

Installing and configuring Microsoft Lync Server 2013

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Version History

Blockpoint/Version	Date	Contributor	Revision Activity Description
1.0/v.00	01/26/2014	Peter Dorner	Initial Version – AD preparation, SQL
			mirror configuration



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Introduction

The following document is a build out for a hypothetical company called PS-United. The company based in Miami, FL with one single Active Directory Forest along with one subnet and a recently built Exchange 2013. The build out is providing simple HA but no site resiliency. The company recently purchased a PBX which has to be integrated to the new Lync environment in order to use the Lync client for making phone calls.

Lync components

1. Lync Front End Server Pool

One Lync server pool with 2 Front End server will be configured to provide basic failover. The pool will provide the following functionality to the clients:

- User authentication
- Address book service
- Instant Messaging and presence information
- Audio and video conferencing
- Mediation server to provide connection to the existing PBX phone system

2. High Availability

High Availability (HA) is provided within the pool with multiple FE server. In case of a server failure due to the DNS setup and the resilience within the pool users will be connected to the other available server.

3. Lync File Share Server

The Lync File Share is used to generate and publish the Lync address book and store IM attachments. In this case no HA nor disaster recovery will be implemented, however if needed deploying a DFS infrastructure can provide both feature using DFS replication between the member servers.

4. Backend Database Servers

Lync has a requirement for a SQL server to store different databases associated with different Lync services. Lync2013 supports database mirroring for HA. Two servers with the Lync database mirror and a third SQL Witness server is used to provide the same data for both databases. In the event of a database server failure Lync will access to another server.



5. Load Balancing

Load balancing can be provided in two ways. DNS and hardware load balancing. This document does not cover hardware load balancer setup.

6. The following roles will not be used

Lync Edge Server - The purpose of edge server pool is to provide the communication mechanism for instant messaging based communication to public IM providers.

Director - The Director role is required for enhanced security; it provides a role to validate authentication requests within the DMZ for external users. In the event of a denial of service attack, the attack would end at the director role.

Persistent Chat – Persistent chat server enables users to join multiparty, topic based conversations. A separate Persistent chat Front End server runs the service and a Persistent Chat Back End server stores the chat history and chat informations.

DNS Name Resolution

Microsoft Lync has specific DNS requirements, in addition to the standard host A record requirements for individual servers and clusters, additional CNAME and SRV records are required for load balancing and the advertisement of Lync services to the end clients. The DNS configuration is listed later in this document.

Autodiscover

Clients use Autodiscover to find the Lync pool. No SRV record is used for Autodiscover. A DNS A record pointing to the Lync pool will be used.



Initial network configuration:

Server name	Role	IP	Windows Version
		Miami	
LyncDC-MIA-01	DC, GC, DNS, Operations Master	192.168.2.11/24	Windows Server 2008 R2 Enterprise with SP1
LyncDC-MIA-01	DC, GC, DNS	192.168.2.12/24	Windows Server 2008 R2 Enterprise with SP1
LyncCAS-MIA- 01	Exchange 2013 CAS	192.168.2.21/24	Windows Server 2008 R2 Enterprise with SP1
LyncMBX-MIA- 01	Exchange 2013 Mailbox	192.168.2.31/24	Windows Server 2008 R2 Enterprise with SP1
LyncFE-MIA-01	Lync 2013 Enterprise FE server	192.168.2.41/24	Windows Server 2008 R2 Enterprise with SP1
LyncFE-MIA-02	Lync 2013 Enterprise FE server	192.168.2.42/24	Windows Server 2008 R2 Enterprise with SP1
LyncBE-MIA-01	Lync 2013 BE server – SQL 2012 Enterprise	192.168.2.51/24	Windows Server 2008 R2 Enterprise with SP1
LyncBE-MIA-02	Lync 2013 BE server – SQL 2012 Enterprise	192.168.2.52/24	Windows Server 2008 R2 Enterprise with SP1
LyncWN-MIA- 01	Witness server for SQL and FileShare server for Lync – SQL 2012 Express	192.168.2.71/24	Windows Server 2008 R2 Enterprise with SP1
LyncCa-MIA-01	CA server	192.168.2.61/24	Windows Server 2008 R2 Enterprise with SP1

Windows Server 2008 forest and domain functional level Internal domain name: ps-united.com External domain name: ps-united.com Single Tier PKI Infrastructure

External and Internal Exchange FQDNs:

OWA for Miami	Miami.ps-united.com
Autodiscover for Exchange	autodiscover.ps-united.com
Autodiscover for Lync	lyncinternaldiscover.ps-united.com



Prerequsites

For Hyper-V based virtual machines

On the Domain Controllers (DNS servers) for proper DNS resolution you need to run the following commands otherwise the replication will failing between the sites using Hyper-V virtual switches

dnscmd /Config /EnableEDnsProbes 0

On all servers change the Network Card settings under Computer Management and disable the following:

IPv4 Large Send Offload Checksum Offload

Lync Server Prerequisites

- .NET 3.5 Framework
- .NET 4.5 Framework
- Microsoft Silverlight
- •
- Windows Management Framework 3.0
- Windows Identity Foundation 3.0
 - o Front End
 - KB2646886 install after all IIS 7.5 components are installed
 - Persistent chat
 - Microsoft Message Queuing

The following IIS modules are required for the FE and Director servers

- Static content
- Default document
- HTTP errors
- ASP.NET
- .NET extensibility
- Internet Server API (ISAPI) extensions
- ISAPI filters
- HTTP logging
- Logging tools
- Tracing



- Windows authentication
- Request filtering
- Static content compression
- Dynamic content compression
- IIS management console
- IIS management scripts and tools
- Anonymous authentication
- Client certificate mapping authentication

Use the following PowerShell command to install the required IIS modules:

Import-Module ServerManager

Add-WindowsFeature Web-Static-Content, Web-Default-Doc, Web-Http-Errors, Web-Asp-Net, Web-Net-Ext, Web-ISAPI-Ext, Web-ISAPI-Filter, Web-Http-Logging, Web-Log-Libraries, Web-Http-Tracing, Web-Windows-Auth, Web-Filtering, Web-Stat-Compression, Web-Dyn-Compression, Web-Mgmt-Console, Web-Scripting-Tools, Web-Basic-Auth, Web-Client-Auth -Restart

Add the Remote System Administration Tools and the Desktop Experience Windows feature by running the following cmdlets:

Import-Module ServerManager
Add-WindowsFeature RSAT-ADDS, Desktop-Experience

Install the Windows Media Format Runtime

%systemroot%\system32\dism.exe /online /add-package /packagepath:%windir%\servicing\Packages\Microsoft-Windows-Media-Format-Package~31bf3856ad364e35~amd64~~6.1.7601.17514.mum /ignorecheck



Preparing the schema, forest and the domain.

Before you can begin install Lync Server Management Shell by running the Setup.exe from the Lync DVD.

Microsoft Lync Server 2013	×
Lync Server 2013	
Specify the location for the installation files. Any additional Lync Server components that you install w also go to this folder. To install Lync Server 2013, Core Components and start the Deployment Wizard, click Install.	ill
Installation Location:	
C:\Program Files\Microsoft Lync Server 2013 Browse	
Install Cance	

When it finished close the Lync Server Deployment Wizard and open Lync Server Management Shell from the Start Menu

 Default Programs Internet Explorer (64-bit) Internet Explorer Windows Media Player Windows Update 	
Accessories Administrative Tools Maintenance	Documents
Microsoft Lync Server 2013 Lync Server Deployment Wizard Lync Server Management Shell	Computer
🕌 Startup	Control Panel
	Devices and Printers Administrative Tools
	Help and Support
 ▲ Back 	Windows Security
Search programs and files	Log off
NStart 퉳 ⊿ 🚞	



Schema update will running against the holder of the schema master FSMO, the account you use need to be member of the Schema Admin group. You need the Active Directory Domain Service Tools are installed before you begin. Run the following cmdlet from the Lync Shell

```
Schema upgrade - Install-CsAdServerSchema
Forest prep - Enable-CsAdForest
Domain prep - Enable-CsAdDomain
```

You can prepare your domain using the GUI. To do this start the Lync Server Deployment Wizard from Start Menu and select the Prepare Active Directory option. The preparation steps are straight forward using the wizard.

🐻 Lync S	erver 2013 - Deployment Wizard
	Lync Server 2013 Welcome to Lync Server deployment.
Deploy	
	Prepare Active Directory Prepares the Active Directory schema, forest, and domain for Lync Server.

Add the Lync server administrators to the CSAdministrator and RTCUniversalServerAdmins group

	rcies 📫 🖬
General Members	Member Of Managed By UNIX Attributes
Member of:	,
Name	Active Directory Domain Services Folder
CSAdministrator	ps-united.com/Users
RTCUniversalSer	verAdmins ps-united.com/Users
 	•
Add	Bemove
Add	Remove
Add	Remove
Add This list displays on in the Global Catalo	Remove
Add	Remove ly groups from the current domain and groups maintained g, such as universal groups.
Add	Remove ly groups from the current domain and groups maintained ig, such as universal groups.
Add	Remove ly groups from the current domain and groups maintained g, such as universal groups.
Add	Remove ly groups from the current domain and groups maintained g, such as universal groups.
Add	Remove ly groups from the current domain and groups maintained g, such as universal groups. OK Cancel Apply

Lync Server 2013

Verifying the new forest, schema and domain version

To verify the schema update check the **CN=ms-RTC-SIP-SchemaVersion** where the **rangeUpper** value should be 1150 and the **rangeLower** 3 or run the Get-

CsAdServerSchema **cmdlet**

📝 ADSI Edit		
File Action View Help		
🗢 🔿 🖄 🛅 🔀 🖬 🛃		
ADSI Edit Configuration [lyncdc-mia-01.p: CN=Configuration,DC=ps-u Schema [lyncdc-mia-01.ps-unite CN=Schema,CN=Configura	Name CN=ms-RTC-SIP-PoolAddresses CN=ms-RTC-SIP-PoolData CN=ms-RTC-SIP-PoolDisplayName CN=ms-RTC-SIP-PoolFunctionality CN=ms-RTC-SIP-SchemaVersion Properties Attribute Editor Security Attributes:	Acti
	Attribute Value otherWellKnownObje <not set=""> partialAttributeDeletio <not set=""> partialAttributeSet <not set=""> proxiedObjectName <not set=""> proxyAddresses <not set=""> proxyAddresses <not set=""> rangeLower 3 rangeUpper 1150 replPropertyMetaData AttID Ver Loc.USN Org.DSA replUpToDateVector <not set=""> repsFrom <not set=""> repsTo <not set=""> schemaFlagsEx <not set=""> schemaIDGUID b26feee1-7eb9-45f9-a8ec-5b93358944bc</not></not></not></not></not></not></not></not></not></not>	
	OK Cancel Apply Help	

Administrator: Lync Server Management Shell
PS C:\Users\administrator.PS-UNITED> Get-CsAdServerSchema
SCHEMA_VERSION_STATE_CURRENT
PS C:\Users\administrator.PS-UNITED> _____



For forest preparation verification open Active Directory Users and Computers under the Users OU you should security groups starting with CS and RTC. The complete list of the new groups shown the following table

RTC Groups	CS Groups
RTCComponentUniversalServices	CSAdministrator
RTCHSUniversalServices	CSArchivingAdministrator
RTCProxyUniversalServices	CSHelpDesk
RTCSBAUniversalServices	CSLocationAdministrator
RTCUniversalConfigReplicato	CsPersistentChatAdministrator
RTCUniversalGlobalReadOnlyGroup	CSResponseGroupAdministrator
RTCUniversalGlobalWriteGroup	CSResponseGroupManager
RTCUniversalReadOnlyAdmins	CSServerAdministrator
RTCUniversalSBATechnicians	CSUserAdministrator
RTCUniversalServerAdmins	CSViewOnlyAdministrator
RTCUniversalServerReadOnlyGroup	CSVoiceAdministrator
RTCUniversalUserAdmins	
RTCUniversalReadOnlyGroup	

Command-line verification run the Get-CsAdServerSchema cmdlet For more details of the forest preparation run the following

Get-CsAdForest -Report C:\ForestPrep.html

Lync Server 2013 Deployment I	Log		Collapse All Actions
ction	Action Information	Time Logged	Execution Result
Get-CsAdForest			Success
▼ Get Schema State		1/26/2014 12:58:35 PM	Success
L	Major version: 1150	1/26/2014 12:58:36 PM	
L	Minor version: 3	1/26/2014 12:58:36 PM	
L	Server schema version: SCHEMA_VERSION_STATE_CURRENT	1/26/2014 12:58:36 PM	
L	Mode: SCHEMA_VERSION_STATE_CURRENT	1/26/2014 12:58:36 PM	
▼ Get Forest State		1/26/2014 12:58:36 PM	Success
L	Root domain: ps-united.com	1/26/2014 12:58:36 PM	
L	Root domain: ps-united.com	1/26/2014 12:58:36 PM	
L	Filter: (&((ObjectCategory Equal person)(ObjectClass Equal user)(Sid Equal S-1-5-21-4257871460-3253629508-733017674-500)))	1/26/2014 12:58:36 PM	
L	Found	1/26/2014 12:58:36 PM	
L	User: CN=Administrator, CN=Users, DC=ps-united, DC=com	1/26/2014 12:58:36 PM	
L	Group security identifier (SID): S-1-5-21-4257871460-3253629508-733017674-519	1/26/2014 12:58:36 PM	
L	HasToken: True	1/26/2014 12:58:36 PM	
L	Schema type: server	1/26/2014 12:58:37 PM	
L	Check Groups	1/26/2014 12:58:37 PM	
L	Check Group permissions	1/26/2014 12:58:37 PM	
L	Process permissions on "CN=RTCUniversalGlobalReadOnlyGroup,CN=Users,DC=ps-united,DC=com".	1/26/2014 12:58:37 PM	

Domain verification

Get-CsAdDomain -Report "C:\DomainPrepReport.html"



Configuring Back End server for High Availability

The Back End (BE) servers are database servers running Microsoft SQL and hosting the databases for archiving, monitoring and persistent chat. These databases can be collocated, however it's not recommended to share these with other non-Lync databases. The BE servers also serves a backup store for the pool's user and conference data. A single BE server is supported, however SQL failover, HA and/or disaster recover (DR) is recommended. In this case SQL mirroring will provide both the server and database HA. The BE servers don't have any Lync software installed.

Before the installation we create a SQL server service account, this account need to be part of the local administrator group on each SQL server with a strong password which never expires.



Install .NET 3.5 via the Add Features option from Server Manager.



Installing the SQL Servers

SQL Server 2012

Start the installation by selecting the New SQL Server stand-alone installation or add feature to an existing installation option



<Back Next > Cancel

Help



On the next page enter the product key and go Next

Read the License and select Next

Select SQL Feature installation



Select the following features on the features selection page

- Database Engine Services
 - SQL Server Replication
- Reporting Services Native
- Data Quality Client
- SQL Server Data Tools
- Client Tools Connectivity
- Management Tools Basic
 - Management Tools Complete



🚼 SQL Server 2012 Setup _ 🗆 X Feature Selection 🐩 SQL S Select the Enterprise features to install. Plannii Setup Support Rules Features: Feature description: Insta Setup Role The configuration and operation of each instance feature of a SQL Server instance is isolated from other SQL Server Instance Features -Mainte Feature Selection V Database Engine Services SQL Server Replication Tools Installation Rules instances. SQL Server instances can operate side-by-side on the same Instance Configuration Resou Data Quality Services computer. Disk Space Requirements Analysis Services Advan Server Configuration Reporting Services - Native Optior Shared Features Database Engine Configuration Reporting Services - SharePoint -Reporting Services Configuration Reporting Services Add-in for SharePoint Products Prerequisites for selected features: Error Reporting 🔽 Data Quality Client SQL Server Data Tools Installation Configuration Rules Already installed: Microsoft .NET Framework 4.0 Client Tools Connectivity Ready to Install Windows PowerShell 2.0 Installation Progress Microsoft .NET Framework 3.5 🔲 Client Tools Backwards Compatibility Complete Client Tools SDK To be installed from media: Microsoft Visual Studio 2010 Shell Documentation Components Microsoft Visual Studio Tools for Applicatio Management Tools - Basic Management Tools - Complete Distributed Replay Controller - 4 • Select All Shared feature directory: C:\Program Files\Microsoft SQL Server\ Shared feature directory (<u>x</u>86): C:\Program Files (x86)\Microsoft SQL Server\ < <u>B</u>ack $\underline{N}ext >$ Cancel Help SQL Server 2012

Select Next





Select Named Instance on the Instance Configuration page and call it RTC

Plannii Insta Mainte	Setup Support Rules Setup Role Feature Selection	C Default instance C Named instance:	RTC			
Tools Resou Advar	Tools Installation Rules Resou Instance Configuration Advar Disk Space Requirements Option Database Engine Configuration Reporting Services Configuration Error Reporting Installation Configuration Rules Backty to Install	Instance ID: Instance root directory:	RTC C:\Program Fi	les\Microsoft SQL Servei	4	
Optior		SQL Server directory: Reporting Services directory: Installed instances:	C:\Program Fil C:\Program Fil	es\Microsoft SQL Server es\Microsoft SQL Server	\MSSQL11.RTC \MSRS11.RTC	
	Installation Progress Complete	Instance Name Ins	itance ID	Features	Edition	Version

On the summary page select Next





Set the domain account you created for SQL Server Agent, SQL Server Database Engine and SQL Server Reporting Services.

SQL Server 2012 Setup					- 0
Server Configuration					
Specify the service accounts and c	collation configuration.				
Setup Support Rules Setup Role	Service Accounts Collation	a constrate account for each SOI So			
Feature Selection	Service	Account Name	Paceword	Startup Type	_
Instance Configuration	SQL Server Agent	PS-UNITED\sqlservice	*******	Automatic	-
Disk Space Requirements	SQL Server Database Engine	PS-UNITED\sqlservice		Automatic	-
Server Configuration	SOL Server Reporting Services	PS-UNITED\sqlservice		Automatic	-
Database Engine Configuration	SQL Server Browser	NT AUTHORITY/LOCAL SE		Automatic	-
Ready to Install Installation Progress Complete					
	2	< <u>B</u> ack	Next >	Cancel H	lelp



Select **Mixed Mode authentication** and set a password for the SA account. Also here you can add the administrators/administrator group who can manage the SQL Server

Database Engine Confi	iguration	
Specify Database Engine authentic	cation security mode, administrators and data directories.	
ietup Support Rules Product Key icense Terms ietup Role Peature Selection Installation Rules Instance Configuration Disk Space Requirements ierver Configuration Database Engine Configuration Configuration Rules Ready to Install Installation Progress Complete	Server Configuration Data Directories User Instances FILESTRE/ Specify the authentication mode and administrators for the Databas Authentication Mode Image: Configuration Mode Windows authentication mode Mixed Mode (SQL Server authentication and Windows authentic Specify the password for the SQL Server system administrator (sa) Enter password: Confirm password: Specify SQL Server administrators Specify SQL Server administrators Specify SQL Server administrators PS-UNITED\Domain Admins (Domain Admins) Add Current User Add Remove 	AM ase Engine. :ation)) account. SQL Server administrators have unrestricted access to the Database Engine.

On the Data Directories tab set the Database locations, in this case lave the defaults.

Setup Support Rules Setup Role reature Selection Installation Rules Instance Configuration Disk Space Requirements Server Configuration Database Engine Configuration Error Reporting Installation Configuration Rules Ready to Install Installation Progress Complete	Server Configuration Data Dir Data root directory: System database directory: User database log directory: Temp DB directory: Temp DB directory: Backyp directory:	ectories FILESTREAM C:IProgram Files/Microsoft SQL Server/ C:IProgram Files/Microsoft SQL Server/MSSQL11.RTC/MSSQLIData C:IProgram Files/Microsoft SQL Server/MSSQL11.RTC/MSSQLIData	
--	--	---	--



Select **Install Only** for the Reporting services we will configure it later when all SQL Servers are installed.



Select Next and Next on the following two pages





Start the installation of the SQL Server

😭 SQL Server 2012 Setup		
Ready to Install Verify the SQL Server 2012 feature	ires to be installed.	
Setup Support Rules Setup Role Peature Selection Installation Rules Instance Configuration Disk Space Requirements Server Configuration Database Engine Configuration Reporting Services Configuration Error Reporting Installation Configuration Rules Ready to Install Installation Progress Complete	Ready to install SQL Server 2012: Summary Edition: Enterprise Action: Install Prerequisites Already installed: Microsoft .NET Framework 4.0 Windows PowerShell 2.0 To be installed from media: Microsoft Visual Studio 2010 Shell Microsoft Visual Studio 2010 Shell Microsoft Visual Studio Tools for Applications 3.0 General Configuration Peatures Database Engine Services SQL Server Replication Reporting Services - SQL Server Data Tools Client Tools Connectivity Management Tools - Complete Instance Configuration Instance Name: RTC Instance ID: RTC Configuration File path:	

Repeat steps above to install the second SQL Server



Installing SQL Witness server

Install SQL Server as you did for the BE server I highlight only the differences or you can install SQL Express version as we only use this for witness and need only the database engine, the witness server will not use and of the features of a Standard/Enterprise version.

🚼 SQL Server 2012 Setup		
Feature Selection Select the Express features to in	stall.	
Setup Support Rules Product Key License Terms Setup Role Feature Selection Installation Rules Instance Configuration Disk Space Requirements Server Configuration Database Engine Configuration Error Reporting Installation Configuration Rules Ready to Install Installation Progress Complete	Eeatures:	Feature description: The configuration and operation of each instance feature of a SQL Server instance is isolated from other SQL Server instances. SQL Server instances. SQL Server instances can operate side-by-side on the same computer. Prerequisites for selected features: Already installed: Microsoft .NET Framework 4.0 Windows PowerShell 2.0 Microsoft .NET Framework 3.5 To be installed from media: Microsoft Visual Studio 2010 Shell
	Select All Unselect All Shared feature directory: C:\Program Files\Microsoft SQL S Shared feature directory (x86): C:\Program Files (x86)\Microsoft SQL S	Server\
	<u></u>	tk <u>N</u> ext > Cancel Help

Install only the Database Engine and the Management Tools



User the Default Instance

🎲 SQL Server 2012 Setup					_ 🗆 ×
Instance Configuration	on				
Specify the name and instance	ID for the instance of SQL Se	rver. Instance ID b	ecomes part of the insta	lation path.	
Setup Support Rules Product Key License Terms	 Default instance Named instance: 	MSSQLSERVER			
Setup Role Feature Selection Installation Rules	Instance ID:	MSSQLSERVER			
Instance Configuration Disk Space Requirements	Instance root directory:	C:\Program Files\I	Microsoft SQL Server\		
Server Configuration Database Engine Configuration Error Reporting	SQL Server directory: Installed instances:	C:\Program Files\I	Microsoft SQL Server\MS:	5QL11.MSSQLSERVER	
Installation Configuration Rules Ready to Install Installation Progress Complete	Instance Name	Instance ID	Features	Edition	Version
			< Back	Next >	Cancel Help

Use the **default accounts** and finish the installation.





C 2 (1)	Name *	Date modified	Type	Size	
Favorites E Desktop Downloads Recent Places	inetpub inetpub PerfLogs Program Files Program Files (x86)	1/25/2014 10:42 PM 7/13/2009 11:20 PM 1/25/2014 10:58 PM 1/25/2014 10:58 PM	File folder File folder File folder File folder	Jico -	
Upraries Documents Music Fictures Videos	Users Windows LyncSQLWitness	1/25/2014 10:21 PM 1/25/2014 10:58 PM 1/25/2014 10:57 PM	File folder File folder File folder		
Computer	General Sharing Network File an Not S Not S Network Path: Not Shared	s Properties Security Previous Versions Advan I Folder Sharing QLWitness hared 56 s	Share this folder ttings Share name: LyncSQLWitness		
	Advanced Share	ng L Inissions, create multiple shares, cong options.	Add <u>Remove</u> Limit the number of simulta Comments:	neous users to:	16777: +
LyncSQLWitn File folder	ess Date modified: 1		Permissions Cach	ing Cancel	Apply

Create a share called LyncSQLWitness that SQL will use

Give Everyone full control as a share permission we will restrict access through the NTFS permissions

K Everyone		
	Add	<u>R</u> emove
ermissions for Everyone	Allow	Deny
Full Control Change Read		



Add the two BE SQL Server with Full Control on the NTFS Permission (Security) tab

General Sharing Security Previous	Versions Custo	x mize
Permissions for LyncSQLWitne	255	1
Security		
UDbject name: C:\LyncSQLWitne	\$\$	
Group or user pames:		
CHEATON OWNER SYSTEM Administrators (LYNCWN-MIA- LYNCBE-MIA-01 (PS-UNITED LYNCBE-MIA-02 (PS-UNITED Sers (LYNCWN-MIA-01\Use	-01 VAdministrators VLYNCBE-MIA-0 VLYNCBE-MIA-0; rs)	;) 1 \$) 2\$)
	2023	
	Add	<u>R</u> emove
Permissions for LYNCBE-MIA-01	A <u>d</u> d	<u>R</u> emove
Permissions for LYNCBE-MIA-01 Full control Modify Read & execute List folder contents Read	A <u>d</u> d Allow V V V V	Remove
Permissions for LYNCBE-MIA-01 Full control Modify Read & execute List folder contents Read	Add Allow V V V V V V M	Remove



Configuring SQL for Lync 2013 deployment

Configuring Windows Firewall

We need to configure the built-in Windows firewall so the SQL cluster can communicate with each other and with the witness. Run the following PowerShell commands on all SQL server including the witness or use the GUI to configure the firewall.

Server2008 R2

netsh advfirewall firewall add rule name="Allow inbound SQL Server" dir=in action=allow protocol=TCP LocalPort=1433 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Administrator Connection" dir=in action=allow protocol=UDP LocalPort=1434 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Administrator Connection" dir=in action=allow protocol=TCP LocalPort=1434 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Server Broker" dir=in action=allow protocol=TCP LocalPort=4022 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Server RPC" dir=in action=allow protocol=TCP LocalPort=135 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Server Analysis" dir=in action=allow protocol=TCP LocalPort=2383 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Server Browser" dir=in action=allow protocol=TCP LocalPort=2382 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Server Mirroring01" dir=in action=allow protocol=TCP LocalPort=5022 RemoteIP=localsubnet

netsh advfirewall firewall add rule name="Allow inbound SQL Server Mirroring02" dir=in action=allow protocol=TCP LocalPort=7022 RemoteIP=localsubnet

Lync Server 2013

netsh advfirewall firewall add rule name="Allow Inbound SQL HTTP" dir=in action=allow protocol=tcp localport=80 remoteip=192.168.2.0/24

netsh advfirewall firewall add rule name="Allow Inbound SQL HTTPS" dir=in action=allow protocol=tcp localport=443 remoteip=192.168.2.0/24

netsh advfirewall firewall add rule name="Allow Inbound SQL Server Program" dir=in action=allow program="C:\Program Files\Microsoft SQL Server\MSSQL11.RTC\MSSQL\Binn\sqlservr.exe" remoteip=localsubnet

Windows Firewall with Advar	nced Security			
<u>File Action View H</u> elp				
🐤 🐟 🖄 📅 🗟 🛛 🕞				
Windows Firewall with Advanced	Inbound Rules			
Inbound Rules	Name	Group 🔺	Profile	Enablec 🔺
Connection Security Rules	Mallow inbound SQL Administrator Connection		All	Yes
	Allow inbound SQL Administrator Connection		All	Yes
a sa nonconing	Allow Inbound SQL HTTP		All	Yes
	Allow Inbound SQL HTTPS		All	Yes
	🛛 🕢 Allow inbound SQL Server		All	Yes
	Allow inbound SQL Server Analysis		All	Yes
	🖉 Allow inbound SQL Server Broker		All	Yes
	Allow inbound SQL Server Browser		All	Yes
	Allow inbound SQL Server Mirroring01		All	Yes
	Allow inbound SQL Server Mirroring02		All	Yes
	🛛 🕢 Allow Inbound SQL Server Program		All	Yes
	Allow inbound SQL Server RPC		All	Yes

Enable the predefined rules listed below

- File and Printer Sharing (NB-Datagram-In)
- File and Printer Sharing (NB-Name-In)
- File and Printer Sharing (NB-Session-In)
- File and Printer Sharing (SMB-In)

File and Printer Sharing (NB-Datagram-In)
 File and Printer Sharing (NB-Name-In)
 File and Printer Sharing (NB-Session-In)
 File and Printer Sharing (SMB-In)

- Remote Administration (NP-In)
- Remote Administration (RPC)
- Remote Administration (RPC-EPMAP)

File and Printer Sharing File and Printer Sharing File and Printer Sharing File and Printer Sharing



- Windows Management Instrumentation (ASync-In)
- Windows Management Instrumentation (DCOM-In)
- Windows Management Instrumentation (WMI-In)

Windows Server 2012

New-NetFirewallRule -DisplayName "Allow Inbound SQL Server" -Direction Inbound -Protocol TCP -LocalPort 1433 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Administrator Connection" -Direction Inbound -Protocol UDP -LocalPort 1434 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Administrator Connection" -Direction Inbound -Protocol TCP -LocalPort 1434 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Server Broker" -Direction Inbound -Protocol TCP -LocalPort 4022 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Server RPC" -Direction Inbound -Protocol TCP -LocalPort 135 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Server Analysis" -Direction Inbound -Protocol TCP -LocalPort 2383 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Server Browser" -Direction Inbound -Protocol TCP -LocalPort 2382 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Server Mirroring01" -Direction Inbound -Protocol TCP -LocalPort 5022 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow inbound SQL Server Mirroring02" -Direction Inbound -Protocol TCP -LocalPort 7022 -RemoteAddress LocalSubnet -Action Allow

New-NetFirewallRule -DisplayName "Allow Inbound SQL HTTP" -Direction Inbound -Protocol TCP -LocalPort 80 -RemoteAddress 192.168.2.0/24 -Action Allow



New-NetFirewallRule -DisplayName "Allow Inbound SQL HTTPS" -Direction Inbound -Protocol TCP -LocalPort 443 -RemoteAddress 192.168.2.0/24 -Action Allow

New-NetFirewallRule -DisplayName "Allow Inbound SQL Server Program" -Direction Inbound -Program "C:\ProgramFiles\Microsoft SQL Server\MSSQL11.RTC\MSSQL\Binn\sqlservr.exe" -RemoteAddress LocalSubnet -Action Allow

Enable the following pre-defined rules

- File and Printer Sharing (NB-Datagram-In)
- File and Printer Sharing (NB-Name-In)
- File and Printer Sharing (NB-Session-In)
- File and Printer Sharing (SMB-In)
- Inbound Rule for Remote Shutdown (TCP-In)
- Inbound Rule for Remote Shutdown (RPC-EP-In)



Configuring the Reporting Services

The following steps need to be done on both BE server.

Start the Reporting Services Configuration Manager from the Start Menu and select the **Web Service URL** option to configure the web access using IP 192.168.2.51. If a certificate is installed you can select to use and encrypt the communication

Reporting Services Configuration	Manager: LYNCBE-MIA-01\RTC		
SQL Server 2012	figuration Manager		
Reporting services con			
Pronnect	Web Service URL		
UNCBE-MIA-01\RTC			
💐 Service Account	instance, or to specify	to access the Report Server. Click Advanced to define multiple t additional parameters on the URL.	JRLs for a single Report Server
🦽 Web Service URL	Report Server Web Servic press the Apply button, els	e is not configured. Default values have been provided to you. To se change them and then press Apply.	o accept these defaults simply
🔰 Database	Virtual Directory:	a Directory ReportServer_RTC	
Report Manager URL	Report Server Web Service Site i	dentification	
🚖 E-mail Settings	IP Address:	192.168.2.51	
Execution Account	SSL Certificate:	(Not Selected)	
Recryption Keys	SSL Port:		Advanced
📩 Scale-out Deployment	-Report Server Web Service URLs		
	URLs:	http://192.168.2.51:80/ReportServer_RTC	
	Results		
			Сору
0			Apply Exit



Go to the database tab and select Change Database

Reporting Services Configuration	Manager: LYNCBE-MIA-01\RTC
SQL Server 2012	
Reporting Services Con	figuration Manager
🕎 Connect	Report Server Database
EVNCBE-MIA-01\RTC	
Service Account	Reporting Services stores all report server content and application data in a database. Use this page to create or change the report server database or update database connection credentials.
🧦 Web Service URL	Current Report Server Database
🚺 Database	Click Change database to select a different database or create a new database in native or SharePoint integrated mode.
Report Manager URL	SQL Server Name: Database Name: Report Server Mode:
🚖 E-mail Settings	Change Database
Execution Account	Current Report Server Database Credential
🔏 Encryption Keys	The following credentials are used by the report server to connect to the report server database. Use the options below to choose a different account or update a password.
u [™] a Scale-out Deployment	Credential: Login:
	Password:
	Results
	Сору
0	Apply Exit



Select Create a new report server database

Connect	Report Server Database Cor Change Database Choose whether to create or o	nfiguration Wizard	create or
Web Service URL Database Capacity Manager I Capacity Constraints Capaci	Action Database Server Database Credentials Summary Progress and Finish	Select one of the following options to create an empty report server database or select an existing report server database that has content you want to use. Select a task from the following list: Create a new report server database. Choose an existing report server database.	Change Database
	0	Previous Next Cancel	Сору

Leave the default and test connection

'hange Database 'haase whether to create r	n configure a report server database			
shouse whether to create t	or configure a report server database.			
Action	Choose a local or remote instance of a	SQL Server Database Engine and specify		
Database Server	credentials that have permission to connect to that server.			
Database				
Credentials	Connect to the Database Server:			
Summary	Server Name:			
^p rogress and Finish	Server Name.			
	Authentication Type:	Current User - Integrated Security		
	Username:	PS-UNITED\Administrator		
	Password:			
		Test Connection		



If it fails

Action	Choose a local or remote instance of a SQL Server Database Engine and specify
)atabase Server	credentials that have permission to connect to that server.
Credentials Summary Progress and Finish	Could not connect to server: A network-related or instance-specific error occurred while establishing a connection to SQL Server. The server was not found or was not accessible. Verify that the instance name is correct and that SQL Server is configured to allow remote connections. (provider: Named Pipes Provider, error: 40 - Could not open a connection to SQL Server)
	Connection

Make sure you opened the firewall and check that Named pipes are enabled under the SQL Server Configuration Manager

	ŕ	-	1
SQL Server Configuration Manager (Local)	Protocol Name	Status	
SQL Server Services	Grant Shared Memory	Enabled	
SQL Server Network Configuration (32bit)	Named Pipes	Enabled	
SQL Server Network Configuration	TCP/IP	Enabled	
SQL Native Client 11.0 Configuration	Pipes Properties		? ×
Proto	icol		
	General		
	inabled	Yes	-
F	Pipe Name	\\.\pipe\MSSQL	\$RTC\sql\query
	bled		
End	bled ble or disable Named Pip	ies protocol for this server in	nstance.
Ena	ibled ble or disable Named Pip	es protocol for this server in Cancel Ap	nstance Help



Check the TCP/IP port settings

s and becoment for our and on manager of OCAL	Protocol Name	Statuc
SOL Server Services	Shared Memory	Epabled
SQL Server Network Configuration (32bit)	Named Pines	Enabled
SQL Native Client 11.0 Configuration (32bit)	TCP/IP	Enabled
🖳 SQL Server Network Configuration		
Reprotocols for RTC	IP Properties	
SQL Native Client 11.0 Configuration Pro	tocol IP Addresses	
	TCB Durania Darka	
	TCP Dynamic Ports	
P	TOF	
	Active	Ves
	Enabled	Yes
	IP Address	fe80::5efe:192.168.2.51%13
	TCP Dynamic Ports	0
	TCP Port	
	IP6	
	Active	Yes
	Enabled	Yes
	IP Address	fe80::100:7f:fffe%11
	TCP Dynamic Ports	0
	TCP Port	
	IPAII ICB Dura antia Dauba	60222
	TCP Dynamic Ports	1433
	TCF FUIL	1455

Leave the Database name and service credentials default

Report Server Database I	Configuration Wizard	8	Report Server Database	Configuration Wizard
Change Database Choose whether to create	or configure a report server database.		Change Database Choose whether to create	or configure a report server database.
Action Database Server Database	Enter a database name, select the language to use for running SQL scripts, and specify whether to create the database in native or SharePoint mode.		Action d Database Server Database	Specify the credentials of an existing account that the report server will use to connect to the report server database. Permission to access the report server database will be automatically granted to the account you specify.
Credentials Summary Progress and Finish	Database Name: Tenp Database Name: Language: Report Server Mode:	ReportServerTemp English (United States)	Credentials Summary Progress and Finish	Credentials: Authentication Type: Service Credentials User name: PS-UNITED/aglservice Password:
0		Previous Next Cancel		Previous Next Cancel



Check the settings on the summary page and select Next

Change Database			
Choose whether to create	or configure a report server database.		
Action	The following information will be use	ed to create a new report server datab	ase. Verřu this
)atabase Server	information is correct before you con	tinue.	
Database	276-370 APA		
Credentials	SQL Server Instance:	LYNCBE-MIA-01	
C. 1999 201	Report Server Database:	ReportServer	
Summary	Temp Database:	ReportServerTempDB	
Progress and Finish	Report Server Language:	English (United States)	
	Report Server Mode:	Native	
	Authentication Type:	Service Account:	
	Username:	PS-UNITED\sqlservice	
	Password:	*******	
0		Previous	Cancel



When the configuration finished go to the Report Manager URL and Apply the settings

¥ Connect	Report Manager URL
LYNCBE-MIA-01\RTC	Configure a URL to access Report Manager. Click Advanced to define multiple URLs, or to specify additional parameters
Service Account	on the URL.
🧀 Web Service URL	The Report Manager virtual directory name is not configured. To configure the directory, enter a name or use the default valu that is provided, and then click Apply.
📙 Database	Report Manager Site Identification
Report Manager URL	Virtual Directory: Reports_RTC
🚖 E-mail Settings	URLs: http://192.168.2.51:80/Reports_RTC Advanced
Execution Account	
🧏 Encryption Keys	
📲 Scale-out Deployment	
	4
	Results

Check the web services configuration by opening the link on the Report Manager URL page. The SQL Server Reporting Home Services webpage should pop-up.





Configuring Lync File store

In this scenario we configure only a single file share, the configuration is the same on a DFS environment. The holder of this file share will be the SQL Witness server because there is no load in our test environment that would require a separate dedicated server.

Create a folder called LyncFileStore then share it. Give Full control for the following groups using the Security tab.

- RTCComponentUniversalService
- RTCHSUniversalServices
- RTCUniversalConfigReplicator
- RTCUniversalServerAdmin

L VDC	plestore yncFileStore Properties	1726721114	HIE	rold			
Ge	eneral Sharing Security Previous V	ersions 🗍 Customize	e)				
C	Permissions for LyncFileStore	2	×	1			
G	Security						
Γ	Object name: C:\LyncFileStore						
	Group or user names:						
	Administrators (LYNCW/N-MI4	-01\Administrators]					
L	& RTCComponentUniversalSer	vices (PS-UNITED)	RTCCom				
T	RTCHSUniversalServices (P	RTCHSUniversalServices (PS-UNITED\RTCHSUniversalS					
E	💀 RTCUniversalConfigReplicate	RTCUniversalConfigReplicator (PS-UNITED\RTCUniversa					
0	RTCUniversalServerAdmins (PS-UNITED\RTCL	JniversalSe 🚽				
	Ĩ						
-		A <u>d</u> d	<u>R</u> emove	ŀ			
n	Permissions for RTCComponentUniversalService:	Allow	Deny				
	Full control			Ŀ			
L	Modify	$\mathbf{\nabla}$					
F	Read & execute	\checkmark					
	List folder contents						
Ŀ	Read						
-	Learn about access control and p	ermissions					
	OK	Cancel	Apply				



Useful Links

- Lync 2013 planning tool <u>http://www.microsoft.com/en-us/download/details.aspx?id=36823</u>
- Lync 2013 Capacity Calculator <u>http://www.microsoft.com/en-us/download/details.aspx?id=36828</u>
- Lync 2013 Resource Kit http://www.microsoft.com/en-us/download/details.aspx?id=36821
- Lync 2013 Pre-Call diagnostic Tools <u>http://www.microsoft.com/en-us/download/details.aspx?id=40733</u>
- Lync 2013 Debugging Tools <u>http://www.microsoft.com/en-us/download/details.aspx?id=35453</u>
- Lync 2013 Poster <u>http://www.microsoft.com/en-us/download/details.aspx?id=39968</u>

References

- Microsoft TechNet <u>http://technet.microsoft.com/en-us/library/gg398616.aspx</u>
- TechNet blog
 <u>http://blogs.technet.com</u>
- TechNet Wiki <u>http://social.technet.microsoft.com/wiki</u>
- Mastering Microsoft Lync Server 2013 by Keith Hanna and Nathan Winters <u>http://www.amazon.com/Mastering-Microsoft-Lync-Server-2013/dp/1118521323</u>
- Getting Started with Microsoft Lync Server 2013 by Fabrizio Volpe <u>http://www.packtpub.com/getting-started-with-microsoft-lync-server-2013/book</u>