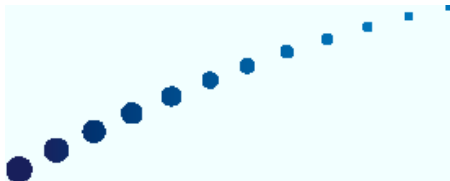




# Deployment Guide

Citrix NetScaler for  
Microsoft Lync



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# Introduction

Citrix® NetScaler® optimizes the delivery of Web applications—increasing security, improving performance, and expanding Web server capacity. This approach ensures the best total cost of ownership (TCO), security, availability, and performance for Web applications. The Citrix NetScaler solution is a comprehensive network system that combines high-speed load balancing and content switching with state-of-the-art application acceleration, layer 4-7 traffic management, data compression, dynamic content caching, SSL acceleration, network optimization, and robust application security to provide a single, tightly integrated solution. Deployed in front of application servers, the NetScaler significantly reduces processing overhead on application and database servers, resulting in reduced hardware and bandwidth costs.

There are several ways to configure the NetScaler to load balance the Microsoft Lync servers. NetScalers can be configured through their GUI configuration utility or through the CLI. This guide describes both scenarios, using the Lync Server 2010 as an example. Microsoft Lync 2010 has Standard and Enterprise Editions available. However, the Enterprise Edition is the one that requires a hardware load balancer at the front end of a large deployment with multiple servers in order to scale to the maximum number of users for the Enterprise customers. For large-scale deployments,

NetScaler will front end the Lync servers with Virtual IP addresses and balance the load across the Lync server pool. After Lync clients register on an active directory or Enterprise pool, the client traffic is bound to an Lync-specific server through the NetScaler. Each Lync server within the Enterprise pool directory handles the server applications, security, authentication, and connection and protocol processing. The SQL database in the back end handles the persistent data, such as contact lists and Access Control Lists. Therefore, the same client can be processed by any Lync server in the pool at any given time.

# Solution Requirements

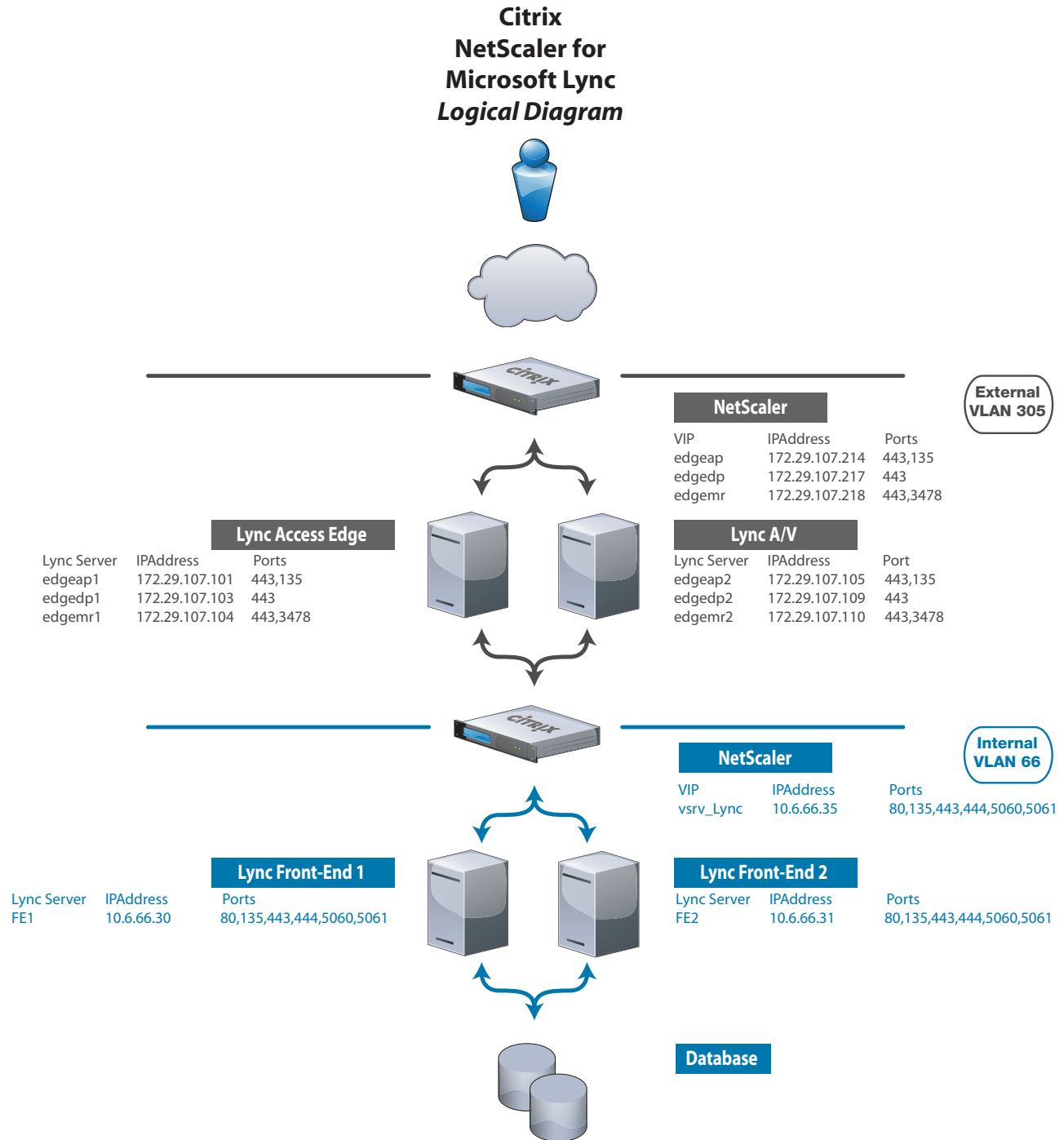
- Load Balanced Microsoft Lync server environment

## Prerequisites

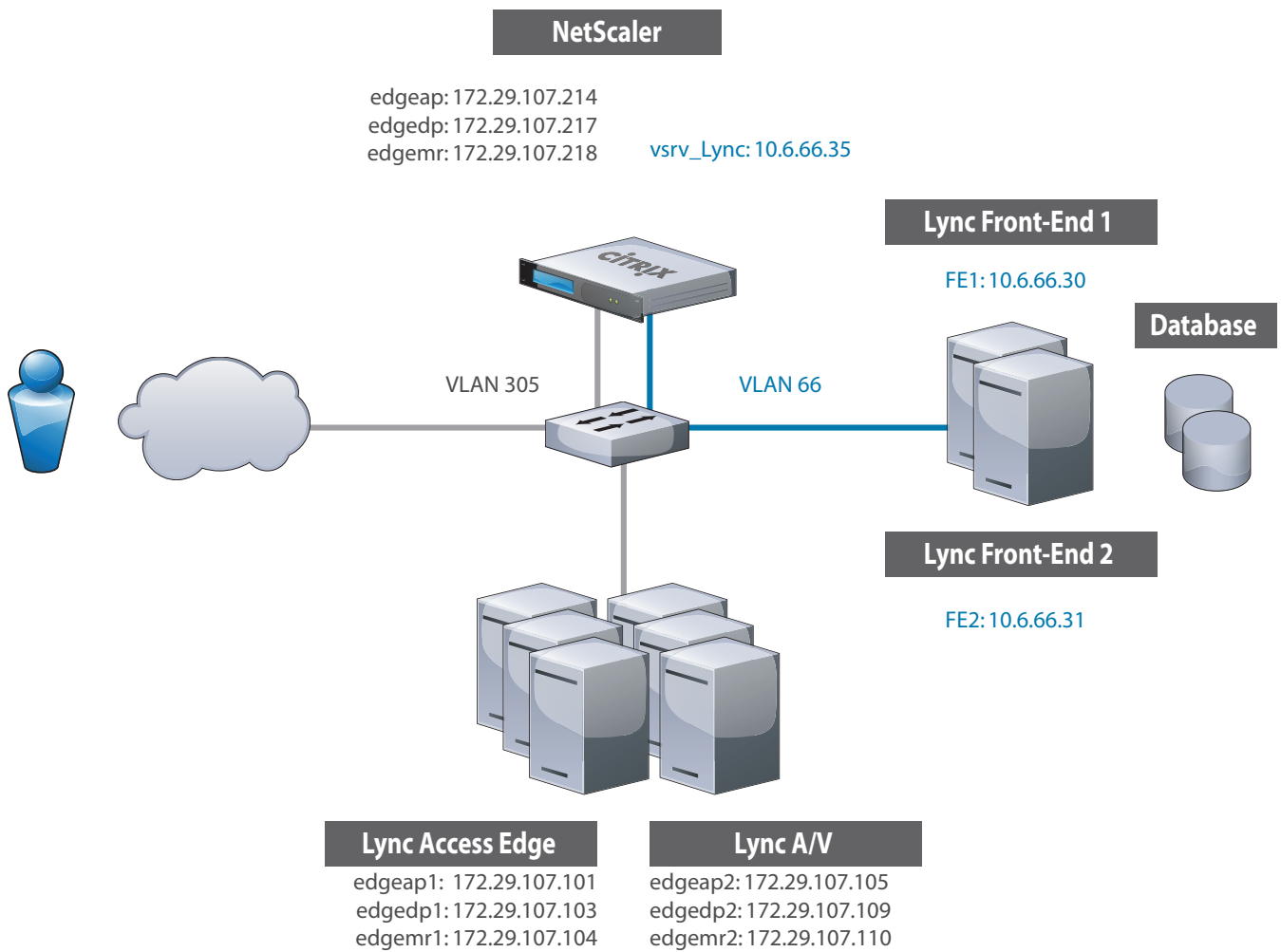
- NetScaler v9.2+ (Quantity 2 for High Availability)
- Microsoft Lync Server 2010

# Network Diagram

The following is the Network that was used to develop this deployment guide.



## Citrix NetScaler for Microsoft Lync Physical Diagram



# Networking

## Add Subnet IPs

Create a certificate request on the NetScaler, and we will submit it to the Windows Certificate Authority to issue a certificate.

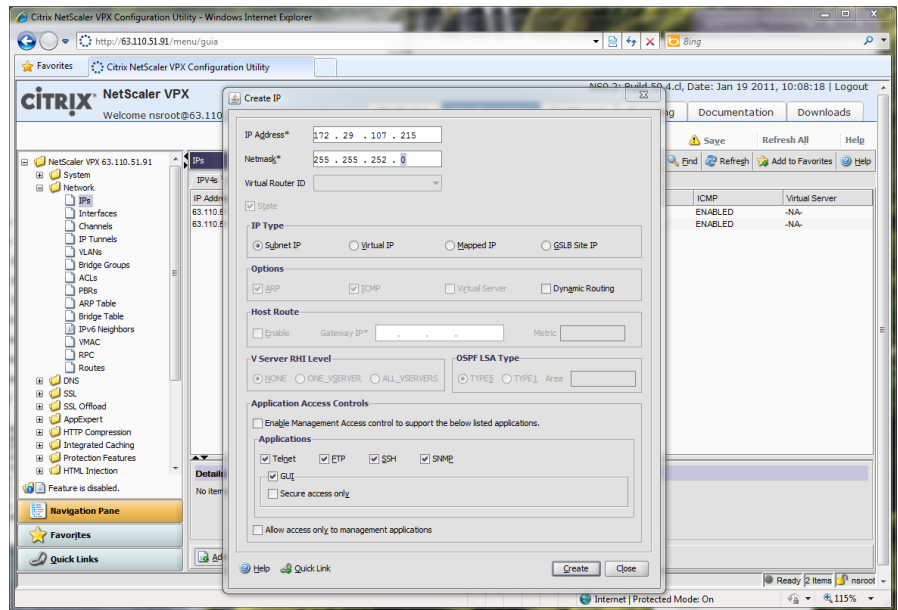
### Connect to NetScaler:

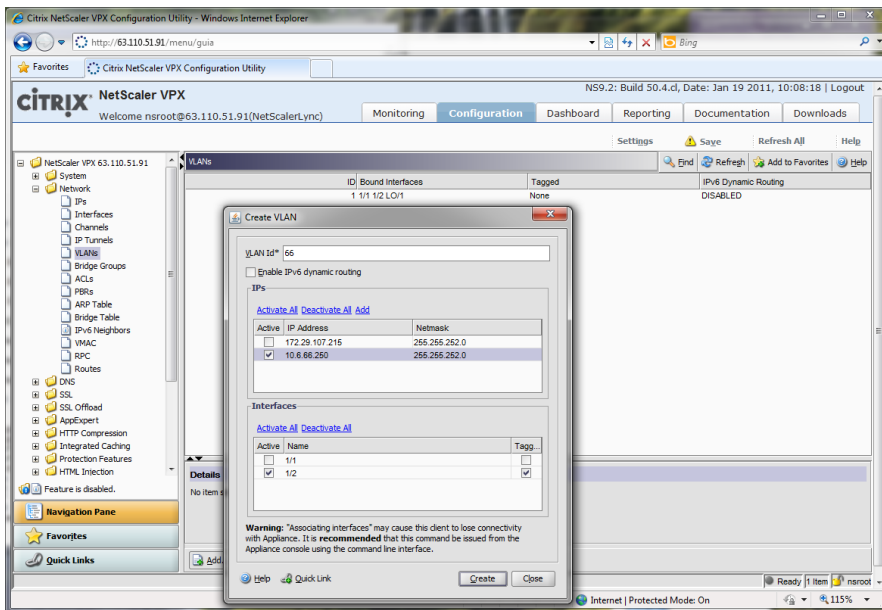
Network -> IPs.

Add.

In this example we are adding two Subnet IP addresses. The 172 address will be bound to VLAN 1, while the 10 address will be bound to VLAN 66.

Subnet IPs are used as the Source IP Address when routing packets that leave the NetScaler.





### Add VLANs:

Navigate to Network -> VLANs.

Add VLAN 66.

We will bind the Subnet IP Address 10.6.66.250 to VLAN 66. This is equivalent to a VLAN IP Address, but is also used as the Source IP for routing packets from the NetScaler.

### Using the Command Line Interface:

At the NetScaler command prompt, type:

```
set ns hostName nslync
add ns ip 63.110.51.88 255.255.255.0 -vServer DISABLED
add ns ip 172.29.107.215 255.255.252.0 -vServer DISABLED
add ns ip 10.6.66.250 255.255.255.0 -vServer DISABLED
add vlan 66
bind vlan 66 -IPAddress 10.6.66.250 255.255.255.0
```

# Load Balancing

## Add Custom Availability Monitors

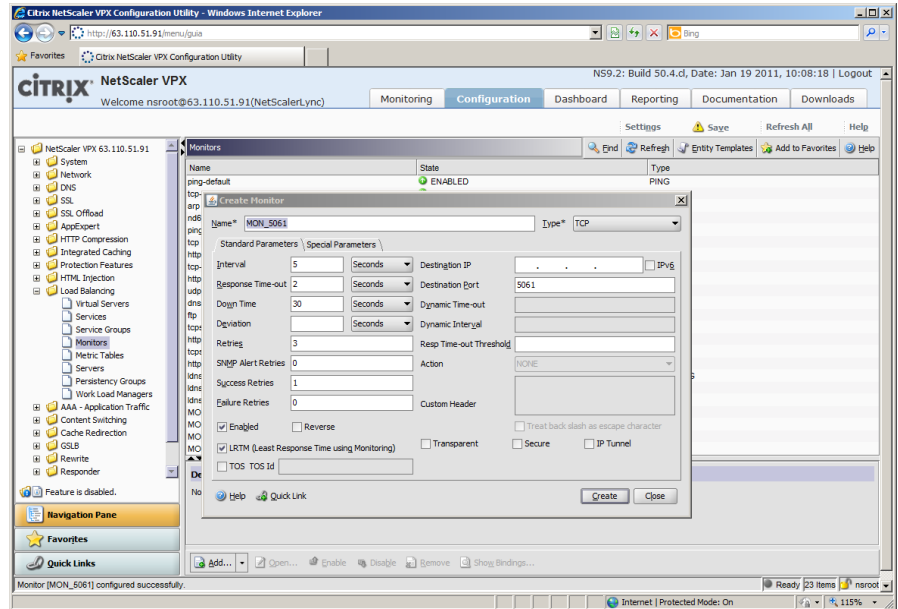
### Add Monitors:

These are the monitors that will determine the uptime of the Microsoft Lync Servers.

In the NetScaler GUI, navigate to Load Balancing -> Monitors -> Add.

For this example:

Monitor	Port
MON_80	TCP 80
MON_443	TCP 443
MON_5060	TCP 5060
MON_5061	TCP_5061



### Using the Command Line Interface:

At the NetScaler command prompt, type:

```
add lb monitor MON_5061 TCP -LRTM ENABLED -destPort 5061
-secure YES

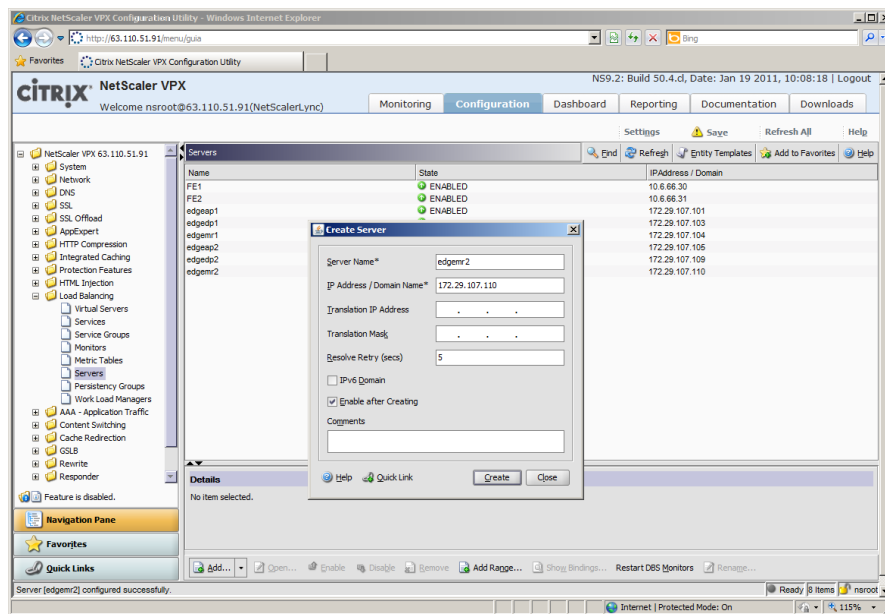
add lb monitor MON_5060 TCP -LRTM ENABLED -destPort 5060

add lb monitor MON_80 TCP -LRTM ENABLED -destPort 80

add lb monitor MON_443 TCP -LRTM ENABLED -destPort 443

save config
```

## Add Lync Servers to be Load Balanced



### Add Servers:

These are the Microsoft Lync Servers that the NetScaler will Load Balance.

In the NetScaler GUI, navigate to Load Balancing -> Servers -> Add.

For this example:

Server	IP Address
FE1	10.6.6.30
FE2	10.6.66.31
edgeap1	172.29.107.101
edgedp1	172.29.107.103
edgemr1	172.29.107.104
edgeap2	172.29.107.105
edgedp2	172.29.107.109
edgemr2	172.29.107.110

## Using the Command Line Interface:

At the NetScaler command prompt, type:

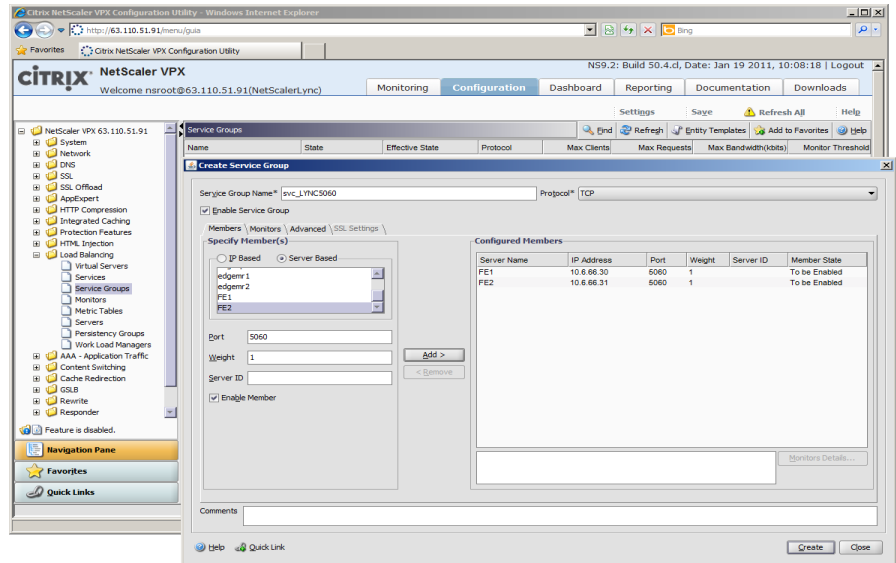
```
add server FE1 10.6.66.30
add server FE2 10.6.66.31
add server edgeap1 172.29.107.101
add server edgedp1 172.29.107.103
add server edgemr1 172.29.107.104
add server edgeap2 172.29.107.105
add server edgedp2 172.29.107.109
add server edgemr2 172.29.107.110
save config
```

## Create Load Balancing Service Groups

### Add Load Balancing Service Groups:

This is where the Load Balancing algorithm and policies are defined.

In the NetScaler GUI, navigate to Load Balancing -> Service Groups -> Add.



Service Group	Protocol	Lync Server	Port
svc_LYNC5060	TCP	FE1 FE2	5060 5060
svc_LYNC5061	TCP	FE1 FE2	5061 5061
svc_LYNC135	TCP	FE1 FE2	135 135
svc_LYNC444	TCP	FE1 FE2	444 444
svc_LYNC443	SSL_BRIDGE	FE1 FE2	443 443
svc_LYNC80	TCP	FE1 FE2	80 80
svc_LYNCEdgeap	SSL_BRIDGE	edgeap1 edgeap2	443 443
svc_LYNCEdgedp	SSL_BRIDGE	edgedp1 edgedp2	443 443
svc_LYNCEdgemr	SSL_BRIDGE	edgemr1 edgemr2	443 443
svc_LYNCEdgeap1135	TCP	edgeap1 edgeap2	135 135



```

bind serviceGroup svc_LYNC443 FE2 443
bind serviceGroup svc_LYNC80 FE1 80
bind serviceGroup svc_LYNC80 FE2 80
bind serviceGroup svc_LYNCedgeap edgeap1 443
bind serviceGroup svc_LYNCedgeap edgeap2 443
bind serviceGroup svc_LYNCedgedp edgesp1 443
bind serviceGroup svc_LYNCedgedp edgedp2 443
bind serviceGroup svc_LYNCedgemr edgemr1 443
bind serviceGroup svc_LYNCedgemr edgemr2 443
bind serviceGroup svc_LYNCedgeap135 edgeap1 135
bind serviceGroup svc_LYNCedgeap135 edgeap2 135
save config

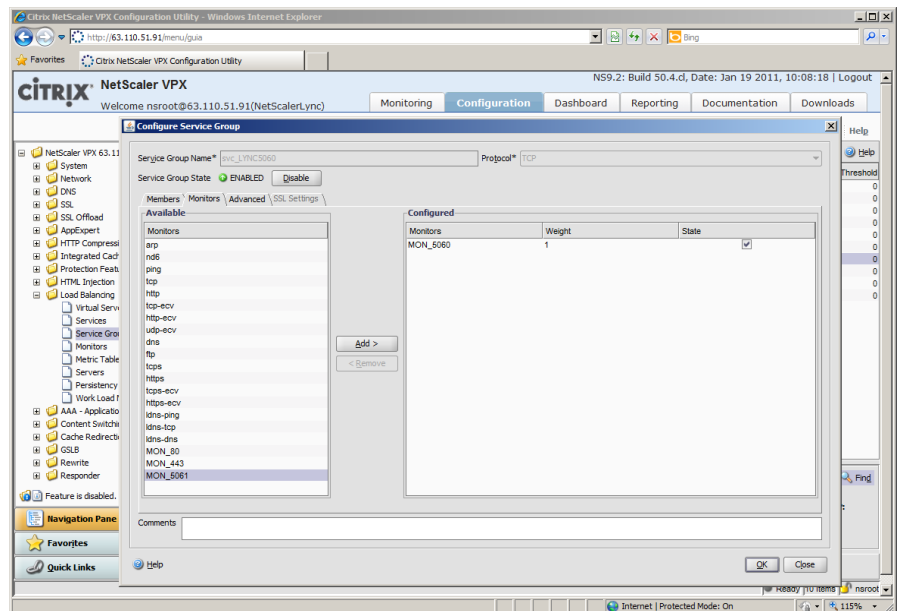
```

### Bind Monitors to Service Groups:

In the NetScaler GUI, navigate to Load Balancing -> Service Groups -> Open ->.

Select the Monitors tab, and assign the server monitor.

### Bind Availability Monitors



Service Group	Monitor
svc_LYNC5060	MON_5060
svc_LYNC5061	MON_5061
svc_LYNC135	MON_5061
svc_LYNC444	MON_5061
svc_LYNC443	MON_443
svc_LYNC80	MON_80
svc_LYNCEdgeap	MON_443
svc_LYNCEgedp	MON_443
svc_LYNCEgedmr	MON_443
svc_LYNCEdgeap1135	MON_5061

### Bind Monitors:

These are the Monitors that will poll the Microsoft Lync servers to determine if they are up and running - for high availability.

### Using the Command Line Interface:

At the NetScaler command prompt, type:

```
bind lb monitor MON_5060 svc_LYNC5060
bind lb monitor MON_5061 svc_LYNC5061
bind lb monitor MON_5061 svc_LYNC135
bind lb monitor MON_5061 svc_LYNC443
bind lb monitor MON_80 svc_LYNC80
bind lb monitor MON_443 svc_LYNCEdgeap
bind lb monitor MON_443 svc_LYNCEgedp
bind lb monitor MON_443 svc_LYNCEgedmr
bind lb monitor MON_443 svc_LYNCEdgeap135
```

## Add Load Balancing Virtual Servers:

These are the Virtual Servers that end-users will connect to. These IP Addresses should be resolvable by DNS.

In the NetScaler GUI, navigate to Load Balancing -> Virtual Servers -> Add.

Enter each virtual server name and VIP - Virtual IP Address, protocol and port number.

## Create Virtual Servers

**Create Virtual Server (Load Balancing)**

Name\*: vsrv\_LYNC135  IP Address Based  IP Pattern Based

Protocol\*: TCP IP Address\*: 10 . 6 . 66 . 35  IPv6

Network VServer Range: 1 Port\*: 135

Directly Addressable  State

Services \ Service Groups \ Policies \ Method and Persistence \ Advanced \ SSL Settings

[Activate All](#) [Deactivate All](#)

Active	Service Group Name	Protocol
<input type="checkbox"/>	svc_LYNC5060	TCP
<input type="checkbox"/>	svc_LYNC5061	TCP
<input checked="" type="checkbox"/>	svc_LYNC135	TCP
<input type="checkbox"/>	svc_LYNC444	TCP
<input type="checkbox"/>	svc_LYNC80	TCP
<input type="checkbox"/>	svc_LYNCEdgeap135	TCP

Comments:

On the advanced tab, enter 1200 seconds for the Client-Timeout. This value should be at least the same or equal timeout value set in Microsoft Lync.

**Create Virtual Server (Load Balancing)**

Name\*: vsrv\_LYNC135  IP Address Based  IP Pattern Based

Protocol\*: TCP IP Address\*: 10 . 6 . 66 . 35  IPv6

Network VServer Range: 1 Port\*: 135

Directly Addressable  State

Services \ Service Groups \ Policies \ Method and Persistence \ Advanced \ SSL Settings

Redirect URL:  Client Time-out(secs): 1200

Backup Virtual Server:

VServer IP Port Insertion: OFF

Redirection Mode:  IP Based  MAC Based  IP Tunnel Based  TOS Based TOS Id:

**Spillover**

Method: NONE Threshold:

Persistence Persistence Time-out (min): 2

Cache Redirection  PQ  SC  Sessionless Connection Failover: DISABLED

Redirect Port Rewrite  Down state flush  RTSP Natting  Disable Primary When Down

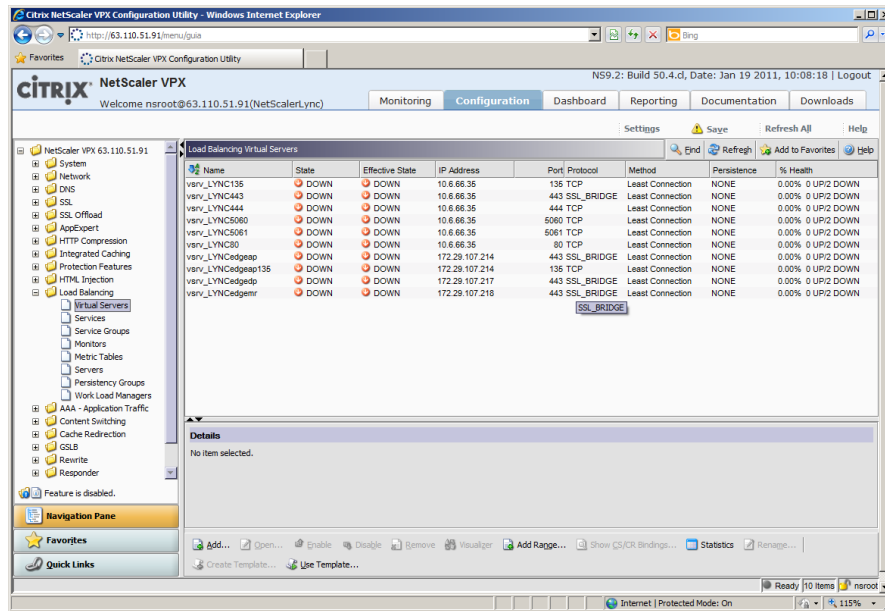
► Push

► Listen Policy

► Authentication Settings

► Profiles

Comments:



### Virtual Servers:

When finished the Virtual Servers should match the screenshot and table below.

Virtual Server	IP Address	Protocol	Port	Service Group	Persistence	Client Timeout
vsrv_LYNC135	10.6.66.35	TCP	135	svc_LYNC135	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNC444	10.6.66.35	TCP	444	svc_LYNC444	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNC5060	10.6.66.35	TCP	5060	svc_LYNC5060	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNC5061	10.6.66.35	TCP	5061	svc_LYNC5061	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNC443	10.6.66.35	SSL_BRIDGE	443	svc_LYNC443	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNC80	10.6.66.35	TCP	80	svc_LYNC80	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNCEdgeap	172.29.107.214	SSL_BRIDGE	443	svc_LYNCEdgeap	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNCEdgedp	172.29.107.217	SSL_BRIDGE	443	svc_LYNCEdgedp	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNCEdgemr	172.29.107.218	SSL_BRIDGE	443	svc_LYNCEdgemr	Source IP -or- Cookie Insert	1200 secs
vsrv_LYNCEdge135	172.29.107.214	TCP	135	svc_LYNCEdgeap135	Source IP -or- Cookie Insert	1200 secs

## Using the Command Line Interface:

At the NetScaler command prompt, type:

```

add lb vserver vsrv_LYNC135 TCP 10.6.66.35 135 -persistenceType SOURCEIP -cltTimeout 1200
add lb vserver vsrv_LYNC444 TCP 10.6.66.35 444 -persistenceType SOURCEIP -cltTimeout 1200
add lb vserver vsrv_LYNC5060 TCP 10.6.66.35 5060 -persistenceType SOURCEIP -cltTimeout 1200
add lb vserver vsrv_LYNC5061 TCP 10.6.66.35 5061 -persistenceType SOURCEIP -timeout 22 -cltTimeout 1200
add lb vserver vsrv_LYNC443 SSL_BRIDGE 10.6.66.35 443 -persistenceType SOURCEIP -cltTimeout 1800
add lb vserver vsrv_LYNC80 TCP 10.6.66.35 80 -persistenceType NONE -state DISABLED -cltTimeout 9000
add lb vserver vsrv_LYNCEdgeap SSL_BRIDGE 172.29.107.214 443 -persistenceType SOURCEIP -cltTimeout 1200
add lb vserver vsrv_LYNCEgedp SSL_BRIDGE 172.29.107.217 443 -persistenceType SOURCEIP -cltTimeout 1200
add lb vserver vsrv_LYNCEgemr SSL_BRIDGE 172.29.107.218 443 -persistenceType SOURCEIP -cltTimeout 1200
add lb vserver vsrv_LYNCEdgeap135 TCP 172.29.107.214 135 -persistenceType SOURCEIP -cltTimeout 1200
bind lb vserver vsrv_LYNC5060 svc_LYNC5060
bind lb vserver vsrv_LYNC5061 svc_LYNC5061
bind lb vserver vsrv_LYNC135 svc_LYNC135
bind lb vserver vsrv_LYNC444 svc_LYNC444
bind lb vserver vsrv_LYNC443 svc_LYNC443
bind lb vserver vsrv_LYNC80 svc_LYNC80
bind lb vserver vsrv_LYNCEdge-ap-443 svc_LYNCEdgeap
bind lb vserver vsrv_LYNCEdge-dp-443 svc_LYNCEgedp
bind lb vserver vsrv_LYNCEdge-mr-443 svc_LYNCEgemr
bind lb vserver vsrv_LYNCEdge-ap-135 svc_LYNCEdgeap135

```



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