



Citrix CloudBridge Best Practices

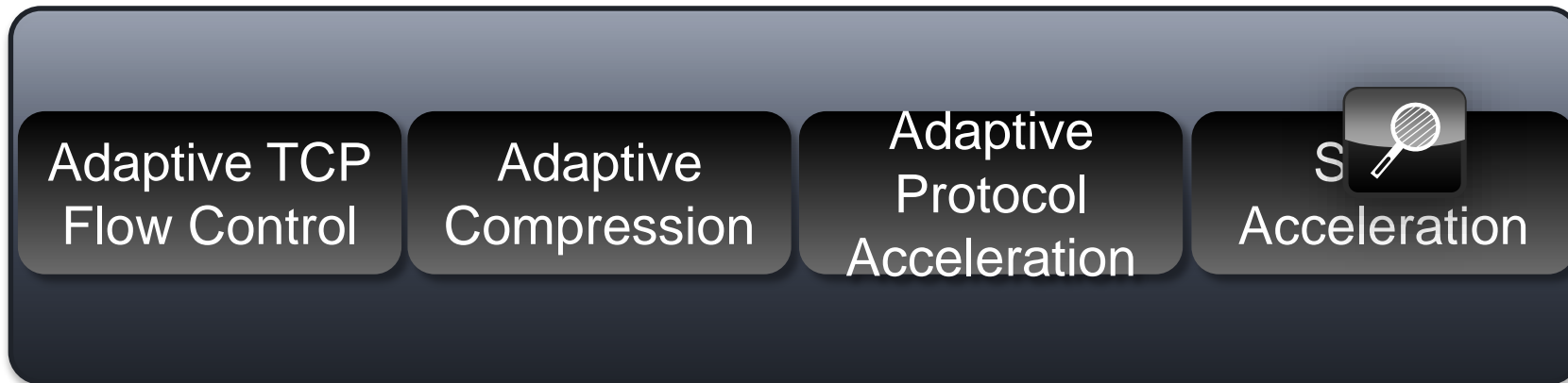
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Agenda

- CloudBridge
- Deployment
- Installation
- TCP Acceleration
- Service Classes & Traffic Shaping
- Dashboard & Monitoring

CloudBridge

HDX **WAN Optimization**



Introduction to the CloudBridge System

CloudBridge appliances support a full range of optimizations, including:

- **Multi-session compression** with compression ratios of **up to 10,000:1**.
- **Protocol acceleration** for Windows network file systems (**CIFS**), XenApp (**ICA and CGP**, including the new **multi-session ICA** standard), Microsoft Outlook (**MAPI**), and **SSL**.
- **Traffic shaping** to **ensure that high-priority** and interactive traffic **takes precedence over low priority** or bulk traffic.
- **Advanced TCP protocol acceleration**, which reduces delays on congested or high-latency links.



Deployment

Key Data Points CB Sizing

Bandwidth

- Consider the sites that do not have CB
- Make the customer aware of the BW requirements of XD and XA
- Network conditions

TCP Connections

- Get the concurrent ICA connection count

Network Diagram

- Stop installation issues before they happen

Application List

- Find out what the business critical applications are

Link Capacity & Disk Size

Link Capacity (Bandwidth)

When selecting a CloudBridge appliance, the most important factor is that it support your WAN links.

If your site has a single WAN link, your appliance should support your link speed.

Disk Size

Disk space is used mostly for compression history, and more disk space results in greater compression performance.

Find your CloudBridge Edition

Datacenter appliances

WAN optimization edition

Model	4000-310	4000-500	4000-1000	5000-1500	5000-2000
Optimized WAN capacity ^{1,2}	310 Mbps	500 Mbps	1.0 Gbps	1.5 Gbps	2.0 Gbps
QoS / unaccelerated bandwidth limit	500 Mbps	1.0 Gbps	2.0 Gbps	2.0 Gbps	4.0 Gbps
Maximum HDX sessions ³	750	1,200	2,500	3,500	5,000
Maximum TCP sessions ⁴	40,000	60,000	120,000	120,000	160,000
Concurrent CloudBridge client plug-ins	1,100	1,800	3,600	3,600	4,800

Large branch/small data center appliances

WAN optimization edition

Model	2000-010	2000-020	2000-050	3000-050	3000-100	3000-155
Optimized WAN capacity ^{7,8}	10 Mbps	20 Mbps	50 Mbps	50 Mbps	100 Mbps	155 Mbps
QoS / unaccelerated bandwidth limit	200 Mbps	200 Mbps	200 Mbps	500 Mbps	500 Mbps	500 Mbps
Maximum HDX sessions ⁹	100	200	300	300	400	500
Maximum TCP sessions ¹⁰	20,000	20,000	20,000	50,000	50,000	50,000
Concurrent CloudBridge client plug-ins	100	200	750	750	1,000	1200

https://www.citrix.com/content/dam/citrix/en_us/documents/products-solutions/citrix-cloudbridge-data-sheet.pdf

Find your CloudBridge Edition Cont.

Branch/small data center appliances with integrated Windows Server

WAN optimization edition

Model	1000WS-006	1000WS-010	1000WS-020	2000WS-010	2000WS-020	2000WS-050
Optimized WAN capacity ^{13,14}	6 Mbps	10 Mbps	20 Mbps	10 Mbps	20 Mbps	50 Mbps
QoS / unaccelerated bandwidth limit	50 Mbps	50 Mbps	50 Mbps	200 Mbps	200 Mbps	200 Mbps
Maximum HDX sessions ¹⁵	60	100	200	100	200	300
Maximum TCP sessions ¹⁶	10,000	10,000	10,000	20,000	20,000	20,000
Concurrent CloudBridge client plug-ins				100	200	750

Small branch office appliances

WAN optimization edition

Model	400-002	400-006	800-002	800-006	800-010	1000-006	1000-010	1000-020
Optimized WAN capacity ^{18,19}	2 Mbps	6 Mbps	2 Mbps	6 Mbps	10 Mbps	6 Mbps	10 Mbps	20 Mbps
QoS / unaccelerated bandwidth limit	50 Mbps	50 Mbps	50 Mbps	50 Mbps	50 Mbps	50 Mbps	50 Mbps	50 Mbps
Maximum HDX sessions ²⁰	10	30	20	60	100	60	100	200
Maximum TCP sessions ²¹	500	1,000	10,000	10,000	10,000			

Virtual appliances

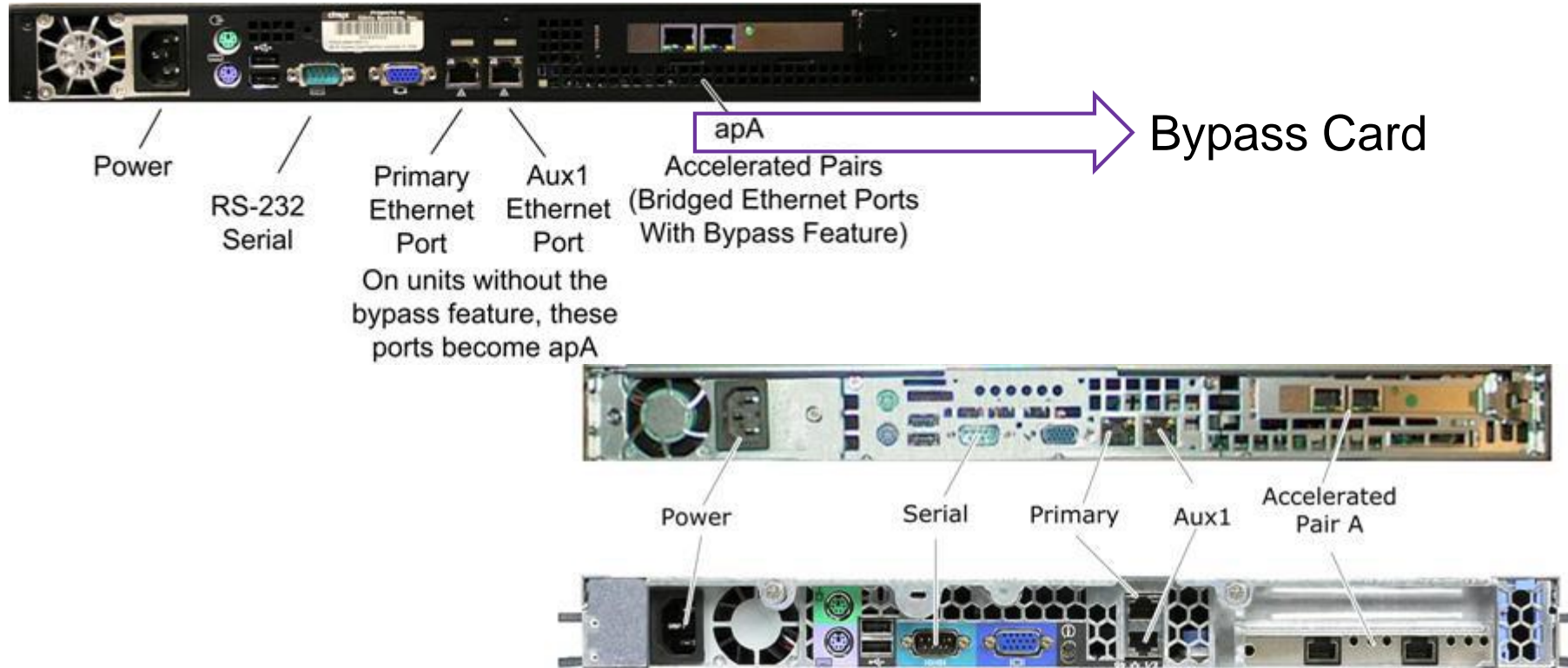
WAN optimization edition

Model	VPX 2	VPX 6	VPX 10	VPX 20	VPX 50	VPX 100	VPX 200
Optimized WAN capacity ^{24,25}	2 Mbps	6 Mbps	10 Mbps	20 Mbps	50 Mbps	100 Mbps	200 Mbps
QoS / unaccelerated bandwidth limit	15 Mbps	50 Mbps	75 Mbps	150 Mbps	250 Mbps	250 Mbps	300 Mbps
Maximum HDX sessions ²⁶	20	60	100	200	300	400	500
Total TCP sessions ²⁷	5,000	5,000	5,000	10,000	10,000	20,000	30,000
Concurrent CloudBridge client plug-ins	20	60	100	200	300	400	500

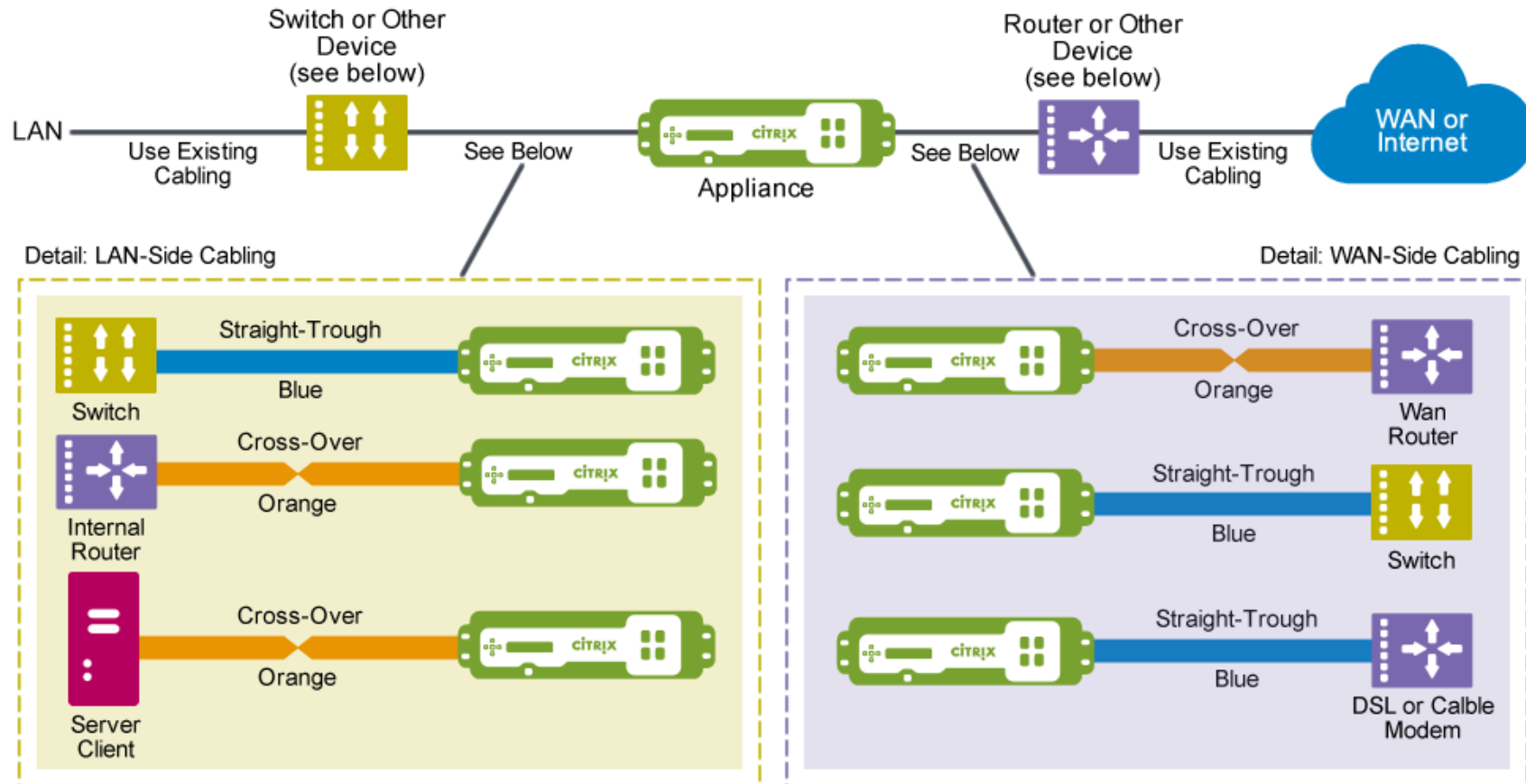


Installation

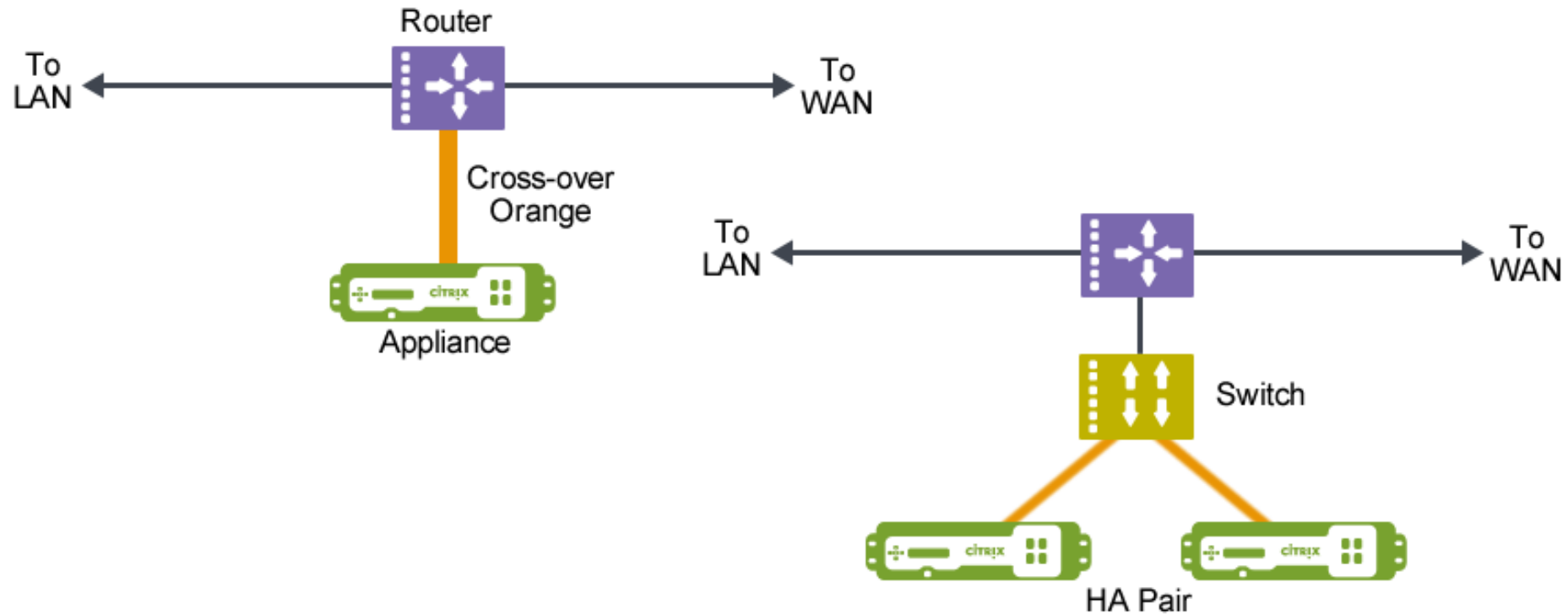
Connecting the Cables



Basic Cabling Inline Mode



Basic Cabling for Virtual Inline and WCCP Mode



CloudBridge VPX

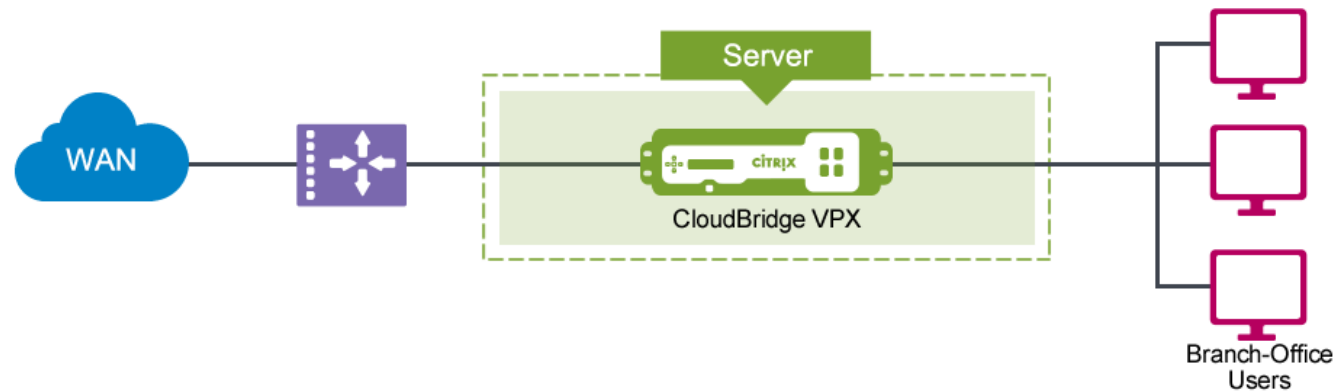
You can deploy CloudBridge VPX to accelerate the traffic to or from a branch office, or to and from a particular server.

A CloudBridge VPX image can be installed on the server of your choice and deployed just like a CloudBridge appliance.

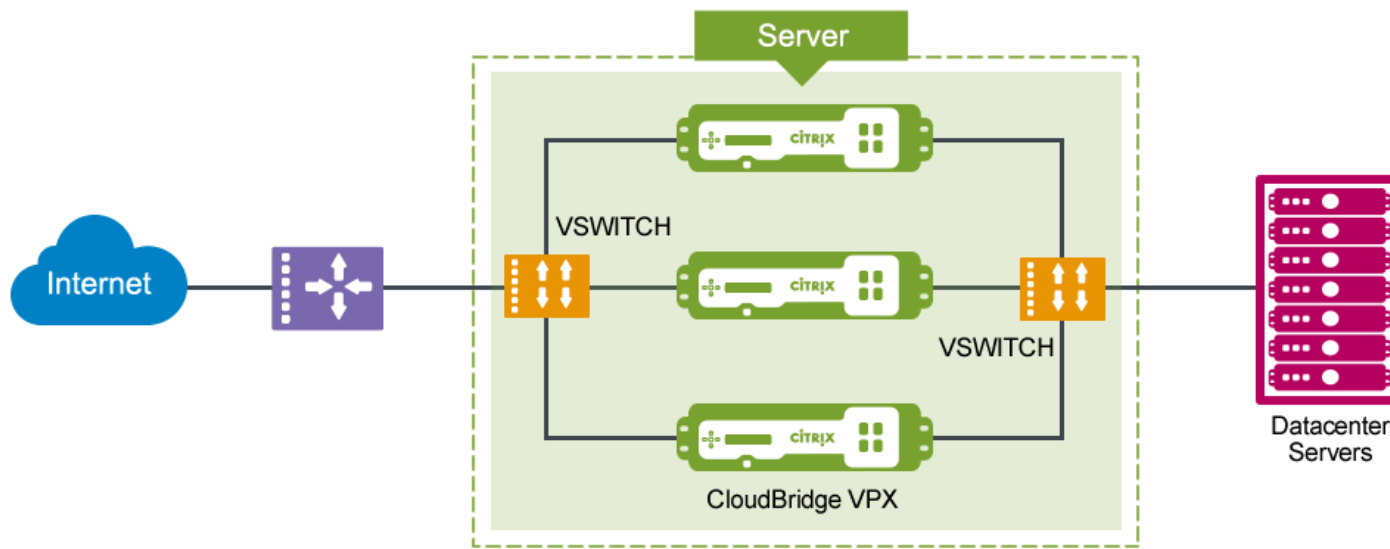
Group mode and high-availability modes are not supported.

As with a physical appliance, inline mode is the most common type of configuration, but WCCP mode can provide an effective failover mechanism.

Branch Office Single & Multiple VPX Instances



No Bypass Card if Appliance or Host goes down the connection are broken.



Link Definition

Physical Interfaces A must match Virtual Network Interface WAN on HyperVisor
Physical Interfaces B must match Virtual Network Interface LAN on HyperVisor

CloudBridge Link Interface A must match Network Interface WAN
CloudBridge Link Interface B must match Network Interface LAN

By default link definitions are automatically created for each adapter port.
If Links are misconfigured there will be compression values less than 1:1

Links: Link Definition

Only show user modified settings.

Link	Link Type	Order
noCCB	LAN	
WAN NIC 0 Link	WAN	
LAN NIC 1 Link	LAN	
All Other Traffic	LAN/WAN	

Link Configuration Example

Click on the Links node in the Configuration menu.

Click the Edit button for the first pre-defined apA link.

Configure the link according to network it is connected to;

- Link Type (LAN or WAN side)
- Bandwidth In
- Bandwidth Out
- Descriptive Link Name (optional)

Click Save.

Repeat this configuration on both the apA1 and apA2 links.

Link	Link Type
noCCB <ul style="list-style-type: none">• Name: noCCB• Link Type: LAN• Bandwidth In: 1 gbps• Bandwidth Out: 1 gbps	LAN <ul style="list-style-type: none">• Filter Rules:<ul style="list-style-type: none">• Filter Rule:<ul style="list-style-type: none">• Dst IP: 172.27.250.0/24• Dst IP: 172.27.210.0/24• Dst IP: 172.27.220.0/24• Dst IP: 172.27.230.0/24• Dst IP: 172.27.240.0/24• Dst IP: 192.168.13.0/24• Dst IP: 172.27.140.0/22• Dst IP: 172.27.60.0/24• Dst IP: 192.168.2.0/24• Dst IP: 172.27.20.0/24• Filter Rule:<ul style="list-style-type: none">• Adapter: apA.1
WAN NIC 0 Link <ul style="list-style-type: none">• Name: WAN NIC 0 Link• Link Type: WAN• Bandwidth In: 18 mbps• Bandwidth Out: 18 mbps	WAN <ul style="list-style-type: none">• Filter Rules:<ul style="list-style-type: none">• Filter Rule:<ul style="list-style-type: none">• Dst IP: 172.30.100.0/22• Dst IP: 172.30.80.0/22• Dst IP: 172.27.160.0/22• Filter Rule:<ul style="list-style-type: none">• Adapter: apA.1
LAN NIC 1 Link <ul style="list-style-type: none">• Name: LAN NIC 1 Link• Link Type: LAN• Bandwidth In: 1 gbps• Bandwidth Out: 1 gbps	LAN <ul style="list-style-type: none">• Filter Rules:<ul style="list-style-type: none">• Filter Rule:<ul style="list-style-type: none">• Adapter: apA.2

**No Acceleration
Use Full Bandwidth**

**Accelerate
Use WAN Bandwidth, when**

What Speed have the LAN Site Interface

CloudBridge Licensing

Click the Licensing node in the Configuration menu.

Chose the License Server tab if your license requires using a stand alone Citrix License server.

- Retail (Appliance, Plug-in, Crypto)
- XenDesktop Platinum Entitlement

Chose the Local Licenses tab if your license type required local installation.

- Evaluation License
- Not for Re-sale
- Express

The screenshot shows the 'Local Licenses' configuration page. At the top, there are four tabs: 'License Information', 'License Server', 'Local Licenses' (which is selected), and 'Licensed Features'. Below the tabs, the 'Local Licenses' section is displayed. The 'License Name' field is set to 'ZionBR2license_20100909141448'. The 'License Content' field contains the following text:

```
# This file is in UTF-8 format.
#
SERVER this_host 0015c5fa44b4
VENDOR CITRIX
USE_SERVER
INCREMENT CWS_8540_SSERVER CITRIX 2011.0909 06-oct-2011 1 \
  VENDOR_STRING=;LT=Eval;GP=720;MAXBW=45;MLC=750;HA=0;CL=8500;SA=0;ODP=0;AP=ADMIN/LOGON/-28D;N
  DUP_GROUP=V ISSUED=09-Sep-2010 NOTICE="Citrix Technical \
  Support" SN=OR415053:3040047 START=9-sep-2010 SIGN="1B16 8A20 \
  3518 6C39 186B ED25 DDAF BC22 E29A 1712 8935 3563 18F3 F528 \
  3A3F 1E15 BBF9 C6AC 2F69 453F 80EA 5A62 E378 CA1F 71CA F851 \
  684C 055A 1883 B573"
#
#[German]
#CITRIXTERM FEATURE 2.0 CWS_8510_SSERVER DE Citrix Repeater 8510|Server
#CITRIXTERM FEATURE 2.0 CWS_8520_SSERVER DE Citrix Repeater 8520|Server
#CITRIXTERM FEATURE 2.0 CWS_8530_SSERVER DE Citrix Repeater 8530|Server
#CITRIXTERM FEATURE 2.0 CWS_8540_SSERVER DE Citrix Repeater 8540|Server
#
#[English]
#CITRIXTERM FEATURE 2.0 CWS_8510_SSERVER EN Citrix Repeater 8510|Server
#CITRIXTERM FEATURE 2.0 CWS_8520_SSERVER EN Citrix Repeater 8520|Server
#CITRIXTERM FEATURE 2.0 CWS_8530_SSERVER EN Citrix Repeater 8530|Server
#CITRIXTERM FEATURE 2.0 CWS_8540_SSERVER EN Citrix Repeater 8540|Server
#
#[Spanish]
#CITRIXTERM FEATURE 2.0 CWS_8510_SSERVER ES Citrix Repeater 8510|Servidor
#CITRIXTERM FEATURE 2.0 CWS_8520_SSERVER ES Citrix Repeater 8520|Servidor
#CITRIXTERM FEATURE 2.0 CWS_8530_SSERVER ES Citrix Repeater 8530|Servidor
#CITRIXTERM FEATURE 2.0 CWS_8540_SSERVER ES Citrix Repeater 8540|Servidor
```

At the bottom of the 'License Content' field, there are three buttons: 'Add', 'Rename', and 'Delete'.

Quick Installation

Click the Quick Installation node in the Command menu.

This page is a collection of all the configuration steps condensed into one simple form.

Quick Installation		
1. Management Access		
Adapter	apA	The adapter values have typically already been configured via the LCD front panel
IP Address	192.168.89.39	
Gateway	192.168.89.1	
Network Mask	255.255.255.0	
2. System Services		
Primary DNS IP Address	192.168.89.88	Your organization's primary DNS server
Secondary DNS IP Address	192.168.89.1	Your organization's backup DNS server
NTP Time Server	pool.ntp.org	Your organization's time server (IP address or domain-name)
System Date	Apr 28, 2011	Configure system date when no NTP Time Server is configured
System Time	07:57:33	Configure system time when no NTP Time Server is configured
Local Time Zone	America/Los_Angeles	The unit's local time zone
3. Licensing		
Citrix License Type	Local License	Select a Repeater license
License Server Address		Remote Citrix license server (IP address or domain-name)
Licensing Service Port	27000	IP port used for Remote Citrix licensing services
4. WAN Link Definition		
Receive (Download) Speed		The link speed must be specified in both directions
Send (Upload) Speed		
WAN-Side Adapter	apA.2	Check your network cabling
5. Perform Quick Install	<input type="button" value="Skip Initial Installation"/> <input type="button" value="Install"/> <input type="button" value="Cancel"/>	Press Install to apply changes or Cancel to restore previous settings

CloudBridge Features

Traffic Processing

- Master enable/disable switch. When disabled, all features of the Appliance are disabled and all traffic passes through without modification or traffic shaping

Traffic Acceleration

- enables and disables the acceleration engine

Traffic Shaping

- enables and disables the traffic-shaping engine

Traffic Bridging (VPX Only)

- Enable / Disable the software bridge, default for new installs is disabled

Traffic Features		
Traffic Processing	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED
Traffic Acceleration	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED
Traffic Shaping	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED
Traffic Bridging	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED

Traffic Processing and Acceleration

Cloud bridge can be installed in a “*monitoring-only*” mode

No compression, flow control or traffic shaping will be used, however full traffic visibility will be available.

Use the Features node in the Command Menu to **disable**;

- Traffic Acceleration
- Traffic Shaping

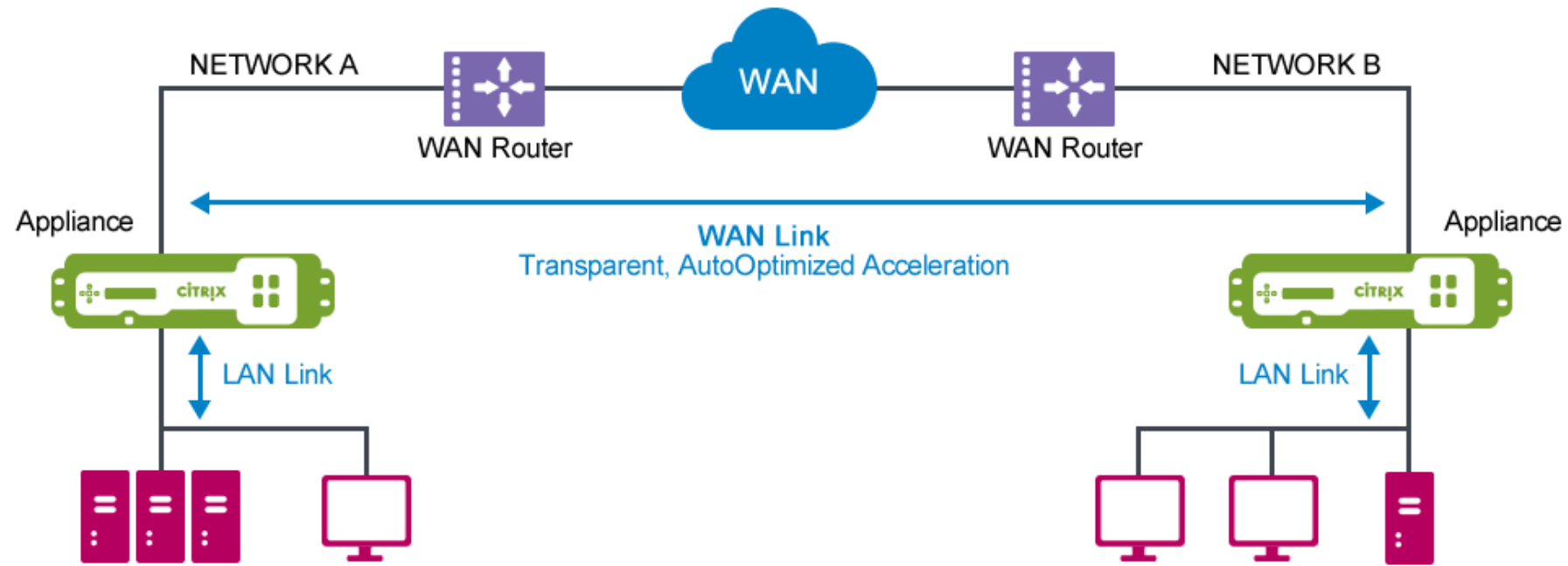
Traffic Features

Traffic Processing	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED
Traffic Acceleration	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled	DISABLED
Traffic Shaping	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled	DISABLED
Traffic Bridging	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED

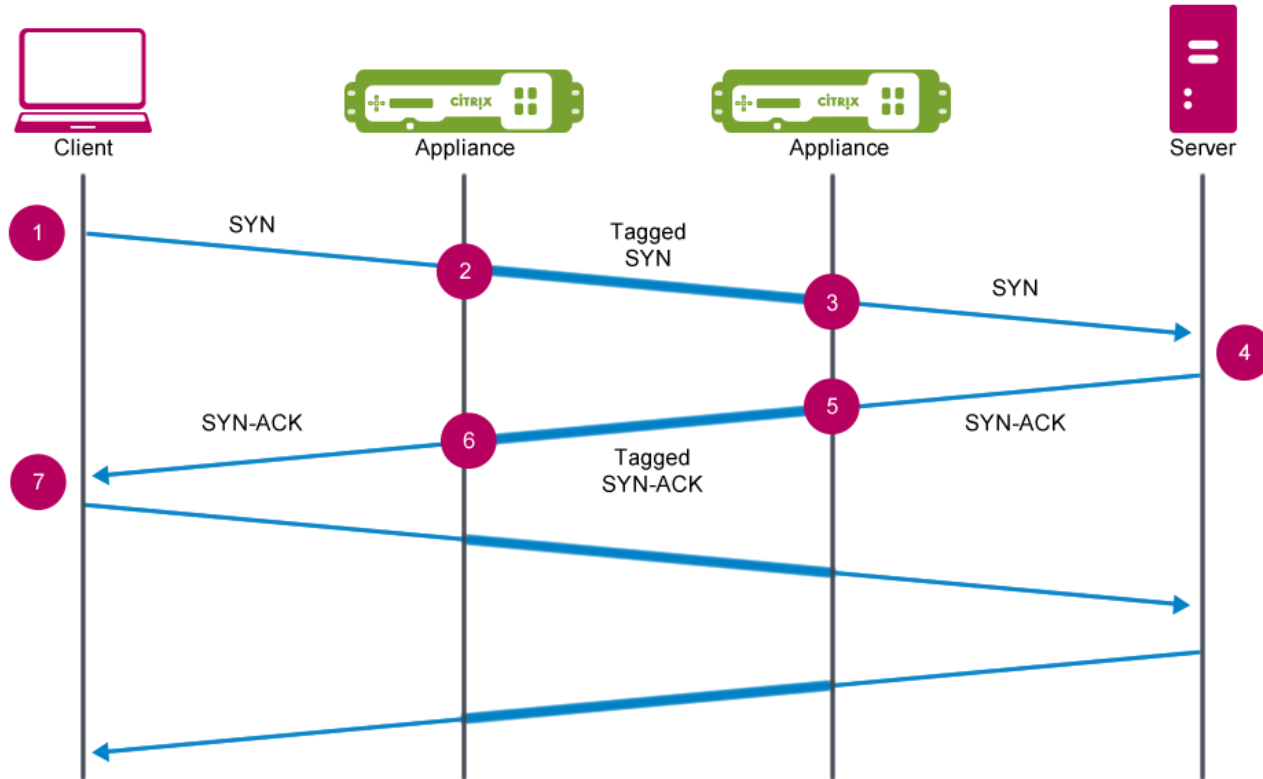


TCP Acceleration

TCP Acceleration



Autodiscovery



Only discovered TCP Handshake's are Accelerated !!

Memory-Based & Disk-Based Compression

- An appliance can transparently compress all of the accelerated sessions passing between two compression-enabled appliances.
- A very large compression history kept in RAM provides high compression ratios at high link rates.
- Disk based compression saves selected data streams to disk on both the sending and receiving appliances



Service Classes Traffic Shaping

Services Classes

Service classes are the main QoS mechanism, bringing together traffic shaping policies, application classifiers, and link configurations.

Only configured **Service Classes on both CloudBridges** brings acceleration.

Service Class Definition Traffic Shaping

Show only user modified Service Classes

Service Class	Acceleration	Traffic Shaping Policy
ICA	disk	ICA Priorities
CIFS	disk	High Priority Traffic
Web (SVDE0039)	memory	Medium Priority Traffic
Web (Private)	disk	Default Policy
Web (Private-Secure)	flow control only	Default Policy
Web (Internet)	disk	Default Policy
Web (Internet-Secure)	flow control only	Default Policy
NFS	disk	Default Policy
Microsoft Exchange (MAPI)	disk	Default Policy
deny_all	none	Low Priority Traffic

Evaluation Top-Down
First match will be used

Service Classes

Service Class	Acceleration	Traffic Shaping Policy
+ ICA	disk	ICA Priorities
- CIFS <ul style="list-style-type: none">Name: CIFSEnabled: trueAcceleration Policy: diskFilter Rules:<ul style="list-style-type: none">Filter Rule:<ul style="list-style-type: none">bidirectionalApp: CIFS	disk	High Priority Traffic <ul style="list-style-type: none">Traffic Shaping Policy: High Priority Traffic
- Web (SVDE0039) <ul style="list-style-type: none">Name: Web (SVDE0039)Enabled: trueAcceleration Policy: memoryFilter Rules:<ul style="list-style-type: none">Filter Rule:<ul style="list-style-type: none">bidirectionalDst IP: 172.30.100.11	memory	Medium Priority Traffic <ul style="list-style-type: none">Traffic Shaping Policy: Medium Priority Traffic

Service Class ICA & Traffic Shaping ICA

Service Class Definition Traffic Shaping

Service Classes: Edit Service Class

Name: ICA

Enabled:

Acceleration Policy: disk

Traffic Shaping Policy: ICA Priorities Set

Application	Src IP		Dst IP	VLAN	DiffServ DSCP Bits	SSL Profile
ICA ICA CGP	Any	↔	Any	Any	Any	Any

Click on filter rule field to edit

Traffic Shaping Policies: Edit Policy

Name: ICA Priorities

Weighted Priority: Very High Priority 256

Set ICA Priorities

ICA Tag - Priority	Traffic Shaping Priority	
0 - Realtime	Very High	Priority 256
1 - Interactive	High	Priority 128
2 - Bulk Transfer	Medium	Priority 32
3 - Background	Medium	Priority 32

Multistream ICA
4 Connections are used

Multistream ICA

CloudBridge appliances support the new Multistream ICA protocol, in which as many as four connections are used for the different ICA priorities, instead of multiplexing all priorities over the same connection.

This approach gives interactive tasks greater responsiveness, especially when combined with the appliance's traffic shaping.

Note: Multistream ICA is disabled by default.

Virtual Channels

- ICA Stream #1**
- ICA Stream #2**
- ICA Stream #3**
- ICA Stream #4**

Channel Name	Default Priority	Description	Virtual Driver
CTXTW	0	Remote Session Screen Update (THINWIRE)	vdw30n.dll
CTXTWI	0	Seamless Windows Screen Update (THINWIRE)	vdwin.dll
CTXTWN	0	Winstation	wfica32.exe
CTXEUEM	0	End User Experience Monitoring	vdeuemn.dll
CTXZLFK	0	Local Text Echo and Keyboard Feedback	vdzlc.dll
CTXZLC	0	Speed Screen Latency Reduction - Screen	vdzlc.dll
CTXZLFK	0	Speed Screen Latency Reduction - Fonts	vdfon30n.dll
CTXCTL	0	ICA Session Control	vdctl.dll
CTXFLSH	1	Multimedia - Flash	vdflash.dll
CTXGUSB	1	USB Redirection	vdgusbn.dll
CTXMM	1	Multimedia - Streaming	vdmmn.dll
CTXCLIP	1	Client Clipboard Mapping	vdclipn.dll
CTXCAM	1	Client Audio Mapping	vdcamN.dll
CTXLIC	1	License Management	wfica32.exe
CTXVFM	1	Video Server – (no longer used)	n/a
CTXPN	1	Program Neighborhood	vdppn.dll
CTXCCM	2	Client COM Port Mapping	vdcom30N.dll
CTXCDM	2	Client Drive Mapping	vdcdm30n.dll
CTXPASS	2	Transparent Key Pass-Through	vdkbhook.dll
CTXCPM	3	Printer Mapping for Spooling Clients	vdcpm30N.dll
CTXCM	3	Client Management (Auto-Update)	vdcmN.dll
CTXLPT1	3	Legacy LP1 Port Mapping	wfica32.exe
CTXLPT2	3	Legacy LPT2 Port Mapping	wfica32.exe
CTXCOM1	3	Legacy COM1 Port Mapping	wfica32.exe
CTXCOM2	3	Legacy COM2 Port Mapping	wfica32.exe

ICA Multistreaming on CloudBridge & XenDesktop Server

Logging	<input checked="" type="radio"/> Enabled	ENABLED
Outlook (MAPI)	<input type="radio"/> Disabled	
Repeater Plug-ins	<input checked="" type="radio"/> Enabled	ENABLED
Secure Partners	<input type="radio"/> Disabled	
Usage Graph	<input checked="" type="radio"/> Enabled	ENABLED
WCCP	<input type="radio"/> Disabled	
Configuration		
Reports		
System Maintenance		
Additional Features		
CIFS Protocol Optimization	<input checked="" type="radio"/> Enabled for All CIFS <input type="radio"/> Enabled for SMB1 Only <input type="radio"/> Enabled for SMB2 Only <input type="radio"/> Disabled	ENABLED
ICA Multi-stream	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED
MAPI Cross Protocol Optimization	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled	DISABLED
Repeater Plug-in	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	ENABLED

The screenshot shows the Local Group Policy Editor window. The left pane displays the tree structure with 'Citrix Computer Policies' selected. The right pane shows the 'Citrix Computer Policies' list with one policy: 'Unfiltered' with priority 1 and 'Enabled' set to 'True'. Below this, the 'Active Settings' list is visible, with 'Multi-Port Policy' selected. The details for 'Multi-Port Policy' show 'ICA\Multi-Stream Connections' with ports 8001 (Very High), 8002 (Medium), and 8003 (Low). The 'Multi-Stream' setting is also shown as 'Enabled'.

Citrix Computer Policy
Enable Multistreaming



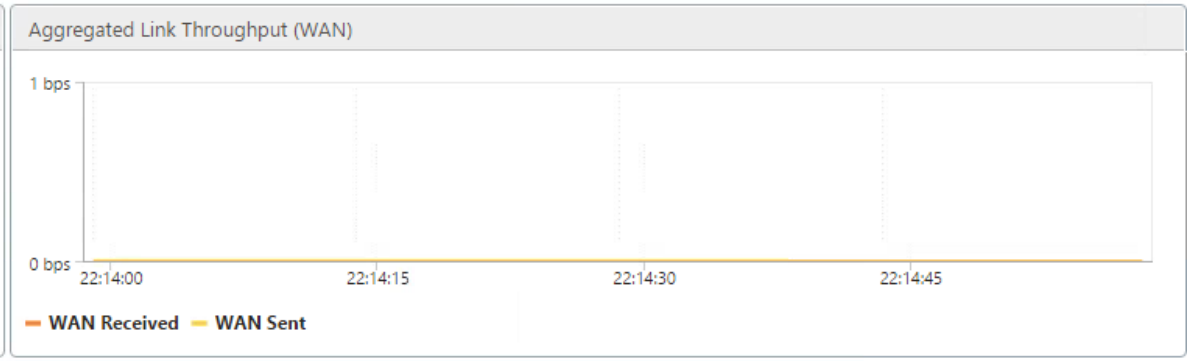
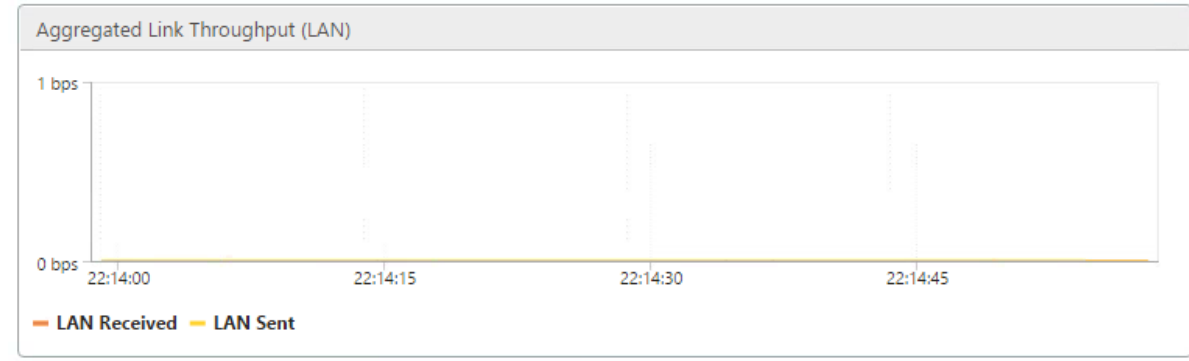
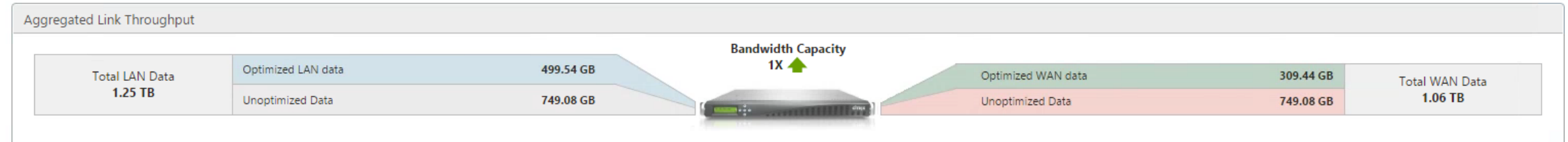


Dashboard and Monitoring

Dashboard

Dashboard Last Minute ▼ ↻

Up Time **17 month 7 day** Data Reduction **1.180 to 1 (15.225%)** Accelerated Connections **0** Unaccelerated Connections **0**

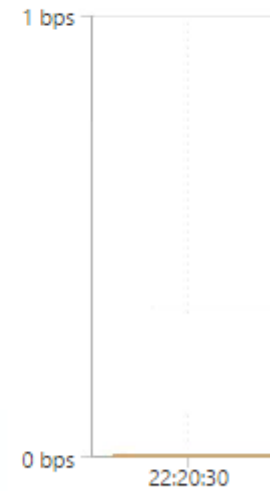


Monitoring

- Optimization
 - Citrix (ICA/CGP)
 - Connections
 - Compression
 - Filesystem (CIFS/SMB)
 - LAN vs WAN
 - Links Usage
 - Outlook (MAPI)
 - Service Classes
 - Top Applications
 - Traffic Shaping
 - Usage Graph
 - ICA Advanced
- Appliance Performance
- Partners & Plug-ins

Monitoring > Optimiz

LAN Monitoring

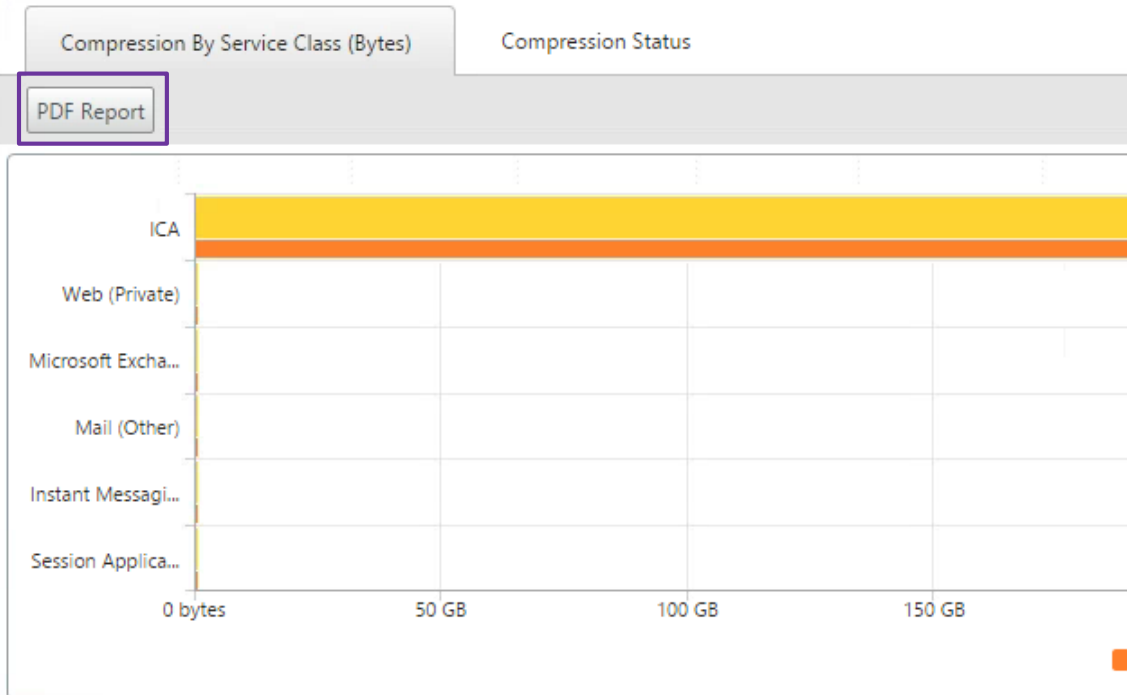


Accelerated Line Usa

WAN Monitoring

- Optimization
- Appliance Performance**
 - Compression Engine
 - Logging
 - WCCP
 - AppFlow
 - Appliance Load
- Partners & Plug-ins

Monitoring > Appliance Performance > **Compression By Service Class (Bytes)**



Service Class Details			
Details	Service Class Name	Current Passthrough TCP Connections	Current Accelerated TCP Connections
	ICA		
	Web (Private)		
	Microsoft Excha...		
	Mail (Other)		
	Instant Messagi...		
	Session Applica...		

Vielen Dank

