usually limited and latency is higher on the WAN, it is better to disable the **Entity and Alarm Replication** on the DFC. Whenever there are changes to the configuration, you will need to perform a manual synchronization whenever a configuration is changed.

Genetec Omnicast Server Admin		_□×
1/13/2010 5:55:50 PM	CPU III	Stop Restart
 System Directory Gateway Archiver AXIS Extension Virtual Matrix 	Gateway: Network card: Incoming TCP command: Ping period: Password:	Image: General 10.019.204 10.019.204 - Microsoft Virtual Machine Bus Network Adapter #2 7999 5 5 5 6 6 6 6 7 7 7 7 7 7 7 8 7 8 8 8 8 9 </th

www.genetec.com

7) Go to System > Network and set the Public address with its local IP address.

n <u>A</u> ction <u>T</u> ools <u>H</u> elp		
CPU Video 4/30/2010 12:01:38 PM	Start Stop Restart)
	🖼 License 🔤 SMTP	Vetwork
Jirectory Directory Failover Coordinato	Local machine name: SUPPORT-	
Gateway	Public address: 10.0.19.206	
rchiver		
/irtual Matrix		

6.4. Verifying the Omnicast services in the Config Tool

Please perform the following to verify that the Omnicast services on both servers have been properly configured and detected by the main Directory:

- 1) Open the Config Tool / Physical View.
- 2) Verify that ALL the Directory servers have the following services:
 - a. Directory Failover Coordinator
 - b. Gateway
- 3) Verify that both Global Gateways appear at the same level under the Directory.

Genetec Omnicast Config Tool System Action Yew Tools Help Admin @ 10.019.16 CP 07/01/2010 12:57/49 PM		Current entity V support-16 - Gateway	Undo Apply			
Physical View Support-16 Support-16 - Gateway Support-204 - Gateway	•	Type: Name: Description: Logical ID: Logical parent Physical parent	Gateway Support-16 - Gateway Not Applicable Not Applicable Support-16	Connections	Find	

4) Verify that the remote Gateway is detected under one of the Gateways on the LAN.



🕅 Genetec Omnicast Config Tool						_ 🗆 ×
ystem Action View Tools Help						
						<u>A</u>
Admin @ 10.0.19.16 Video	Current entity.					e
08/01/2010 12:26:21 PM	🕤 🦉 support-16 - Gate	eway Undo A	Apply			OMNICAS
Physical View			Identity	Connections	tions	
Corrigination of the second seco		<u></u>	identity 00	Connections A Ac		
🜍 support-16	Application		Name	From Gateway	To Gateway	
🖃 💽 support-16 - Gateway	SDK CDUMITRES	CU-M20 - SDK	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
G support-16 - Directory Failover Coordinator	SDK CDUMITRES	CU-M20 - SDK	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
🗉 🖀 support-16 - Metadata Engine	💛 🕺 RLEE - Conf	ig Tool	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
🗄 🥎 support-16 - Virtual Matrix	Remote Gateway	Directory Failover Co		Mc, Udp, Tcp	Mc, Udp, Tcp	
😐 🗐 support-204 - Archiver	(on Local Directory	Live Viewer	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
= 🕥 Support-206 - Gateway	server) is under	Metadata Engine		Mc, Udp, Tcp	Mc, Udp, Tcp	
Support-206 - Archiver	one of the Global	Virtual Matrix		Mc, Udp, Tcp	Mc, Udp, Tcp	
G Support-206 - Directory Failover Coordinator	Gatowave	- Directory	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
= 🔃 support-204 - Gateway	Galeways	- Archiver		Mc, Udp, Tcp	Mc, Udp, Tcp	
B Support 16 - Archiver	Support-200	6 - Gateway		Udp, Tcp	Udp, Tcp	
Counter 201 Director Evilouer Coordinator						
Support-204 - Directory Pallover Coordinator						

5) In the Physical View / Gateway / Connections, the remote Gateway should be detected by the primary Gateway as **Udp**, **Tcp**.

🕀 Genetec Omnicast Config Tool						_ 🗆 ×
System Action View Tools Help Admin @ 100.19.16 0k/01/2010 122621 PM	urrent er	port-16 - Gateway	Apply			OMNICAST
U Physical View			Identity	Connections	ions	
Support-16		Application	Name	From Gateway	To Gateway	
🖃 🔮 support-16 - Gateway	SDK	CDUMITRESCU-M20 - SDK	Admin	Mc. Udp. Tcp	Mc. Udp. Tcp	
G support-16 - Directory Failover Coordinator	SDK	CDUMITRESCU-M20 - SDK	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
🗉 🔳 support-16 - Metadata Engine		RLEE - Config Tool	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
🗉 🏐 support-16 - Virtual Matrix	G	support-16 - Directory Failover Co		Mc, Udp, Tcp	Mc, Udp, Tcp	
B-B support-204 - Archiver	۲	support-16 - Live Viewer	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
E G Support-206 - Gateway		support-16 - Metadata Engine		Mc, Udp, Tcp	Mc, Udp, Tcp	
Support-206 - Archiver	9	support-16 - Virtual Matrix		Mc, Udp, Tcp	Mc, Udp, Tcp	
G Support-206 - Directory Failover Coordinator		SUPPORT-17 - Directory	Admin	Mc, Udp, Tcp	Mc, Udp, Tcp	
S (support-204 - Gateway		support-204 - Archiver		Mc Udp Tcp	Mc Udp Tcp	
support 204 - Valeway support 16 - Archiver	g	Support-206 - Gateway		Udp, Tcp	Udp, Tcp	
- G support-204 - Directory Failover Coordinator						

6.5. Running the DFC Wizard

The next step is to run the Directory Failover Configuration (DFC) Wizard to configure the failover list. Please perform the following steps:

- 1) In the Config Tool, go to Tools / **Configure Directory Failover**. The Directory Failover Configuration Wizard will pop open.
- 2) On Step #1, uncheck the box "Use default failover configuration".
- 3) Check both servers that are on the LAN and make them **Global**. Check the remote servers that are on the WAN and make them **Local**.

The order of the list is important:

- First server in the list is the primary Global Directory
- Second server in the list is the failover Global Directory

• The remaining servers can be in any order since they are the Local Directories

Direct	tory Failover Configu	ration Wizard				_			_
	~	Step #1: Directory failov							
		Define priority and scope	of each D	irectory					
→	Directory failover list	Use default failover configu							
		Directory Failover Coordinat	Global	Local	Local address	Public addr	Port		
		🗹 🞧 support-16 - Directory	0	0	support-16	10.0.19.16	7999		
	Gateway	🗹 🔂 support-204 - Director	۲	0	support-204	10.0.19.204	7999		
	Connections	🗹 📻 Support-206 - Director	•	0	Support-206	10.0.19.206	7999		
	Client								
	Connections								V
									-
									-
	Last cor	nfiguration update: 15/01/2010	4:41:03 P	'M	Cance	el	< Bac	k (Next >

- 4) Click Next.
- 5) Step #2 in the DFC Wizard is to configure the Gateway connections. This step will define the order each Gateway will try to connect to the Directory.

From the drop down list, select the Gateway that is on the primary Global Directory. Using the up and down arrows, change the order of the list to have the primary Global Directory first and the failover Global Directory second. The remote Directories and Gateways should NOT be checked since the Gateways on the LAN should never try to connect to the remote Gateways on the WAN to reach a Directory.

	Step #2: Gateway Connect	tions				
	Assign a Directory access pat	th to each gateway				
 Directory failover list 	Current gateway: 🔮 sup	port-16 - Gateway	0			
	Connections	Local address	Public address	Port		
	🗹 🕥 support-16 - Directory	support-16	10.0.19.16	7998		
🔶 Gateway	🗹 🥥 support-204 - Directory	support-204	10.0.19.204	7998		
Connections	□ 🔮 support-204 - Gateway	support-204	10.0.19.204	5001		
	Support-206 - Gateway	Support-206		5001		
	Support-206 - Directory	Support-206		/998		
Client						
Connections					~	
					\bigcirc	
						_

6) From the drop down list, select the Gateway that is on the **failover Global Directory server**. The list should be configured the same as the primary Gateway in the previous step.

		Assign a Directory access pat	h to each gateway			
		Current gateway: <u> sup</u>	port-204 - Gateway	0		
		Connections	Local address	Public address	Port	
		🗹 🜍 support-16 - Directory	support-16	10.0.19.16	7998	
> (Gateway	🗹 🕥 support-204 - Directory	support-204	10.0.19.204	7998	
(Connections	🗆 🔮 support-16 - Gateway	support-16	10.0.19.16	5001	
		🗆 🞯 Support-206 - Gateway	Support-206		5001	
		🗆 🜍 Support-206 - Directory	Support-206		7998	
	Client					
	Connections					
						$\langle \checkmark \rangle$
						_
						_

www.genetec.com

- 7) From the drop down list, select the remote Gateway that is on the failover Local Directory server. This Gateway should try to connect to the Global Directories first via their Gateways (i.e. Reverse Gateway) and then try to connect to its local Directory. Therefore, it should be configured as follows:
 - a. First server in the list is the Gateway on the primary server at the head-end
 - b. Second server in the list is the Gateway on the failover server at the head-end
 - c. The last server in the list should be its own local Directory

Dir	tory Failover Configu	ration Wizard				
		Step #2: Gateway Connect	tions			
		Assign a Directory access pat	h to each gateway			
		Current gateway: 🞯 Sup	port-206 - Gateway	0		
· ~	Directory failover list		,,			
		Connections	Local address	Public address	Port	
		🗹 🔮 support-16 - Gateway	support-16	10.0.19.16	5001	
4	Gateway	🗹 🔮 support-204 - Gateway	support-204	10.0.19.204	5001	
	Connections	Support-206 - Directory	Support-206	10.0.19.206	7998	
		🗆 🜍 support-204 - Directory	support-204	10.0.19.204	7998	
		🗆 🜍 support-16 - Directory	support-16	10.0.19.16	7998	
	Client					
	Connections					
						(\checkmark)
	Last co	nfiguration update: 13/01/2010 4:5	59:25 PM	Cancel	< Back	Next >

8) Step #3 in the DFC Wizard is to configure the client connection list. This section configures the alternative choices for the Gateway to which the client applications should connect.

Select the Gateway on the Primary Global Directory server. The only alternative is to connect to the Gateway on the Failover Directory server on the LAN. It should NOT connect to the remote Gateways.



Directory Failover Conf	iguration Wizard					-
	Step #3: Client Connectio	ns				
	Assign a backup list to each	gateway				
 Directory 	Current gateway: 🦉 sup	port-16 - Gateway	0			
	Alberta contractions	Less Leddress	Bublic eddeese	Dart	_	
	Alternate connections	Local address	Public address	FOR		
Gateway	Support-204 - Gateway	Support-204	10.0.19.204	5001		
Connections			20101201200			
Sclient						
Connections						
					_	
					_	

9) Select the Gateway on the Failover Global Directory. It should be configured similarly as the Gateway on the Primary Global Directory server.

	Assign a backup list to each o	gateway			
	Current gateway: 🦉 sup	port-204 - Gateway	0		
	Alternate connections	Local address	Public address	Port	
	🗹 🞯 support-16 - Gateway	support-16	10.0.19.16	5001	
	🗆 🔮 Support-206 - Gateway	Support-206	10.0.19.206	5001	
Client					(A)
Connections					

www.genetec.com

10) Select the remote Gateway. None of the Gateways should be selected. We do not want the client applications at the remote sites to ever connect to the Gateway at the head-end.

/		Step #3: Client Connection					
/							
/		Assign a backup list to each g	gateway				
	Directory failover list	Current gateway: 🕑 Sup	port-206 - Gateway	0			
		Alternate connections	Local address	Public address	Port		
		🗆 🞯 support-16 - Gateway	support-16	10.0.19.16	5001		
1		□ 🔮 support-204 - Gateway	support-204	10.0.19.204	5001		
	Connections						
> (Client						a
	Connections						
							- 3
					C		
	Last co	onfiguration update: 15/01/2010 4:	41:03 PM	Cancel	C	< Back	Finish

11) Click **Finish**. After clicking this button, the DFC services will restart and the synchronization process will begin. Please refer to the next section for a description of the synchronization process.

7. Failover synchronization process

If the Directory Failover has been configured properly, synchronization of the Directory databases should occur. Depending on the size of your system, this can take up to 15 minutes (even more for very large systems). The Replication Status can be checked by clicking the failover Directory Failover Coordinator in the Config Tool:

Genetec Omnicast Config Tool vstem Action View Loois Help Admin @ 10.01916 CPU Wideo Video 15/01/2010 4.41.09 PM () () ()	Curren entez Curren entez Undo Apply	
Physical View	Identity Statistics	
Government of the end of the	Directory Failover Coordinators Global Local Priority Connection support-16 - Directory Failover Coordinator Global 1 Connected support-204 - Directory Failover Coordinator Global 2 Connected	
Ŧ ★ ⊙	Status	

Once the synchronization has completed successfully, the Status will change to **On Stanby** and the Replication Status will change to **Active** and the different counts should have a value.

Secrete Omnical Config Tool Secrete Omnical Your Tool Maining 1001316 Secrete Omnical Your Tool Secrete Of Secrete Tool <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
Admin @ 1001310 Cit Lottoriol Addition Cit Lottoriol Addition Cit Prycelal View Cit Support 16 - Methods Findework Support 204 - Centrol Statuser Support 204 - Statwark Statuser Support 204 - Statwark Statuser Support 30 - Directory Findework Status	🔅 Genetec Omnicast Config Tool	_				_	_ 🗆 ×
	ystem <u>A</u> ction <u>V</u> iew <u>T</u> ools <u>H</u> elp						
Prycact Vec Image: Control of C	Admin @ 10.0.19.16 15/01/2010 447.13 PM		support-204 - Direct)			OMNICAST
Compare-16 Compare-16 - Greedway Support-16 - Metadata Engine Support-16 - Withual Matrix Support-204 - Ontextopy Failover Coordinators Support-204 - Ontextopy Failover Coordinators Support-204 - Ontextopy Failover Coordinator Support-204 - Virtual Matrix Supp	Physical View		0	📰 Identity 🛛 🥑 Sta	tistics		
Image: Support-16 - Machiner Support-16 - Machiner Support-16 - Witadata Engine Support-16 - Witadata Engine Support-204 - Achiner Support-204 - Achiner Support-204 - Marcia Support-204 - Achiner Support-204 - Vitual Matrix Support-204 - Marcia Support-204 - Directory Failover Coordinator Global 2 Connected Support-204 - Marcia Support-204 - Marcia Support-204 - Marcia Support-204 - Marcia Support-204 - Marcia Support-204 - Directory Failover Coordinator Global 2 Connected Support-204 - Directory Failover Coordinator Support-204 - Directory Failover Coordinator Global 2 Connected Support-204 - Directory Failover Coordinator Support-204 - Directory Failover Coordinator Global 2 Connected Support-204 - Directory Failover Coordinator Support-204 - Directory Failover Coordinator Support-204 - Dir	Support-16	- 8	Directory failover list		D :		
Support-16 - Virtual Matrix Support-20 - Archiver Support-20 - Virtual Matrix Support-20 - Virtua		- 8	Support-16 - Directory Failover Coordinators	Global (Local	Priority	Connection	
Support-204 - Virtual Matrix support-204 - Archiver support-204 - Archiver support-204 - Directory Failover Coordinator support-204 - Directory Failover Coordinator support-16 - Directory Failover Coordinator Status Stat	🗉 🔳 support-16 - Metadata Engine	- 8	support-204 - Directory Failover Coordinator	Global	2	Connected	
support-204 - Kritiver support-204 - Virtual Matrix support-16 - Directory Failover Coordinator support-16 -	support-16 - Virtual Matrix	- 8					
Support-204 - Directory Failover Coordinator support-16 - Directory Failover Coordinator Support-16 - Directory Failover Coordinator Status	support-204 - Archiver	- 8					
Support-204 - Virtual Matrix Support-16 - Directory Failover Coordinator - Status Status: On standby Entity count: 174 Alarn count: 0 Last time alarn was synchronised: 15/01/2010 4:45:23 PM Last undate:	💮 support-204 - Directory Failover Coordinator	- 8					
Status	support-204 - Virtual Matrix	- 8					
- Status - St	🛶 🕼 support-16 - Directory Failover Coordinator	- 8					
- Status - Statu		- 8					
Status On standby Entity config count: 174 Alarm count: 0 Last time alarm was synchronised: 15/01/2010 4:45:23 PM Last time alarm was synchronised: 15/01/2010 4:45:23 PM Last undate: 15/01/2010 4:45:23 PM Directory database Manual sync		- 8					
- Status - Statu		- 8					
- Status							
- Status -		•					
- Status		- 8					
Statu: On standby Entity count: 174 Entity count: 174 Alarm count: 0 Last time alarm was synchronised: 15/01/2010 4:45:23 PM Last time entity was synchronised: 15/01/2010 4:45:23 PM Last under: 15/01/2010 4:46:07 PM Replication status: Entity (Active), alarm (Active)		- 8					
Entity count: 174 Entity count: 174 Entity config count: 174 Alarm count: 0 Last time alarm was synchronised: 15/01/2010 4:45:23 PM Last time entity was synchronised: 15/01/2010 4:45:23 PM Last utime entity was synchronised: 15/01/2010 4:46:07 PM Replication status: Entity (Active), alarm (Active)		- 8	Status: On s	tandby			
Entity config count: 174 Alarm count: 0 Last time alarm was synchronised: 15/01/2010 4:45:23 PM Last time antity was synchronised: 15/01/2010 4:45:23 PM Last under: 15/01/2010 4:46:07 PM Replication status: Entity (Active), alarm (Active)		- 8	Entity count: 174				
Alarm count: 0 Last time alarm was synchronised: 15/01/2010 4:45:23 PM Last time entity was synchronised: 15/01/2010 4:45:23 PM Last undate: 15/01/2010 4:46:07 PM Replication status: Entity (Active), alarm (Active) Manual sync Manual sync Manual sync Manual sync		- 8	Entity config count: 174				
Last time alarm was synchronised: 15/01/2010 4:45:23 PM Last time entity was synchronised: 15/01/2010 4:45:23 PM Last undate: 15/01/2010 4:46:07 PM Replication status: Entity (Active), alarm (Active) Manual sync		- 8	Alarm count: 0				
Last update: 15/01/2010 4/46:07 PM Replication status: Entity (Active) Manual sync Manual syn			Last time entity was synchronised: 15/0	01/2010 4:45:23 PM			
Replication status: Entity (Active)			Last update: 15/0	01/2010 4:46:07 PM			
Hanual sync Manual sync Alarm database			Replication status: Entit	ty (Active), alarm (Activ	e)		
Hanual sync Manual sync Alarm database							
(+ X) () () () () () () () () ()				Directory database			
Alaluu volavas		\odot	Manual sync 🚽	Alarm database			

For remote Directories where the entity replication has been disabled, you can perform a manual synchronization when needed by clicking on the **Manual Sync** button on the remote Directory Failover Coordinator.

– Status –		22
Status: Entity count: Entity config count: Alarm count: Last time alarm was synchronised: Last time entity was synchronised:	On standby 174 174 0 15/01/2010 4:45:23 PM 15/01/2010 4:45:23 PM	
Last update: Replication status:	15/01/2010 4:46:07 PM Entity (Active), alarm (Active)	
C Manual sync	Directory databaseAlarm database	



8. Troubleshooting Directory Failover Issues

The following are some of the common issues that we encounter with Directory Failover and some troubleshooting steps you can perform.

ALWAYS BACKUP THE DIRECTORY DATABASE AND REGISTRY ON <u>ALL</u> SERVERS BEFORE MAKING CHANGES DURING THE TROUBLESHOOTING.

You can use the Omnicast Backup Tool to perform the backup. You can download the Backup Tool at our GTAP (<u>http://gtap.genetec.com/</u>):

GENETEC	Innovative Solutions	SA	Tech	nnical Assi	stance Portal
Cases	System Management	Tools	Forum Conta	act Profile	Home
KNOWL	EDGE BASE DOCUMENTS	SUPPORTED DEV	ICES KNOWN IS	SUES UTILITIES	NEWSLETTER
Search					Newest Downloads
Search	f tools and compor re that Genetec su	nents to be used w pport is only availal	ith Genetec ble for the	Map Editor 1.0.21.0 05/01/2010	
	page, please see the dev please visit the system m	elopper. For Genet anagement sectior	tec client and serve	r applications,	Omnicast Single Click Archive Player 24/12/2009
	Genetec Tools			-	Connection Lookup for Omnicast
	Omnicast Backup Tool			03/09/2009	4.5 GA 22/10/2009
	Dump registry keys for SR3	Omnicast 4.1		09/09/2009	
	Dump registry keys for GA	omnicast 4.2		09/09/2009	Omnicast Report Tool 22/10/2009
	Dump registry keys for GA	omnicast 4.3		09/09/2009	
	Dump registry kays for	Omnicast 4.4	(TT)		

8.1. Clients do not connect to failover Directory

A failover condition has started so the client applications have disconnected. They do not reconnect to the failover Directory as it is expected. Please do the following to troubleshoot the problem:

1) Verify that after the Directory on the failover server has started, usually in about 2 minutes after the failover condition started.

Name 🔺	Description	Status	Startup Type	Log On As
🤹 Genetec Omnicast Archiver	This service is r	Started	Automatic	.\OmnicastSvcUsr
🎑 Genetec Omnicast Directory	This service is t	Started	Manual	.\OmnicastSvcUsr
🤹 Genetec Omnicast Directory Failover	Service installe	Started	Automatic	.\OmnicastSvcUsr
🎑 Genetec Omnicast Gateway	Service allowin	Started	Automatic	.\OmnicastSvcUsr
🤹 Genetec Omnicast Virtual Matrix	This service pr	Started	Automatic	.\OmnicastSvcUsr
🎑 Genetec Watchdog	Provides monit	Started	Automatic	.\OmnicastSvcUsr

2) Verify that the synchronization process has completed successfully on the DFC of the Failover Directory server.

Constant Confector I			_		
Wenetec Omnicast Config Tool					^
Sharew Wordon Alem Toola Relb					
Admin @ 10.01916 CPU II	Community S				()
Video Video	C support-204 - Direct Undo Apply				OMNICAST
		2			
Physical View	6	🖬 Identity 🔜 🚺 St.	itistics		
0					
Support-16	- Directory failover list	(label) Land	Describe	Constant	
support-16 - Archiver	support-16 - Directory Failover Coordinators	Global	Phonty	Connected	
🗉 📕 support-16 - Metadata Engine	support-204 - Directory Failover Coordinator	Global	2	Connected	
Support-16 - Virtual Matrix					
support-204 - Gateway					
G support-204 - Directory Failover Coordinator					
support-204 - Virtual Matrix					
- Cal support-16 - Directory Failover Coordinator					
	8				
				_	
	- Status				
	Status: On s	tandhu			
	Entity count: 174	unuuy			
	Entity config count: 174				
	Alarm count: 0				
	Last time alarm was synchronised: 15/0	1/2010 4:45:23 PM			
	Last unie entity was synchronised. 15/0 Last update: 15/0	1/2010 4:46:07 PM			
	Replication status: Entit	y (Active), alarm (Activ	re)		
(+ ×) (0)	Manual sync 🚽	Directory database			
		Alam database			

3) Verify that the client workstation has connectivity to the failover server (i.e. can ping the failover server).

📾 C:\WINDOWS\system32\cmd.exe	- 🗆 ×	
C:∖>ping 10.0.19.204	^	
Pinging 10.0.19.204 with 32 bytes of data:		1
Reply from 10.0.19.204: bytes=32 time<1ms TTL=127 Reply from 10.0.19.204: bytes=32 time<1ms TTL=127 Reply from 10.0.19.204: bytes=32 time<1ms TTL=127 Reply from 10.0.19.204: bytes=32 time<1ms TTL=127		
Ping statistics for 10.0.19.204: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms		
C:\>		
	-	1

4) As the client application is trying to establish connection, verify that you see it try to connect to the failover server.



- 5) Install the client application (ex: Config Tool) on the failover server and see if it can connect to the failover Directory.
- 6) Verify that the database on the failover Directory is valid. This can be done by checking the database properties in the Server Admin > Directory > Database > Properties.

Genetec Omnicast Server Admin			_ = ×
System Action Tools Help			
CPU			
Video			
10/02/2010 1:25:40 AM	Start Stop	Restart Undo Apply	OMNICAST
System Directory	General	🔤 Email 🧧 Logging 🚦 Active Directory 🕅 Password	
G Directory Failover Coordinator	General settings		
Gateway			
- 🎖 Federation	Directory p	ort 7998	
🕀 📑 Archiver	Start multicast addre	ss: 230 . 16 . 0 . 1 Port: 47806	
ACTi Extension			
Arecont Extension	Directory database		
Bosch Extension	Directory database		-
Generic Extension			
- Genetec Extension	Data sen		
- lQinVision Extension	Databa	se: DirectorySQL 📀 🕂 🔀 🖭	
Optelecom - NKF Extension			
Panasonic Extension		Database properties	
Verint Extension	Alarm Gatabase		
Verint Extension			
Auxiliary Archiver	Data s	Data server version: 9.00.3077.00 SP2 (Express Edition)	
Restore Archiver	Data	Database version: 4.00	
📕 📕 Metadata Engine	Koon birto		
- 10 Virtual Matrix	Reep fisto	Data	
		Size on disk: 12.0 MB	
		Entity count: 285	
		Entity config count: 12705	
			OK

7) Verify that the windows firewall is stopped and disabled in services.msc.



🦏 WINDOWS EVENCLOG	mis service man	Starteu	Automatic	LUCALSERVICE
🎑 Windows Firewall	Windows Firewal		Disabled	Local Service
🎑 Windows Font Cache Service	Optimizes perfor		Manual	Local Service
🎑 Windows Installer	Adds, modifies,		Manual	Local System
🖏 Windows Management Instrumen	Provides a comm	Started	Automatic	Local System

8.2. Directory on failover server is always started

You notice that the Directory service on the failover server is always started:

Name 🔺	Description	Status	Startup Type	Log On As
🧟 Genetec Omnicast Archiver	This service is r	Started	Automatic	.\OmnicastSvcUsr
🥋 Genetec Omnicast Directory	This service is t	Started	Manual	.\OmnicastSvcUsr
🧟 Genetec Omnicast Directory Failover	Service installe	Started	Automatic	.\OmnicastSvcUsr
🎑 Genetec Omnicast Gateway	Service allowin	Started	Automatic	.\OmnicastSvcUsr
🎑 Genetec Omnicast Virtual Matrix	This service pr	Started	Automatic	.\OmnicastSvcUsr
🎑 Genetec Watchdog	Provides monit	Started	Automatic	.\OmnicastSvcUsr

This is not normal because the failover Directory service should only be started when there is a failover condition. Please do the following to troubleshoot the problem:

- 1) Verify that the DFC service has been set to Manual in services.msc.
- 2) Run the DFC Wizard again.

Senetec Omnicast Config Tool		×
em <u>A</u> ction <u>V</u> iew <u>Tools</u> <u>H</u> elp		
Live Viewer		A
Admin 🙉 Archive Player		
2/9/2010 E-tike Counch	💿 🚱 support-16 Undo Apply	OMNICAST
Entity Search		
Block Cameras	📊 1 🛆 id 📕 刘 👰	
Lest Sounds		
support-16	Company name: Internal License Demo Only	
G support-16 Copy Configuration Tool	System ID:	
Support-16 Transfer Video	Package name: Default License	
g support-204 Options Ctrl+O	Expiration: 7/12/2010	
	Technical support: 1-514-332-4000	
Language Tool	Access rights	
	💁 Number of cameras / analog monitors 🛛 🎒 1000	
	🙀 Number of standby Directories 🛛 🤴 100	
	Active Directory integration 🖌 Supported	1
	🚱 Number of Gateways 💮 100	=
	🖓 Number of Media Gateways 🦪 100	
	Number of Archivers 🐉 100	
	🚽 Standby Archivers 🖌 🖌 Supported	i
	🚽 🎒 Redundant archiving 🚽 🖌 Supported	1
	🖏 Number of Virtual Matrices 🥔 100	
	🙀 Standby Virtual Matrices 🚽 🖌 Supported	1
	📕 📕 Number of Metadata Engines 🛛 🎒 100	
	🚽 👫 Standby Metadata Engines 🖌 🖌 Supported	1
	👔 Number of Restore Archivers 🦪 100	
	🚺 👔 Number of Auxiliary Archivers 🛛 🎒 100	
	😥 Number of federated Directories 🛛 🥮 100	
	😥 Number of federated cameras/camera sequences 🛛 🥮 100	
	Number of Auxiliary Archiver cameras 🛛 🎒 100	
	🛄 Number of client workstations 🛛 🥮 100	
	SDK Number of SDK connections 💮 100	
	📓 Number of Pocket PC clients 🖉 100	
	Supported	
	Figure 100 Provide State Provi	
	Vumber of DVR inputs	
	Number of AutoVul PR units 🔗 100	~

3) It is possible the DFC is detecting a problem on the primary server. Stop and disable the Directory on the failover server and ensure the clients can login to the primary Directory. If you cannot login to the primary Directory, you will need to resolve this problem first.

🤹 Genetec Omnicast Archiver	This service is re	Started	Automatic	.\OmnicastSvcUsr
🤹 Genetec Omnicast Directory	This service is th		Disabled	.\OmnicastSvcUsr
🤹 Genetec Omnicast Directory Failover Coordinator	Service installed	Started	Automatic	.\OmnicastSvcUsr
🤹 Genetec Omnicast Gateway	Service allowing	Started	Automatic	.\OmnicastSvcUsr
🧠 Genetec Omnicast Virtual Matrix	This service prov	Started	Automatic	.\OmnicastSvcUsr
🥋 Genetec Watchdog	Provides monitor	Started	Automatic	.\OmnicastSvcUsr

- 4) It is possible that the failover server thinks it is the primary. To completely clear the FOS configuration on the failover, do the following:
 - a. Make a backup of both the primary and failover servers using the Omnicast backup tool.
 - b. On the failover server, stop the DFC service.
 - c. Open regedit.
 - d. Export HKEY_LOCAL_MACHINE\SOFTWARE\Genetec to make a backup.
 - e. Rename HKEY_LOCAL_MACHINE\SOFTWARE\Genetec\OmnicastFOS4.x to OmnicastFOS4.xold. Ex: OmnicastFOS4.5old.

www.genetec.com



- f. Start the DFC service.
- g. Open the Watchdog Tray. You should now see 2 DFC services, one in red (stopped) and another in green (running). Right-click on the one in red and select "Remove application" to delete it.



h. Reconfigure the failover server as described in this document and run the DFC Wizard again.

5) Verify that the database on the primary Directory is valid. This can be done by checking the database properties in the Server Admin > Directory > Database > Properties. If it appears that the database on the primary Directory is corrupted, you can restore a backup from the failover Directory.

Genetec Omnicast Server Admi	n		_ = ×
System Action Tools Help			
10/02/2010 1:25:40 AM	CPU Video	Restart	OMNICAST
 System Directory Directory Failover Coordinator Gateway Federation Archiver ACT Extension ACT Extension ACT Extension Genetic Extension Genetic Extension Optelecom-NKF Extension Optelecom-NKF Extension Pelco Extension Verint Extension Ausiliary Archiver Restore Archiver Metadata Engine Virtual Matrix 	General setting: General setting: Directory database Directory database Data Malarm database Data Data Keep hist	Sol Server: Clogging Activity ddress: 230 16 0 1 Port: 4 server: (local)\OMNICAST Image: Clogging Image: C	ve Directory Y Password 7806 7806 9.00.3077.00 SP2 (Express Edition) 4.00 12.0 MB 285 12705 CK

8.3. Status shows "Software Broken"

In the Statistics of the DFC on the Failover Directory server, the Status indicates "Software Broken". This error means that the primary DFC cannot connect to the failover DFC. Verify that failover server is reachable and there is sufficient bandwidth between the servers. Ensure that port 7999 is open.

9. Appendix A: Scenario #3: Global Directories With No Multicast

This scenario is not common but worth mentioning. This scenario has the following requirements:

- 1) Only two servers are involved in the Directory FOS: Primary server and failover server
- 2) Multicast is NOT supported on the network
- 3) Both servers are on a LAN with good network bandwidth (100 Mbps or higher)



Please note that this configuration should NOT be used on large systems where there is a high amount of live viewing. If you are unsure, please contact us or one of our Sales Engineers to discuss this option.

9.1. Configuration on the Primary Server

The configuration on the primary server is the same as in the Simple scenario (refer to section 5.1).

9.2. Configuration on the Failover Local Directory Server

The configuration on the primary server is the same as in the Simple scenario (refer to section 5.2).

9.3. Verifying the Omnicast services in the Config Tool

Please follow the procedure described in section 5.3. However, only the services on the same server as the Gateway will be detected in **Mc**, **Udp**, **Tcp** since multicast should be detected locally on the

server. Services on another server will be detected in **Udp, Tcp** since multicast is not available on the network.

9.4. Running the DFC Wizard

The next step is to run the Directory Failover Configuration (DFC) Wizard to configure the failover list. Please perform the following steps:

- In the Config Tool, go to Tools / Configure Directory Failover. The Directory Failover Configuration Wizard will pop open.
- 2) Uncheck the box "Use default failover configuration".
- 3) Check both servers and make them **Global**. The order of the list is important: the first server in the list is the primary; the second server in the list is the failover or backup.

Dire	ctory Failover Configu	ration Wizard								
		Step #1: Directory failov	ver list							
		Define priority and scope of each Directory								
\$	Directory failover list									
		Directory Failover Coordinat	Global	Local	Local address	Public addr	Port			
		🗹 😭 SUPPORT-VM-5 - Dire	۲	0	SUPPORT-V	10.0.19.183	7999			
	Gateway Connections	C G SUPPORT-VM-6 - Dire	۲	0	SUPPORT-V	10.0 19 184	7999			
	Client Connections								8	
									8	
	Last co	nfiguration update: 29/04/2010	4:30:01 F	'n	Cance	el	< Back		lext >	
	Last co	nfiguration update: 29/04/2010	4:30:01 F	M	Canc	el	< Back		lext >	

- 4) Click Next.
- 5) Step #2 in the DFC Wizard is to configure the Gateway connections. This step will define the order each Gateway will try to connect to the Directory.

From the drop down list, select the primary Gateway. Check only its own Directory as follows:



	iguration wizaru					_	
	Step #2: Gateway Connection	ons					
	Assign a Directory access path	to each gateway					
Jirectory	Current gateway: 🥨 SUPP	ORT-VM-5 - Gatewa	y 🙂				
iallover list	Connections	Local address	Public address	Port			
	SUPPORT-VM-5 - Directory	SUPPORT-VM-5	10 0 19 183	7998			
Sateway	SUPPORT-VM-6 - Gateway	SUPPORT-VM-6	10.0.19.184	5001			
Connections	SUPPORT-VM-6 - Directory	SUPPORT-VM-6	10.0.19.184	7998			
Client					6		
Connections							

6) From the drop down list, select the Gateway on the failover server. Check only its own Directory as follows:

	Assign a Directory access path	to each gateway					
Current gateway: SUPPORT-VM-6 - Gateway failover list							
	Connections	Local address	Public address	Port			
	SUPPORT-VM-6 - Directory	SUPPORT-VM-6	10.0.19.184	7998			
Gateway	SUPPORT-VM-5 - Gateway	SUPPORT-VM-5	10.0.19.183	5001			
Connections	SUPPORT-VM-5 - Directory	SUPPORT-VM-5	10.0.19.183	7998			
Client							
Connections							
						8	
						-	

7) Click Next.

8) Step #3 in the DFC Wizard is to configure the client connection list. Since there are only two Gateways, the alternate connection is always the other Gateway. Just ensure the connection list is similar to the following:

Dire	ctory Failover Confi	guration Wizard							
		Step #3: Client Connections							
	Assign a backup list to each gateway								
~		Current gateway: 🥥 SUPPORT-VM-5 - Gateway 📀							
		Alternate connections	Local address	Public address	Port				
		☑ 🔮 SUPPORT-VM-6 - Gateway	SUPPORT-VM-6	10.0.19.184	5001				
~	Gateway Connections								

Dire	ctory Failover Config	puration Wizard						
		Step #3: Client Connections						
	Assign a backup list to each gateway							
~		Current gateway: 🞯 SUPPORT-VM-6 - Gateway						
		Alternate connections	Local address	Public address	Port			
		🗹 🔮 SUPPORT-VM-5 - Gateway	SUPPORT-VM-5	10.0.19.183	5001			
~	Gateway Connections							

9) Click **Finish**. After clicking this button, the DFC services will restart and the synchronization process will begin.

9.5. Modifying the Gateway on Failover Server

To avoid redirections passing through both Gateways, the Gateway on the failover server needs to be modified so that it only connects to its local Directory. As such, only one Gateway will be online at any one time. The Gateway on the primary server will be online and the Gateway on the failover server will be in red (or offline) most of the time. Only when the failover Directory is started then the Gateway on the failover server will be online.

- 1) On the failover server, open the Server Admin.
- 2) On the Gateway > General, change the Connection Type to "Directory". In the Directory field, leave it blank or put the local IP address:

Ø Genetec Omnicast Server Admin		_ 🗆 ×
System Action Iools Help CPU		•
4/30/2010 11:40:07 AM	Start Stop Restart Undo Apply	OMNICAST
System	🔛 General 🧧 Logging 🔺 Advanced 🛸 IP filtering	
Gener		
- Federation	Connection type: O Directory	
Analainan	Gateway	
Virtual Matrix	Directory:	

3) Once the Gateway is restarted, in the Config Tool, the Gateway on the failover server will be in red which is normal. The Gateway will only be online when in failover mode (i.e. when the failover Directory has started).

🌞 Genetec Omnicast Config Tool						
System Action View Iools Help						
Admin @ SUPPORT-VM-5 CPU IIIII Video UVideo UVideo UVIDEO CONTRACTOR SUPPORT 30/04/2010 11:43:05 AM	-VM-6					
Physical View						
SUPPORT-VM-5	Nar					
- Ga SUPPORT-VM-5 - Directory Failover Coordinator						
SUPPORT-VM-5 - Gateway						
SUPPORT VM 5 Vietual Matrix						
SUPPORT-VM-6 - Gateway						
E SUPPORT-VM-5 - Archiver						
🗉 🧧 support-16 - Archiver						
SUPPORT-VM-6 - Virtual Matrix						
General Support - VM-6 - Directory Failover Coordinator						
SUPPORT-VM-6 - Archiver						