



Digicomp Citrix-Day 2015 Networking Update

Zürich, 11.11.2015

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Citrix Systems International GmbH



Agenda

- NetScaler 11
 - Unified Gateway
 - SDX
 - General Improvements
- CloudBridge
 - WAN Optimization 7.4
 - VirtualWAN – WAN Optimization
 - VirtualWAN / VirtualWAN Center
 - HDX Optimization



NetScaler 11

Unified Gateway

Unified Gateway

(Key Use Cases)

Access Unification

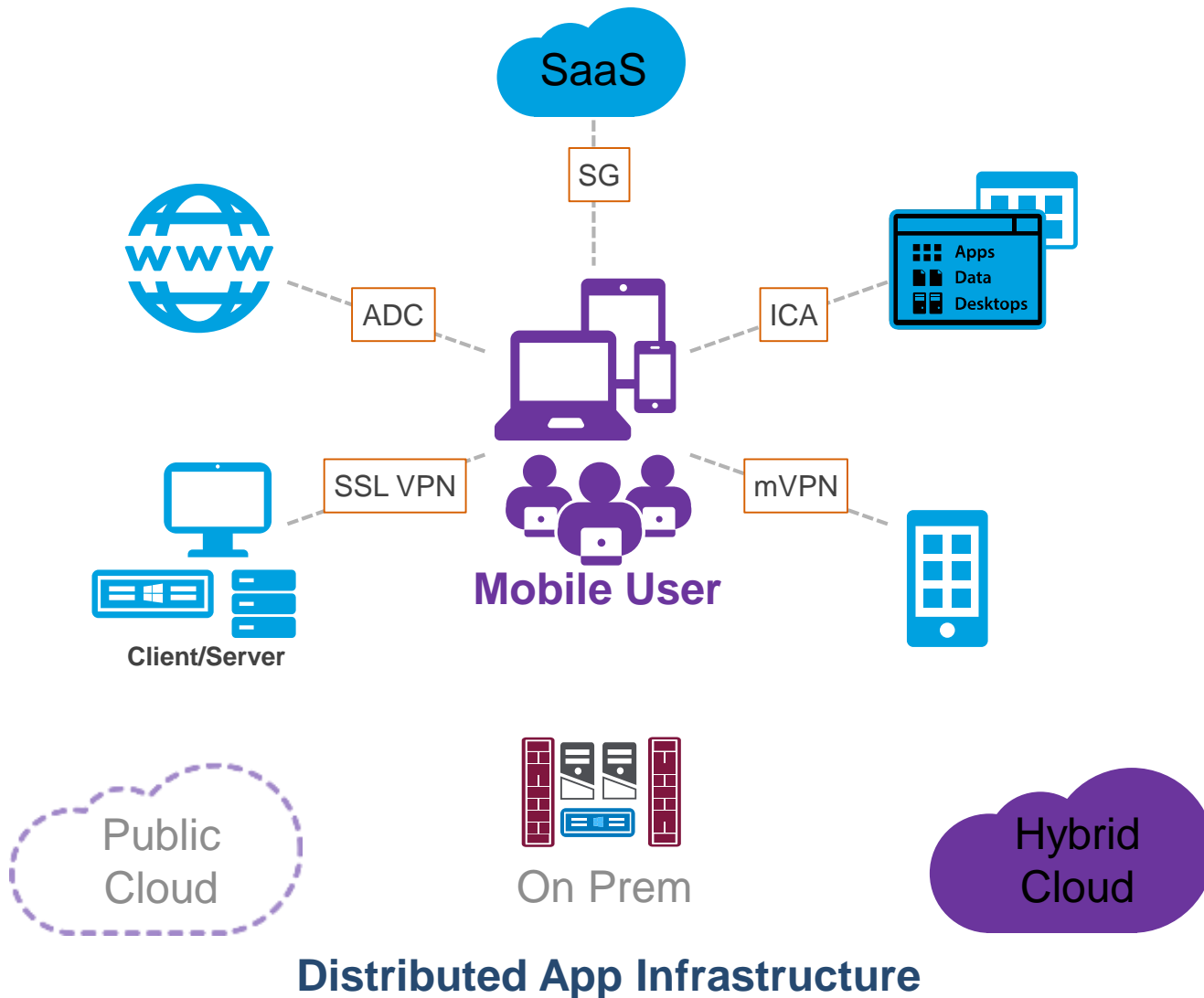
Smart Access 2.0

Portal
Customization

CVPN
Infrastructure

Client Plugins

Why Unified Gateway ?

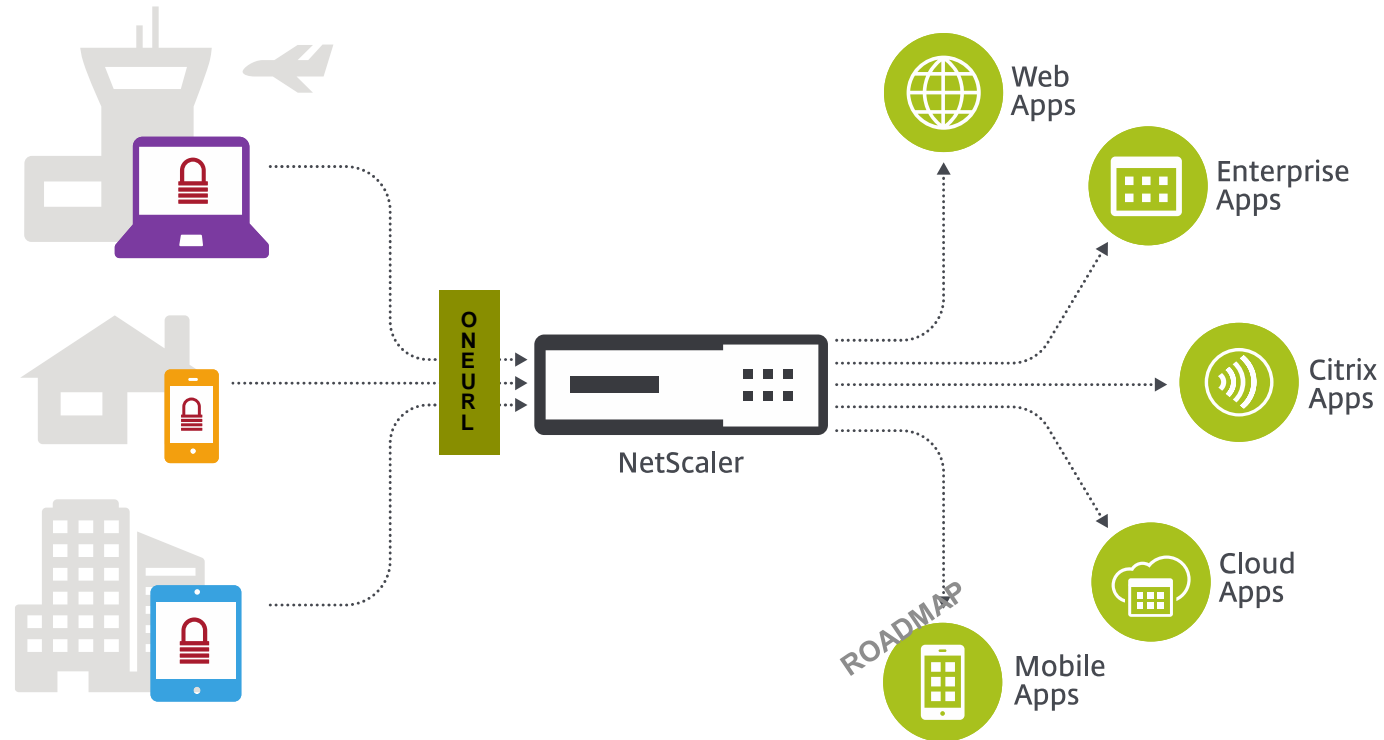


Multiple point solutions result in:

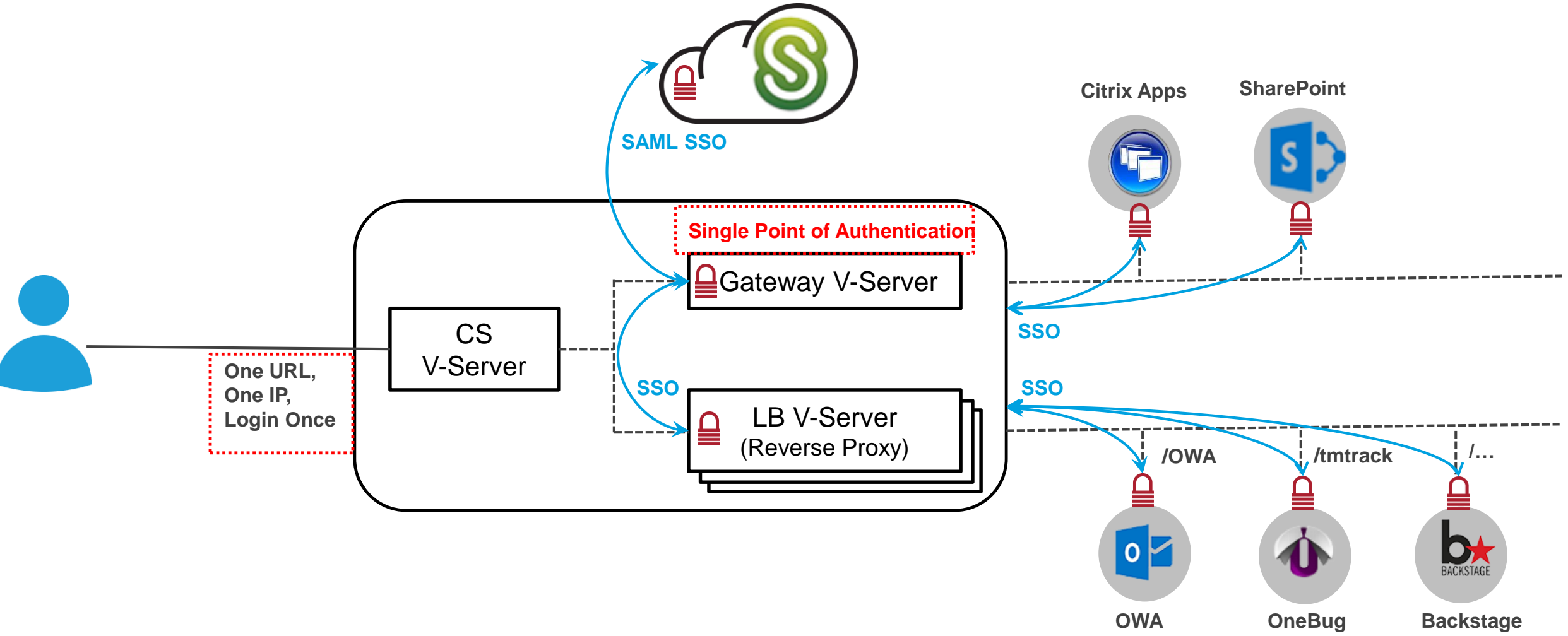
- Multiple URLs, Limited or poor end user experience
- Complicated and hard to manage Infrastructure
- Multiple islands, limited integration between products/solutions
- Misconfiguration of security and access policies
- Re-authentication for all the applications.

Unified Gateway - One URL to any application

- One addressable URL/FQDN
- “Login Once” and achieve seamless SSO to WebApps, Enterprise Apps, Citrix Apps, CloudApps (Mobile Apps is in the works)
- A single pane of glass for Configuration, Security and Control



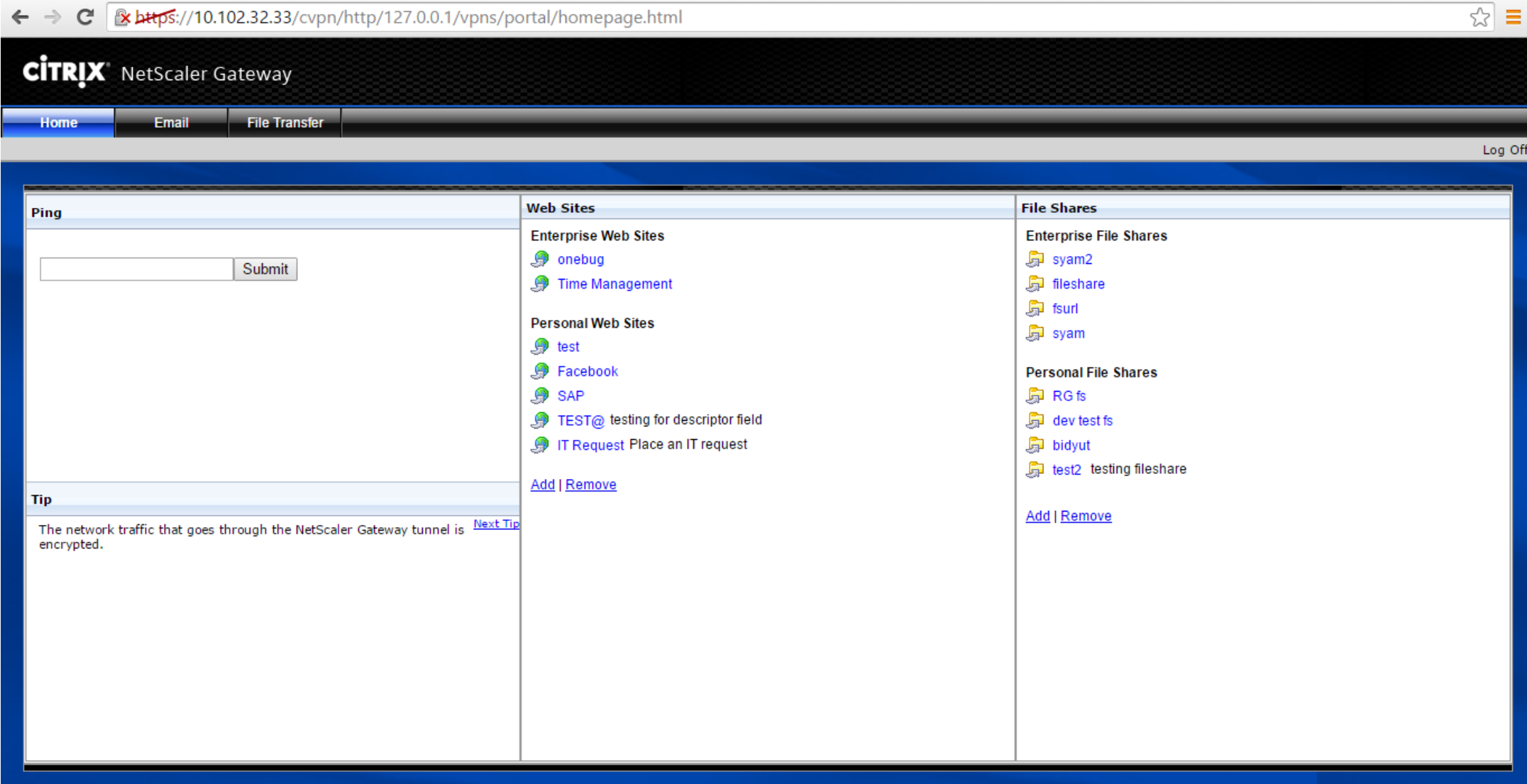
Unified Gateway – Building blocks



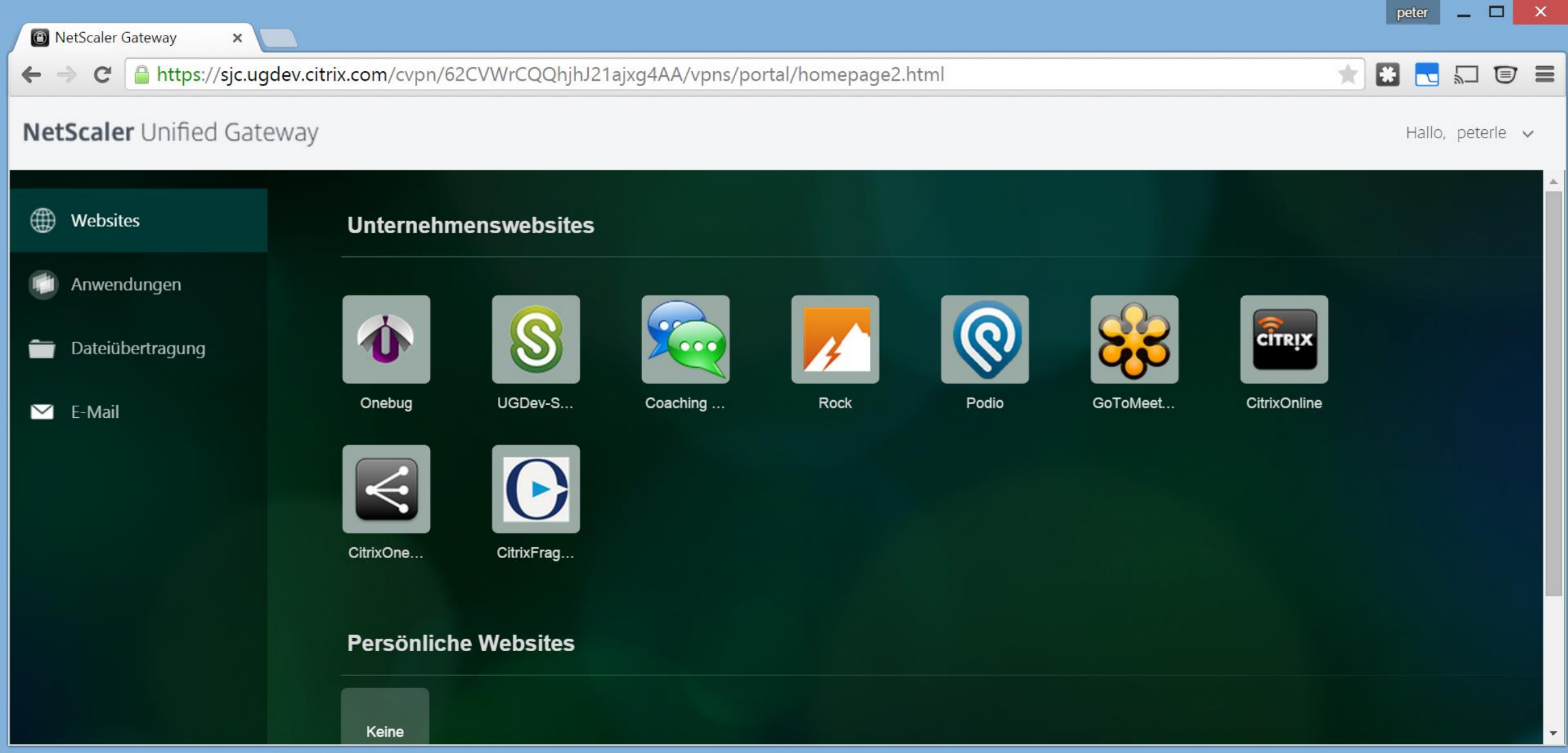
Unified Gateway- What's new in Gateway?

- Gateway vserver
 - can be behind CS vserver.
 - Does not need IP/port.
 - Does not need SSL certs(SSL certs are bound to front end CS vserver)
 - Single point of configuration for all policies(Authentication/authorization/session)
- Login once
 - One login for all GW/TM/SaaS apps that are published on gateway portal.
- Logout once
 - Single logout for all TM web apps/enterprise apps behind Unified Gateway.

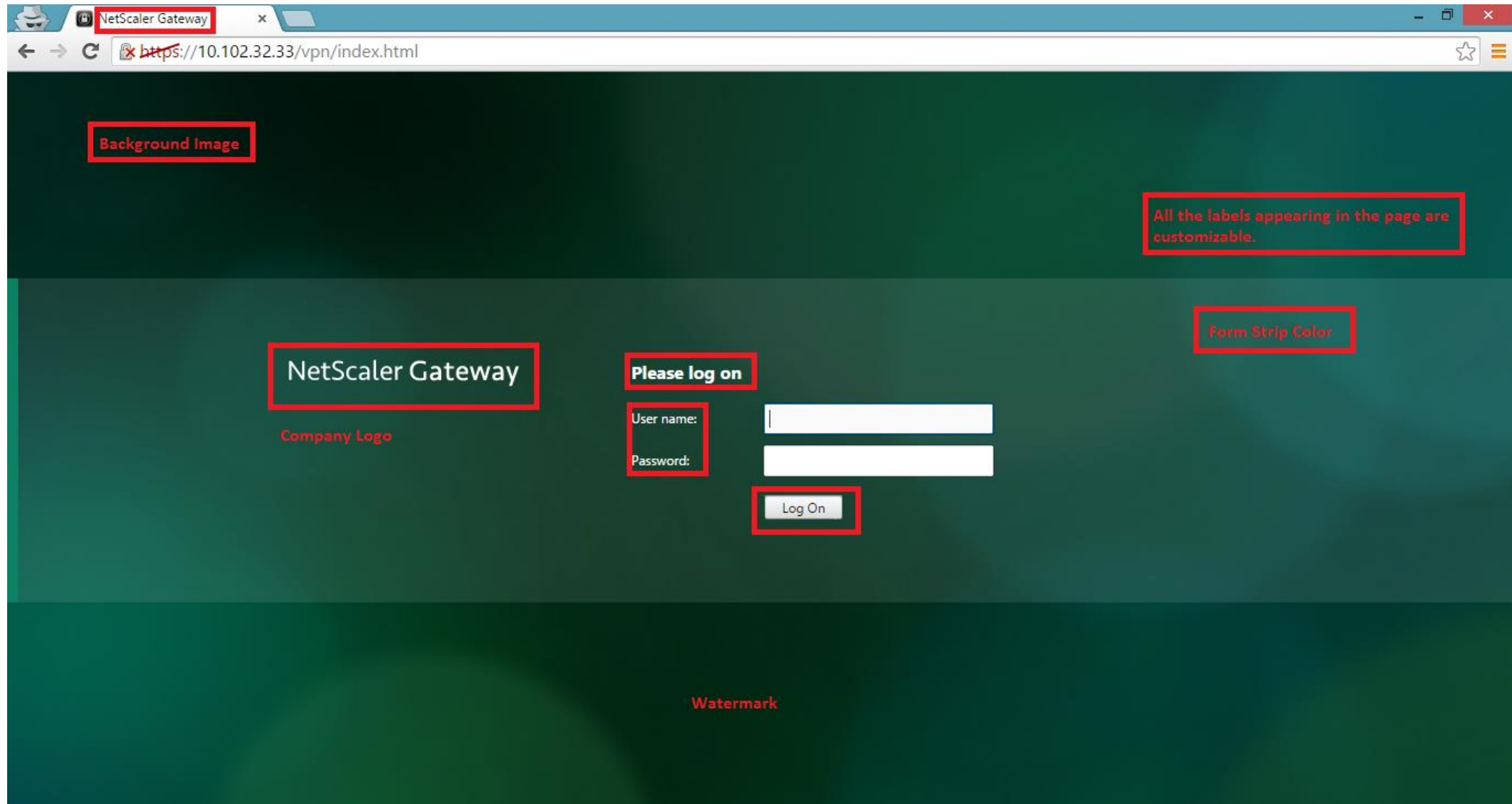
Default theme homepage:



New homepage for Greenbubble theme



Customization



Admin GUI

The screenshot displays the NetScaler VPX (1000) Admin GUI. The top navigation bar includes the product name, version (NS11.0 44.2.a.nc), and options for Logout and Citrix. The main navigation menu on the left lists various configuration categories, with 'Portal Themes' selected under 'NetScaler Gateway'. The main content area shows a table of Portal Themes with columns for 'Theme Name' and 'Base Theme'. The table contains 12 rows of data. Below the table, there is a section for 'Integrate with Citrix Products' featuring a XenMobile button.

Theme Name	Base Theme
Testing_theme	Greenbubble
Default	Default
Greenbubble	Greenbubble
global_test	Greenbubble
bidyut	Greenbubble
anil	Default
anil2	Greenbubble
.._@#=-	Greenbubble
- - _#@=-	Greenbubble
test_cluster	Greenbubble
cluster_mohit	Greenbubble

Portal Customization Wizard flow

The screenshot displays the 'Portal Customization Wizard' interface. At the top, there is a navigation bar with tabs for 'Dashboard', 'Configuration', and 'Reporting'. The 'Configuration' tab is active. On the right side of the navigation bar, there are links for 'Documentation' and 'Downloads', along with a settings gear icon.

The main content area is titled 'Portal Theme' and includes a 'Back' button. Below this, there is a 'Portal Theme' section with a table showing the current theme configuration:

Portal Theme	
Theme Name	Testing_theme
Base Theme	GreenBubble

To the right of this table is a 'Click to see Preview' button. Further right is an 'Advanced Settings' button.

Below the 'Portal Theme' section is the 'Common Attributes' section, which contains various configuration options:

- Locale***: English (dropdown)
- Background Image**: bg_bubbles.jpg (image selection)
- Change Background Image**: (checkbox)
- Header Background-Color**: rgba(255,255,255,1) (text input)
- Header Border-Bottom Color**: (text input)
- Header Logo**: (image selection)
- Change Header Logo**: (checkbox)
- Header Logo Position***: Top-left (dropdown)
- Center Logo**: logo_notagline.png (image selection)
- Change Center Logo**: (checkbox)
- Watermark Image**: (image selection)
- Change Watermark Image**: (checkbox)
- Form Font-Size***: 12px (dropdown)
- Form Font-Color**: #ffffff (text input)
- Login Button Image**: Button_LogOn_idle.png (image selection)
- Change Login Button Image**: (checkbox)
- Form Title Font-Size***: 10px (dropdown)
- Form Title Font-Color**: #ffffff (text input)
- Form Background-Color**: rgba(255,255,255,0.1) (text input)
- Form Left Border**: #0e8164 (text input)
- EULA Title Font-Size***: 20px (dropdown)

At the bottom of the 'Common Attributes' section are 'OK' and 'Cancel' buttons.

[Back](#)

Portal Theme

Portal Theme	
Theme Name	Testing_theme
Base Theme	GreenBubble
Click to see Preview	

Common Attributes	
Locale	English
Background Image	bg_bubbles.jpg
Header Background-Color	rgba(255,255,255,.1)
Header Border-Bottom Color	-
Header Logo	-
Header Logo Position	Top-left
Center Logo	logo_notagline.png
Watermark Image	-
Form Font-Size	12px
Form Font-Color	#ffffff
Login Button Image	Button_LogOn_idle.png
Form Title Font-Size	10px
Form Title Font-Color	#ffffff
Form Background-Color	rgba(255,255,255,0.1)
Form Left Border	#0e8164
EULA Title Font-Size	20px

Advanced Settings
+ EPA Page
+ EPA Error Page
+ Post EPA Page
+ VPN Connection Page
+ Portal Home Page

Login Page	
The labels for this section will be updated for the respective locale chosen in 'Common Attributes' section above	
Page Title <input type="text" value="Bank of America"/>	User Name Field Title <input type="text" value="Employee Name"/>
Form Title <input type="text" value="Enter Credentials"/>	Password Field Title <input type="text" value="Domain Password"/>
Login Button Text <input type="text" value="Log On"/>	Password Field2 Title <input type="text" value="BSA Token"/>
<input type="button" value="OK"/>	

Major customizable parameters. Includes CSS styling which will be consistently applied to all pages. Individual pages labels are also customizable.

Authentication Dashboard

NetScaler > Authentication > Authentication Servers

Authentication

Manage your authentication servers

NetScaler > Authentication > Authentication Servers > Authentication Server

Add

Name

Peter.lab
Auto_Peter.lab
Radius2AD
Cert_Server
cert1
SAML_SP_CNS
Auth_Pro_SAML_CM

Server Type

LDAP

VPN Virtual Server

Unbind **Visualize**

Peter.lab

This authentication server

Server Type

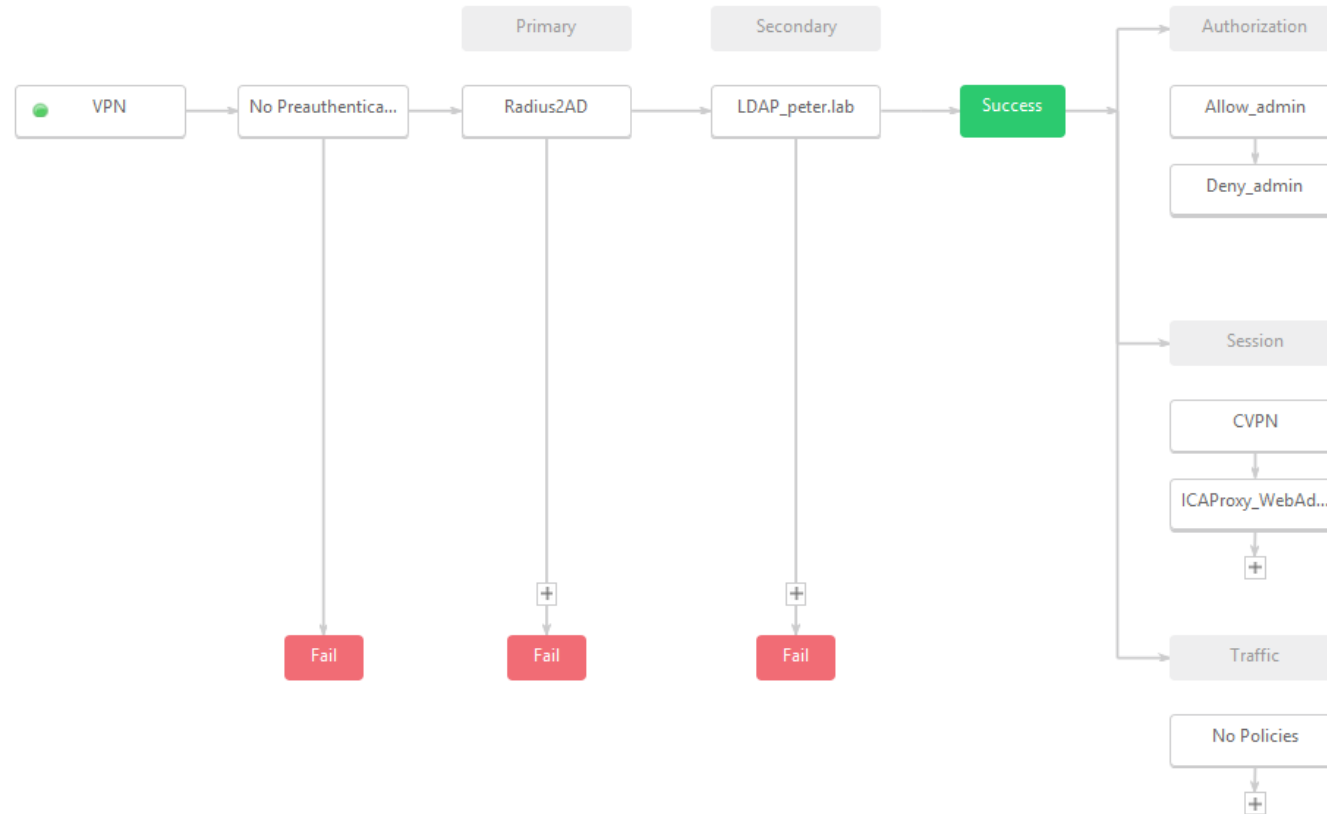
LDAP

VPN Virtual Server

Unbind **Visualize**

Name	Policy
VPN	LDAP

Visualizer - VPN



Syslog Viewer

NetScaler > Authentication > Logs

Syslog Viewer (138 results) Sort: Newest first

Search Go

Mon, 08 Jun 2015 13:49:58	ns [1130]: In receive_ldap_user_bind_event: User authentication (Bind event) for user peter succeeded	Info
Mon, 08 Jun 2015 13:49:58	ns [1130]: In receive_ldap_user_search_event: User search succeeded, attempting user authentication(Bind) for peter	Info
Mon, 08 Jun 2015 13:49:58	ns [1130]: In receive_ldap_user_search_event: Doing ldap authentication, failed to extract attribute assistant for user peter	Warn
Mon, 08 Jun 2015 13:49:58	ns [1130]: In receive_ldap_user_search_event: Doing ldap authentication, failed to extract attribute employeeType for user peter	Warn
Mon, 08 Jun 2015 13:49:58	ns [1130]: In receive_ldap_user_search_event: Doing ldap authentication, failed to extract attribute employeeID for user peter	Warn

File

/var/log/nsvpn.log

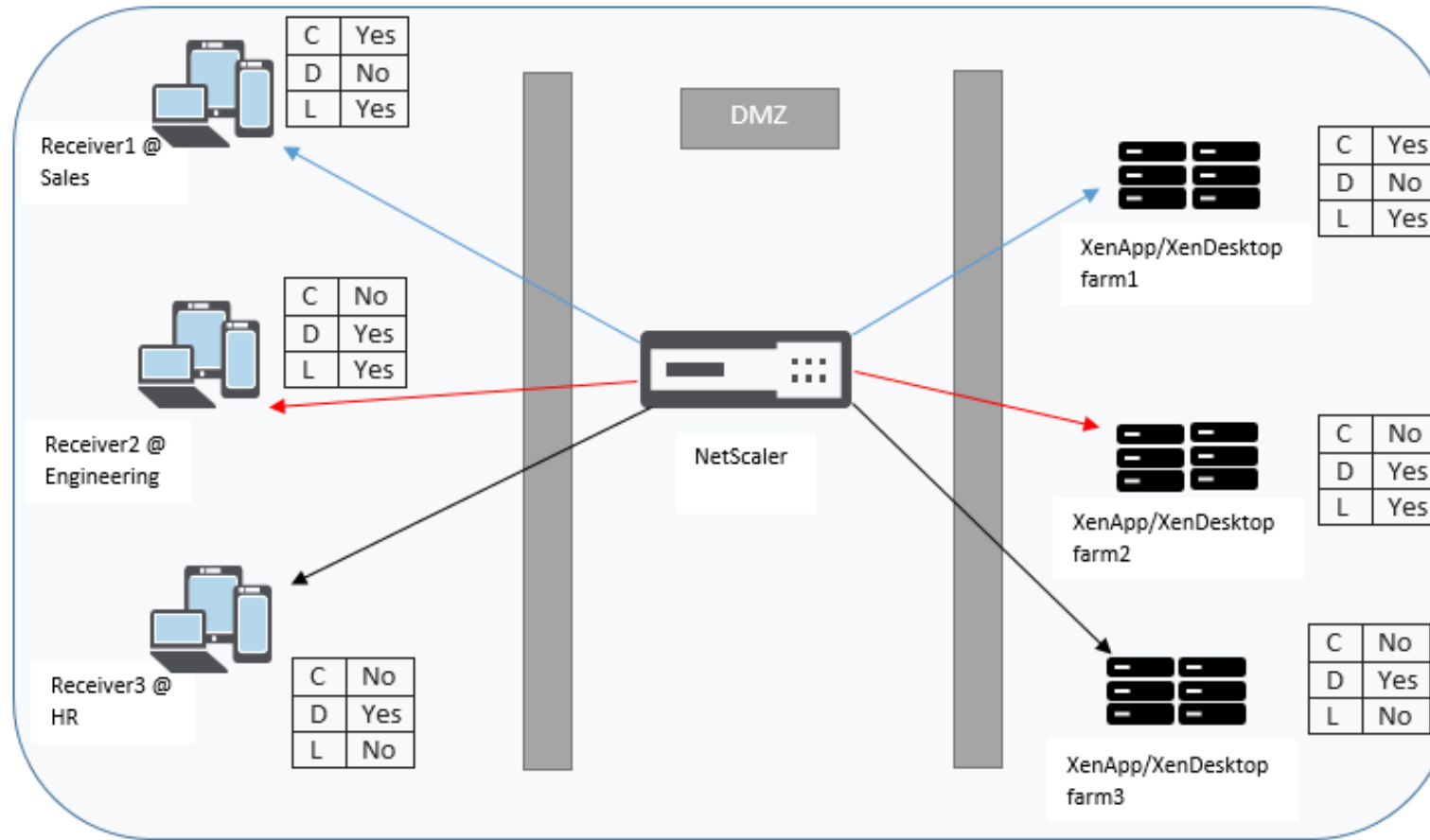
Filter By

- ▶ Module
- ▶ Event Type
- ▶ Severity

Apply

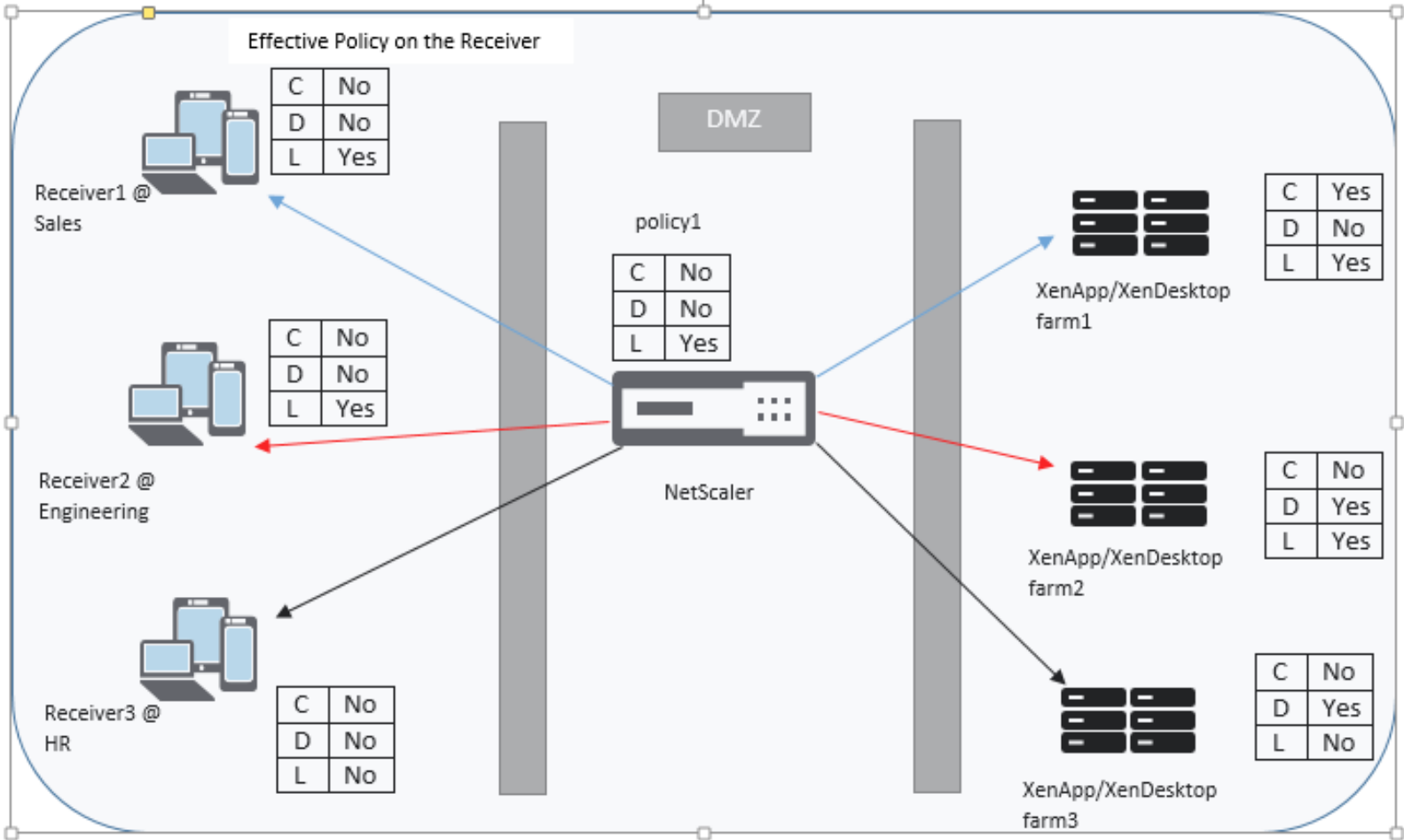
SmartAccess

C,D,L are applications in this example where C = Clipboard access, D = Drive mapping and L = LPT port access.



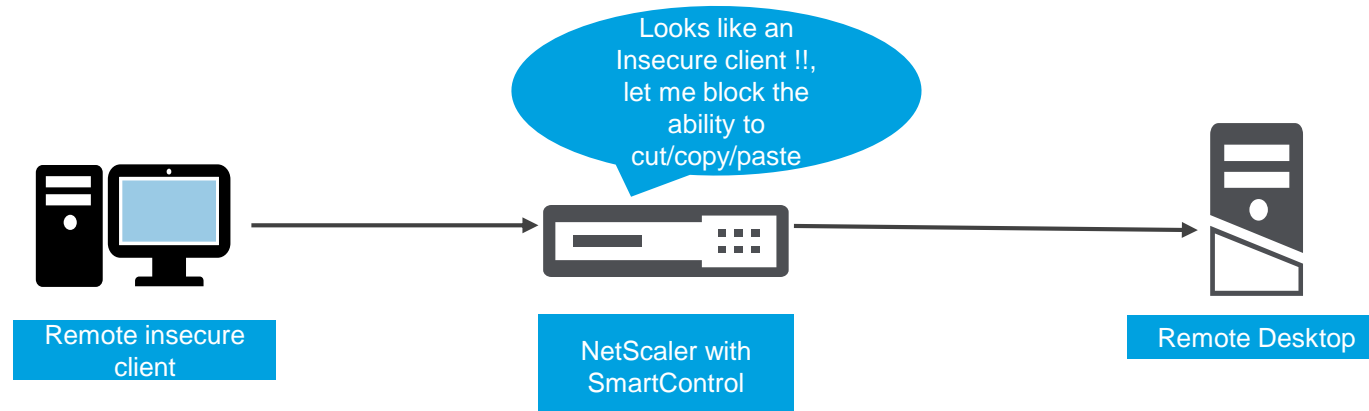
SmartControl

Overriding capability on NetScaler and the effective policy on Receiver.



What is the difference between SmartAccess and SmartControl?

- SmartAccess: access to published application controlled in XA/XD policy engine with the help of session polices results from the NS.
- SmartControl: NetScaler becomes a single point of configuration and enforcement. The NS takes the decision to block access to any features.



SmartControl: What can be controlled?

All of these features can be controlled.

- Client clipboard redirection
- Client Drive mapping
- Client USB Device Redirection
- Client audio redirection
- Client COM port redirection
- Client LPT port redirection
- Client printer redirection
- Multi stream
- File sharing for Receiver for HTML5

- Rather than making the admin configure capabilities on multiple backend XA/XD servers, with SmartControl, NetScaler becomes a single point of configuration.
- Users can be granted access based on EPA checks.

SmartControl requires Platinum License!
No hiding of published applications!

Configuration

Global NetScaler Gateway Settings

Network Configuration | Client Experience | Security

Display Home Page

Home Page

URL for Web-Based Email

Split Tunnel*
OFF

Session Time-out (mins)
30

Client Idle Time-out (mins)

Plug-in Type*
Windows/MAC OS X

Windows Plugin Upgrade*
Essential

Linux Plugin Upgrade*
Always

MAC Plugin Upgrade*
Always

VPN Plugin

VPN Virtual Server

Basic Settings

Name
vpn_ssl

IPAddress*
10 . 102 . 111 . 11 IPv6

Port
443

RDP Server Profile

Max Users
0

Max Login Attempts

Failed Login Timeout

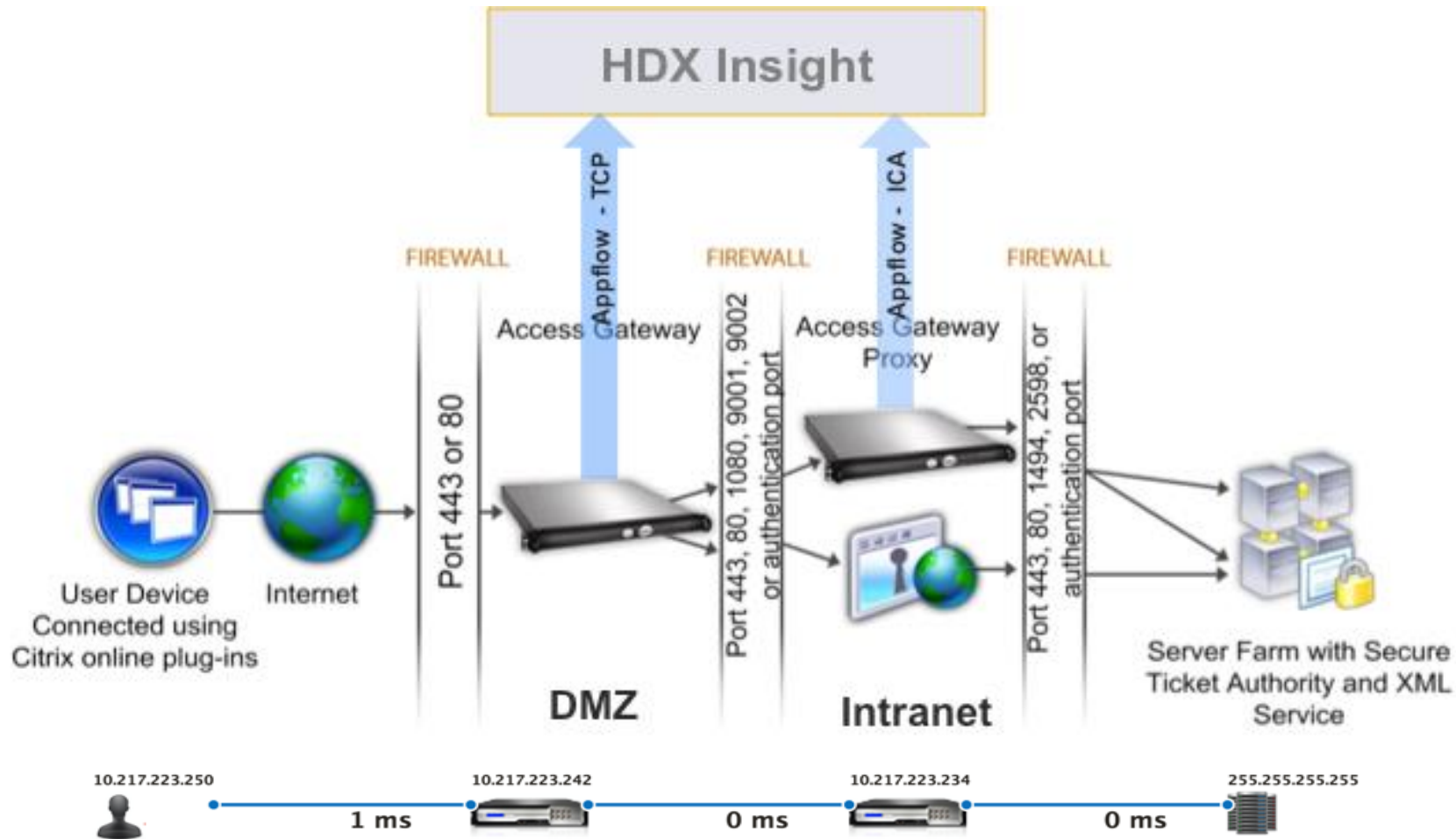
Windows EPA Plugin Upgrade
Essential

Linux EPA Plugin Upgrade

Mac EPA Plugin Upgrade

EPA Plugin

Netscaler Gateway Double Hop Deployment:

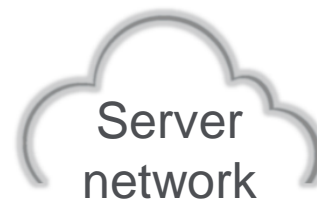


HDX Insight LAN User Mode

XenApp XenDesktop SOCKS Proxy

NetScaler Socks Server

- `add cr vserver crvs HDX <crvserver IP> <Port> - cacheType FORWARD -cltTimeout 180`
- `bind appflow global pol2 1 END -type ICA_REQ_DEFAULT`



SOCKS Proxy



Citrix NetScaler



ICA File Settings

ProxyType=Socks

ProxyHost=<crvserver IP>:<Port>

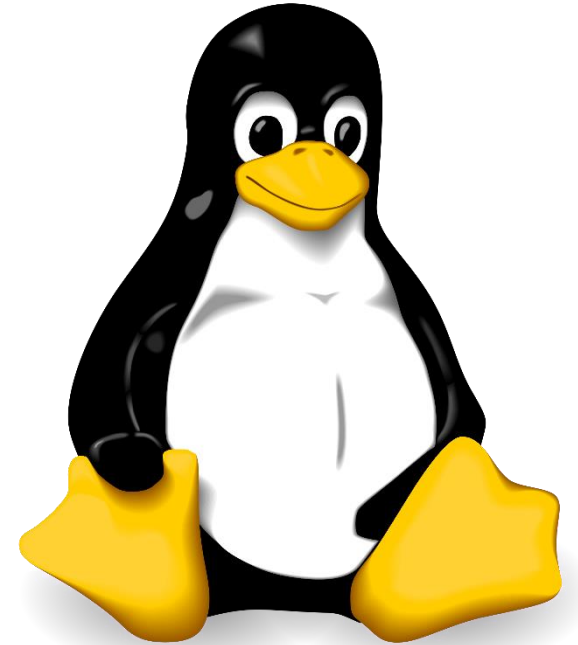
ICASOCKSProtocolVersion=0

ICASOCKSProxyHost=<crvserverIP>

ICASOCKSProxyPortNumber=<Port>

XA/XD FARM

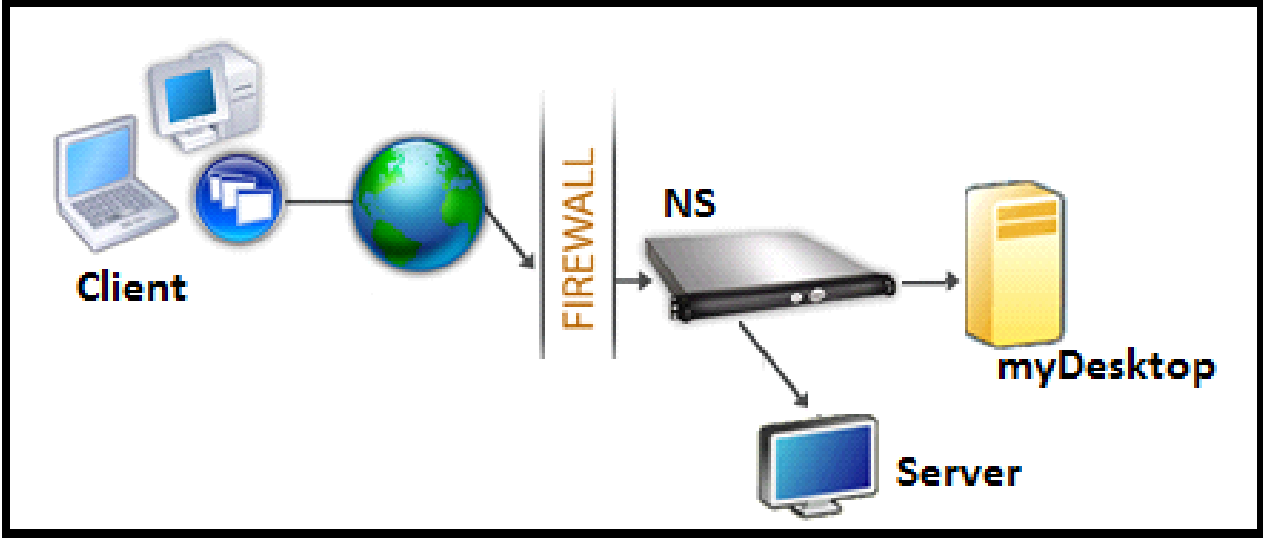
Client Plugins





RDP Proxy in NetScaler Gateway

RDP Proxy Deployment Overview



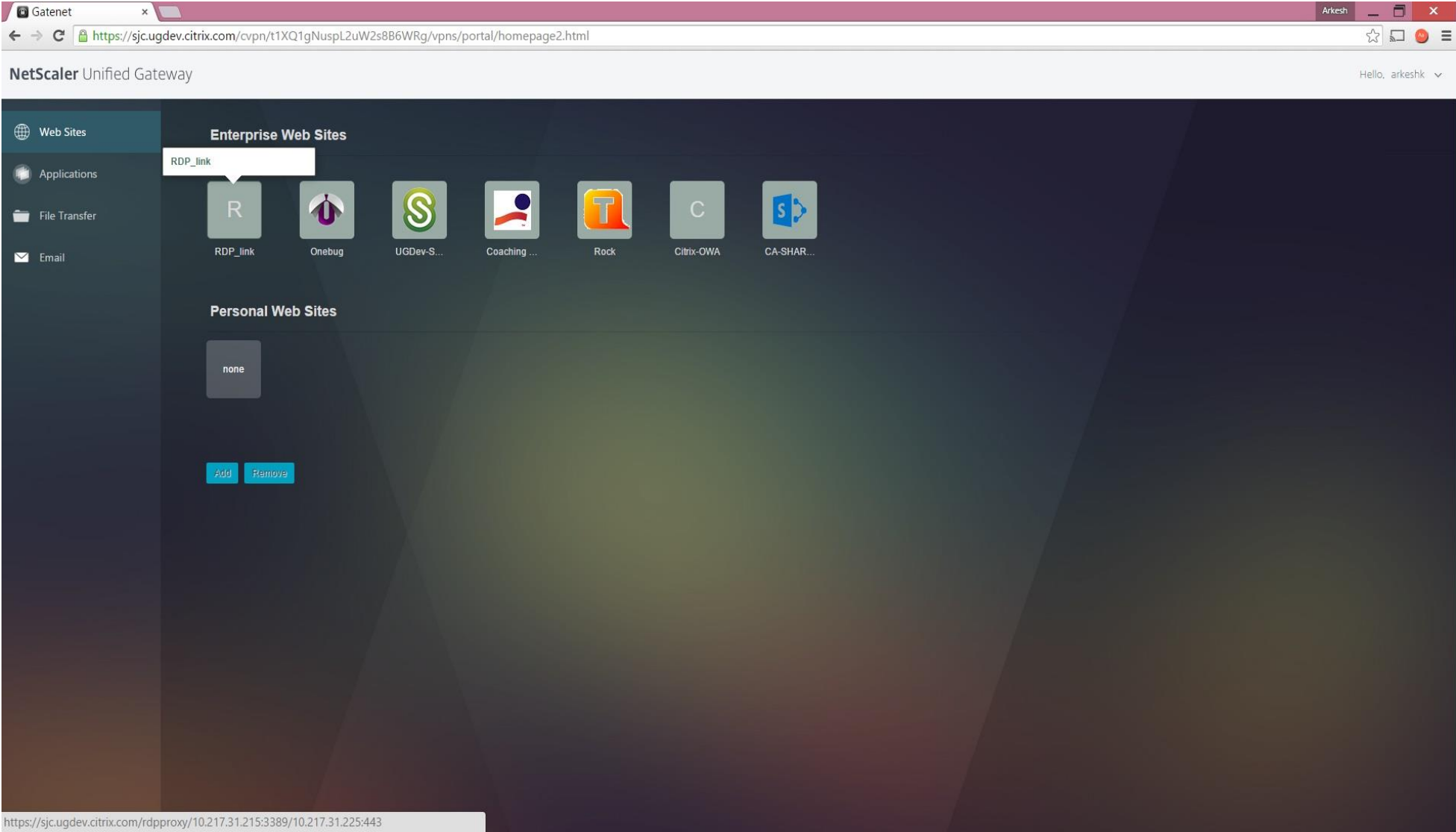
Sample RDP File

Like a launch.ica

full address:s:10.217.31.225:443 [SSLProxyHost field in .ica]

loadbalanceinfo:s;;40;STA209308785;849F5498AFE8C942E8835973F8BFAA
[Address field in .ica]

Portal Page with RDP Resources





NetScaler 11

SDX

Solution - Simplified Upgrade

- SDX on Citrix supported matrix - Always
- Single step upgrade of the entire SDX with single image
- Intuitive progress display
- Reduced customer escalations




First Time User Experience

The screenshot shows the 'Configuration' tab of the NetScaler SDX management console. It features a navigation bar with 'Dashboard', 'Configuration', 'Documentation', and 'Downloads'. A 'Welcome!' message explains the wizard's purpose. Below, three configuration sections are listed: 'Management Network' (completed), 'System Settings' (skipped), and 'Licenses' (3 items). A 'Continue' button is at the bottom.

Dashboard | **Configuration** | Documentation | Downloads

Welcome!

Use this wizard for initial configuration of your NetScaler SDX appliance. To configure or to change a previously configured setting, click each of the sections below. If a parameter has already been configured, a check mark appears within a green circle. An orange circle containing a dash indicates that you have chosen to skip this section.

Section	Description	Status
	Management Network IP address at which you access the NetScaler SDX for configuration, monitoring, and other management tasks. Management Service IP Address: 10.102.126.20 XenServer IP Address: 10.102.126.19 Netmask: 255.255.255.0 Gateway: 10.102.126.1 DNS IP Address: 127.0.0.2	✓
	System Settings Specify a host name to identify your NetScaler SDX, System Settings and the Time Zone in which your NetScaler SDX is located. Host Name: Not configured Secure Access Only: Disabled Time Zone: UTC+0530 IST Asia/Kolkata	—
	Licenses Upload licenses from your local computer or allocate licenses from the Citrix licensing portal. There are 2 license file(s) present on this NetScaler SDX.	3

[Continue](#)

New Dashboard

Interfaces

- LA/1
 - 1/1
 - 1/2
- LA/2
 - 1/3
 - 1/4
- 0/1
- 0/2
- 1/5
- 1/6
- 1/7
- 1/8
- 10/1
- 10/2
- 10/3
- 10/4

Instances

NetScaler
●
10.102.126.215
10.102.126.215

0/1	0/2	1/1	1/2 (VLANs 100,110)	10/1
-----	-----	-----	---------------------	------

Rx Bytes

1
Mbps

Tx Bytes

0
Mbps

HTTP Req/s

0

CPU Usage

1.10%

Memory Usage

15.78%

VM State ●

Total Memory (MB) 2048

Throughput (Mbps) 2000

Packets per second 1000000

Up Since Tue Apr 7 20:56:49 2015

Version NetScaler NS10.5: Build 55.8.nc, Date: Jan 26 2015, 00:21:02

Disk Allocation VPX-SR(/dev/hda) - 20GB

#SSL Chips 2


#SSL Chips UP 2

HA Master State Primary

Peer IP Address

HA Sync Status ENABLED


Instances Allocation
20



5 Allocated







15 Free

Memory Allocation (GB)
48



24 Allocated

24 Free

-  Fan
●
-  Temperature
●
-  Voltage
●
-  Power Supply
●
-  Disk Storage
●
-  Resources
●



NetScaler 11

General Improvements

TLS_FALLBCK_SCSV

- Mitigation for POODLE attack
- Prevents attempt to connect to server by downgrading SSL/TLS protocol
- Server identifies if SSLv3 is the highest protocol present on a client by this parameter

Platform	Release Plan
MPX	11.0, 10.5b57
VPX	11.0, 10.5b57
VPX on SDX	11.0, 10.5b57
MPX-FIPS	11.0, 10.5b57

Customize SSL Default Profile

- Edit the default SSL profile to handle global changes to be applied to all of the SSL vservers and services
- Edit the default cipher group bound to the vservers at one location
- Enables to reflect changes to multiple vservers and services by changing configuration at one location
- For example disable SSLv3 globally, remove RC4 from default cipher group

Platform	Release Plan
MPX	11.0, 10.5 MR (Q2, 2015)
VPX	11.0, 10.5 MR (Q2, 2015)
VPX on SDX	11.0, 10.5 MR (Q2, 2015)
MPX-FIPS	11.0, 10.5 MR (Q2, 2015)

New Cipher Support

- AES-GCM/SHA-2
 - Front-end on MPX (PX, N3)
 - TLSv1.2 only.
- ECDHE
 - Back-end on MPX (PX, N3)
 - Note: ECDHE on front-end GA'ed in 10.1, 10.5

- Support on other platforms (FIPS, VPX) coming soon.

PFS Optimizations

- ECDHE: +120%
 - 2 ECC Multiplication + 1 RSA 2K Sign operation.
 - More operations offloaded to Cavium card.
 - Performance with P-256:
 - Corinth-N3: 8,200 TPS (CPU:12%)
 - Decapolis: 65,000 TPS (Expected numbers: Shenick tool limitation, BWC now ready :)
- DHE:
 - DH key generation offloaded to card.
 - Performance with DH-2048bit
 - Corinth-N3:
 - Full PFS (no reuse): 9,200 (CPU:10%)
 - 500 reuse: 15,500 (CPU:11%)

Auto Detection of CertKey Encoding

- NetScaler can now auto-detect the encoding type and load the certificate and key.
 - No need to figure out and give the “–inform” option.
- Supported Formats: PEM, DER, PFX/PKCS#12
- For PFX, with “–bundle” option of “add certkey” command.
 - NetScaler will parse the PFX file.
 - Load the server-cert and server-key
 - Load all the Intermediate-CA certs present in the PFX file
 - Link the certificates.

Protocol Support Matrix for TLSv1.1/1.2

Platforms	Front-End (Vserver)	Back-End (Service)
MPX/SDX	YES [Since 10.0]	YES [11.0, 10.5 (MR – June/July)]
FIPS	YES [11.0, 10.5.e - 55.8007.e]	YES [11.0, 10.5 (MR – June/July)]
VPX	YES [11.0, 10.5 – 57.7]	In-progress [Q3]

Qualys SSL Labs Report: NetScaler MPX/SDX/VPX

The screenshot shows a web browser displaying the Qualys SSL Labs report for the domain sjc.ugdev.citrix.com. The browser's address bar shows the URL: https://www.ssllabs.com/ssltest/analyze.html?d=sjc.ugdev.citrix.com. The Qualys SSL Labs logo is visible at the top left, and navigation links for Home, Projects, Qualys.com, and Contact are at the top right. The breadcrumb trail indicates the user is in the 'SSL Server Test' section. The main heading is 'SSL Report: sjc.ugdev.citrix.com (207.47.50.173)', with the assessment date of Tue, 02 Jun 2015 21:18:02 UTC. A 'Scan Another' link is present. The 'Summary' section features a large green 'A+' rating badge. To the right, a horizontal bar chart displays scores for Certificate (100), Protocol Support (95), Key Exchange (90), and Cipher Strength (90). Below the chart, three informational boxes are shown: a yellow box with a link to documentation, a green box stating support for TLS_FALLBACK_SCSV, and another green box stating support for HTTP Strict Transport Security with long duration.

Metric	Score
Certificate	100
Protocol Support	95
Key Exchange	90
Cipher Strength	90

http://blogs.citrix.com/2015/05/22/scoring-an-a-at-ssllabs-com-with-citrix-netscaler-the-sequel/



Secure Cookie Enhancement



Introduction

- When cookie persistence is configured on a lb vserver, for a client request NS insert's a cookie in the response.
- Cookie has information about:
 - Vserver name
 - Ip address & port of service
- Based on which a persistent service is selected on subsequent requests from client containing the cookie.

Vulnerability:

The encoded persistence data can be easily guessed by the attacker exposing backend servers information.

```

Done
> sh lb param
Global LB parameters:
  Persistence Cookie HttpOnly Flag: ENABLED
  Use Secured Persistence Cookie Flag: DISABLED
  Use Port For Hash LB: YES
  Prefer direct route: YES
  Start RR Factor: 0
  Skip Maxclient for Monitoring: DISABLED
  Monitor Connection Close: FIN
  Use consolidated stats for LeastConnection: YES
  Allow mac mode based vserver to pick the return traffic from services: DISABLED
Done
> sh lb vs v1
v1 (100.100.100.11:80) - HTTP  Type: ADDRESS
State: UP
Last state change was at Wed Mar 25 04:27:15 2015
Time since last state change: 0 days, 00:28:06.960
Effective State: UP
Client Idle Timeout: 180 sec
Down state flush: ENABLED
Disable Primary Vserver On Down : DISABLED
Appflow logging: ENABLED
Port Rewrite : DISABLED
No. of Bound Services : 3 (Total)      3 (Active)
Configured Method: LEASTCONNECTION
Current Method: Round Robin, Reason: Bound service's state changed to UP
Mode: IP
Persistence: COOKIEINSERT (version 0) Persistence Timeout: 2 min
Vserver IP and Port insertion: OFF
Push: DISABLED Push VServer:
Push Multi Clients: NO
Push Label Rule: none
L2Conn: OFF
Skip Persistency: None
IcmpResponse: PASSIVE
RHISstate: PASSIVE
New Service Startup Request Rate: 0 PER_SECOND, Increment Interval: 0
Mac mode Retain Vlan: DISABLED
DBS_LB: DISABLED
Process Local: DISABLED
Traffic Domain: 0
1) http1 (200.200.200.1: 80) - HTTP State: UP  Weight: 1
   Persistence Cookie Value : NSC_w1=ffffffffcbc0d61045525d5f4f58455e445a4a423660
2) http2 (200.200.200.2: 80) - HTTP State: UP  Weight: 1
   Persistence Cookie Value : NSC_w1=ffffffffcbc0d61345525d5f4f58455e445a4a423660
3) http3 (200.200.200.3: 80) - HTTP State: UP  Weight: 1
   Persistence Cookie Value : NSC_w1=ffffffffcbc0d61245525d5f4f58455e445a4a423660
Done
> set lb param -UseSecuredPersistenceCookie ENABLED -cookiePassphrase abc
Done
> sh lb param
Global LB parameters:

```

```

> set lb param -UseSecuredPersistenceCookie ENABLED -cookiePassphrase abc
Done
> sh lb param
Global LB parameters:
  Persistence Cookie HttpOnly Flag: ENABLED
  Use Secured Persistence Cookie Flag: ENABLED
  Cookie Passphrase: af2b2ce2e894f3210e06b20ddf0a837
  Use Port For Hash LB: YES
  Prefer direct route: YES
  Start RR Factor: 0
  Skip Maxclient for Monitoring: DISABLED
  Monitor Connection Close: FIN
  Use consolidated stats for LeastConnection: YES
  Allow mac mode based vserver to pick the return traffic from services: DISABLED
Done
> sh lb vs v1
v1 (100.100.100.11:80) - HTTP  Type: ADDRESS
State: UP
Last state change was at Wed Mar 25 04:27:15 2015
Time since last state change: 0 days, 00:28:25.740
Effective State: UP
Client Idle Timeout: 180 sec
Down state flush: ENABLED
Disable Primary Vserver On Down : DISABLED
Appflow logging: ENABLED
Port Rewrite : DISABLED
No. of Bound Services : 3 (Total)      3 (Active)
Configured Method: LEASTCONNECTION
Current Method: Round Robin, Reason: Bound service's state changed to UP
Mode: IP
Persistence: COOKIEINSERT (version 0) Persistence Timeout: 2 min
Vserver IP and Port insertion: OFF
Push: DISABLED Push VServer:
Push Multi Clients: NO
Push Label Rule: none
L2Conn: OFF
Skip Persistency: None
IcmpResponse: PASSIVE
RHISstate: PASSIVE
New Service Startup Request Rate: 0 PER_SECOND, Increment Interval: 0
Mac mode Retain Vlan: DISABLED
DBS_LB: DISABLED
Process Local: DISABLED
Traffic Domain: 0
1) http1 (200.200.200.1: 80) - HTTP State: UP  Weight: 1
   Persistence Cookie Value : NSC_w1=14b5a3d92f20893a6e284b5427f5a2d2e6d8522d060272041fa6a13d5ae8e06e7703dbf2
2) http2 (200.200.200.2: 80) - HTTP State: UP  Weight: 1
   Persistence Cookie Value : NSC_w1=5ccba3d8a5e8bdd6a14231fabe5f1b5461fde3c3ab805bad730f12ba2798819c58f59989
3) http3 (200.200.200.3: 80) - HTTP State: UP  Weight: 1
   Persistence Cookie Value : NSC_w1=30dfa3db400a9037ac7740ca2934d980a641bebe94c3e6223981c55de6d1856e2eae9657
Done
>

```



CloudBridge

WAN Optimization 7.4

CloudBridge 7.4.x WAN Optimization

- September:
 - Transparent Caching – Includes authenticated links
 - Thinwire+ support (FP3) – expect **LESS** bandwidth usage than legacy T/W
 - ICA Proxy / NSG sandbox – Acceleration for remote users
- October / November
 - Zero Touch Factory Ship – DHCP / Command Center support
 - Office365 acceleration – Support optimization from local POP
 - SMB3 Optimization – Better pre-fetching and compression
- Q1/2016
 - Session Reconnect – full CGP support
 - Adv. Thinwire / DCR – Better cross session de-duplication



CloudBridge

VirtualWAN – WAN Optimization

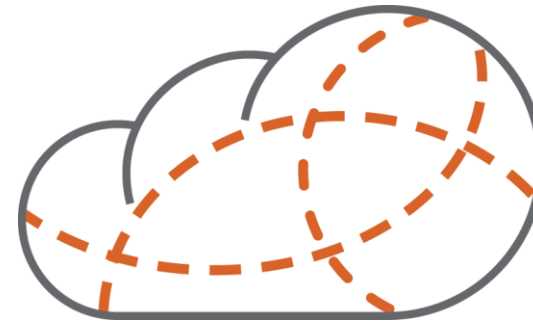


CloudBridge



WAN Optimization Solution

Optimize bandwidth while accelerating application delivery



Virtual WAN Solution

Scale bandwidth, ensure availability, and reduce costs



CloudBridge



WAN Optimization Solution



- “Accelerate” the WAN by compressing data and optimizing chatty protocols
- Use when MPLS connections are the only viable WAN option for security or performance reasons

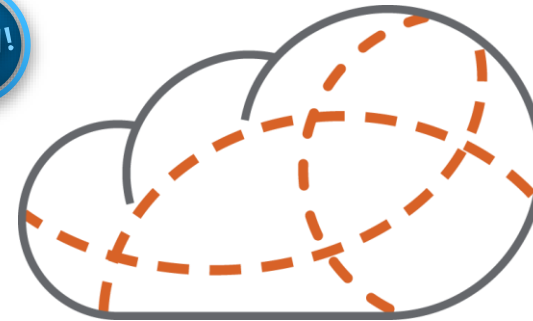


CloudBridge



WAN Optimization Solution

Optimize bandwidth while accelerating application delivery

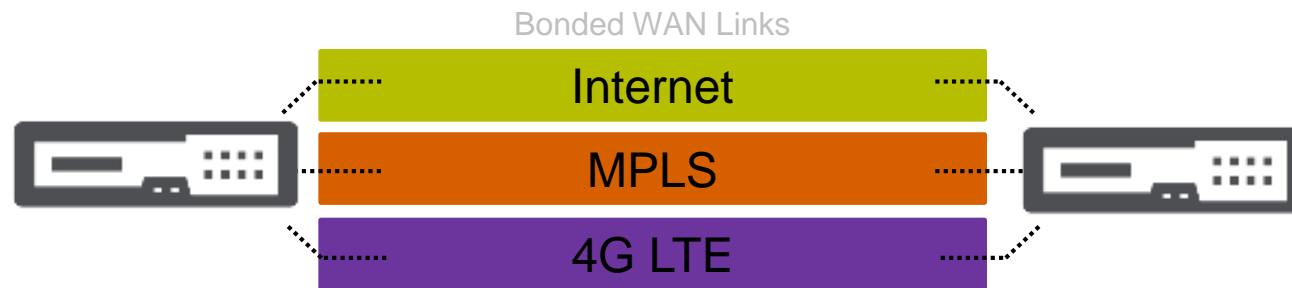


Virtual WAN Solution

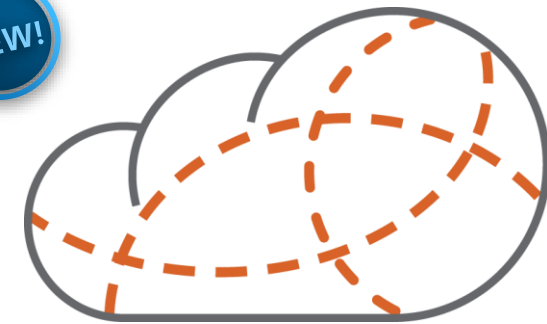
Scale bandwidth, ensure availability, and reduce costs



CloudBridge

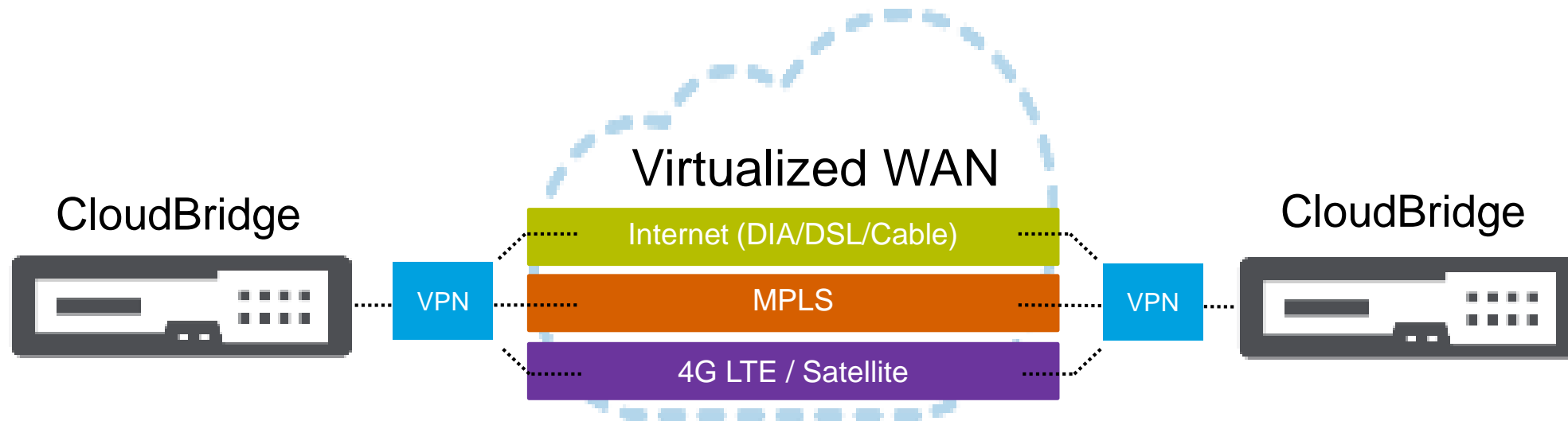


- Bonds WAN connections for increased throughput
- Use to increase application bandwidth and WAN reliability while prioritizing mission critical apps



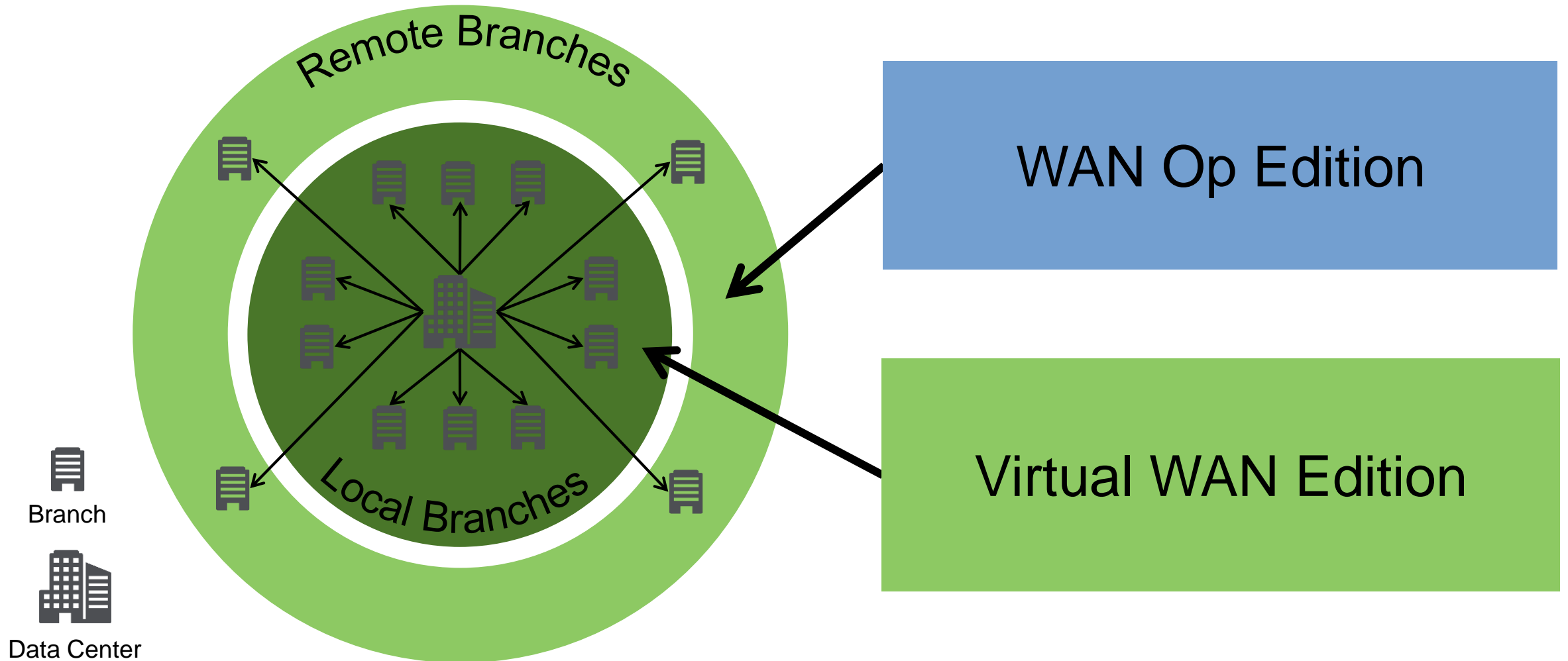
Virtual WAN Solution

CloudBridge Virtual WAN Solution Overview



- Logically bond multiple, distinct WAN connections into one virtual link
- Encrypt paths between devices to provide end-to-end security
- Send packets based upon application needs and link performance

Branch Needs Differ Based Upon Location





CloudBridge

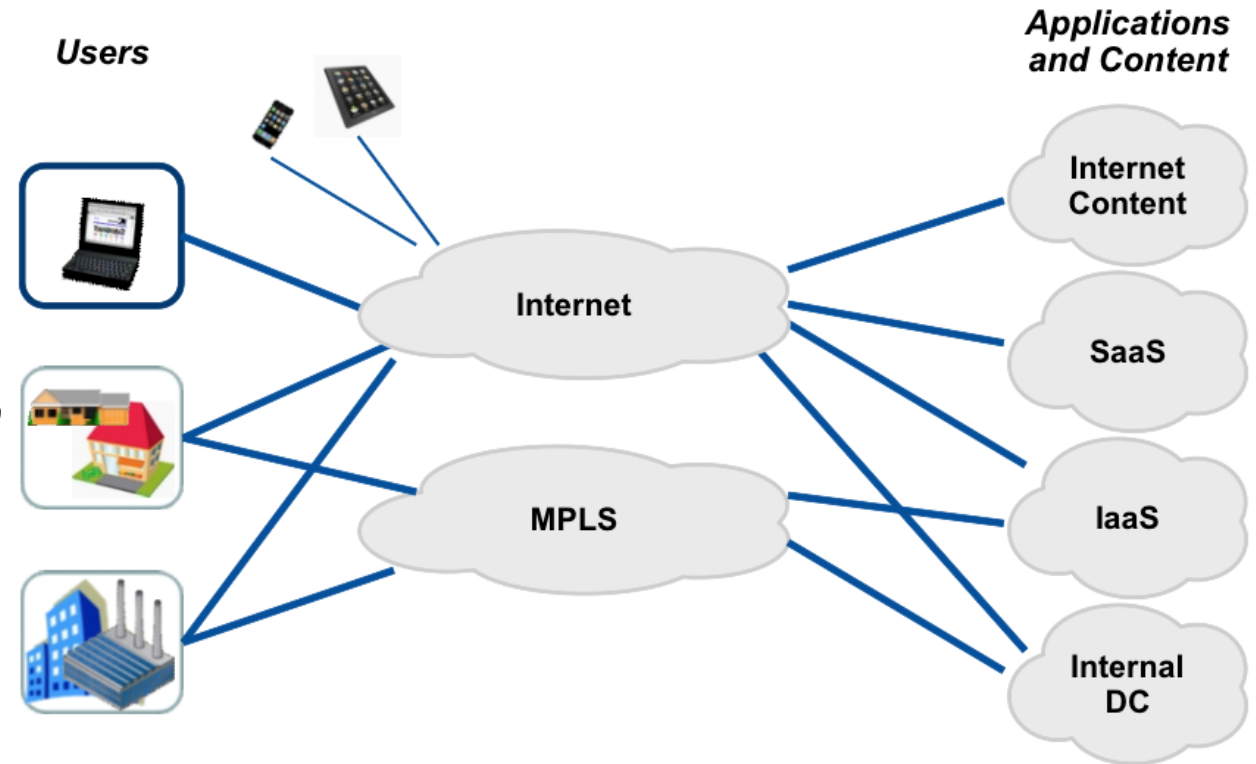
VirtualWAN

Internet and MPLS are both Important

Key recommendation:

“Create a WAN solution that can optimize traffic flows between the Internet and the MPLS for all applications and between both internal and external users.”

Gartner Sept 2014



IaaS: infrastructure as a service
DC: data center

Source: Gartner (September 2014)

vWAN Architecture Basics

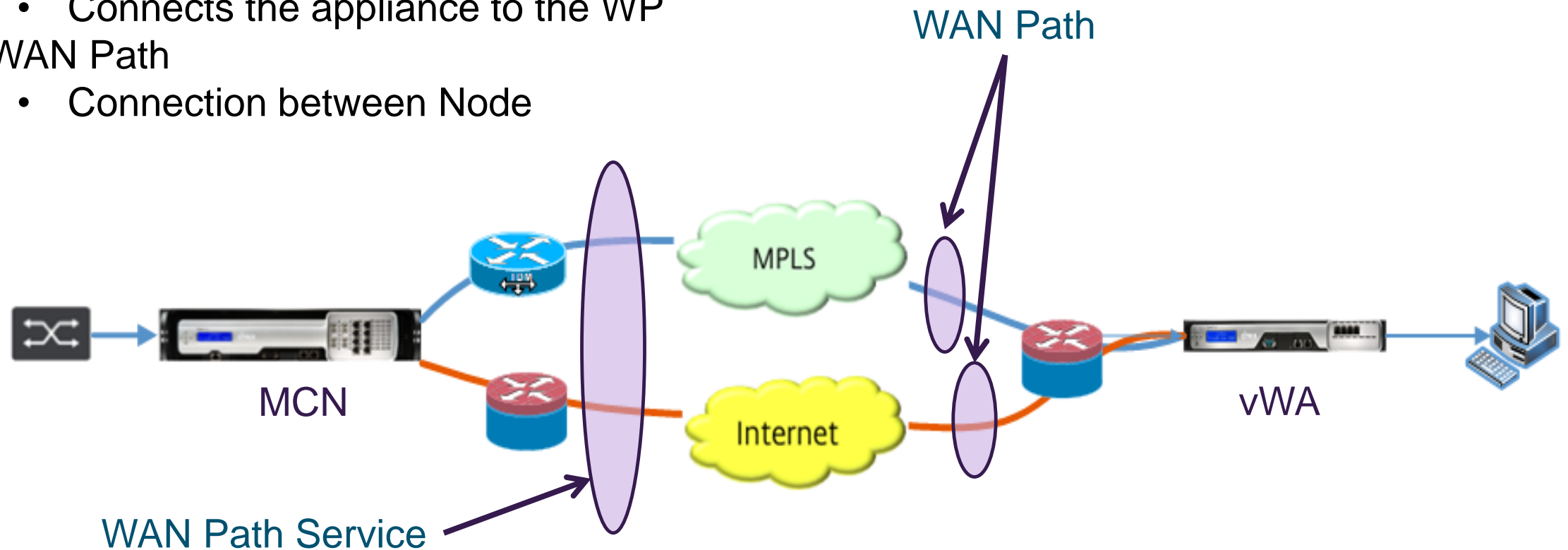
- The Main Control Node (MCN) is the configuration and management node for the Virtual Network.
- Except for the initial install all configuration and management are done here.
- There can be more than one but only one active.

- The vWAN Node (VWN) is located at the Branch sites.
- Very little configuration can be done here



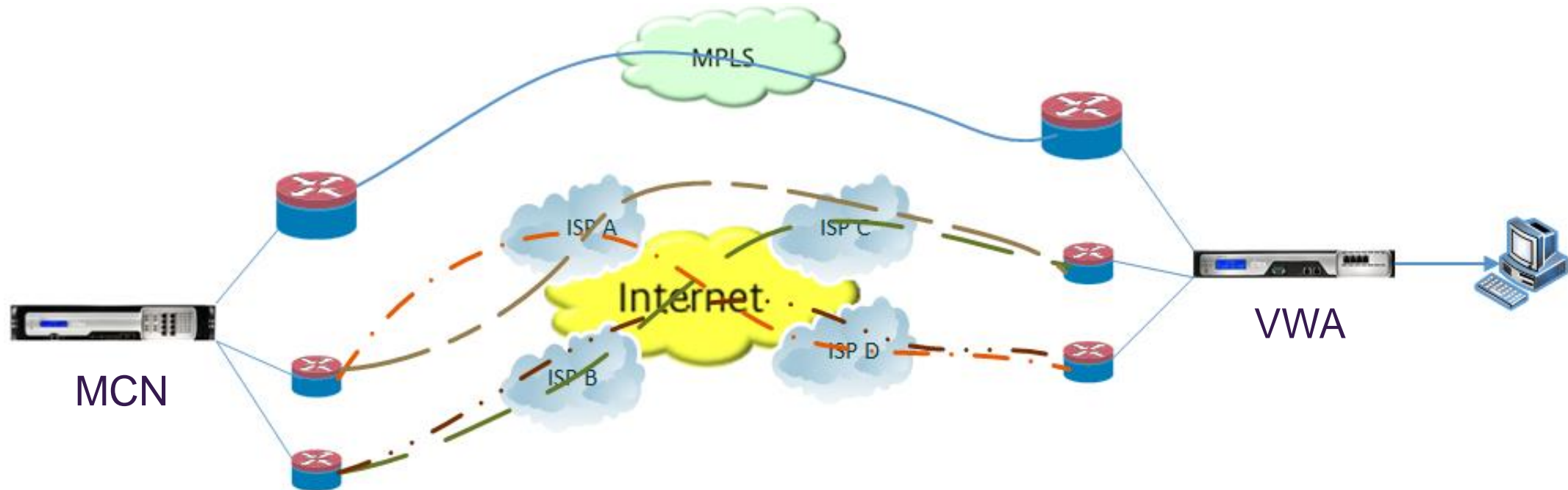
vWAN Architecture Basics

- WAN link
 - Connects the appliance to the WP
- WAN Path
 - Connection between Node



Architecture Basics

- Internet Virtual links
 - Can be path diverse
 - Multiple paths are not affected by single fail point



Flows

Flows are book-keeping devices:

Flows represent directional flows of traffic across a vWAN

Flows are created for each Session **in each direction**

Flows are identified by a 6-tuple of Session information



Flow 6-tuple:

Source IP, Destination IP, Source Port, Destination Port, IP Protocol, DSCP tag (optional)

Virtual WAN is

- Assign App to best path, every packet

Video

XA-Critical

XA-Normal

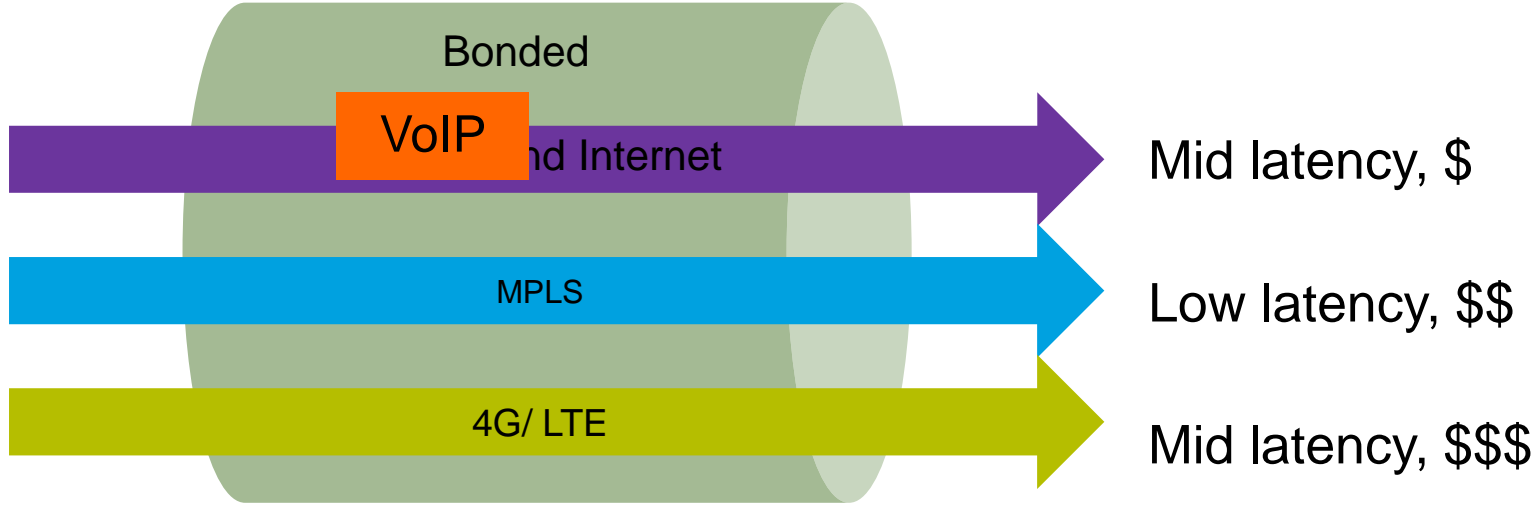
Web

XD

Files

VoIP

Mail



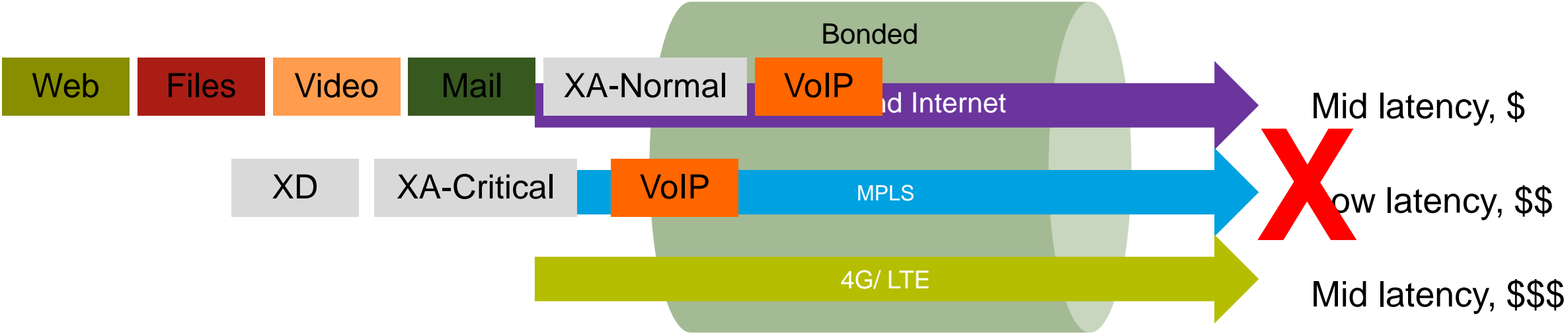
Optimized delivery



Application Aware
QoS

Virtual WAN is Always Connected

- Adapt path on network changes



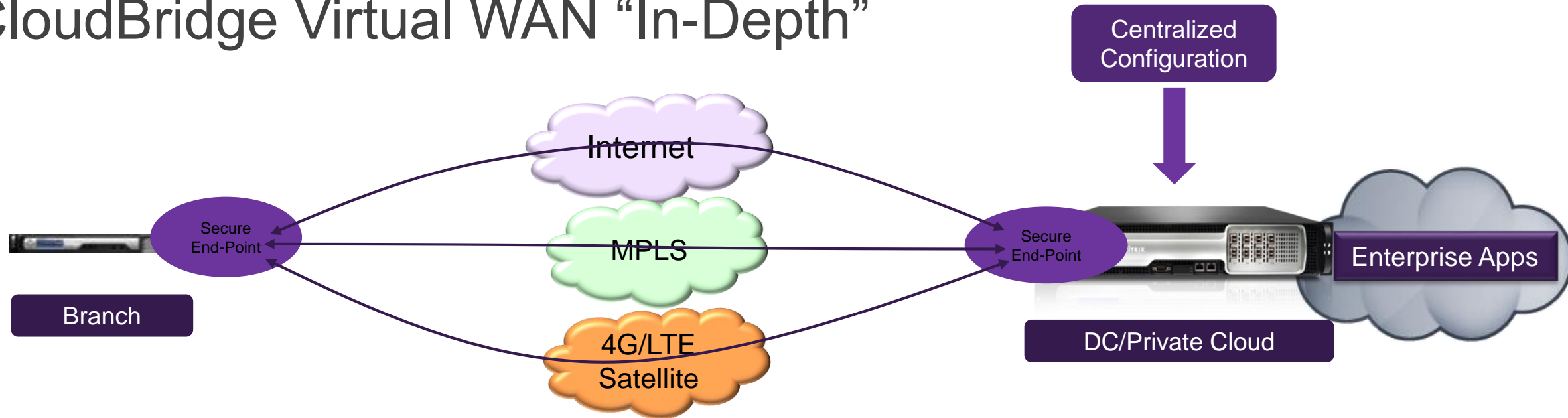
CloudBridge Virtual WAN Solution Leapfrogs the Competition

Criteria	Cisco iWAN	Riverbed	CloudBridge
Path assignment	By connection	By connection	By packet
Adaptation Time	Seconds	Seconds	Milliseconds
Adaptation Methodology	Routing table changes	Device-managed	Device-managed
Adaptation Basis	Round trip	Round trip	Uni-directional
Configuration complexity	Significant	Significant	Minimally invasive & Centralized
Path assessment	Heartbeat-Threshold Driven	Heartbeat-Threshold Driven	Per packet

Why does this matter?

- Granular adaptations → superior end user experience
- Timely adaptations → superior end user experience
- Self contained implementation
- Works just as well with asymmetric networks
- Single point of configuration
- Path selection is based on best available WAN link, not a static threshold being sampled periodically

CloudBridge Virtual WAN “In-Depth”



Key Capabilities

- **Per packet path selection:** Policy based path selection based on packet content
- **Sub-second adaptation:** Reacts in real time to subtle changes in network conditions
- **Packet Duplication:** Improved reliability for sensitive applications across the WAN
- **One-way path selection:** Get maximum benefits for asymmetric network links

CloudBridge VWAN 8.1

Customer Benefits

Simple Deployment & Licensing

Enhanced Manageability & Troubleshooting

Expanded visibility

Increase DC Scale

Supporting Features

- Quicker branch deployment with VW VPX models
- Remote & local licensing for new VW VPX models

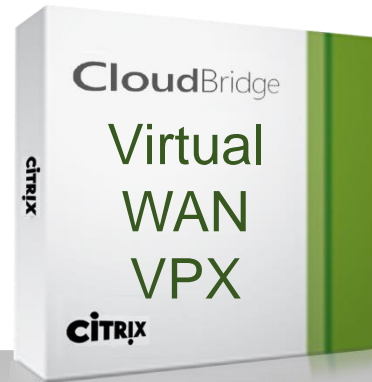
- Management of complete Virtual WAN topology
- Real-time Alerting
- Fault Management & SLA Monitoring

- Interactive Network Map
- Site-by-site visibility

- Higher capacity SKU for CB 4000 (2Gbps)

CloudBridge Virtual WAN

Virtual WAN VPX Appliances



Feature	VPX 10	VPX 20	VPX 50	VPX 100
Virtualized bandwidth	10 Mbps	20 Mbps	50 Mbps	100 Mbps
Max Virtual Paths	8	8	16	16
Max Dynamic Virtual Paths	2	4	6	8
Max WAN Links (Public/Private)	4/16	4/16	8/32	8/32

Virtual Deployments

Branch

- Upto 100Mbps (Q3'15)
- ESXi, XS and Hyper-V*
- Cisco ISR
- HP branch router*

Virtualized DC

- Starting with 100 Mbps (Q3'15) and going up to 1Gbps*
- ESXi, XS and Hyper-V*

Cloud DC

- AWS (Q3'15)
- Azure*
- SoftLayer*

** Target 1H 2016*

Platforms Update

Cirta expands DC platform scalability

Deployment	Model Series	Bandwidth (Mbps)	Availability
Data Center	CloudBridge 5100	2000-4000	Q4'15
	CloudBridge 4000	500-1000 2000	Now
Large Branch / Regional Office	CloudBridge 2000	100-200	Now
Medium Branch Small Branch	CloudBridge 1000	20-100	Now
	CloudBridge 400	10-20	

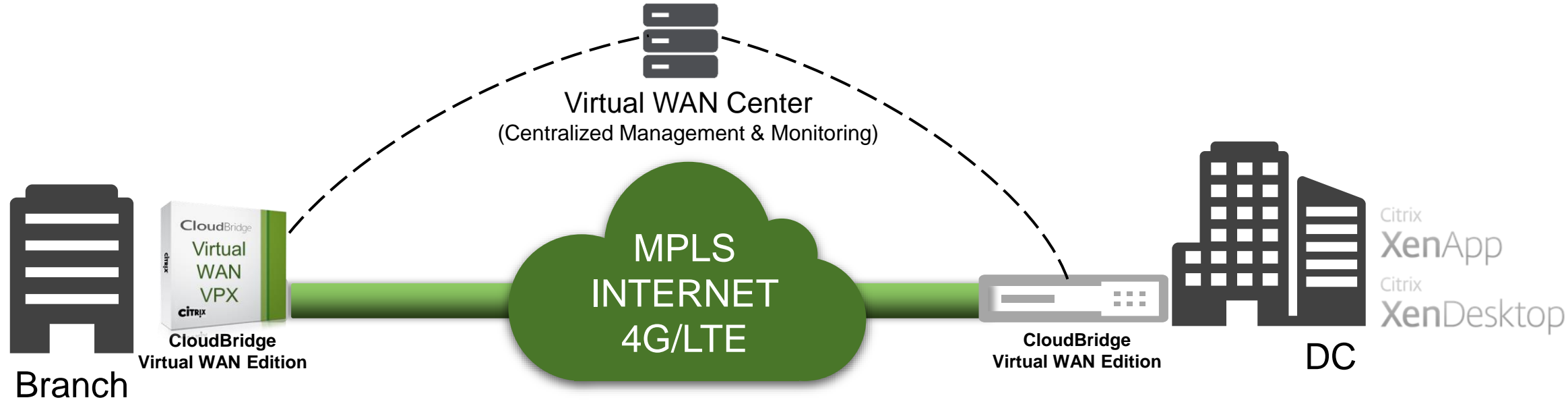




CloudBridge

VirtualWAN Center

Centralized Management and Monitoring for the Virtual WAN



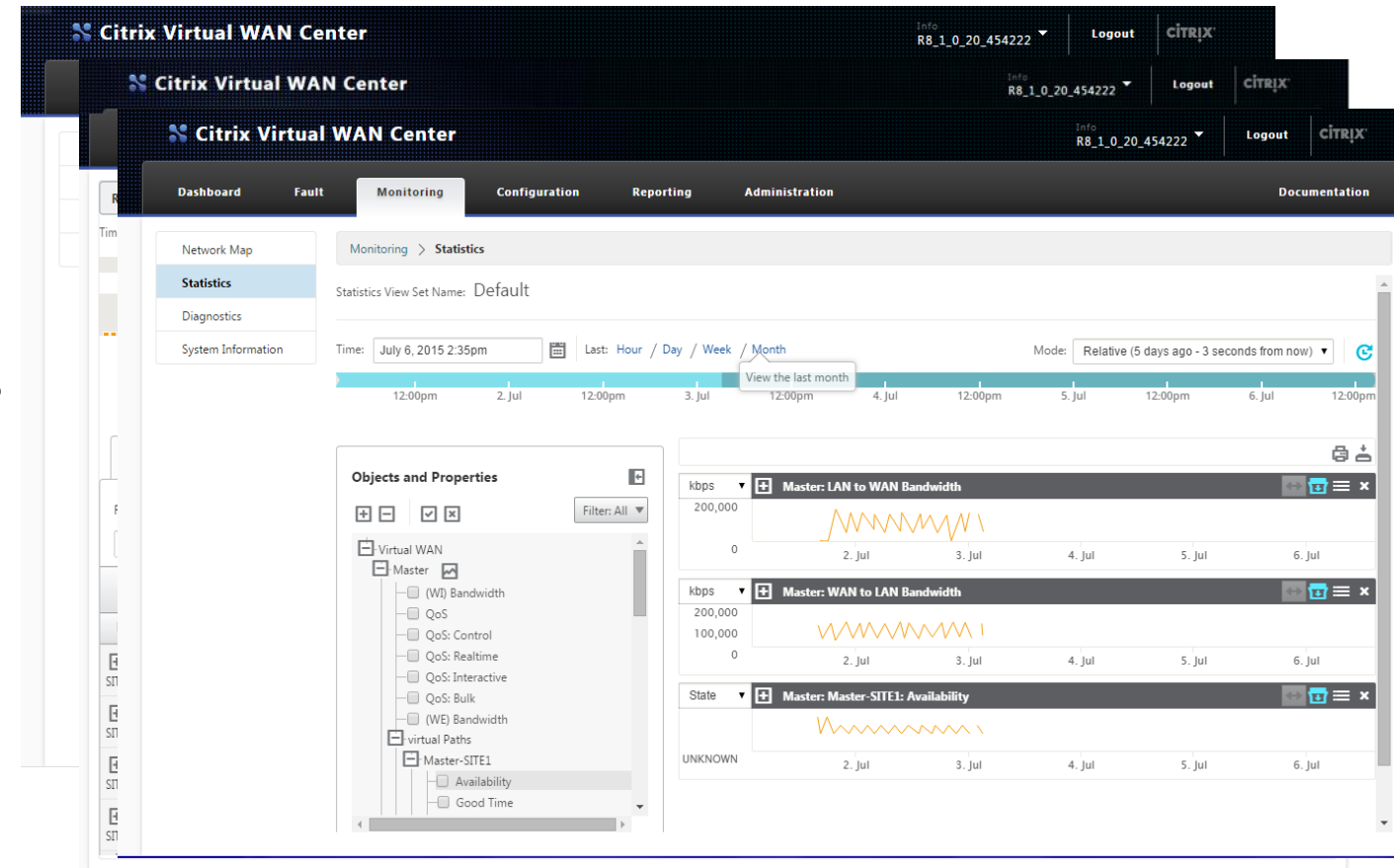
Centralized control with Virtual WAN Center

- Configure
- Monitor
- Analyze / Report

Management / Reporting

Centralized management and monitoring capabilities for the Virtual WAN

- Centralized, aggregate dashboard view
- Virtual WAN Topology Map
- Proactive SLA Monitoring for WAN links
- Fault Management and Alerting capabilities



Virtual WAN Centre Dashboard

Citrix Virtual WAN Center

R8_1_0_65_466339 ▼ root ▼

Dashboard Fault Monitoring Configuration Reporting Administration

Network Map

Configuration: Murthy_CB400MCN_2Branches_HA_Dyn-Path ▼

Site Filter 👁️ ✎️

Inventory Status

Murthy_Branch1 (10.102.76.172)	Stats in Sync
Murthy_Branch2 (10.102.76.181)	Stats in Sync
Murthy_Branch3 (10.102.76.182)	Stats in Sync
Murthy_MCN (10.102.76.175)	Stats in Sync
Murthy_MCN (10.102.76.176)	Stats in Sync

Virtual WAN Centre Fault Management

Citrix Virtual WAN Center
R8_1_0_65_466339 ▾ root ▾

Dashboard
Fault
Monitoring
Configuration
Reporting
Administration

Event Viewer

Notification Settings

Severity Settings

Fault / Event Viewer

New View Open... Save Save As...
🗑️ ?

Time: 📅
Last: [Hour](#) / [Day](#) / [Week](#) / [Month](#)
Mode: ↕️

⚠️
⏪ ⏩
Interval: ▾

Filters: + ✕

▾ / page Showing 1 - 25 of 8,614 Search

Time ▾	Site	Object Name	Object Type	Severity	Previous State	Current State	Description	⚙️
09/10/15 13:05	Murthy_Branch3	Murthy_Branch3-Murthy_MCN	virtual path	NOTICE	BAD	GOOD	The state of Virtual Path: Murthy_Branch3-Murthy_MCN has changed from BAD to GOOD	
09/10/15 13:05	Murthy_Branch3	Murthy_MCN-WL-1-Dial-up->Branch3-WL-1	wan_to_lan_path	NOTICE	BAD	GOOD	The state of wan_to_lan_path Murthy_MCN-WL-1-Dial-up->Branch3-WL-1 for Site: Murthy_Branch3 has changed from BAD to GOOD	
09/10/15 13:05	Murthy_MCN	Murthy_MCN-WL-1-Dial-up->Branch3-WL-1	lan_to_wan_path	NOTICE	BAD	GOOD	The state of lan_to_wan_path Murthy_MCN-WL-1-Dial-up->Branch3-WL-1 for Site: Murthy_MCN has changed from BAD to GOOD	
09/10/15 13:05	Murthy_Branch3	Murthy_Branch3-Murthy_MCN	virtual path	⚠️ WARNING	GOOD	BAD	The state of Virtual Path: Murthy_Branch3-Murthy_MCN has changed from GOOD to BAD	

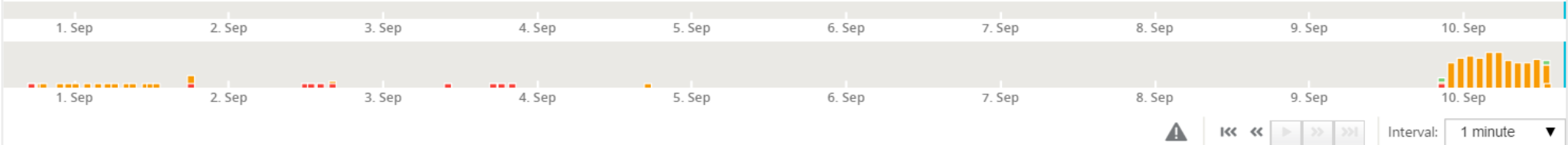
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Virtual WAN Centre Reporting

Reporting

🏠 ?

Time:
Last: [Hour](#) / [Day](#) / [Week](#) / [Month](#)
Mode: ⌵



Sites Services Virtual Paths Paths WAN Links Classes Applications Ethernet Interfaces Events
Show Bandwidth/Data in ▾

Filters: + 🏠 👤
 / page Showing 1 - 4 of 4

Name ^	LAN to WAN					WAN to LAN	Data Coverage (%)
	Bandwidth	Control Bandwidth	Realtime Bandwidth	Interactive Bandwidth	Bulk Bandwidth	Bandwidth	
<input type="checkbox"/> Murthy_Branch1	84.03	84.03	0.00	0.00	0.00	80.37	90.9
<input type="checkbox"/> Murthy_Branch2	28.97	28.97	0.00	0.00	0.00	25.92	90.9



CloudBridge

HDX Optimizations

The three HDX display modes



Desktop Composition
Redirection (DCR)



Advanced Thinwire (H.264)



Thinwire+ (Snowball)



Desktop Composition Redirection (DCR)

- Uses Direct 3D to render the screen -- replaces GDI-based screen handling
- Offers the best screen user experience – Aero-like view
- Offloads screen rasterization to the client – best server scalability
- Good cross-session deduplication (better compression)
- **BUT**
- Uses a lot of bandwidth
- Only supported by Windows 8+ and Server 2012
- May not be the long-term solution – e.g., Linux VDA, etc.



Advanced Thinwire (H.264)

- Very efficient compression, especially for server-rendered video, graphic apps
- Efficient rasterization on the server
- Wide support for various operating systems (Windows, Linux, etc.)

BUT

Does not de-duplicate well (20% versus 50% to 80%)

Server is not as scalable as DCR

Best for graphics applications, less applicable for general user apps (SAP, Office)

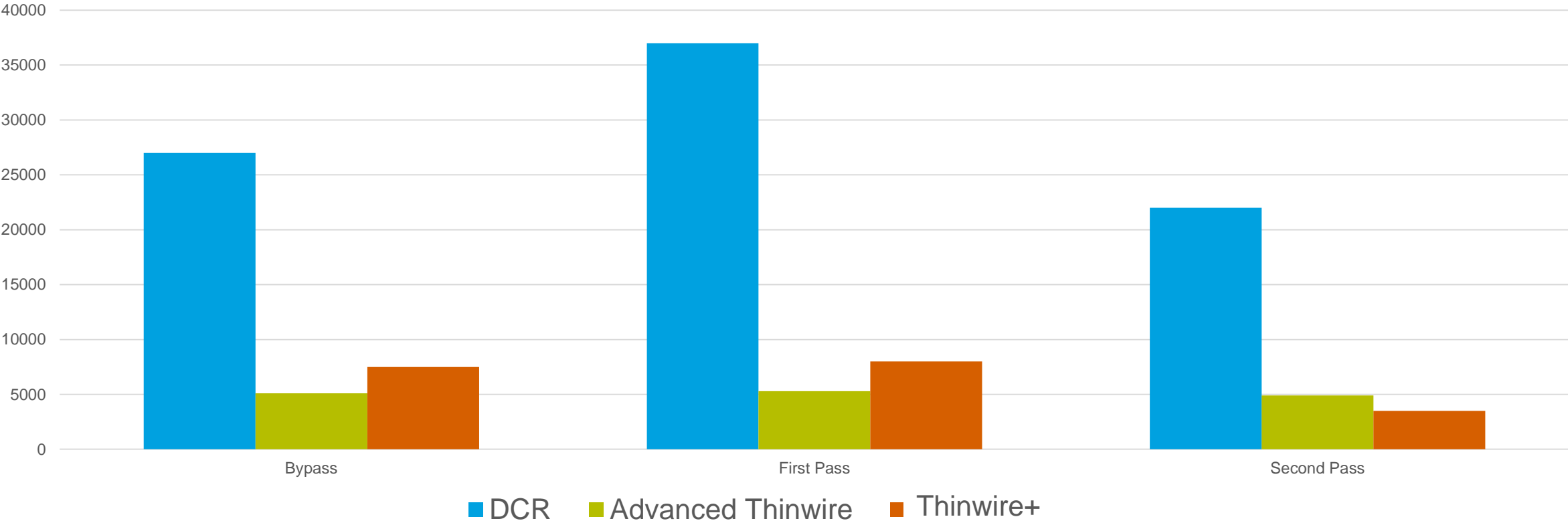


Thinwire+ (Snowball)

- Highly efficient use of bandwidth
- Broad cross-platform support
- High cross-session de-duplication
- Rasterizes on the server -- about the same efficiency as Advanced Thinwire
- **BUT**
- Not as good as Advanced Thinwire for video and heavy graphics apps
- Not as scalable as DCR on the server

How much bandwidth does each consume with and without CB?

Word 2010 Paging Test -- Total Bytes



Which to choose?



- WAN Implementations:

- Use Thinwire+ with CloudBridge for highest bandwidth efficiency
- Advanced Thinwire for server rendered video
- Modified DCR template for the best user experience

- LAN Implementations

- Local implementations use Advanced Thinwire or DCR
- CAD use HDX 3D Pro (Adv. Thinwire)
- Server rendered video use advanced Thinwire
- Only use legacy Thinwire for compatibility with XP and older thin clients

XenDesktop / App are perfect for Virtual WAN) ADSL & Cable





Work better. Live better.