

Server Centralization and Data Center Consolidation

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Key Business Challenges

- Globalized integration
 - Tie remote employees into business process
- Proliferation of distributed resources
 - Reduce capital and operational costs
- Regulatory compliance and business continuity
 - Improve control and backup of data, DR

- Result: Existing infrastructure is compromising the business

Data Center Consolidation Statistics

- 592 surveyed — 28% planning a consolidation project and 60% have one underway
- Savings anticipated
 - Hardware — 40%
 - Staffing — 31%
 - Software — 15%
 - Facilities — 14%
- For those with projects underway
 - 60% have saved on hard costs
 - 25% have reduced staffing costs

Impact of Centralization and Consolidation

Application response times and productivity

- Servers overloaded
- Finite bandwidth and more rich content
- Latency & chatty protocols
- Application contention
- Availability, scalability
- Programming inefficiencies

Capacity, availability, security, and resiliency

- Increased Application I/O
- More users, fewer servers
- Layered security perimeters
- Users aren't just employees
- Infrastructure must be hardened & able to perform consistently at high-speed

Application Acceleration

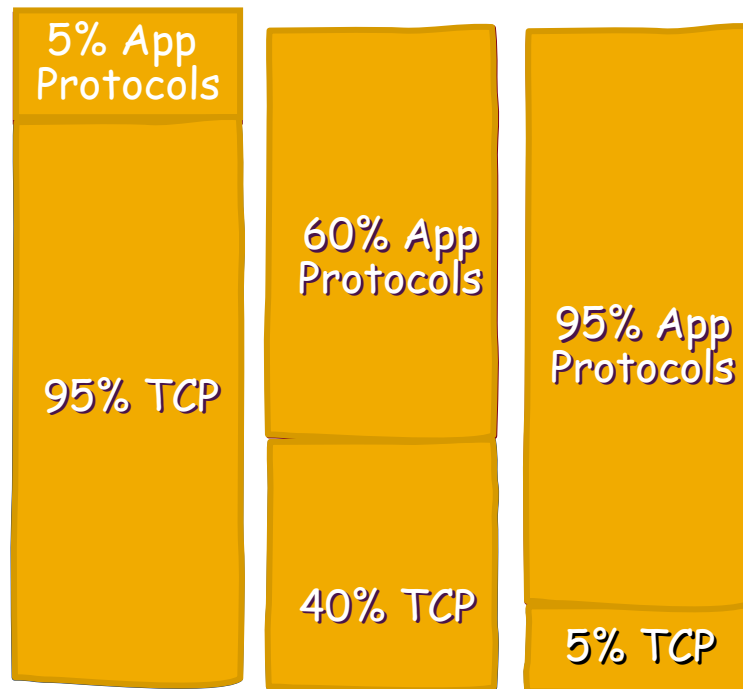
- Latency is leading cause of slow apps
- Two areas impacted — TCP and app layer
- Apps differ in source of delay — TCP or L7

Many apps are slow because of latency's effect on TCP

Examples:

FTP, backups, bulk data transfer, collaboration apps

Solution: TCP Acceleration



Others are delayed by TCP as well as protocol "ping-pong" delays

Examples:

Exchange, file services, web applications

Solution: Application Acceleration

Exchange – The Challenge

Distributed servers:

Users are happy but IT is burdened



- Server management — patch upgrades
- Remote maintenance — unlikely to have IT in all sites
- Backup — a regulatory compliance issue in many countries
 - In the US, Sarbanes-Oxley requires corporations to keep backup copies of all e-mail for years, a problem magnified by remote server deployment

Exchange – The Challenge

Centralized
servers:

Easier admin but slows users
and takes more bandwidth

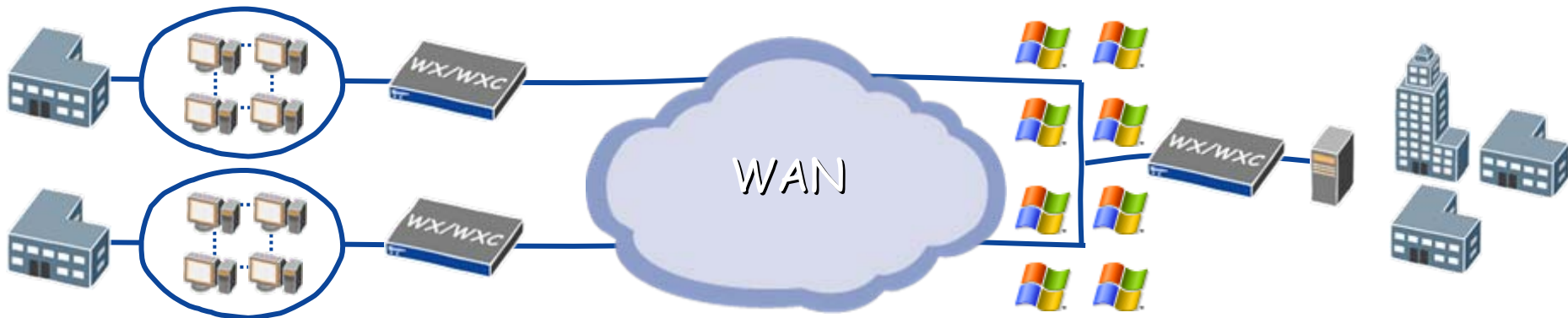


- Message retrieval subject to delay
 - Multiple round trips per e-mail, so even minimal latency slows users
- Bandwidth requirements increase dramatically
 - Many more message sent across WAN, creating a bandwidth crunch

Exchange – The Solution

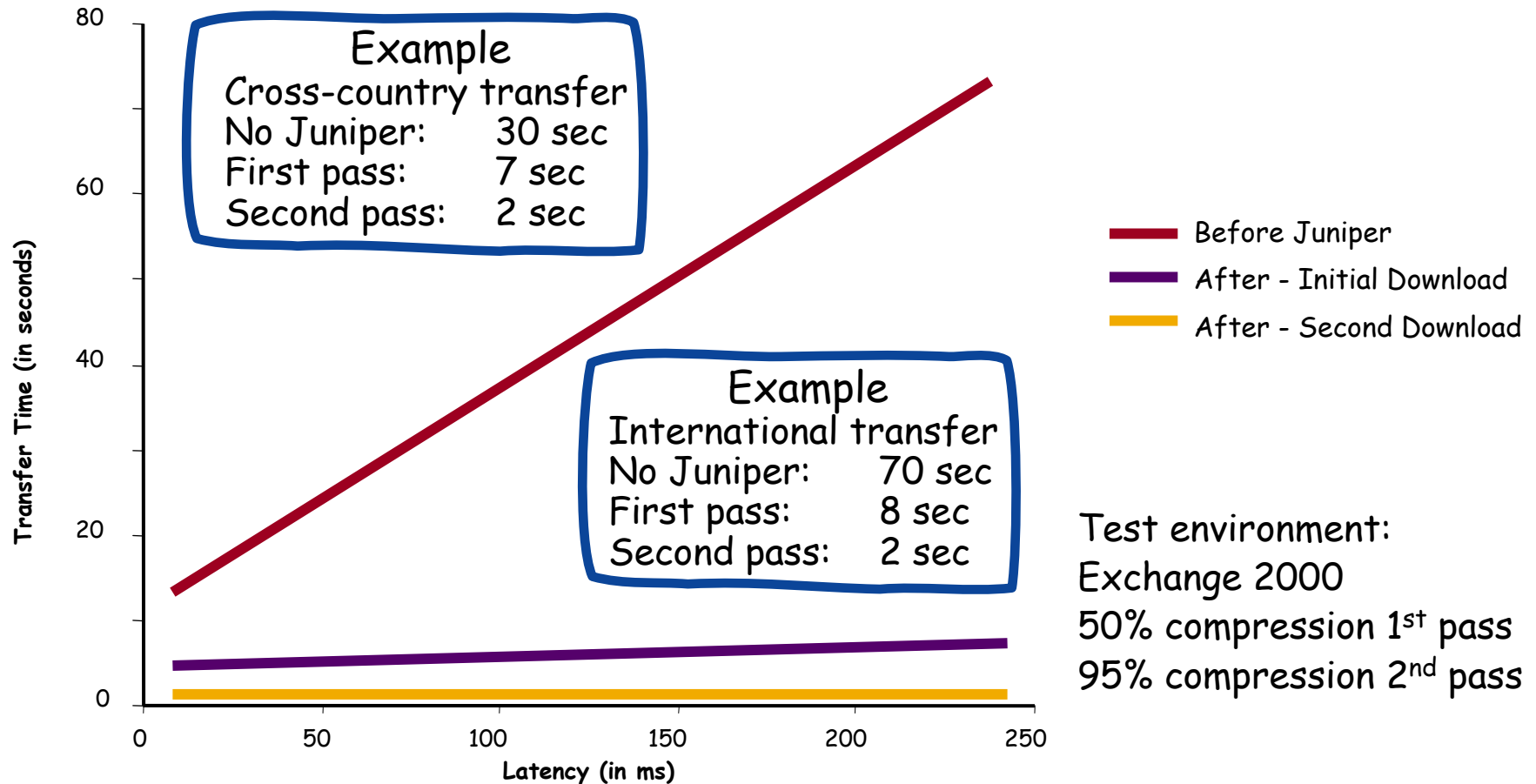
- Pipeline messages across the WAN
 - By the time the client requests the message, the local WX/WXC device sends it at LAN speeds
- Dramatic acceleration and bandwidth savings
 - Compression and caching significantly improve the results
- Transparent to clients and servers

Centralized servers with fast performance for users



Centralized Exchange, High Performance

Time To Retrieve a 2 MB Exchange Attachment Over T-1 Link



Juniper your Net

Exchange Acceleration – Customer Results

2 MB e-mail with Excel file

- 768 Kbps link, Boston to NY, 35 ms latency
- Results
 - Without Juniper: 45 seconds
 - With Exchange accel: 2 seconds
- 23x performance gain

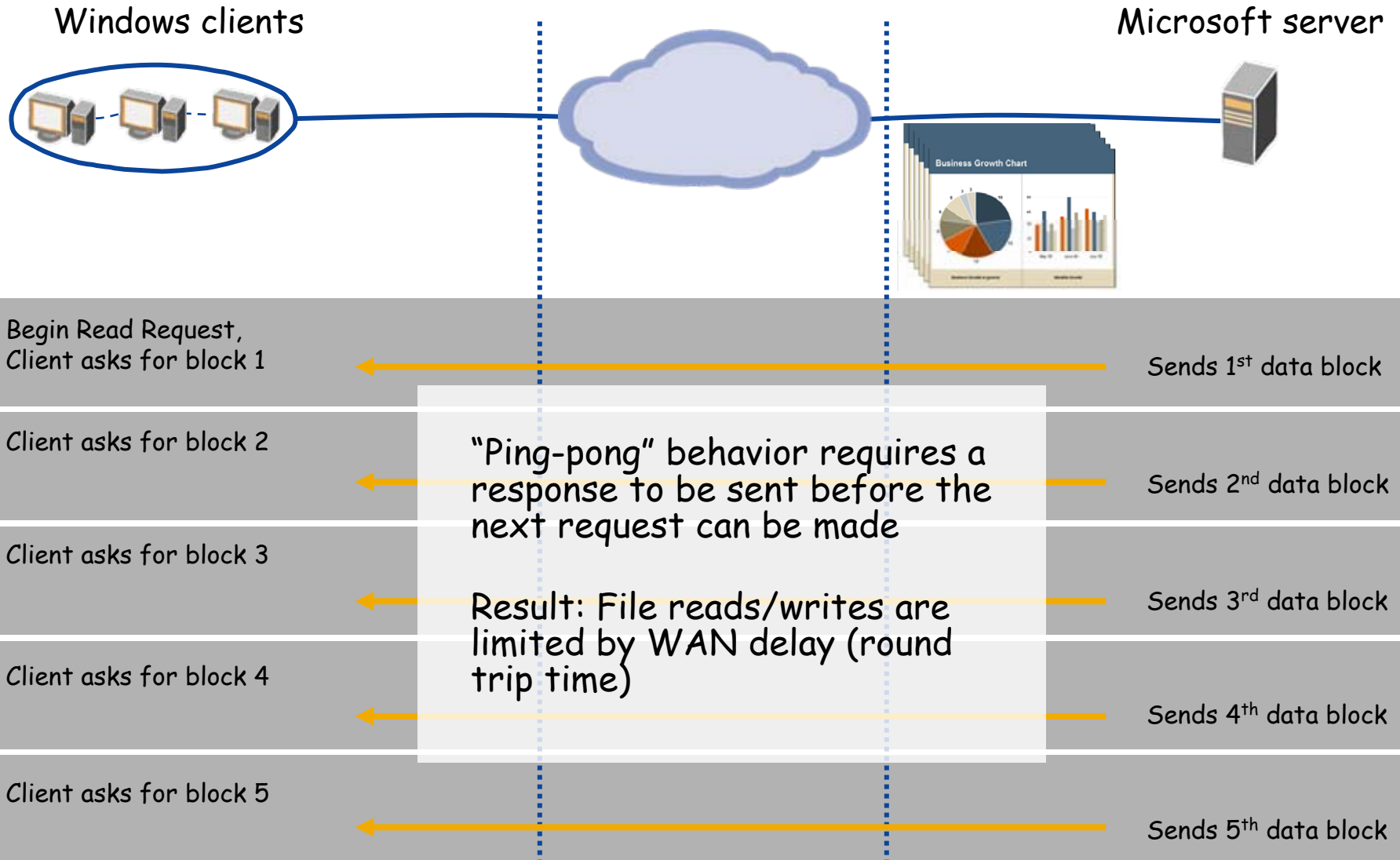
2.8 MB e-mail with PDF

- 384 Kbps link, Chicago to Mexico, 100 ms latency
- Results
 - Without Juniper: 96 seconds
 - With TCP accel: 57 seconds
 - With Exchange accel: 5 seconds
- 20x performance gain

"The users are reporting faster message opening times, by about a factor of 4. They're getting 1 MB files in 15 seconds instead of a minute."

IT Director

CIFS Read Without Optimization



CIFS Read *with* AppFlow Optimization



Begin Read Request,
Client asks for block 1

Juniper 1 asks Juniper 2 to read ahead to fill pipe

Sends 1st data block

Client asks
for block 2



Juniper 1
sends block 2

Client asks
for block 3



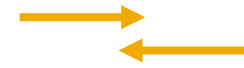
Juniper 1
sends block 3

Client asks
for block 4



Juniper 1
sends block 4

Juniper 2 asks
server to read
ahead



Juniper 2
pipelines data
blocks to
Juniper 1



Total time needed for round trips greatly reduced
Result: significantly faster file reads for user

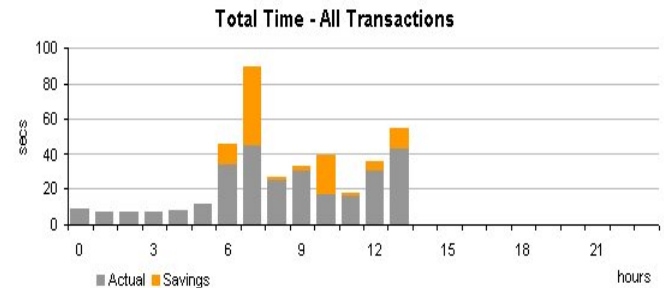
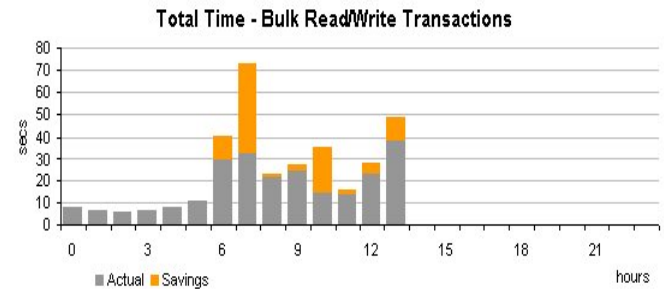


File Services Acceleration – Customer Results

AEC Firm

- 98 MB CAD file
- T-1 link Denver to Atlanta
- 60 ms latency
 - Without Juniper: 711 seconds
 - With compression /caching: 140 seconds
 - With acceleration: 13 seconds
- 55x performance gain

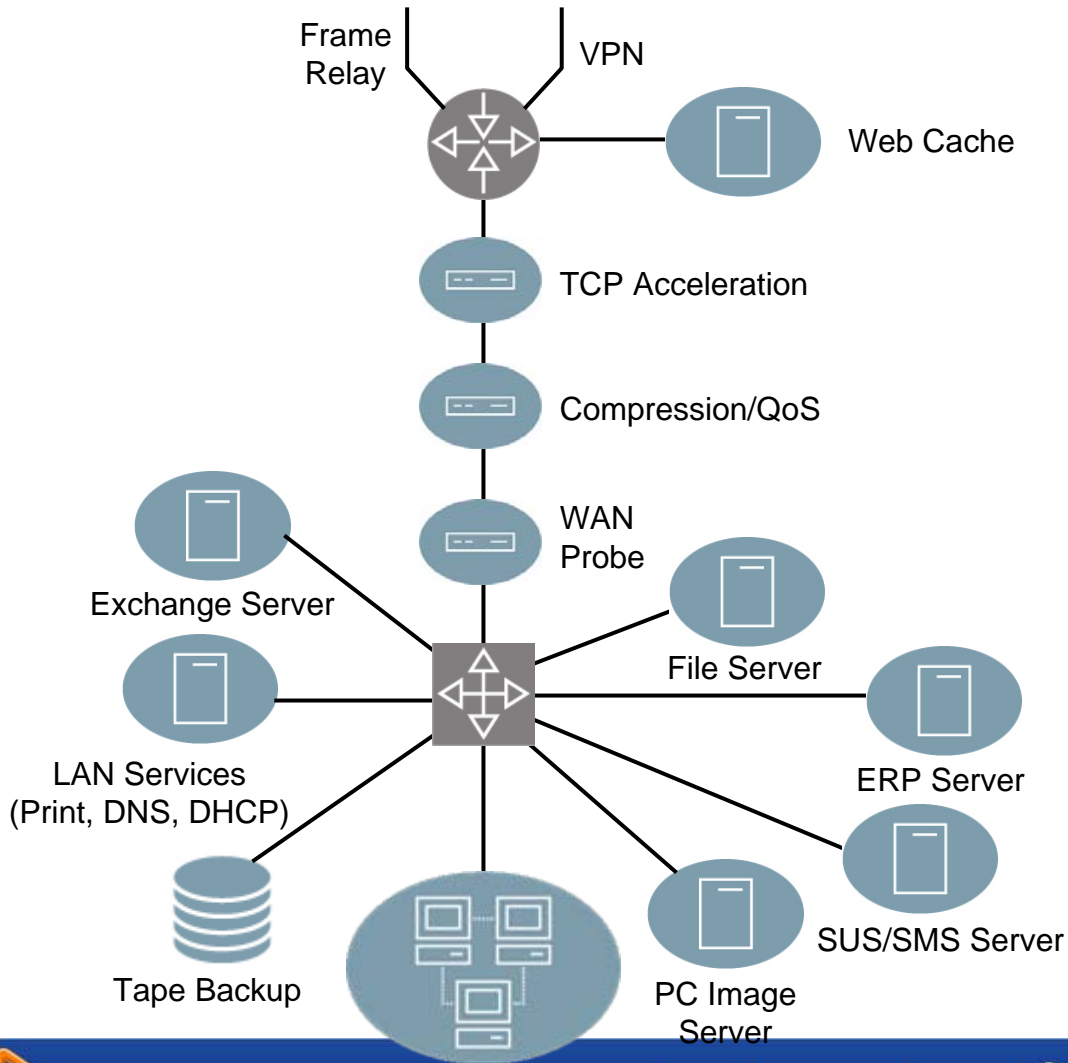
Transaction Type	Total Time (Secs)		Savings	
	Actual	w/o Peribit*	Secs	Percent
Bulk Read/Write	241.53	335.39	93.87	38.9%
All Transactions	288.05	390.85	102.80	35.7%



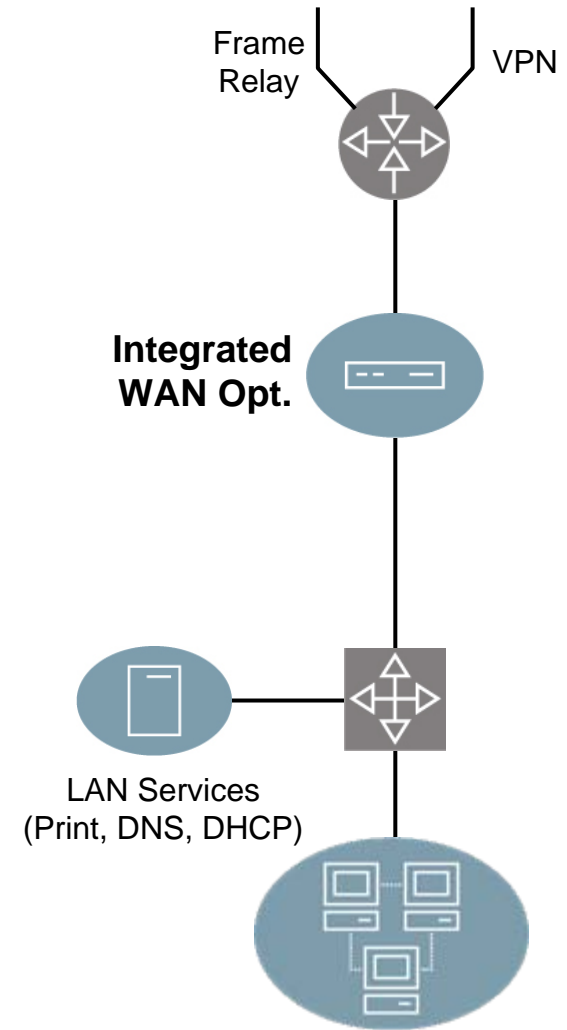
Application:

Integrated Approach Simplifies Branch Office Architecture

Before



After



Juniper your Net



Thank You!

