



Deployment Guide for Microsoft Exchange 2010

Securing and Accelerating Microsoft Exchange with Palo Alto Networks Next-Generation Firewall and Citrix NetScaler Joint Solution





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1. Overview

Business productivity hinges on providing users of IT resources secure access to the right applications and the right content – on demand. Enterprise IT strategies are rapidly evolving to support a world in which any user can safely access any application or data, using any device, from any location.

One of the biggest impediments in achieving this degree of flexibility is the enterprise network. Legacy networks were built to provide highly reliable connectivity between users, hosts, and networks, but with no awareness or context of application-layer traffic. This inherently limits the ability of the network to deliver to users the secure and transparent access to apps, data and virtual desktops they need to be productive, and to protect the organization from attack. What is required is a new approach – a next-generation cloud network that safely enables applications with the best-in-class performance and availability.

Palo Alto Networks and Citrix have come together to deliver best-in-class functionality upon which enterprises can build next-generation cloud networks. In addition to sharing a common vision of which networks must evolve, each company is delivering best-in-class solutions that already meet these requirements.

1.1 Best-in-Class Solution for Microsoft Exchange 2010

Citrix® NetScaler® and Palo Alto Networks take a best-in-class approach to optimizing and securing applications. This approach ensures the best total cost of ownership (TCO), security, availability, and performance for enterprise applications. The combined solution is a comprehensive network system that takes the best of high-speed load balancing, content switching, state-of-the-art application acceleration, layer 4-7 traffic management, data compression, dynamic content caching, SSL acceleration, network optimization, deep packet inspection, and next-generation network security to provide a robust, tightly integrated solution. Deployed in front of application servers, the NetScaler and Palo Alto Networks firewalls significantly reduce processing overhead on application and database servers and improves security

The purpose of this guide is to help organizations deploy NetScaler and Palo Alto Networks nextgeneration firewalls for securing and load balancing Microsoft® Exchange 2010 Client Access servers. Inside this guide you will find a concise set of step-by-step deployment instructions required to configure both devices to accelerate and safely enable a Microsoft Exchange 2010 OWA application.

Within the Exchange 2010 server architecture, a NetScaler and next generation firewall is located in front of the Client Access Servers (CAS) with one single Virtual IP (VIP) address. The next-generation firewall secures the CAS systems and the NetScaler provides load balancing and traffic optimization. Exchange client traffic is bound to a Client Access Server through NetScaler. Each CAS system within the server pool handles the server applications, security, authentication, and connection and protocol processing. The Mailbox server at the back end handles the mailbox data, such as mail and contacts.

For readers less familiar with the architecture of Exchange 2010, Microsoft provides a useful overview at <u>http://technet.microsoft.com/en-us/video/microsoft-exchange-server-2010-architecture.aspx.</u>

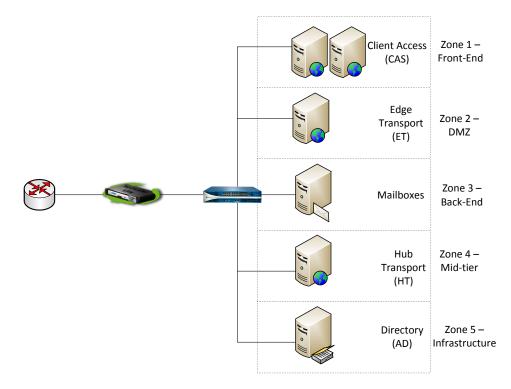


2. Requirements

Required Component	Used in this Document	Note
Citrix NetScaler	NS 10.0 VPX Build 69.4.nc with	
	Platinum License	
Palo Alto Networks Next-	PAN-OS 4.1	
Generation Firewall		
Microsoft Exchange 2010 Servers	6 Physical/VM servers	2x CAS (Web); 1x Edge
		Transport; 1x Mailboxes; 1x
		Hub Transport; 1x AD
AppExpert Microsoft Outlook Web	Template File	http://community.citrix.com/do
Access Template		wnload/attachments/49186776
		/OWA.xml
	Deployment File	http://community.citrix.com/do
		wnload/attachments/49186776
		/OWA_deployment.xml

3. Microsoft Exchange Server Network Topology

3.1 Environment diagram



3.2 IP allocations

Functional Device	IP:Port	Subnet Mask
NetScaler IP (NSIP)	10.5.172.124	255.255.255.0
NetScaler Subnet IP (SNIP)	10.5.172.126	255.255.255.0
Exchange OWA (VIP) – Web	10.5.172.165:443	255.255.255.0
Exchange OA (VIP) – Outlook	10.5.172.165:443	255.255.255.0
Exchange AS (VIP) – Mobile	10.5.172.165:443	255.255.255.0
Exchange IMAP4 – IMAP Client	10.5.172.165:993	255.255.255.0
Exchange POP3 – POP Client	10.5.172.165:995	255.255.255.0
Exchange SMAP Relay	10.5.172.166:25	255.255.255.0
Exchange CAS Server 1	10.5.172.160	255.255.255.0
Exchange CAS Server 2	10.5.172.161	255.255.255.0
Exchange ET Server	10.5.172.162	255.255.255.0
Exchange Mailbox Server	10.5.172.163	255.255.255.0
Exchange HT Server	10.5.172.164	255.255.255.0
Active Directory Server	10.5.172.155	255.255.255.0

4. Microsoft Exchange Installation and Configurations

The configuration of Citrix NetScaler for Microsoft Exchange 2010 is made up of 5 key steps:

- 1. Setup the underlying network
- 2. License the system
- 3. Configure the policies for Microsoft Exchange 2010
- 4. Setup SSL
- 5. Setup which servers will receive traffic from the NetScaler

The third step in particular is noteworthy.Traditionally, there are numerous policies that must be configured to correctly enable all of the features for optimal traffic management for Microsoft Exchange. Everything from traffic switching to optimization is affected in this step. With Citrix NetScaler, we are able to leverage the AppExpert AppTemplate for Microsoft Exchange 2010 which provides a single configuration file to load in order to get all of the correct settings configured. For additional AppExpert Templates for other applications, visit http://community.citrix.com/display/ns/AppExpert+Templates.

The AppExpert Templates published by Citrix do not contain certain application- and custom environment-specific parameter settings. Elements which are not predefined include IP addresses, number of servers, SSL parameters and others. Since the AppExpert Template for Exchange 2010 only supports Microsoft Outlook Web Access (OWA), there will be separate steps to manually configure the rest of Exchange services such as Outlook Anywhere (OA, i.e., Outlook client), ActiveSync (AS, i.e., mobile client), IMAP4, POP3 and external SMTP relay services. The following steps guide where and how each custom data will be added.



4.1 NetScaler Configuration

During the installation and configuration process, from the main NetScaler screen, administrators will be able to navigate the menu (in red) panel to configure application-specific parameters or to confirm the data already populated by the template.

tScaler VPX (1000)			Host Name 10.5.172.124(ns10)	Version NS10.0: Build 69.4.nc, Date: Jul 14 2012, 07:21:20	o nsroot Logout Ci
Dashboard Configuration	Reporting				Documentation Downli
System	NetScaler System In	formation			Refresh Help
Network	System Information	System Sessions			
Cloud Bridge	System Information				
DNS		System IP	10.5.172.124		
SSL		Netmask	255.255.255.0		
		Number of Mapped IP(s)			
SSL Offload		Node	Standalone		
AppExpert		Time Zone	Coordinated Universal Time		
HTTP Compression			Tue, 11 Sep 2012 09:14:55 UTC		
Integrated Caching			Mon, 10 Sep 2012 16:32:18 UTC Mon, 10 Sep 2012 16:43:42 UTC		
Protection Features	Hardware Information		Mon, 10 Sep 2012 10/45/42 Dire		
EdgeSight Monitoring		Platform	NetScaler Virtual Appliance 450010		
Load Balancing		Manufactured on	9/30/2009		
		CPU	2799 MHZ		
AAA - Application Traffic		Host Id	000c29a05c0a		
Content Switching		Serial no	HE2H81UJ47		
Cache Redirection		Encoded serial no	891e0000cb254307ee9a		
GSLB					
Rewrite					
Responder					
Access Gateway					
Web Interface			ne management		
Application Firewall	Setup Wizard Upgrade	Wizard Reboot Statistic	Call-Home		

The table below summarizes the specific menu and actions within NetScaler which need to be configured properly in order to complete the Exchange configuration:

Service	NetScaler Menu	NetScaler Sub- Menu	Action	Comment
All	System	Licenses	Manage Licenses	Custom added*
		Settings	Configure basic features	Custom added*
All	Network	IPs	NetScaler IP, Subnet IP	Custom added*
			Virtual IP	Auto added **
All	SSL	Certificate	Root-CA, Server	Custom added*
All	SSL Offload	Servers	Per VM/Physical Server	Auto added
		Service Group	Per Port	Auto added
		Virtual Servers	VIP per Port	Auto added
OWA	AppExpert	Applications	Import	Custom added*
			Configure Public	Custom



			Endpoints	added*
			Configure Backend Services	Custom added*
OWA	Load Balancing	Servers	Per VM/Physical Server	Auto added
		Service Groups	Per Port	Auto added
IMAP4	Load Balancing	Service Groups	Per Port	Custom added*
		Virtual Servers	VIP per Port	Custom added*
		Servers	Per VM/Physical Server	Auto added
POP3	Load Balancing	Service Groups	Per Port	Custom added*
		Virtual Servers	VIP per Port	Custom added*
		Servers	Per VM/Physical Server	Auto added
SMTP	Load Balancing	Service Groups	Per Port	Custom added*
		Virtual Servers	VIP per Port	Custom added*
		Servers	Per VM/Physical Server	Auto added
OWA	Content Switching	Virtual Servers	Per VM/Physical Server	Auto added
OA/AS	AppExpert	Applications	Service confirmation	Auto added***

* Please refer below 4.2 Step-by-step Installation for custom environment setup

** Auto added – The data will be populated automatically when the template is installed and 'Custom added' data is added (Please do not modify manually 'Auto added' data)

*** Auto added – The Exchange environment in this deployment doc shares the same CAS servers for OA/AS services with OWA, and sharing same port numbers. Therefore, no additional service configuration is required.

4.2 Step -by-Step Installation

The following steps are required to get the downloaded Exchange AppExpert template installed and operational.

Step	Action	Detail	Custom Data
1	NetScaler IP, Subnet IP	NetScaler initial Configuration	NetScaler IP (NSIP), Subnet
		(by Setup Wizard)	IP (SNIP)
2	Manage Licenses	NetScaler license installation	.lic license file
3	Configure basic	NetScaler basic feature settings	Feature settings
	features		
4	Import	Template Import	Template, Deployment files
			(XML format)
5	Root-CA, Server	Security Certificate Installation	
6	Configure Public	Creating virtual servers (IP) to	OWA Virtual IP (VIP)
	Endpoints	talk to multiple backend servers	
7	Configure Backend	Creating a Service Group	IPs for Web Server 1 and
	Services		Web Server 2
8	Per Port, VIP/Port	IMAP4 Service Installation	IMAP4 port



9	Per Port, VIP/Port	POP3 Service Installation	POP3 port
10	Per Port, VIP/Port	SMTP Service Installation	SMTP VIP and Port
11	Service confirmation	OA/AS service confirmation	OWA data

5. Deployment Instructions

This section will describe details of the NetScaler VPX installation and initial configuration, Exchange AppExpert template download, and full SharePoint service configuration within NetScaler.

Administrators can use the NetScaler command-line to set up the initial NSIP, Mapped IP (MIP), and Subnet IP (SNIP). Administrators can also configure advanced network settings and change the time zone.

For information about MIP, SNIP, other NetScaler-owned IP addresses, and network settings, see the "*Citrix NetScaler Networking Guide*" at <u>http://support.citrix.com/article/CTX132369</u>.

5.I.I Add NSIP, Subnet Mask, and Default Gateway on NetScaler:

At the Console prompt from XenCenter or vSphere client, enter the NSIP address, subnet mask, and then save the configuration. Use either the SSH client or the NetScaler VPX Console to access the NetScaler command line to complete initial configuration with default gateway.

> add route 0.0.0.0 0.0.0.0 <gateway ip>

> show route

> save ns config

5.1.2 NetScaler Configuration by Using the Configuration Utility

Once the network connectivity to NetScaler is established, the Configuration Utility can be accessed from a browser to complete the rest of the Microsoft Exchange configuration. Connect to NetScaler on a web browser: <u>http://<NSIP_address</u>. In Start in, select Configuration, and then click Login. Setup Wizard should start up automatically. Otherwise, Setup Wizard can be started from menu under Netscaler>System Information:



CİTRİX.

Dashboard Configuration	1 000	orting			Documentation Download
Dashboard Configuration	кер	orting			Documentation Download
* System		NetScaler System Information			Refresh Help Sa
Network		System Information System Ses	sions		
Cloud Bridge		System Information			
DNS		System I	P 10.	5.172.124	
⊕ SSL		Netmas	k 25	5.255.255.0	
SSL Official		Number of Mapped IP(s			
		Nod		indalone	
AppExpert		Time Zon		ordinated Universal Time	
HTTP Compression		System Tim Last Config Changed Tim		u, 6 Sep 2012 14:51:03 UTC	
Integrated Caching				u, 6 Sep 2012 14:52:10 UTC u, 6 Sep 2012 14:26:26 UTC	
Protection Features		Hardware Information	e 10	, 0 Sep 2012 192020 010	
EdgeSight Monitoring		Platform	n Ne	tScaler Virtual Appliance 450010	
* Load Balancing	-0-1	Manufactured o	n 9/3	80/2009	
-		CP	J 27	99 MHZ	
AAA - Application Traffic		Host I	d 00	0c29a05c0a	
* Content Switching		Serial n	o HE	2H81UJ47	
Cache Redirection		Encoded serial n	o 89	1e0000cb254307ee9a	
GSLB					
* Rewrite					
* Responder					
* Access Gateway					
* Web Interface					
Application Firewall					

5.1.3 Setup Wizard

Setup Wizard		×
Introduction Welcome to the Setup Config	uration Wizard.	CITRIX
Introduction Network Config Choose Application Summary	This wizard is designed to help you set up the initial configuration. To continue, click Nest.	
	IL	< <u>B</u> ack <u>Next</u> Close

Click **Next** to follow the instructions. Confirm the pre-populated **NSIP**, **Netmask** and **Gateway** addresses.



Setup Wizard	×
	at is used for all management related access to the system. Mapped IP Address (MIP) and Subnet IP c client when communicating with a configured server. Default Gateway IP Address corresponds to the CITRUX net.
✓ Introduction Network Config Choose Application Summary	System Configuration IP Address IM - 5 . 172 . 124 Netmask 255 . 255 . 0 Gate ₂₀₀ y* 10 . 5 . 172 . 1 Host Name* net0

Choose Subnet IP (SNIP) to add SNIP address and its subnet mask (Netmask) and Click Next.

Setup Wizard	×
	nat is used for all management related access to the system. Mapped IP Address (MIP) and Subnet IP e client when communicating with a configured server. Default Gateway IP Address corresponds to the bnet.
✓ Introduction Network Config Choose Application Summary	System Configuration IP Address 10.5.122.124 Netmask 255.255.0 Gategay* 10.5.172.1 Host Name* ns10 MIP / SNIP Configuration Note 0 MIP and 1 SNIP configured. O Magned IP Is journet IP IP Address 10.5.122.126 Netmask 255.255.255.0
	< <u>B</u> ack Next> Close

Choose Skip this Step for now. AppExpert Template can be added in another step.

Setup Wizard	
Choose Application You can choose to configure an ap	plication through AppExpert Template or Load Balancing for Citrix XenApp or Citrix XenDesktop.
Introduction Vetwork Config Choose Application Summary	Configure application from AppExpert Template SharePoint_2010 Upload template file from local system Deployment File* C:\Users\albert\Desktop\SharePoint_2010_deployment.xml @B Browse (Loca) . Constitutioning for Citrix XenDesktop Loag Balancing for Citrix XenDesktop Skip this step
	< Back Next > Close



5.2 NetScaler License installation

Proper licenses are required in order to enable necessary services for the Exchange configuration. Refer to the *"Citrix NetScaler VPX Licensing Guide"* at <u>http://support.citrix.com/article/CTX122426</u>.

Dashboard Configuration	Reporting				Documentation	Dow	nioads
= System	NetScaler System Licenses				Refresh	Help	Save
Licenses	Web Logg	ing 🥪	Content Filtering	4			
Settings	Surge Protect	tion 🥪	Integrated Caching	4			
Diagnostics	Load Balanc	ing 🥪	Access Gateway	4			
High Availability	Content Switch	ning 🥪	Maximum Access Gateway Users Allowed	15			
NTP Servers	Maximum ICA Users Allow	wed 0	Cache Redirection	4			
Groups	Authentication, Authorization and Audit	ting 🥪	Sure Connect	4			
Users	OSPF Rout	ting 🥪	HTTP Compression	4			
Database Users	RIP Rout	ting 🥪	BGP Routing	4			
Command Policies	E Priority Queu	ing 🥪	Rewrite	~			
Reports Profiles	SSL Offload	ling 🥪	IPv6 Protocol Translation	4			
Cluster	Global Server Load Balance	ing 🥪	Application Firewall	~			
Authentication	GSLB Proxim	nity 🥪	Responder	4			
Auditing	DoS Protect	tion 🖌	EdgeSight Monitoring (HTML Injection)	4			
AppFlow	Dynamic Rout	ting 🥪	NetScaler Push	4			
* SNMP	Mode	ID 1000	Web Interface	4			
	AppF	low 🥪	Cloud Bridge	4			
Network	ISIS Rout	ting 🖌	Clustering	-			
Cloud Bridge	Callho	ome -					
DNS							
SSL							
SSL Offload							
AppExpert							
HTTP Compression							
Integrated Caching							
Protection Features	Manage Licenses						

Click Manage License to install the downloaded license.

FID	_3f70.lic <u>A</u> dd
	Remove
	Le la
lick here to request f	or licenses.



5.3 NetScaler Basic Feature Setting

5.3.1 Systems Settings

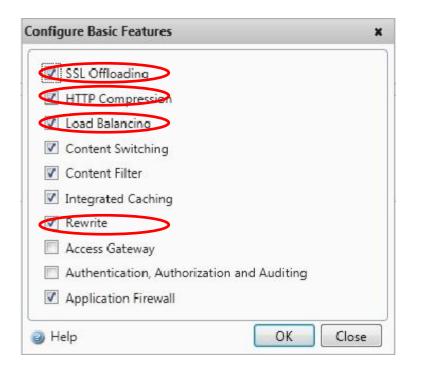
Once a proper license is installed, administrator can select the available features to enable them from **Systems>Settings**. Choose **Configure basic features**.

NetScaler VPX (1000)		Host Name Version 10.5.172.124 NS10.0: Build 69.4.nc, Date: Jul 14 2012, 07:21:20	User Instoot Logout CITRIX
Dashboard Configuration	Reporting		Documentation Downloads
System Ucenses Settings Disprostics High Availability NT Servers Groups Users Database Users Command Bolicies Reports Profiles Command Bolicies Reports Profiles Authentication Auditing Appliow SNMP	NetScaler System Settings Mode and Features Configuration features Configuration Summary Image: System Group Image: System Group	Settings Ownge global system settings Ownge HVDP parameters Ownge HVDP parameters Ownge Dipmater parameters Ownge Encryption parameters Ownge Encryption parameters Ownge timecont values	Refresh Help Save
Network			
Cloud Bridge			
DNS			
* SSL			
🛞 SSL Offload			
AppExpert			
HTTP Compression			
* Protection Features			

5.3.2 Basic Features

The following services are the minimal services required in order to enable and complete the Exchange configuration.





5.4 NetScaler AppExpert Outlook Web Access Template Install

AppExpert Outlook Web Access template can be imported under **AppExpert** navigation panel then choose **Import AppExpert Template**.

NetScaler VPX (1000)	Host Name 10.5.172.12		User nsroot Logout CITRIX
Dashboard Configuration Reporting			Documentation Downloads
System NetScaler AppExpe	ert		Refresh Help Save
Network			
Cloud Bridge Import App			
DNS Download	Appexpert lemplates		
* SSL		Limit Identifiers	
SSL Offload Use sys.htt	ours tp_callout operator in advanced policy expressions, to invoke the HTTP Service C m other features.		to invoke the Rate based policy feature from
AppExpert	in other reasoned.	SUICE CONTER	
Templates HTTP Callouts Pattern Sets Configurat 31 Appl	ess Gateway Applications 1P Callout erm Sets a Set		
HTTP Compression			
Integrated Caching			
(*) Protection Features			
EdgeSight Monitoring			
Load Balancing			
AAA - Application Traffic			
Content Switching			

Click **Next** to bring **AppExpert Template Wizard** to upload the downloaded templates.

AppExpert Template Wizard	x
Introduction Welcome to the AppExpert Te	mplate Wizard.
Introduction Select Template File Specify Application Name Summary	AppExpert Templates simplify deploying NetScaler for specific application by encapsulating configuration that is specific to a given application. This wizard guides you through the process of using a template to set up an application on the NetScaler. To continue, click Next.
	< <u>B</u> ack <u>N</u> ext > Close

Choose **Browse (Local)** if the files were downloaded to local system, then choose the proper **Template** and **Deployment** files for Exchange. Then, click **Next**.

AppExpert Template Wizard					×
Select Template File You can import an AppExpert Template either from the NetScaler appliance or from your computer. To import the template from the appliance, click Browse (Appliance). To browse your computer for the template file, click Browse (Local). Optionally you can provide an XML file containing deployment information.		e (Local).			
Introduction Select Template File Specify Application Name Summary	Template File* Deployment F	C/(AOWA deployment.xml		Breve (Local)
				<	Back Next > Close



AppExpert Template Wizard		×
Summary Configuration summary.		CITRIX
 Introduction Select Template File Specify Application Name Summary 	You have specified following configuration settings: Name OWA To make changes, click Back. To create the application, click Finish.	

AppExpert Template Wizard will confirm with the Name then click Finish to complete

If any of required services for OWA were not enabled, the following **Warning** will guide through to enable those features. Click **Yes**.

Warning	×
	ed Caching, Rewrite, Content Filtering, ation Firewall features are disabled. e these features?
<u>Y</u> es	No

By default, the memory usage limit was set to 0. **Proceed** message will prompt to change the value of memory limit parameter. Click **Yes**.

Procee	ł			×
?				e objects has been set to 0. his parameter to a greater value.
	Do you want to change the	e value of me	mory limit	t parameter?
		<u>(</u> es	<u>N</u> o	

Set Memory Usage Limit (MB) to 300. Then click OK.

che Global Settings	1
Memory Usage Limit (MB)	300
Active Memory Usage Limit (MB)	0
Maximum value for Memory Usage Limit (MB)	848
√ia Header*	NS-CACHE-10.0: 124
Ma <u>x</u> imum Post body length to be Cached	0
Global Undefined-Result Action	NOCACHE
Bypass ☑ Ena <u>b</u> le	
	each request
☑ Ena <u>b</u> le	oth the hostname

Confirm enabled Basic Features. Click OK.



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5.5 NetScaler SSL Security Certificate installation (Self-Signed Certificate

example)

If production certificates are available, these can be imported through the processes within the NetScaler management interface. Consult Chapter 11, "Securing Load Balanced Traffic by Using SSL" of the NetScaler product documentation entitled "NetScaler VPX Getting Started Guide" for details pertaining to the user of existing certificate/key pairs.

The following steps were used in this reference environment to create of self-signed certificates used to implement the HTTP to HTTPS rewrite.

5.5.1 Root-CA Certificate

C 0 http://10.5.172.124 - 🖹 🖒 X 🕐 Citrix NetScaler VPX - Confi... X vert 👻 🔂 Select NetScaler VPX (1000) CITRIX Logout Dashboard Cont NetScaler SSL * System Refresh Help Save . Network SSL Certificates Create CSR (Certificate Signing Request) Create Certificate Create and Install a Server Test Certificate Cloud Bridge . DNS 🖲 SSL E SSL Offload AppExpert * HTTP Compre KCS#12 Integrated Caching E Protec EdgeSight Monitoring E Load Balancing Policy Manager SSL Policy Manager E Content Switching Cache Redire • GSLB E Rewrite Responder Access Gateway Statistics * Web Interface

Under SSL navigation panel, choose Root-CA Certificate Wizard.



ntroduction	
Welcome to Certific	ate Wizard.
Introduction Create Key Create CSR Create Certificate Install Certificate Summary	This wizard is designed to help you create and install an SSL Certificate. CAUTION: Certificates generated with this tool are self-signed certificates. They should be used only for internal testing purposes. If you use this certificate as a server certificate, most browsers will reject it because it is not authenticated (signed) by a valid Certificate Authority (CA). To continue, click Next.

Set the **Key Filename** to **Exchange-CA-Key**. And set **Key Size** to **1024** or any value that reflects customized datacenter's standard. Then click **Next**.

Create CSR Key Eilename* Exchange-CA-Key Browse Create Certificate Key Size (bits)* 1024 Install Certificate Public Exponent Value Image: Exchange CA-Key Image: Exchange: Exchange CA-Key Image:	Create Certificate Install Certificate	Choose priva <u>t</u> e key type R	5A		
Key Size (bits)* 1024 Install Certificate Public Exponent Value F4 3 Summary Key Format PEM DER PEM Encoding Algorithm DES DES3		Key <u>F</u> ilename*	Exchange-CA-Key		Browse
Summary Public Exponent Value Image: F4 Image: 3 Summary Key Format Image: PEM Image: DER PEM Encoding Algorithm DES Image: DES3		Key Size (bits)*	1024		
PEM Encoding Algorithm O DES O DES3		Public Exponent Value	F4	03	
		Key Format	<u>Р</u> ЕМ	○ de <u>r</u>	
PE <u>M</u> Passphrase*		PEM Encoding Algorithm	⊖ d <u>e</u> s	○ <u>D</u> ES3	
		PE <u>M</u> Passphrase*			
Verify Passphrase*		Verify Passphrase*			



Certificate Wizard						
Create CSR Generate a new Certific certificate for the user		The generated	d CSR can be sent to a	Certificate Authority (CA) to c	obtain an X509	CİTRI
 Introduction Create Key 	Request <u>F</u> ile Name*		Exchange-CA-CSR		Browse	View
Create CSR	Key File Name*		Exchange-CA-Key			Browse
Create Certificate Key Format			● <u>P</u> EM ○ <u>D</u> ER			
Create Certificate Install Certificate Summary	PE <u>M</u> Passphrase (For Er Distinguished Name F Common N <u>a</u> me Cit <u>y</u> Organi <u>z</u> ation Name* Coun <u>t</u> ry* Attribute Fields Challenge Pass <u>w</u> ord	ields	TES	State or Province* CA Email Address		

Set the Certificate File Name to Exchange-CA-Certificate. Then click Next.

Certificate Wizard			×
Create Certificate Generate a signed X509	Certificate.		CITRIX
 Introduction Create Key Create CSR Create Certificate 	Certificate Type	Exchange-CA-Certificate	Browse
Install Certificate Summary	Certificate Req <u>u</u> est File Name* <u>K</u> ey File Name* Key Format PEM Passphrase (For Encrypted Key)	Exchange-CA-CSR Exchange-CA-Key	Browse Browse
	<u>V</u> alidity Period (Number of Days)	365	
		Skip > < Back	ext > Close



Certificate Wizard			
Install Certificate Add a certificate-key pa	air obiect		
nad a certificate key pi	an objecti		CİTRI
✓ Introduction	1		
✓ Create Key	Certificate-Key Pair Nam	e* Exchange-CA-CertKey	
✓ Create CSR	┌ Details		
✓ Create Cartificate	Certificate and key files	are stored in the folder /nsconfig/ssl/ on appliance.	
Install Certificate	Certificate File Name*	Exchange-CA-Certificate	🧔 Browse (Appliance) 🝷 🛃 Insert
	Pri <u>v</u> ate Key File Name	Exchange-CA-Key	🗔 Browse (Appliance) 🔹 🛃 Insert
Summary	Pass <u>w</u> ord		
	Certificate Format	● pe <u>m</u> ⊖ <u>d</u> er	
	Notify When Expires C	Enable 🖲 Disable	
	Notification Period		
	Exit.		
Click Finish then Certificate Wizard Summary			
Certificate Wizard			- i
Certificate Wizard Summary			CİTRI
Certificate Wizard Summary Configuration summar			CİTRI
Certificate Wizard Summary Configuration summar ✓ Introduction	y. The configuration is success		CİTRI
Certificate Wizard Summary Configuration summar Introduction Create Key	у.		CÎTR
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR	y. The configuration is success		CİTRĮ
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR	y. The configuration is success		CİTRI
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create Certificate	y. The configuration is success		CİTRI
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create CSR Create Certificate Install Certificate	y. The configuration is success		CİTRĮ
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create CSR Create Certificate Install Certificate	y. The configuration is success		CİTR
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create CSR Create Certificate Install Certificate	y. The configuration is success		CİTRĮ
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create CSR Create Certificate Install Certificate	y. The configuration is success		CİTR
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create CSR Create Certificate Install Certificate	y. The configuration is success		CİTR
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create CSR Create Certificate Install Certificate	y. The configuration is success		CİTR
Certificate Wizard Summary Configuration summar Introduction Create Key Create CSR Create CSR Create Certificate Install Certificate	y. The configuration is success		CİTRĮ



5.5.2 Server Certificate



Click Next.

Certificate Wizard	×
Introduction Welcome to Certificat	te Wizard.
Introduction Create Key Create CSR Create Certificate Install Certificate Summary	This wizard is designed to help you create and install an SSL Certificate. CAUTION: Certificates generated with this tool are self-signed certificates. They should be used only for internal testing purposes. If you use this certificate as a server certificate, most browsers will reject it because it is not authenticated (signed) by a valid Certificate Authority (CA). To continue, click Next.
	< <u>B</u> ack <u>N</u> ext > Close



Set the Key Filename to Exchange-Server-Key. And set Key Size to 1024 or any value that
reflects customized datacenter's standard. Then click Next .

✓ Introduction Create Key Create CSR Create Certificate Install Certificate Summary	Choose priva <u>t</u> e key type RSA				
	Key <u>F</u> ilename*	Exchange-Server-Key		Browse	
		1024 • F4 • <u>P</u> EM	0 <u>3</u> 0 de <u>r</u>		
	PEM Encoding Algorithm PE <u>M</u> Passphrase* <u>V</u> erify Passphrase*		<u>O</u> <u>D</u> ES3		
	<u>v</u> eniy Passpirase				

Set the **Request File Name** to **Exchange-Server-CSR**. And set **City** and **State** or **Province**, **Organization Name** to appropriate values. Then click **Next**.

					•
Request <u>F</u> ile Name*		Exchange-Server-CSR		Browse	View
<u>(</u> ey File Name*		Exchange-Server-Key			Browse
Key Format <u>PEM</u> O <u>DER</u> PE <u>M</u> Passphrase (For Encrypted Key)					
Distinguished Name F	ields				
Common N <u>a</u> me			State or Province* CA		
City			Email Add <u>r</u> ess		
Organization Name*	Exchange		Organization <u>U</u> nit		
Coun <u>t</u> ry*	UNITED STAT	TES 👻			
Attribute Fields					
Challenge Pass <u>w</u> ord			Company Nam <u>e</u>		
	Key Format PE <u>M</u> Passphrase (For Er Distinguished Name F Common N <u>a</u> me Cit <u>y</u> Organi <u>z</u> ation Name* Coun <u>t</u> ry*	Key Format VEM Passphrase (For Encrypted Key) Distinguished Name Fields Common Name City Organization Name* Exchange Country* UNITED STAT Attribute Fields	Key Format <u>PEM</u> O <u>D</u>ER VEM Passphrase (For Encrypted Key) Distinguished Name Fields Common Name City Organization Name* Exchange Country* UNITED STATES Attribute Fields	(ey Format • PEM O DER VEM Passphrase (For Encrypted Key) Distinguished Name Fields Common Name State or Province* CA City Email Address Organization Name* Exchange Country* UNITED STATES Attribute Fields	(key Format <u>PEM</u> O <u>D</u>ER VEM Passphrase (For Encrypted Key) Distinguished Name Fields Common Name State or Province* CA City Email Address Organization Name* Exchange Organization <u>Unit</u> Country* UNITED STATES Attribute Fields



Certificate Wizard			
Create Certificate Generate a signed X509	Certificate.		CITR
Introduction Create Key Create CSR	Certificate File Name* Certificate Format	Exchange-Server-Certificate	Browse
Create Certificate Install Certificate Summary	Certificate Type Certificate Req <u>u</u> est File Name* <u>V</u> alidity Period (Number of Days)	Server Exchange-Server-CSR 365	Browse
Summary	CA Certificate File Na <u>m</u> e* CA Certificate File Format	Exchange-CA-Certificate	Browse
	CA Key File Name* CA Key File Format PEM Passphrase (For Encrypted CA Key)	Exchange-CA-Key PEM O DER	Browse
	CA Serial Number File*	CAExhcnage	Browse

Set the Certificate-Key Pair Name to Exchange-Server-CertKey. Then click Next.

nstall Certificate			
Add a certificate-key pa	ir object.		CITRIX
¹ Introduction ² Create Key ² Create CSR	Details	e* Exchange-Server-CertKey	
^e Create Certificate Install Certificate Summary		s are stored in the folder /nsconfig/ssl/ on applia Exchange-Server-Certificate	ance. 🥥 Browse (Appliance) 🔹 🍓 Insert
	Private Key File Name	Exchange-Server-Key	🥥 Browse (Appliance) 🔻 🛃 Insert
	Pass <u>w</u> ord		
	Certificate Format	● PE <u>M</u> ○ <u>D</u> ER	74
	Notify When Expires C Notification Pe <u>r</u> iod	Enable 🖲 Disable	
			<u>Skip > < Back</u> <u>N</u> ext > Close

Certificate Wizard		×
Summary Configuration summ	ary.	CİTRIX
 Introduction Create Key Create CSR Create Certificate Install Certificate Summary 	You specified the following configuration settings : Key File: Exchange-Server-Key Certificate Request File: Exchange-Server-CSR Certificate File: Exchange-Server-Certificate Certificate key pair name: Exchange-Server-CertKey To make any changes, click Back. To complete the configuration, click Finish.	

Click Exit.

Certificate Wizard		×
Summary Configuration summa	ry.	CİTRİX
 Introduction Create Key Create CSR Create Certificate Install Certificate Summary 	The configuration is successful. Click Exit to close the wizard.	
		Exit



5.6 Creating virtual servers (VIP)

Virtual servers (or Virtual IP, VIP) will be used for users to connect to Exchange service. Once completed, users will be able to access their SharePoint environment to $\underline{http}(s)://\langle VIP \rangle$ or $\underline{http}(s)://\langle VIP \rangle$ /owa depending on their configuration.

5.6.1 HTTP VIP

Under **AppExpert** navigation panel, choose **Applications** to view those installed templates. Under **OWA**, all the pre-defined Exchange service components will be listed. Choose **Configure Public Endpoints...** to set public virtual server name and ip address according to section 3.2.

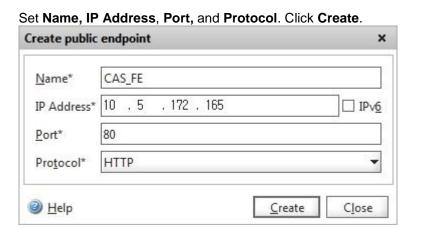
Scaler VPX (1000)				Host Name 10.5.172.124(ns10)	Version NS10.0: Build 69.4.nc, Date: Jul 14 2012, 07:21:20	User Insroot	CITR
ashboard Configuration	Reporting					Documentation	Downloads
System	NetScaler AppExpert Applications						
Network	Applications						esh 🕹 Help
	Applications	1					ežu 🕲 Heip
Cloud Bridge	Applications	Compression	Caching	Rewrite	Responder	Application Firewall	
DNS	OWA	_					
	Certificates				*		
SL	ServerPages			3	4		
SL Officiad	Documents	• •		3			
SLOffload	StylesScripts	9 B		3	4		
AppExpert				~			
	Images				4		
Applications	DigitalMedia				4		
Access Gateway Applications	ArchiveFiles	• •		3	4		
Templates	default	<u> </u>		3	~		
	SharePoint_2010				-		
HTTP Callouts	FrontPage_Services	*		*			
Pattern Sets	SOAP_Services				*		
Data Sets	Portal_Management	<u> </u>					
String Maps	Document_Management	*		*		*	
	Editable_Image_Management	<u> </u>					
XML Namespaces	ReadOnly_Image_Management	•			-		
Expressions	Video_Management	<u> </u>		*			
Rate Limiting	Audio_Management	<u> </u>			4		
	Styles_and_Scripts	•		•		•	
Action Analytics	Web_Service_Definitions	•	•	*	-	•	
ITTP Compression	Web_Service_Schemas	•	*	*	4	*	
Integrated Caching	default	•	•	•	4	•	
Protection Features							
dgeSight Monitoring	Details : OWA						🔍 Fin
bad Balancing	Public Endpoints: <u>Not configured (Click to configure)</u> B	ackend Services: Not configured (Click to configure)					
UAA - Application Traffic							
Content Switching							
Cache Redirection		/ /			eSight Monitoring 👶 Export 🎒 Visualizer 🔲 Statistics 🔒		

Choose Add.

ie	IP Address	Port Proto	State	
		55C - 55C	5	
228	Remove			
	1940			

CIT

RİX.



Set Persistence Time-out (min) to 2. Then click OK.

			1995
me* CAS_FE		dress Based 🔘 IP Patte	
b <u>t</u> ocol* HTTP	👻 IP Addre	ss* 10 .5 .172.1	65
Network VServer Range 1	Port*	80	
te 💿 UP Disable 🗌 AppFlow Logging			
Red <u>i</u> rect URL		Client Time <u>-</u> out(secs)	180
Bac <u>k</u> up Virtual Server	•	ICMP VServer Response	PASSIVE
VServer IP Port Inserti OFF			
Spillover			
Method NONE Threshold			
Persistence Persistence Time-out (min) 2			
Cacheable Case sensitive Redirect Port Re State Update RTSP Natting L2 Connection Precedence © Rule OURL		n 🗌 <u>D</u> isable Primary W	/hen Down
Push			
Listen Policy			
Authentication Settings			
		2	•
mments			
Help			OK Clo



5.6.2 HTTPS VIP

From the main NetScaler Configuration Utility screen, under **AppExpert** and **Applications**, and **OWA**, choose **Configure Public Endpoints...** to set public virtual server name and ip address according to section 3.2. (Note. This IP address will be the same as HTTP VIP which was just created in previous section. It will just use a different port.). Set **Name** to **CASSe_FE_SSL** or meaningful name. Set **IP Address**, **Port 443** and **Protocal** as **HTTPS**. Then click **Create**.

<u>N</u> ame*	CAS_FE_SSL	
IP Address*	10 . 5 . 172 . 165	IPv(
Port*	443	
Protocol*	HTTPS	

Highlight CAS_FE_SSL then click Open...

ctive	Name	IP Address	Port Proto	State
~	CAS_FE	10.5.172.165	80 HTTP	UP UP
~	CAS_FE_SSL	10.5.172.165	443 HTTPS	🕝 UP
A	ld 📝 Open	Remove		



X.

	iblic Endpoint		
<u>l</u> ame*	CAS_FE_SSL	IP Addre	ess Based 🔘 IP Pattern Based
oro <u>t</u> ocol*	SSL	IP Address*	10 . 5 . 172 . 165
] Net <u>w</u> or	VServer Range 1	Port*	443
State 💿 l Advance Red <u>i</u> rect	d Profiles SSL Settings	me <u>-</u> out(secs)	180
Paaluun		erver Response	PASSIVE
Spillove			
Methoo	NONE Threshold istence Persistence Time-out (min)		
		2020 52 30	Dicable Briman/ When Down
	eable Case sensitive Redirect Port Rewrite Dow Update RTSP Natting L2 Connection nce Rule OURL	vn state <u>f</u> lush	
☐ State Precede ▶ <u>P</u> ush ▶ Listen	Update I RTSP Natting I L2 Connection nce I Rule O URL	/n state <u>f</u> lush	

Choose the **Certificates** which were created in previous section 5.5. Click the arrow button under **Add>** to choose **as CA>** to add **CA CertKey**.

paloalto

CİTRİX.

figure Public Endpoint			
ame* CAS_FE_SSL rotocol* SSL Network VServer Range 1 ate @ UP Disable AppFlow Lo Advanced Profiles SSL Settings	gging	IP Address Based IP Address* 10 . 5 Port* 443	1 O IP Pattern Based 5 , 172 , 165
SSL Parameter Ciphers	SSL Polici <u>e</u> s		
Available		onfigured	
Certificates		Certificates Type	Check
ns-server-certificate	E	xchange-Server Server Certil	ficate
Self-Signed-CA-CertKey			
Self-Signed-Server-CertKey			
SS-CA-CertKey	E		
SS-Server-CertKey	<u>A</u> dd > •		
imap_CA_CertKey	as CA >		
imap_Server_CertKey	as SNI >		
pop-CA-CertKey	Install •	_	
pop-Server-CertKey			
SharePoint-CA-CertKey			
SharePoint-Server-CertKey			
Exchange-CA-CertKey			

Click OK.

ame* CAS_FE_SSL		IP Addre	ess Based 🔿 IP Pattern Based
rotocol* SSL		✓ IP Address*	10 . 5 . 172 . 165
		Port*	443
Network VServer Range 1		Low	172
tate 💿 UP 🛛 Disable 🗌 AppFlow	/ Logging		
Advanced Profiles SSL Settings			
SSL Parameter Cighers	SSL Polici <u>e</u> s		
Available	Cont	igured	
Certificates	Certi	icates Typ	De Check
ns-server-certificate	Exch	ange-Server Ser	ver Certificate
Self-Signed-CA-CertKey	Exch	ange-CA-Ce CA	Certificate
Self-Signed-Server-CertKey			
SS-CA-CertKey			
SS-Server-CertKey	<u>A</u> dd > 💽		
imap_CA_CertKey			
imap_Server_CertKey	< <u>R</u> emove		
pop-CA-CertKey	Install •		
pop-Server-CertKey			
SharePoint-CA-CertKey			
SharePoint-Server-CertKey			
Exchange-CA-CertKey			
Exchange-Server-CertKey			
445 (2013) 17			
omments			
onments			



5.7 Creating a Service Group

From the main NetScaler Configuration Utility screen, under **AppExpert** and **Applications**, and **OWA**, choose **Configure Backend Services...** to set **Service Groups** to add physical/VM server IP addresses.

Athen Outgoin Description <th>Scaler VPX (1000)</th> <th></th> <th></th> <th></th> <th>Host Name 10.5.172.124(ns10)</th> <th>Version NS10.0: Build 69.4.nc, Date: Jul 14 2012, 07:21:20</th> <th>User Insroot Logout</th> <th>cit</th>	Scaler VPX (1000)				Host Name 10.5.172.124(ns10)	Version NS10.0: Build 69.4.nc, Date: Jul 14 2012, 07:21:20	User Insroot Logout	cit
Applications Applications Store Store Store Store Store Store Applications Applications Access Gateway Applications Templates Access Gateway Access Gateway Access Gateway Temp	eshboard Configuration	Reporting					Documentation	Downloa
Applications Compression Com	System	NetScaler AppExpert Applications						
Cloud Bridge Coordenation C	Network	Applications					🖉 Beli	esh 😣 He
Dr.S. Applications SSL OrdA SSL StorePlage Decements Image <td>Cloud Bridge</td> <td></td> <td>Compression</td> <td>Caching</td> <td>Rewrite</td> <td>Responder</td> <td></td> <td></td>	Cloud Bridge		Compression	Caching	Rewrite	Responder		
S. Classical Statistical	-	Applications			•			
Secured Secure Secur	DNS	OWA						
SeverAge Sever	51	Certificates	•		+			
Sejections Access General Conference Templates Templ		ServerPages						
Applications Active Titles Active Titles Tot Database </td <td>iL Offload</td> <td>Documents</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> <td></td>	iL Offload	Documents			3			
Applications Actes: Global Action Action Actes: Global Action Action Actes: Global Action Act	-	StylesScripts	Q		3			
Archverlins Archve	opExpert	Images	•		•	4		
Actes Glanda Applications Templates Templa	Applications	DigitalMedia	• •		+			
terplates terpla		ArchiveFiles		9	4			
HTP Clocks: DSM Services and a constraint of the services in t		default	9		3			
haten Sats Data Sets Data Data Sets Data	Templates	SharePoint_2010						
Alem 13d Dis Sets: Implement	HTTP Callouts	FrontPage_Services	<u>ب</u>		4			
bas Sets Sing Madi Shang Mag	Pattern Sets	SOAP_Services	•	*	*			
Sing Mapi Sing Mapi Sing Magienest Sing Mag		Portal_Management	•	9	+			
MA, Nanespecs Spresson Aufo, Maagement Aufo, Service, Schman Composition Aufo, Maagement Aufo, Maagement Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Maagement Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Maagement Aufo, Maagement Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Composition Aufo, Service, Schman Compositio		Document_Management	•	9	+	~		
topesion Ase Linding Ase Linding Ase Linding Ase Device Definitions PE compression PE c	String Maps			9	+			
Audo, Magingenet • • • • •	XML Namespaces		•	9	+			
Ate Linking Ate Linking Ate Confession P Conversion P	Expressions	Video_Management			+			
kton Analytics: P Congression granted Caching service Centrations Web_Service Centrations W					•			
PP Compression Web_Stravker_Scheman • • • • •		Styles_and_Scripts	•		+		٠	
default default	Action Analytics	Web_Service_Definitions		•	•			
Iggerded Caching Indefender @	TP Compression		•		+		*	
eligie Montoning eligie		default	•	*	*	*	•	
projekt Montolog • Details (10WA > Certificates (DOWN) • Details (10WA > Certific								
Application Traffic								
4 - Application Traffic	eSight Monitoring		red (Click to configure) Buller HTTP DEC LIDE SUPERTY	SET TEXT MODEFIne parameter & FOUNDS	NEOWA CARRIENTS			- F
	d Balancing							
tent Switching	A - Application Traffic							
	ntent Switching							

Click Add...

nfigure Ba	ckend Services	
Services Service Groups Activate All Deactivate All		Member binding details 🔍 Find
Active	Service Group Name	Protocol
~	CASServers-SSL	SSL
	SharePointServers	HTTP
	CASServers	HTTP
Add	📝 Open 🙀 <u>R</u> emove	
Help		<u>O</u> K C <u>l</u> ose



	Protocol* SSL					
Monitoring 🗌	AppFlow Logging					
Configured Mer	mbers					
Server Name	IP Address/Domain	Port	Weight	Server ID	Hash ID	Member State
10.5.172.160	10.5.172.160	443	1	"None"		🔘 UP
10.5.172.161	10.5.172.161	443	1	"None"		OP UP
						Monitors Deta
-					*	
	Monitoring	Monitoring AppFlow Logging Configured Members Server Name IP Address/Domain 10.5.172.160 10.5.172.160	Monitoring AppFlow Logging Configured Members Server Name IP Address/Domain Port 10.5.172.160 10.5.172.160 443	Monitoring AppFlow Logging Configured Members Server Name IP Address/Domain Port Weight 10.5.172.160 10.5.172.160 443 1	Monitoring AppFlow Logging Configured Members Server Name IP Address/Domain Port Weight Server ID 10.5.172.160 10.5.172.160 443 1 "None"	Monitoring AppFlow Logging Configured Members Server Name IP Address/Domain Port Weight Server ID Hash ID 10.5.172.160 10.5.172.160 443 1 "None" 10.5.172.161 10.5.172.161 443 1 "None"

Set Service Group Name to CASServers-SSL or proper meaningful name. Set IP address under Specify Member(s). Then Add.

Choose Monitor. Then add http-env .

ervice Group State ENABLED Disable Members Monitors Profiles Advan		alth <u>M</u> onitoring 🛛 A _l	pFlow Logging	
Maniferr D CI AL				
Members Monitors Profiles Advan	ced SSL Settings			
Available	7	Configured		28
Monitors		Monitors	Weight	State
arp		https-ecv	1	\checkmark
nd6				
ping				
tcp				
http				
tcp-ecv	Add >			
http-ecv				
udp-ecv	< <u>R</u> emove			
dns				
ftp				
tcps				
https				
tcps-ecv				
ldns-ping				
Idaa too				



	kend Services	n was just created under Conf i	×
Services	Service Groups Method and Pers	stence Advanced	
Activate All	Deactivate All	Member binding details	🔍 Find
Active	Service Group Name	Protocol	
~	CASServers-SSL	SSL	

Choose Method and Persistence to set Round Robin under Method. And set Persistence to SSLSESSION.

Services	Service Groups	Method and Persistence Advanced
LB Metho	d	
Method	Round Robin	 New Service Startup Request Rate
		Increment Interval
Persistence	:e	Backup Persistence
	ce SSLSESSIO	
Per <u>s</u> isten		
Per <u>s</u> isten	ce SSLSESSIO	ON Persistence NONE Time-out (min)
Per <u>s</u> isten		DN Persistence NONE Time-out (min) IPv <u>4</u> Netmask
Per <u>s</u> isten		ON Persistence NONE Time-out (min)
Per <u>s</u> isten		DN Persistence NONE Time-out (min) IPv <u>4</u> Netmask
Per <u>s</u> isten		DN Persistence NONE Time-out (min) IPv <u>4</u> Netmask
Per <u>s</u> isten		DN Persistence NONE Time-out (min) IPv <u>4</u> Netmask



5.8 IMAP4 installation

IMAP4 service was not added as part of Exchange (OWA) AppExpert Template. In order to install and configure the service, a *service group* needs to be created with physical/VM servers to be load balanced. Then a *virtual server* will be created using the service group.

From main NetScaler navigation panel, choose Service Groups under Load Balancing. Click Add...

zice Group Name* Exchange_IMAP4		Protocol* TCP				
fembers Monitors Profiles Advanced SSL Se						
pecify Member(s)	Configured M	embers				
IP Based Server Based P Address Address Range . IP \Delta -	Server Name	IP Address/Domain	Port Weight	Server ID	Hash ID	Member State
eight 1	<u>A</u> dd >					
erver ID "None" <	Remove					
Ena <u>b</u> le Member						
					* *	<u>M</u> onitors Deta
nments						

Set Service Group Name to Exchange_IMAP4 and add designated physical/VM servers under Specify Members(s) with 993 Port. Click Create.

rvice Group State 💿 ENABLED Disable 🗹 Enabl	le Health <u>M</u> onitoring	AppFlow Logging					
Members Monitors Profiles Advanced SSL Sett	ings						
Specify Member(s)	Configured Mer	mbers					
IP Based O Server Based	Server Name	IP Address/Domain	Port	Weight	Server ID	Hash ID	Member State
IP Address Range	10.5.172.160	10.5.172.160	993	1	"None"		🕘 UP
□ IP√6-	10.5.172.161	10.5.172.161	993	1	"None"		🕘 UP
Weight 1 < № Finite Server ID "None" Hash ID IZ Enable Member	move						Monitors Deta
mments						•	

×



Under Load Balancing navigation panel, choose Virtual Servers. Click Add...

				• P	Addre	ss Based	O IP P	attern Based		
нттр				• IP Ad	dress*		10			
VServer Range	1			Port*		80				
Addressable 🗹 S	tate 🗹 A	ppFlow Logging	9							
Service Groups	Policies	Method and	Persisten	e Adva	nced	Profile	< SSI 1	Settinos		
Il Deactivate All	- Concies	1 means a sine	i content	- 1	inces	Tronic				Sind
Service Name		IP Address	Port	Protocol	State			Weight		mic Weig
🖉 Open 🔊 8	emove									
🖉 Open 🔊 B	emove									
	VServer Range Addressable 🕑 S Service Groups II Deactivate All	VServer Range 1 Addressable 🗹 State 🗹 A Service Groups Policies Il Deactivate All	VServer Range 1 Addressable I State AppFlow Loggin Service Groups Policies Method and II Deactivate All	VServer Range 1 Addressable State AppFlow Logging Service Groups Policies Method and Persistence II Deactivate All	HTP PAde VServer Range Port Addressable State AppFlow Logging Service Groups Policies Method and Persistence Adva Il Deachinite All	HTP PAddress* VServer Range Address* VServer Range Addressable State AppFlow Logging Service Groups Policies Method and Persistence Advanced I Deactivite All	HTTP P Address* . VServer Range Port* 80 Addressable State AppFlow Logging Service Groups Policies Method and Persistence Advanced Profile Il Deactivate All	HTP PAddress VServer Range Port* 80 Addressable State AppFlow Logging Service Groups Policies Method and Pensistence Advanced Profiles SSL I Desclivate All	Service Groups Policies Method and Pessitence Advanced Profiles SSL Settings	HTP PAddres* VServer Range VServer Range Addressable State AppFlow Logging Service Groups Policies Method and Pensistence Advanced Profiles SSL Settings I Deactivite All

Set Name to Exchange_IMAP4_VIP and IP Address. Protocol to SSL_TCP. Choose Method and Persistence tab. Set Round Robin Method and SSLSESSION Persistence.

ame* Exchan	ge_IMAP4_VIP		IP Addre	ss Based 🔘 IP P	attern Based	
otocol* SSL_TC	p	•	IP Address*	10 . 5 . 172	. 165	
] Network VServe	r Range 1		Port*	993		
Directly Addres	sable 🗹 State 🗹 AppFlow	Logging				
	ce Groups Policies Meth	nod and Persistence	Advanced	Profiles SSL	Settings	
LB Method						
Method Round		ew Service Startup Requ	uest Rate		Р	ER_SECOND -
	In	crement Interval				
	SSLSESSION			Backup Persistence	e NONE	
Per <u>s</u> istence			-			
Per <u>s</u> istence				Persistence Time-out (min)	NONE	
Persistence Persistence Time-out (min)				Persistence Time-out (min) IPv <u>4</u> Netmask		
Per <u>s</u> istence				Persistence Time-out (min)		
Per <u>s</u> istence				Persistence Time-out (min) IPv <u>4</u> Netmask		
Per <u>s</u> istence				Persistence Time-out (min) IPv <u>4</u> Netmask		
Per <u>s</u> istence				Persistence Time-out (min) IPv <u>4</u> Netmask		

Binding Exchange_IMAP4 service group under Service Groups tab.

ame*	xchange_IMAP4_VIP	IP Addre	ss Based 🔿 IP Pattern Based	
rotocol*		IP Address*	159	
-		Port*	993	
	VServer Range 1	Poit	[333]	
Directly	Addressable 🗹 State 🗹 AppFlow Logging	75	n 12 mar	
Services	Service Groups Policies Method and Persistence	Advanced	Profiles SSL Settings	
Activate A	II Deactivate All	122	Member binding details	🔍 Find
Active	Service Group Name	Protocol		
V	Exchange_IMAP4	TCP		
<u>A</u> dd	Ogen Remove			



ame* Exchange_IMAP4_VIP			IP Add	dress Based 🔘	IP Pattern Based	
rotocol* SSL_TCP		*	IP Addres	ss* 10 . 5 .	172 . 165	
Network VServer Range 1			Port*	993		
ate 💿 UP 🛛 Disable 🗹 AppFlow	/ Logging					
		1		ofiles SSL Set		
Services Service Groups Policies	Method and Persiste	ence Advan	ced Pro	ofiles SSL SEL	ungs	
SL Parameter Ciphers						
Available		Configured				
Certificates		Certificates	1	Гуре	Check	
ns-server-certificate		imap_Server_	CertKey 5	Server Certificate	Re .	
Self-Signed-CA-CertKey		imap_CA_Ce	rtKey C	CA Certificate		•
Self-Signed-Server-CertKey						
SS-CA-CertKey						
SS-Server-CertKey		s				
imap_CA_CertKey	<u>A</u> dd > •					
imap_Server_CertKey		8				
pop-CA-CertKey	< <u>R</u> emove	a.				
pop-Server-CertKey	Install •					
SharePoint-CA-CertKey		9				
SharePoint-Server-CertKey						
Exchange-CA-CertKey						
Exchange-Server-CertKey						
omments						

5.9 POP3 installation

POP3 service was not added as part of Exchange (OWA) AppExpert Template. In order to install and configure the service, a *service group* needs to be created with physical/VM servers to be load balanced. Then a *virtual server* will be created using the service group.



From main NetScaler navigation panel, choose **Service Groups** under **Load Balancing**. Click **Add...**

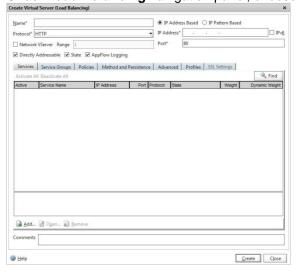
onfigured Mer	mbers				
Server Name	IP Address/Domain	Port Wei	ht Server ID	Hash ID	Member State
				*	<u>M</u> onitors Deta
	Server Name	Server Name IP Address/Domain	Server Name IP Address/Domain Port Weg	Server Name IP Address/Domain Port Weight Server ID	

Set Service Group Name to Exchange_POP3 and add designated physical/VM servers under Specify Members(s) with 110 Port. Click Create.

vice Group State ENABLED Disable Kembers Monitors Profiles Advanced SSL Settin		AppFlow Logging					
pecify Member(s)	Configured Mer	mbers					
IP Based O Server Based	Server Name	IP Address/Domain	Port	Weight	Server ID	Hash ID	Member State
IP Address Range	10.5.172.160	10.5.172.160	110	1	"None"		OP UP
IPv <u>6</u> -	10.5.172.161	10.5.172.161	110	1	"None"		🖲 UP
Port Add							
Veight 1	love						
erver ID "None"							
lash ID							
☑ Ena <u>b</u> le Member						*	Monitors Deta
mments							



Under Load Balancing navigation panel, choose Virtual Servers. Click Add...



Set Name to Exchange_POP3_VIP and IP Address. Protocol to SSL_TCP. Choose Method and Persistence tab. Set Round Robin Method and SSLSESSION Persistence. Binding Exchange_POP3 service group under Service Groups tab.

ame*	Exchange_POP3_VIP			IP Addre	ss Based 🔿 IP Pattern Base	ed
protocol*	SSL TCP		*	IP Address*	10 . 5 . 172 . 165	
	rk VServer Range 1			Port*	995	
				1 OIL		
itate 🎯	UP Disable 🗹 AppFl	ow Logging				
Services	Service Groups Policie	s Method and Persistence	Advan	ced Profil	es SSL Settings	
Activate	All Deactivate All			D N	fember binding details	🔍 Find
Active	Service Group Name		Pro	otocol	, ,	
	Exchange_POP3		TC	P		
	Exchange_IMAP4		TC	P		
	Exchange_SMTP		TC	P		
	Lync_svc_5060		TC	P		
	Lync_svc_5061		TC	P		
	Lync_svc_135		TC	P		
	Lync_svc_444		TC	P		
	Lync_svc_80		TC	P		
	Lync_svc_edge1135		TC	P		
)						
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Add Certificates under SSL Settings. Then click Create.



ame* Exchange_POP3_VIP			IP Addre	ess Based 🔿 IP 🛛	^p attern Based
rotocol* SSL_TCP		¥	IP Address*	10 . 5 . 172	2 . 165
			Port*	995	
Network VServer Range 1		-	FUIL	223	
ate 💿 UP Disable 🗹 AppFlow I	Logging				
Services Service Groups Policies	Method and Persist	ence Advan	ced Profi	les SSL Settings	5
SSL Parameter Ciphers					
Available		Configured			
Certificates		Certificates	Ту	pe	Check
ns-server-certificate		pop-Server-C	ertKey Ser	ver Certificate	
Self-Signed-CA-CertKey		pop-CA-Cert	Key CA	Certificate	•
Self-Signed-Server-CertKey					
SS-CA-CertKey					
SS-Server-CertKey		0			
imap_CA_CertKey	Add > •				
imap_Server_CertKey	1000				
pop-CA-CertKey	< <u>R</u> emove				
pop-Server-CertKey	T				
SharePoint-CA-CertKey	Install •	65			
SharePoint-Server-CertKey					
Exchange-CA-CertKey					
Exchange-CA-CertKey Exchange-Server-CertKey					
Exchange-CA-CertKey Exchange-Server-CertKey					
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5.10 SMTP installation

SMTP service was not added as part of Exchange (OWA) AppExpert Template. In order to install and configure the service, a *service group* needs to be created with physical/VM servers to be load balanced. Then a *virtual server* will be created using the service group. From main NetScaler navigation panel, choose **Service Groups** under **Load Balancing**. Click **Add...**



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	Mambar State
	Mamher State
) Member State
e"	
-	💿 UP
	Monitors Deta
	Montol's Deta
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Set Service Group Name to Exchange_SMTP and add designated physical/VM servers under Specify Members(s) with 25 Port. Click Create.

Under Load Balancing navigation panel, choose Virtual Servers. Click Add...

ame*					• PA	Addres	is Based	O IP Pa	ttern Based	
otocol*	HTTP			8	IP Add	ress*		43 3		I IF
Network	VServer Range	1			Port*		80			
Directly	Addressable 🗹 S	tate 🗹 A	ppFlow Logging	9						
Services	Service Groups	Policies	Method and	Persistence	Advan	ced	Profiles	SSL S	ettings	
Activate A	II Deactivate All									🔍 Find
Active	Service Name		IP Address	Port F	Protocol	State			Weight	 mic Weigh
à Add	🖉 Ogen 🔊 S	emove								
		emove								
≩ <u>A</u> dd		emove								

Set Name to Exchange_SMTP_VIP and IP Address. Protocol to TCP. Choose Method and Persistence tab. Set Round Robin Method and SSLSESSION Persistence. Binding Exchange_SMTP service group under Service Groups tab.



Vame*	Exchange_SMTP_VIP	IP Address Based O IP Pattern Based
protocol*		✓ IP Address* 10 . 5 . 172 . 166
Networ	k VServer Range 1	Port* 25
tate 🔘 l	-	
Services	Service Groups Policies Method and P	
	All Deactivate All	🔟 Member binding details 🔍 🤦 Find
Active	Service Group Name	Protocol
V	Exchange_SMTP	TCP
	Exchange_IMAP4 Exchange_POP3	TCP TCP
_		

5.11 Outlook Anywhere, ActiveSync confirmation

Microsoft Outlook Anywhere (OA) allows Exchange access through the Microsoft Outlook client by tunneling Outlook's MAPI protocol over an HTTP connection.

Microsoft Exchange ActiveSync (AS) client synchronizes data between mobile devices and Exchange 2010. E-mail, contacts, calendar information, and tasks can be synchronized over an HTTP connection.

Since OA and AS services are connecting to Exchange servers over secured SSL (443) tunneling to an HTTP (80) connection which is the same way Outlook Web App (OWA) does, if Client Access Server (CAS) was set up as a multi-mode service including OWA, OA and AS, then there won't be any necessary service configuration for OA and AS. If OA and AS are serviced in a separated server from OWA, the configuration steps will be the same as OWA in previous chapter 5.

6. Services Verifications

As described in section 4.1, some required configuration will be added automatically as part of installation and configuration of '*Custom added*' data. Once all the data is installed and configured properly in chapter 5, administrators should be able to confirm and verify other data ('*Auto added*') which were added automatically.

6.1 Network IPs and Virtual IPs

NetScaler IP, Subnet IP and Virtual IP can be found under Network>IPs>IPV4s:



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etScaler VPX (1000)						ost Name .5.172.124(ns10)	Version NS10.0: Build 6	i9.4.nc, Date: Jul 14	4 2012, 07:21:20	User Insroot Logout	CITRIX
Dashboard Configuratio	n Rep	orting								Documentation	Downloads
* System	*	NetScal	er Network	IPs / IPV4	5					Refresh	Help Save
Network		IPV4s	IPV6s								
IPs									25 Per Page 💌	+ + 1 - 7 of 7 + + 1	• • •
Interfaces Channels		IP Addre	155	State	Ţ	ype	Mode	ARP	ICMP	Virtual Server	
IP Tunnels		10.5.172	.124	Enabled	i N	letscaler IP	Active	ENABLED	ENABLED	-N/A-	
VLAN5		10.5.172	.126	Enabled	i S	ubnet IP	Active	ENABLED	ENABLED	-N/A-	
Bridge Groups	=	10.5.172	.156	Enabled	i v	irtual IP	Active	ENABLED	ENABLED	ENABLED	
Forwarding Sessions ACLs		10.5.172	.165	Enabled	i V	firtual IP	Active	ENABLED	ENABLED	ENABLED	
PBRs		10.5.172	.166	Enabled	i V	irtual IP	Active	ENABLED	ENABLED	ENABLED	
ARP Table		10.5.172	.177	Enabled	i V	Tirtual IP	Active	ENABLED	ENABLED	ENABLED	
Bridge Table	1	10.5.172	.170	Enabled	I V	irtual IP	Active	ENABLED	ENABLED	ENABLED	
IPv6 Neighbors											
- VMAC - RPC											
Routes											
IP Sets											
Net Profiles											
Linksets											
Cloud Bridge											
* DNS											
● SSL											
SSL Offload											
AppExpert		Add	Open Remove	Enable Disa	able Add Range	Statistics					

6.2 SSL Offload – Servers, Service Groups

Under **SSL Offload**, *Backend Servers* which were created with *Backend Service Group* can be found under **Servers**:



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etScaler VPX (1000)			Host Name 10.5.172.124(ns10)	Version NS10.0: Build 69.4.nc, Dat	te: Jul 14 2012, 07:21:20	User nsroot	CITRIX
Dashboard Configuration	Reporting					Documentation	Downloads
 System 	NetScaler Loa	Balancing Servers				Refresh	Help Save
* Network					25 Per Page 💌	1 · 8 of 8 > > 1	• 9.+
* Cloud Bridge	Name		State	IPAd	dress / Domain		
* DNS	10.5.172.150		Enabled	10.5.3	172.150		
€ SSL	10.5.172.151		Enabled	10.5.1	172.151		
SSL Offload	10.5.172.160		Enabled	10.5.	172.160		
Virtual Servers	10.5.172.161		Enabled	10.5.	172.161		
Services	10.5.172.164		Enabled	10.5.	172.164		
Service Groups	10.5.172.171		Enabled	10.5.3	172.171		
Monitors Servers	E 10.5.172.175		Enabled	10.5.3	172.175		
	10.5.172.176		Enabled	10.5.3	172.176		
* AppExpert							
 HTTP Compression 	-						
* Integrated Caching	-						
Protection Features							
* EdgeSight Monitoring							
* Load Balancing							
AAA - Application Traffic							
Content Switching							
Cache Redirection							
* GSLB							
* Rewrite	Add., Open., E	hable Disable Remove Add	Range Show Bindings F	lestart DBS Monitors Rename			

etScaler VPX (1000)			Host Name 10.5.172.12	Host Name Version NS10.0: Build 69.4.nc, Date: Jul 14 2012, 07:21:20 User Logout Cit										
Dashboard Configuration	Rep	orting						Documentation	Download					
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Network							25 Per Page 💌	+ + 1 - 14 of 14 + +)	1 • Q.					
Cloud Bridge		Name	State	Effective State	Protocol	Max Clients	Max Requests	Max Bandwidth(kbits)	Monitor Thresho					
* DNS		SharePointServers	ENABLED	OUP	HTTP	0	0	0						
€ SSL		CASServers	ENABLED	CUP	HTTP	0	0	0						
SSL Official		CASServers-SSL	ENABLED	€UP	SSL	0	0	0						
Virtual Servers	1	Exchange_IMAP4	ENABLED	€UP	тср	0	0	0						
Services		Exchange_POP3	@ENABLED	OUP	ТСР	0	0	0						
Service Groups		Exchange_SMTP	ENABLED	OUP	TCP	0	0	0						
Monitors	E	Lync_svc_5060	ENABLED	DOWN	TCP	0	0	0						
Servers	11	Lync_svc_5061	ENABLED	GUP	TCP	0	0	0						
* AppExpert	- 1	Lync_svc_135	ENABLED	€UP	TCP	0	0	0						
HTTP Compression		Lync_svc_444	ENABLED	€UP	TCP	0	0	0						
Integrated Caching		Lync_svc_443	ENABLED	UP	SSL_BRIDGE	0	0	0						
Protection Features		Lync_svc_80	ENABLED	⊜ UP	TCP	0	0	0						
EdgeSight Monitoring		Lync_svc_edge	ENABLED	DOWN	SSL_BRIDGE	0	0	0						
Load Balancing		Lync_svc_edge1135	ENABLED	DOWN	ТСР	0	0	0						
AAA - Application Traffic														
Content Switching														
Cache Redirection														
• GSLB														
* Rewrite		Add_ Open. Enable Disable Manac	e Members Remove Sh	ow Bindings Flus	h Surge Queue	Statistics Renal	ne							

Under **SSL Offload**, *Backend Server Group* which was created can be found under **Service Groups**:

Under SSL Offload	, <i>public endpoints</i> which	were created can b	be found under	Virtual Servers:
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etScaler VPX (1000)						Host Nam 10.5.172	e 124(ns10)	Version NS10.0: Bu	ild 69.4.r	nc, Date: Jul	14 2012, 07:21:20	User nsroot	
Dashboard Configuration	n Rep	orting										Docume	ntation Downloads
* System	*	NetScal	er SSL Offic	oad Virt	tual Servers							Re	fresh Help Save
Network											25 Per Page 💌	1 · 2 of 2	
* Cloud Bridge		Name				State E	ffective State	IP Address	Port	Protocol	Method	Persistence	% Health
* DNS		Exchang	e_IMAP4_VIP			⊜Up 🧃	Up	10.5.172.165	993	SSL_TCP	ROUNDROBIN	NONE	100.00% 2 UP/0 DOWN
* SSL		Exchang	e_POP3_VIP			🛛 Up 💊	Up	10.5.172.165	995	SSL_TCP	LEASTCONNECTION	NONE	100.00% 2 UP/0 DOWN
Virtual Servers Services Service Groups Monitors Servers	ŧ												
AppExpert	†												
HTTP Compression	_												
Integrated Caching													
Protection Features													
EdgeSight Monitoring Load Balancing													
AAA - Application Traffic													
Content Switching													
Coche Redirection													
* GSLB													



6.3 Load Balancing – Servers, Service Group

Under Load Balancing, Servers and Service Groups can be confirmed:

Scaler VPX (1000)			Host Name 10.5.172.124(ns10)	Version NS10.0: Build 69.4.nc, Date: Jul 14 2012, 07:21:20	User Isroot Logout	CITR
ashboard Configuration	Reporting				Documentation	Download
System	NetScaler	Load Balancing			Refresh	Help Sa
Network						
Cloud Bridge	1789	Getting Started Load Balancing wizard		Settings Change SIP settings		
DNS	1	Load Balancing wizard for Citrix XenApp Load Balancing wizard for Citrix XenDesktop		Configure Load Balancing parameters		
SSL.		Load Balancing wizard for Citrix Branch Repeater				
SSL Offload						
AppExpert		Monitor Sessions Virtual Server persistence sessions				
HTTP Compression	3	Clear persistence sessions				
Integrated Caching						
Protection Features	-	Configuration Summary INo LB Virtual Server		6 Metric Tables 2 Servers		
EdgeSight Monitoring		 No Service 1 Service Group 		No Persistency Group		
Load Balancing	-	19 Monitors				
Virtual Servers						
Services						
Service Groups						
Monitors						
Metric Tables						
Servers						
Persistency Groups						
AAA - Application Traffic						
Content Switching						
Cache Redirection						
GSLB						
Rewrite						



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etScaler VPX (1000)						H 1(ost Name 0.5.172.124(ns10)	Version NS10.0: Build 69	.4.nc, Date: Jul 14 2	012, 07:21:20	User nsroot	Logout	CITRIX.
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Cloud Bridge		Name				St	ate		IPAddress / Doma	ain			
DNS		10.5.172.	150				Enabled		10.5.172.150				
6 SSL		10.5.172.	151				Enabled		10.5.172.151				
SSL Offload		10.5.172.	160				Enabled		10.5.172.160				
AppExpert		10.5.172.	161				Enabled		10.5.172.161				
HTTP Compression		10.5.172.	164				Enabled		10.5.172.164				
Integrated Caching	E	10.5.172.	171				Enabled		10.5.172.171				
		10.5.172.	175				Enabled		10.5.172.175				
Protection Features		10.5.172.	176			•	Enabled		10.5.172.176				
EdgeSight Monitoring	Ŷ												
E Load Balancing													
Virtual Servers Services Service Groups													
Monitors Metric Tables													
Servers													
Persistency Groups													
AAA - Application Traffic	-												
Content Switching													
Cache Redirection		Add	Open Enable	Disable	Remove	Add Range	Show Bindings	Restart DBS Monitors	Rename				

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etScaler VPX (1000)			Host Nam 10.5.172	e 124(ns10)	Version NS10.0: Build (59.4.nc, Date: Jul 14	2012, 07:21:20	User nsroot	out citrix
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System	-	NetScaler Load Balancing Service G	aroups					Refresh	
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Cloud Bridge	-	Name	State	Effective State		Max Clients		/lax Bandwidth(kbits)	Monitor Threshold
* DNS		SharePointServers	ENABLED	eUP	HTTP	0	0	0	
⊛ SSL		CASServers	enabled enabled	OUP	HTTP	0	0	0	
SSL Offload		CASServers-SSL Exchange_IMAP4	@ENABLED	eup eup	SSL TCP	0	0	0	
AppExpert		Exchange_POP3	@ENABLED	OP	тср	0	0	0	
HTTP Compression	_	Exchange SMTP	@ENABLED	OUP	тср	0	0	0	
Integrated Caching		Lync_svc_5060	@ENABLED	DOWN	тср	0	0	0	
Protection Features		Lync_svc_5061	@ENABLED	OUP	TCP	0	0	0	
EdgeSight Monitoring	-	Lync_svc_135	@ENABLED	CUP	TCP	0	0	0	0
Load Balancing		Lync_svc_444	ENABLED	OUP	TCP	0	0	0	0
Virtual Servers		Lync_svc_443	@ENABLED	OUP	SSL_BRIDG	E 0	0	0	0
Services		Lync_svc_80	@ENABLED	€UP	TCP	0	0	0	0
Service Groups Monitors		Lync_svc_edge	@ENABLED	DOWN	SSL_BRIDG	E 0	0	0	0
Metric Tables		Lync_svc_edge1135	ENABLED	OWN	TCP	0	0	0	0
Servers									
Persistency Groups									
 AAA - Application Traffic 									
Content Switching									
Cache Redirection									
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x oria Copyold(C) Clinic System: Inc. All roy Copyold(C) Clinic System: Inc. All roy Copyold Configuration System Network Cloud Bridge DNS SSL	eo	rd. - C Citrix NetSce iorting NetScaler Load Balancing Virtual S Name Exchange_IMAP4_VIP Exchange_POP3_VIP Exchange_POP3_VIP Exchange_SOP3_VIP Exchange_SOP3_VIP	Ier VPX - Confil X Host Nam 10.5.172 Servers State Up Up Up	Effective State Up Up	Version NS10.0: Build IP Address 10.5.172.165 10.5.172.165	69.4.nc. Date: Jul 3 69.4.nc. Protocol 993 SSL_TCP 993 SSL_TCP 25 TCP	4 2012, 07:21:20 25 Per Page Method ROUNDROBIN LEASTCONNECTION LEASTCONNECTION	Documenta Refresi e e 1 - 11 of 11 > Persistence NONE NONE NONE	C CTRIX ation Downloads h Help Save (1) I I OCT 5 Health 100.00% 2 UP/0 DOWN 100.00% 1 UP/0 DOWN 100.00% 1 UP/0 DOWN
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6.4 Content Switching

AppExpert Template uses **Content Switching** to add its virtual server. Under **Content Switching**, **Virtual Servers** can be found:

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7. Monitoring – NetScaler Dashboard

NetScaler provides **Dashboard** to display System Overviews, Logs, and Service Summary per Service Group(s):

7.1 By Service Groups

Under CASServers-SSL , Exchange_IMAP4, Exchange_POP3, and Exchange_SMTP service groups -

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7.2 Per Server

Under **Service Group Member Summary**, service details including # of Requests, Reponses can be found:

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8. Palo Alto Networks Next-Generation Firewall Deployment

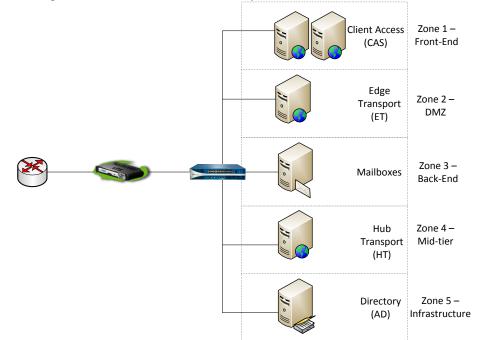
The Palo Alto Networks next-generation firewall safely enables enterprise applications in the data center and delivers meaningful segmentation by application, user and content. It identifies all traffic sent to the Microsoft Exchange servers, based on actual application, not just port or protocol. Access to the Microsoft Exchange servers can be further restricted to only the authorized users or groups. All content is scanned for malicious content - viruses, malware, and spyware – and dropped before they can reach the data center servers.

8.1 Data Center Segmentation

In an Exchange data center implementation, there will be several different roles performed by the servers. In smaller implementations, some of these roles can be combined in a single server. For large Exchange installations, the different server roles will be deployed on dedicated physical or virtual servers.

In order to properly segment and secure a large Exchange implementation, the different server roles will be isolated in dedicated security zones that can only be accessed by authorized users with authorized applications.

In this reference design, there will be segments for the Exchange Client Access Servers, Edge Transport Servers, Hub Transport Servers, and Mailbox Servers. Users and administrators accessing the Exchange servers will come from the External zone, and there will be an infrastructure segment in which the Active Directory Domain Controllers reside.



To build these segments in the Palo Alto Networks firewall, the following zones will be created:

Web – Exchange Client Access Servers DMZ – Edge Transport Servers Application – Hub Transport Servers Database – Mailbox Servers Active-Directory – Domain controller External – Users and administrators

For example, to create the Web zone, go to the Network tab, under the Zone section and click Add.

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		Add Delete admin Logout			Tasks Language

Enter the name of the zone, the type – Layer2 or Layer3, and click the check box for Enable User Identification.

Repeat this for each of the required zones.

8.2 Security Policy

The Palo Alto Networks next-generation firewall security policy is zone-based. Each segment in a data center deployment will be in a separate zone. Once the traffic flow is understood, the security policy can be written based on actual application, not just ports and port ranges. Allowing the following protocols between the specified zones will enable Exchange, while restricting non-Exchange traffic.

Every Exchange implementation is different, and depending on the features and services enabled, the specific applications between zones, as well as the required zones, may vary. This will serve as a starting reference for a working Exchange security policy.

Source Zone	Destination Zone	Application
Active-Directory	DMZ	netbios-ns



CIT	'RIX'
W E E	KIA
	•

Active-Directory	External	dns
Active-Directory	Web	ms-ds-smb msrpc netbios-dg netbios-ns netbios-ss
Application	Active-Directory	dns kerberos ldap ms-ds-smb ms-netlogon msrpc netbios-dg netbios-ss rpc
Application	Database	ms-ds-smb msrpc netbios-dg netbios-ss
Application	External	dns kerberos rpc
Database	Active-Directory	active-directory dns kerberos Idap ms-ds-smb ms-netlogon msrpc netbios-dg netbios-ss rpc
Database	Application	ms-ds-smb msrpc netbios-dg netbios-ss
Database	External	web-browsing
DMZ	Active-Directory	dns Idap ms-ds-smb netbios-dg netbios-ss
DMZ	External	web-browsing
External	Active-Directory	active-directory dns kerberos ldap ms-ds-smb ms-netlogon msrpc netbios-dg netbios-ss rpc
External	Application	smtp



External	Web	imap ms-ds-smb ms-exchange msrpc netbios-dg netbios-ss outlook-web pop3 rpc-over-http ssl web-browsing
Web	Active-Directory	active-directory dns kerberos ldap ms-ds-smb ms-netlogon msrpc netbios-dg netbios-ss rpc
Web	Application	ms-ds-smb msrpc netbios-dg netbios-ss
Web	Database	ms-ds-smb msrpc ms-exchange netbios-dg netbios-ss rpc-over-http ssl web-browsing
Web	External	active-directory dns kerberos Idap ms-ds-smb ms-netlogon msrpc netbios-dg netbios-ss rpc web-browsing

To create the security policy, each of these source and destination zone pairs will represent one rule in the security policy. For example, to create the "Application to Database" security policy, on the Palo Alto Networks firewall, go to the Policies tab (on top), and the Security section (on left), and click Add (on bottom). Enter the name of the security policy rule.



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Click on the Source tab and click Add. Select the Application zone.

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s://10.5.172.22/#										

Click on the Application tab and click Add. Four applications will be added to this rule: ms-ds-smb, msrpc, netbios-dg, and netbios-ss. Begin typing the first application name and select it when it appears in the list.

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Click OK. The rule will be added to the security policy. Repeat this process for each of the source and destination zone pairs listed above.

	ORKS	Dashboard	ACC	Monitor	Policies	Objects	Network	Device			📥 Commit 🔒	🗄 Sav
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8.3 User Identification

The Palo Alto Networks firewall also allows security policy to be further refined by end user or group, not just source IP. Certain servers, or certain applications in the data center may only need to be accessed by specific people or groups. The next-generation firewall will retrieve user and group information from the local user directory service, and allow that information to be used in security policies.

For example, the Exchange servers may need to be accessible by system administrators with Remote Desktop for management purposes. But, other users do not need this access. The security policy rule allowing the applications, in this case, ms-rdp and t.120, would only be accessible by the administrators group. Exchange would be accessible by other users using the client applications.

. palo	NETWOR	iks	Dashbo	pard ACC Mo	onitor	Policies	Objects	Network	Device	2		
م												
						Destinatio						
Name	Tag	Zone	Address	User	HIP Profile	Zone	Address	Application	Service	Action	Profile	Option
Remote Access	none	100 L2-External	any	8 enterprise\administrators	any	(100) L2-Web	any	🗊 ms-rdp 🗊 t.120	any	0	none .	
DMZ-Ex	none	pag L2-DMZ	any	any	any	(22) L2-External	any	web-browsing	any	0	none	
Ping	none	any	any	any	any	any	any	jing ping	any	0	none	
Web-App	none	pag L2-Web	any	any	any	M LZ-App	any	 ms-ds-smb msrpc netbios-dg netbios-ss 	any	O	none	

8.4 Threat Protection

In addition to validating the application used to access a security zone and the user initiating the request, the next-generation firewall can scan the network traffic for known and unknown threats. These include viruses, malware, spyware, or files with confidential data. By creating a security profile that scans traffic into the data center, the firewall can prevent a user from unknowingly infecting data center servers with malware, or getting infected from a compromised server.

Each rule in the security policy can have its own security profile applied, allowing for the greatest flexibility in setting policy. For example, you may have a strict security profile blocking viruses, malware, and spyware on traffic that originates outside the data center and accesses the front-end servers, but not have any inspection on traffic between the application and database servers.

To begin creating the security profile, locate the Profile column in the security policy page. If nothing has been configured there yet, it will indicate "none".



" pal	NETWOR	KS	Dashboa	ard ACC	Monitor	Policies	Objects	Network	Device	ě	Commit 👌	🎦 🗎 Sav	e
												S 🔞 H	elp
\$												•	×
Name	Tag	Zone	Address	User	HIP Profile	Zone	Address	Application	Service	Action	Profile	Options	
AD-Web	none	🕅 L2-AD	any	any	any	🕅 L2-Web	any	m netbios-ns	any	0	none	e	
App-Web	none	🕅 L2-App	any	any	any	🕅 L2-Web	any	🔟 ms-ds-smb	any	0	none		
								msrpc					
								metbios-dg					
App-DB	none	000 (3 Ann	any	any	2014	000 1.2 D.D.	any	netbios-ss	2014	-	none	-	
Mpp-DD	TROTTE	pag L2-App	city	dity	any	🕅 L2-DB	any	ms-ds-smb	any	0	none		
								netbios-dg					
								netbios-ss					
Ex-Web	none	pa L2-External	any	any	any	🙉 L2-Web	any	imap	any	0	none	B	
								🗊 ms-ds-smb			Ļ	J	
								ms-exchange					
								msrpc					
								netbios-dg					
								netbios-ss					
								i outlook-web					
Ex-App	none	pa L2-External	any	any	any	pag L2-App	any	more	any	0	none	B	
Web-Ex	none	pag L2-External	any	any	any	12 L2-App		active-direct		0	none		

Click the "none" and a dialog window will open. Choose "Profiles" from this window to configure the security profile.

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lame	Tag	Zone	Address	User		HIP Profile	Zone	Address	Application	Service	Action	Profile	Options
D-Web	none	(22) L2-AD	any	any		any	🕅 L2-Web	any	🔲 netbios-ns	any	0	none	
opp-Web	none	pag L2-App	any	any		any	🕅 L2-Web	any	 ms-ds-smb msrpc netbios-dg 	any	۲	none	
pp-DB	none	12-App	any	any	Profiles				etbios-ss ns-ds-smb		0	none	
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						Group			etbios-ss				
		pag L2-External		any		None			map ms-ds-smb ms-exchange msrpc marpc metbios-ss more		0		
x-App	none	pm L2-External	any	any		any	🙀 L2-App	any	🗊 smtp	any	0	none	
Neb-Ex	none	pag L2-Web	any	any		any	(22) L2-External	any	active-direct	any	0	none	



In the security profile window, select the specific profile settings for each of the different areas, Antivirus, Vulnerability Protection, etc. Some of these will have pre-configured profiles, such as "default" or "strict". These pre-configured options can be chosen, or a customized profile can be created. Please see Palo Alto Networks Administration Guide for details on creating custom profiles.

													S 6
4													G
Name	Tag	Zone	Address	User	1	HIP Profile	Zone	Address	Application	Service	Action	Profile	Options
AD-Web	none	pag L2-AD	any	any	3	any	🙉 L2-Web	any	🔲 netbios-ns	any	0	none	
App-Web	none	pag L2-App	any	any	1	any	pag L2-Web	any	ms-ds-smb msrpc netbios-dg	any	0	none	
App-D8	none	(20) L2-App	any	any	Profiles				Is-ds-smb	апу	Ø	none	
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					File Block	ing None			TSTPC				
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									more				
Ex+App	none	12 L2-External	any	any	1	any	peg L2-App	any	🗊 smtp	any	O	none	
Web-Ex	none	(22) L2-Web	any	any		any	(12) L2-External	any	active-direct	any	0	none	

Click OK, and the new security profile should now be part of the security policy rule. This will be displayed with icons for the specific areas that profiles were chosen for.



	Paloalto		Dashboa	ard ACC	Monitor	Policies	Objects	Network	Device	å	Commit 🔗	Save
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8												
Name	Tag 🗢	Zone	Address	User	HIP Profile	Zone	Address	Application	Service	Action	Profile	Options
AD-Web	none	pag L2-AD	any	any	any	🕅 L2-Web	any	🔝 netbios-ns	any	۲	none	•
App-Web	none	pag L2-App	any	any	any	🚧 L2-Web	any	ms-ds-smb msrpc netbios-dg netbios-ss	any	ø	none	
App-DB	none	pag L2-App	any	any	any	pag L2-DB	any	ms-ds-smb msrpc netbios-dg netbios-ss	any	ø	none	
Ex-Web	none	199 L2-External	any	any	any	paq L2-Web	any	Imap Imap ms-ds-smb ms-exchange msrpc metbios-sg metbios-ss more	.any	O	\$ 09	
Ex-App	none	(20) L2-External	any	any	any	pag L2-App	any	📰 smtp	any	0	none	e
Web-Ex	none	Dig L2-Web	any	any	any	(2) L2-External	any	active-direct	any	0	none	

Repeat this process for all of the rules that a security profile should be applied to.

9. References

<u>Citrix NetScaler Deployment Guide for Microsoft Exchange 2010.</u> Citrix Systems, Inc. 2009 <u>Application Template Deployment Guide</u>. *Microsoft OWA*. Citrix Systems, Inc. 2008 <u>NetScaler: Load Balancing Exchange 2010</u> <u>http://www.cb-net.co.uk/citrix-articles/2013-netscaler-load-balancing-exchange-2010</u>



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