CityLink
Streaming UpDate

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Topics

- Windows Media Streaming
- Anycast
- SF Upgrade
- LVS Load Balancing
- Squid Based Cache
- Managing Windows in a Unix World.

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Anycast (A Primer)

- What is it?
- An IP Address range is re used in multiple locations
  - Routing protocols ensure user linked to nearest node
  - Generally used for stateless udp transmission
  - A different closer node would break a TCP session

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Anycast

- Why use it ?
- Provides Resilience and Redundancy
  - Route withdrawn on node failure
- General Applications
  - DNS root servers
  - 6to4 Gateway IP address 192.88.99.1

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CityLink Streaming Media Services

- CityLink
  - us
- Streaming
  - Continuous stream of data
- Media
  - The data is video or music
  - The third one out of triple play voice/data/video
- Services
  - We do it

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Anycast in CityLink

- Same address range used across three nodes
  - WIX
  - APE
  - San Francisco
- Rationale
  - Resilience considerations
  - Commercial considerations

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SF Upgrade

- Dual Windows Front End
- Linux Data Store
- Load Balancing Director
- (Uplinks, Routers and Switches)

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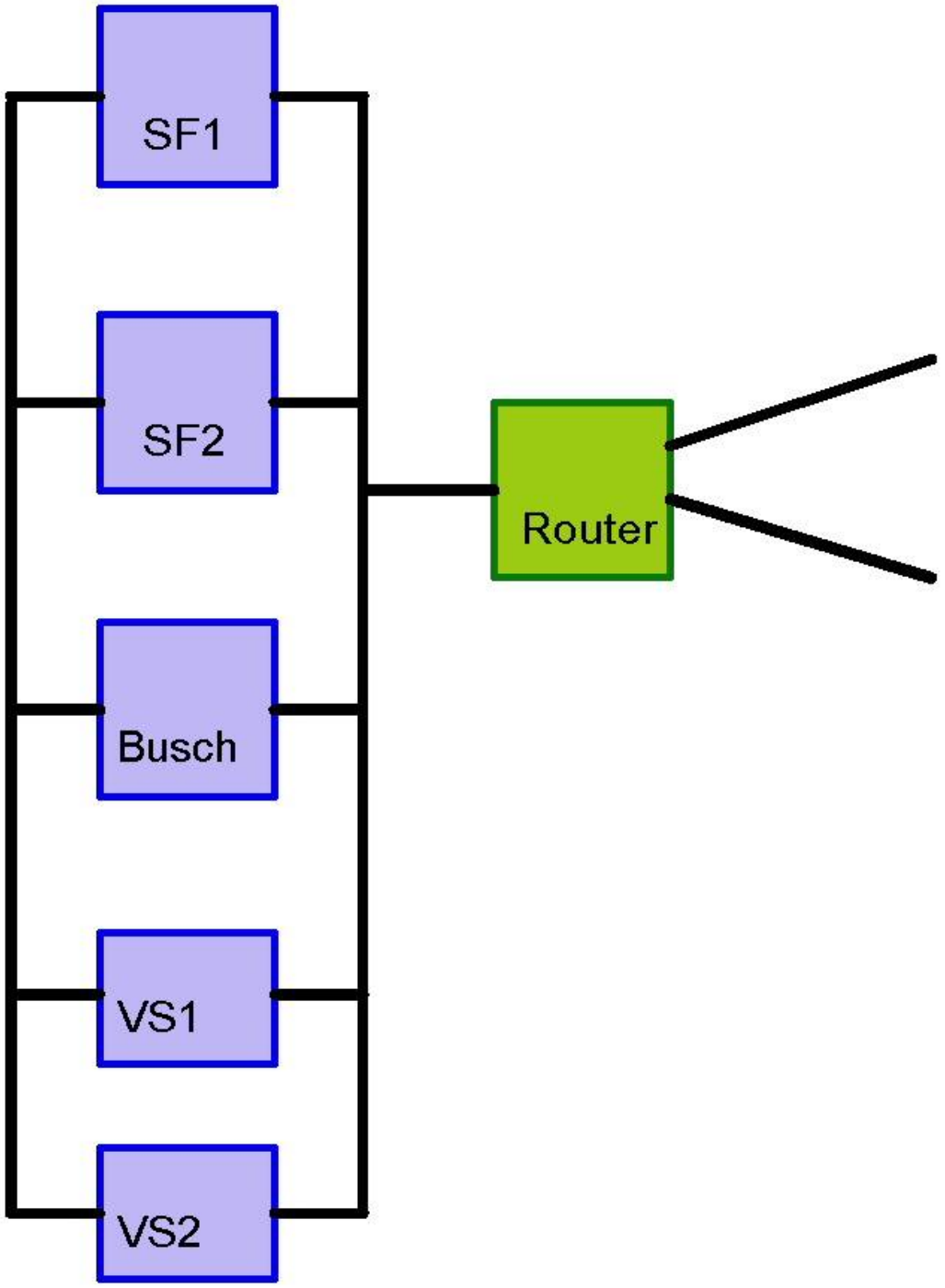
SF Node



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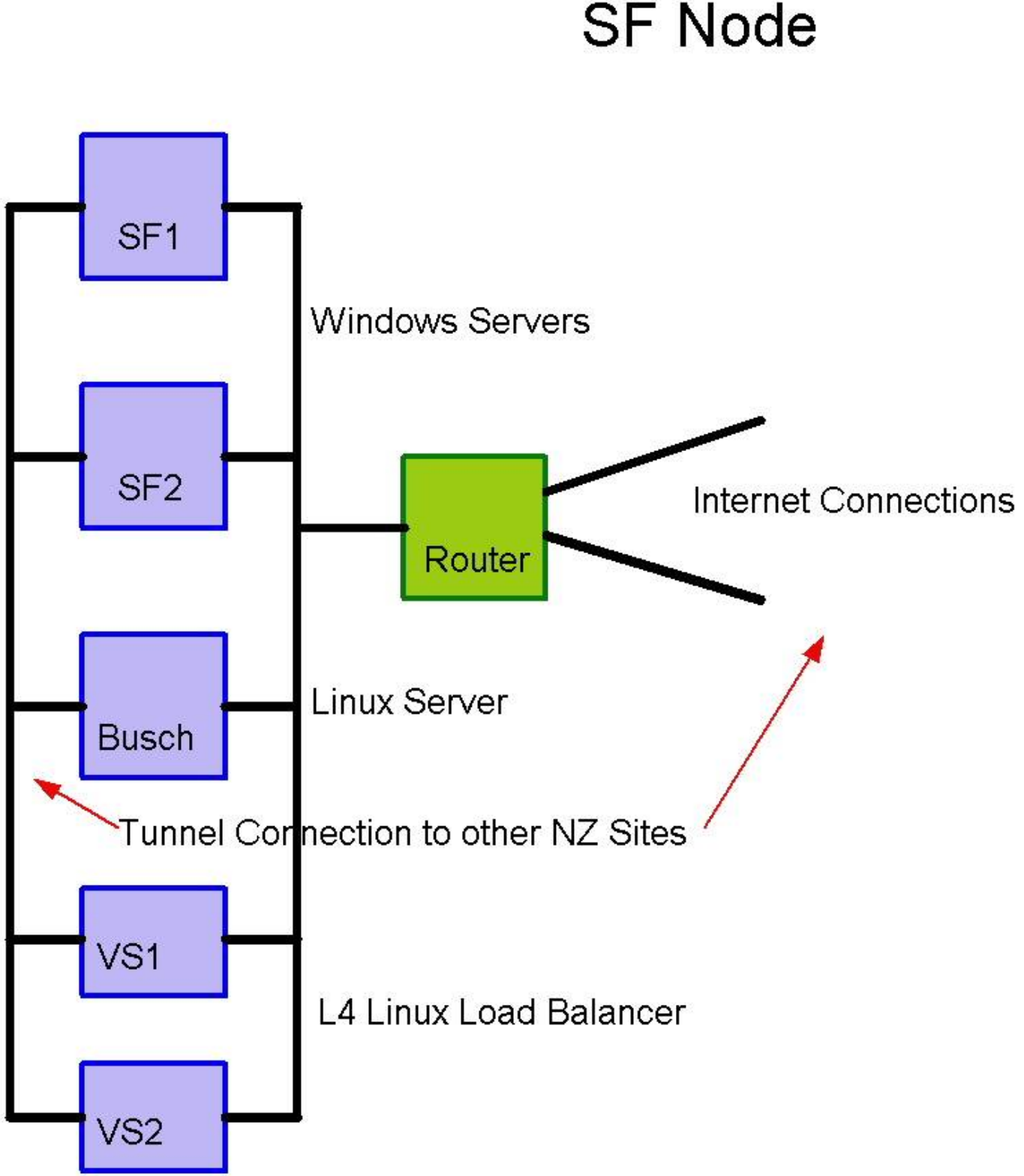
SF Node



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On Demand Streaming Service

- Distributes media files
- Files are pre positioned to the file store
- User requests are directed to a CityLink site

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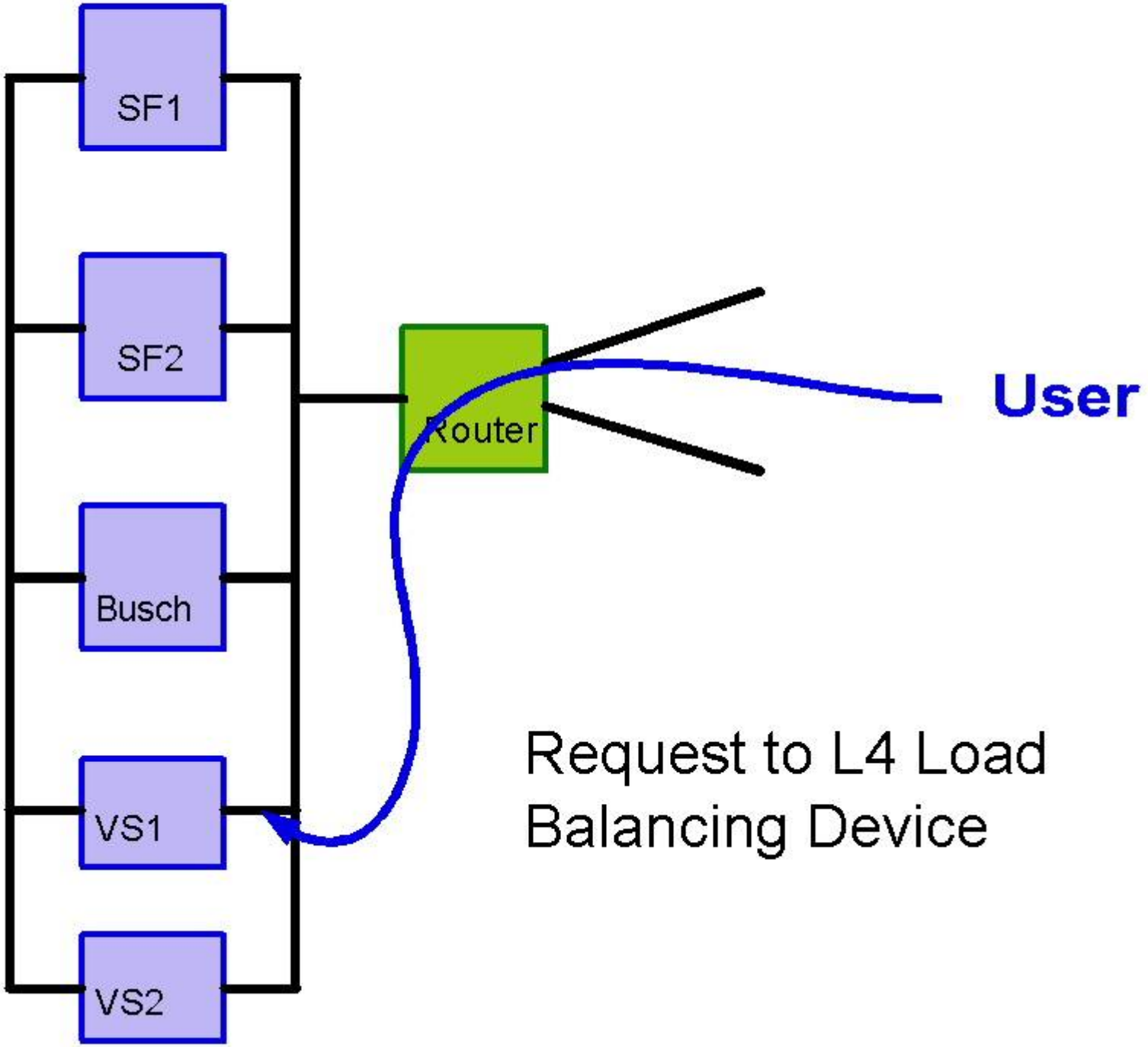
On Demand



Request to L4 Load Balancing Device

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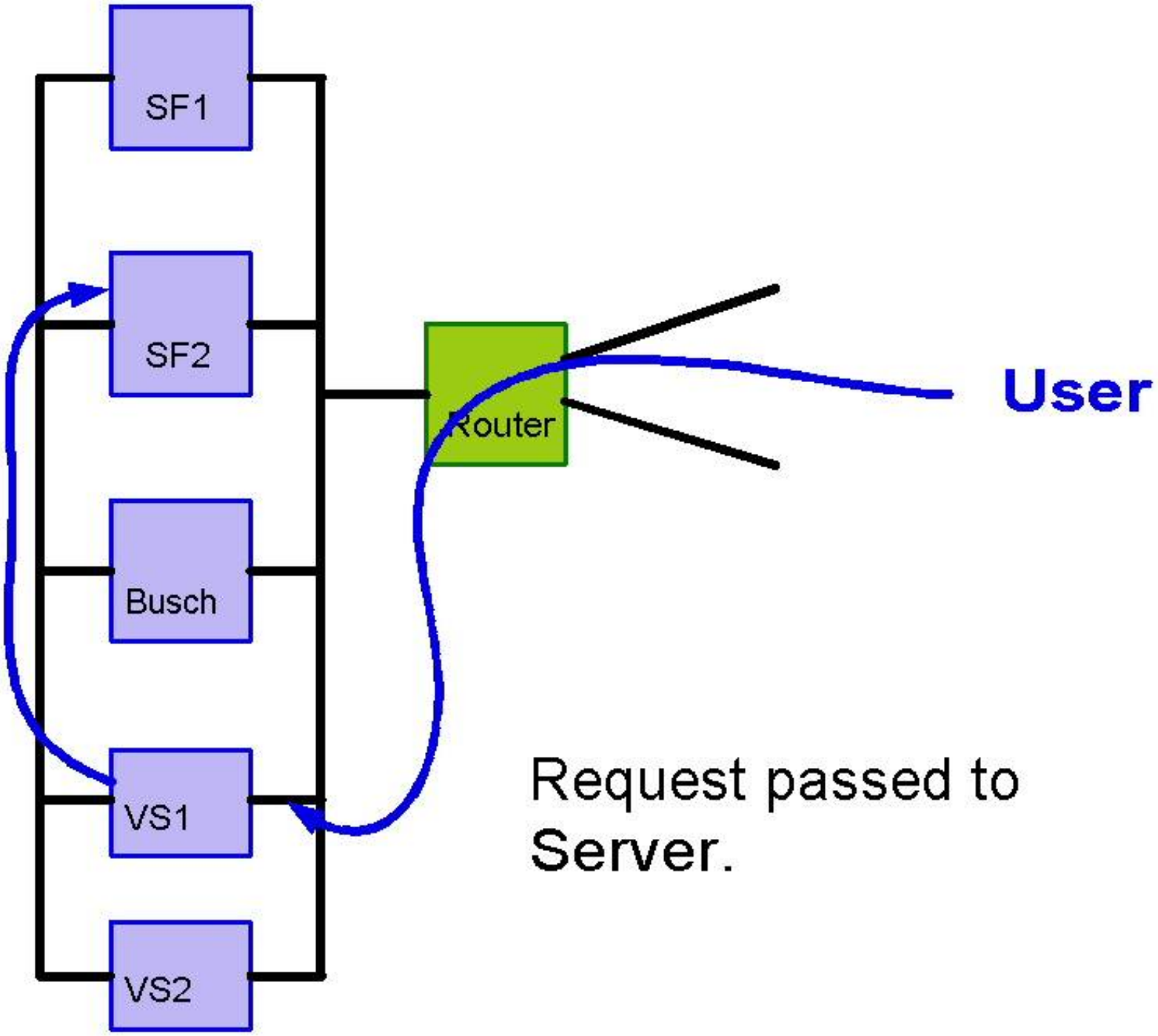
On Demand



Request passed to Server.

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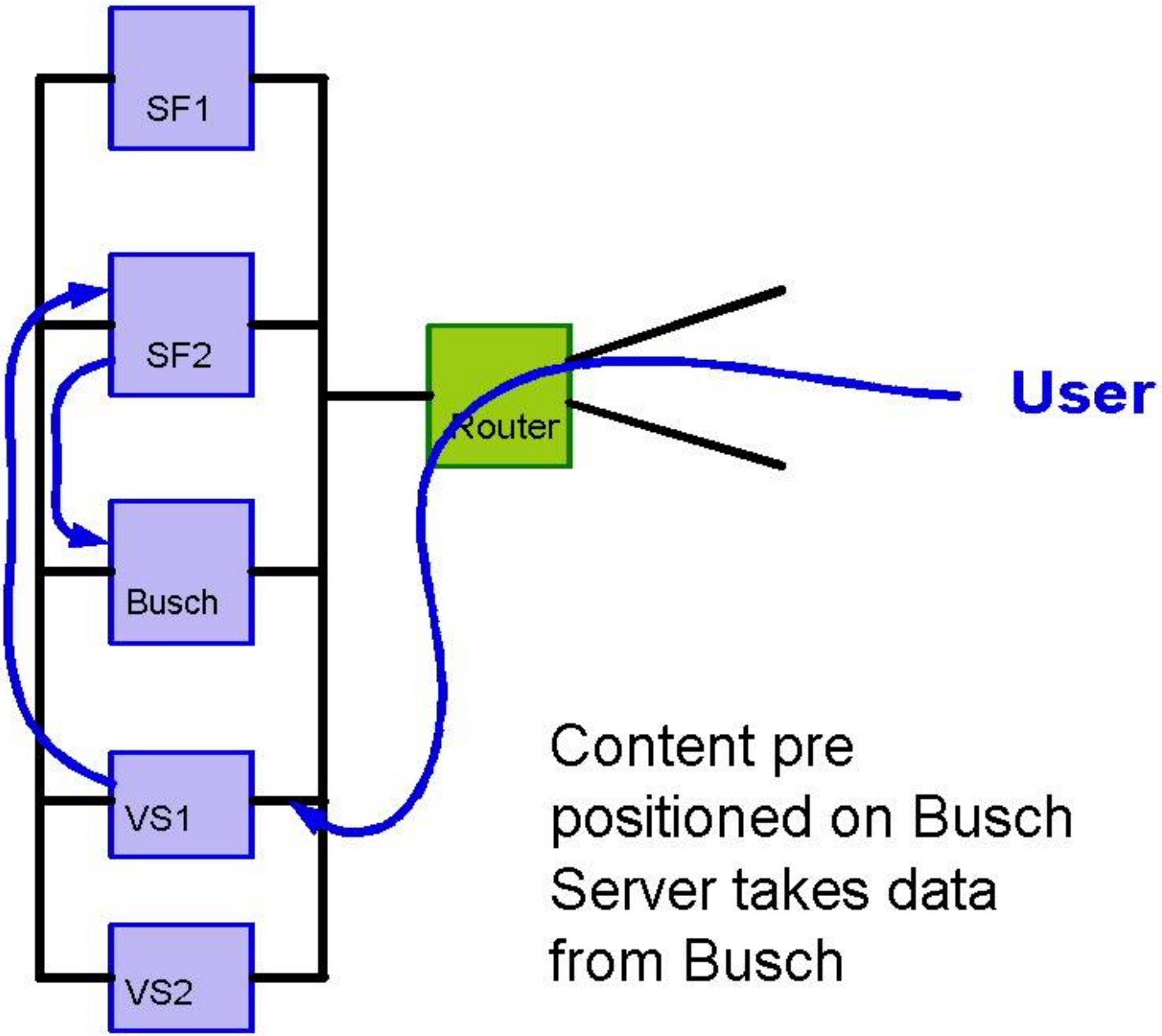
On Demand



Content pre positioned on Busch Server takes data from Busch

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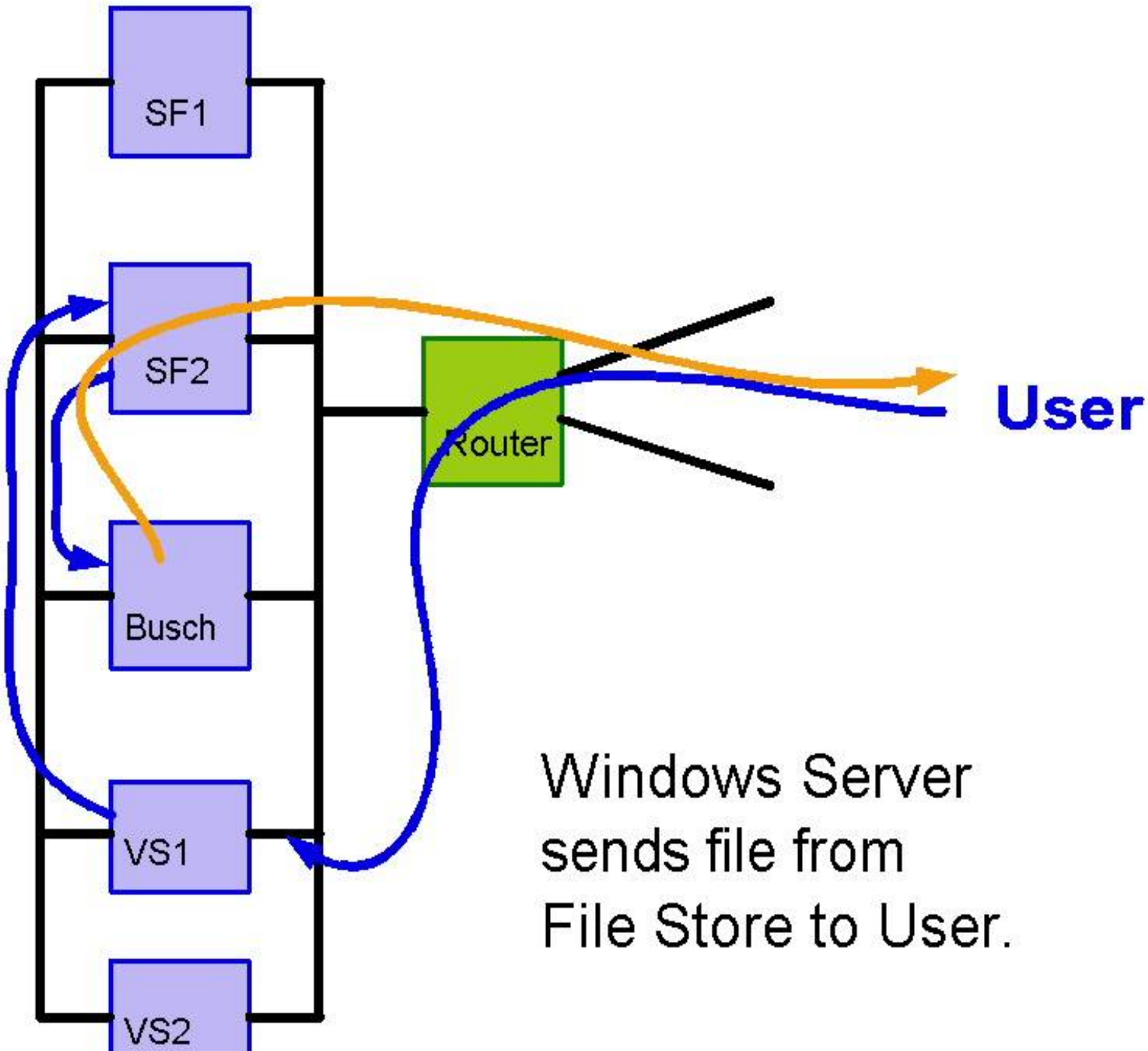
On Demand



Windows Server
sends file from
File Store to User.

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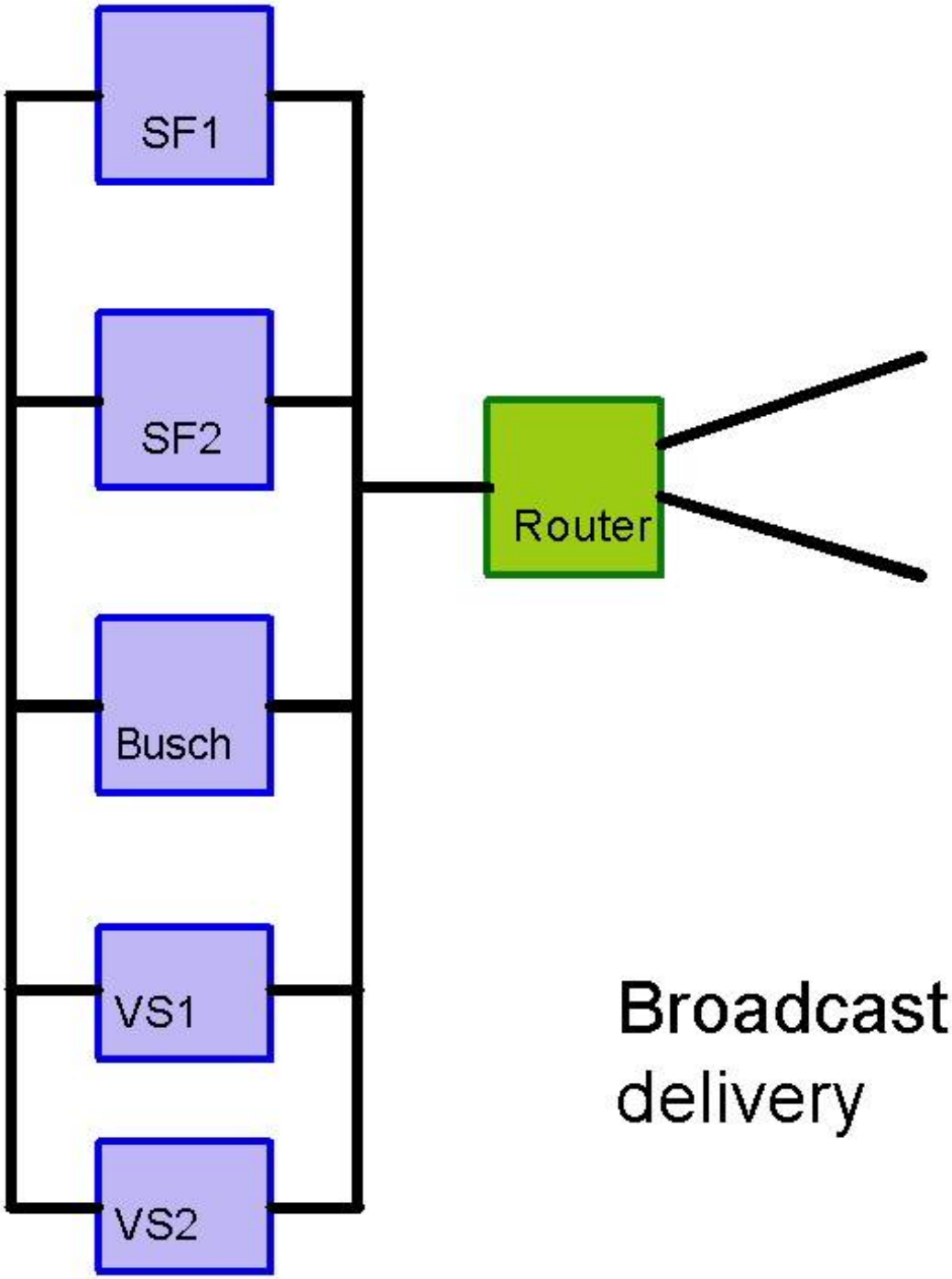
Broadcast



User

Broadcast content delivery

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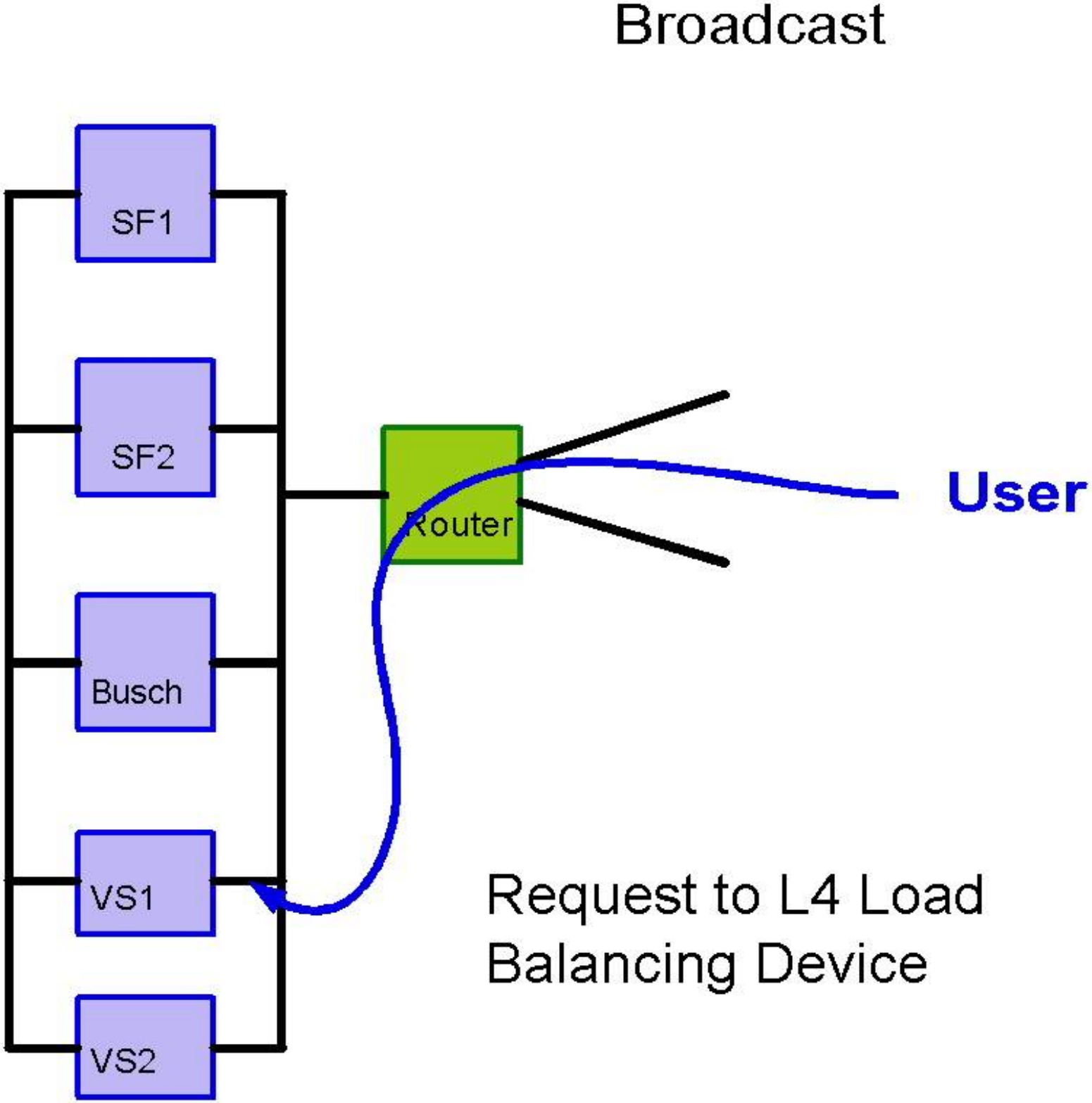
Broadcast



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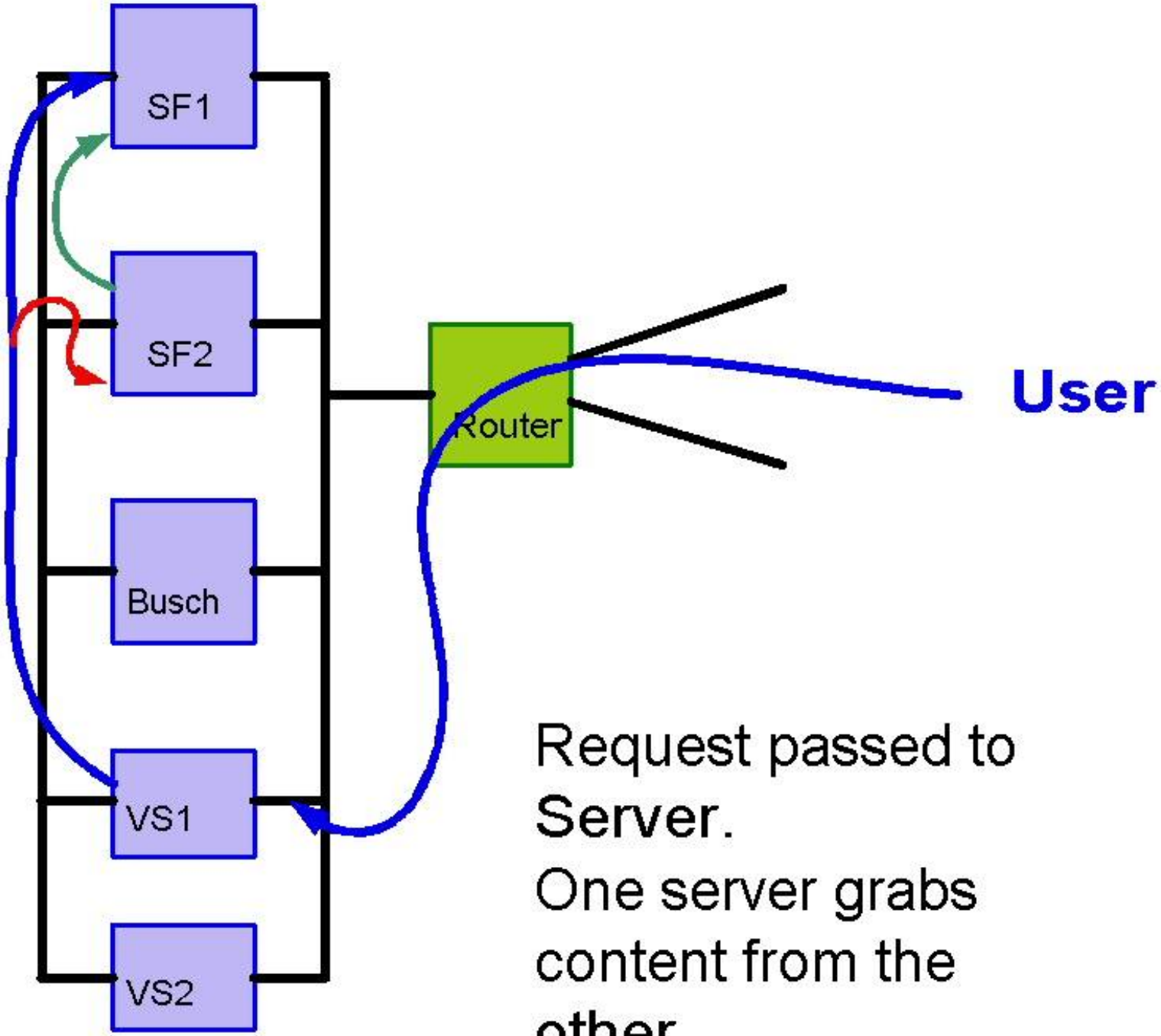
Broadcast



Request passed to Server.
One server grabs content from the other.

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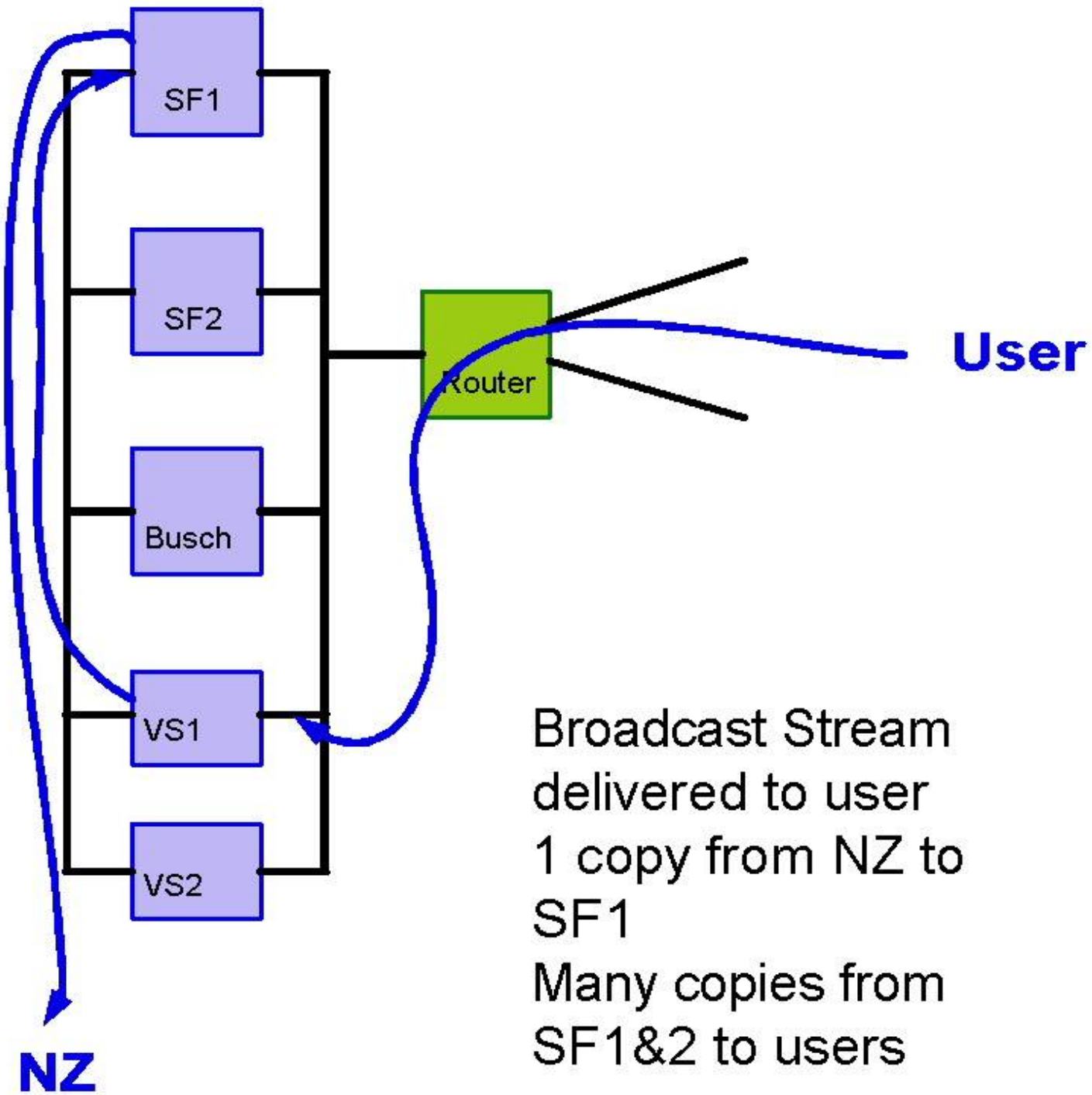
Broadcast



Broadcast Stream delivered to user
1 copy from NZ to SF1
Many copies from SF1&2 to users

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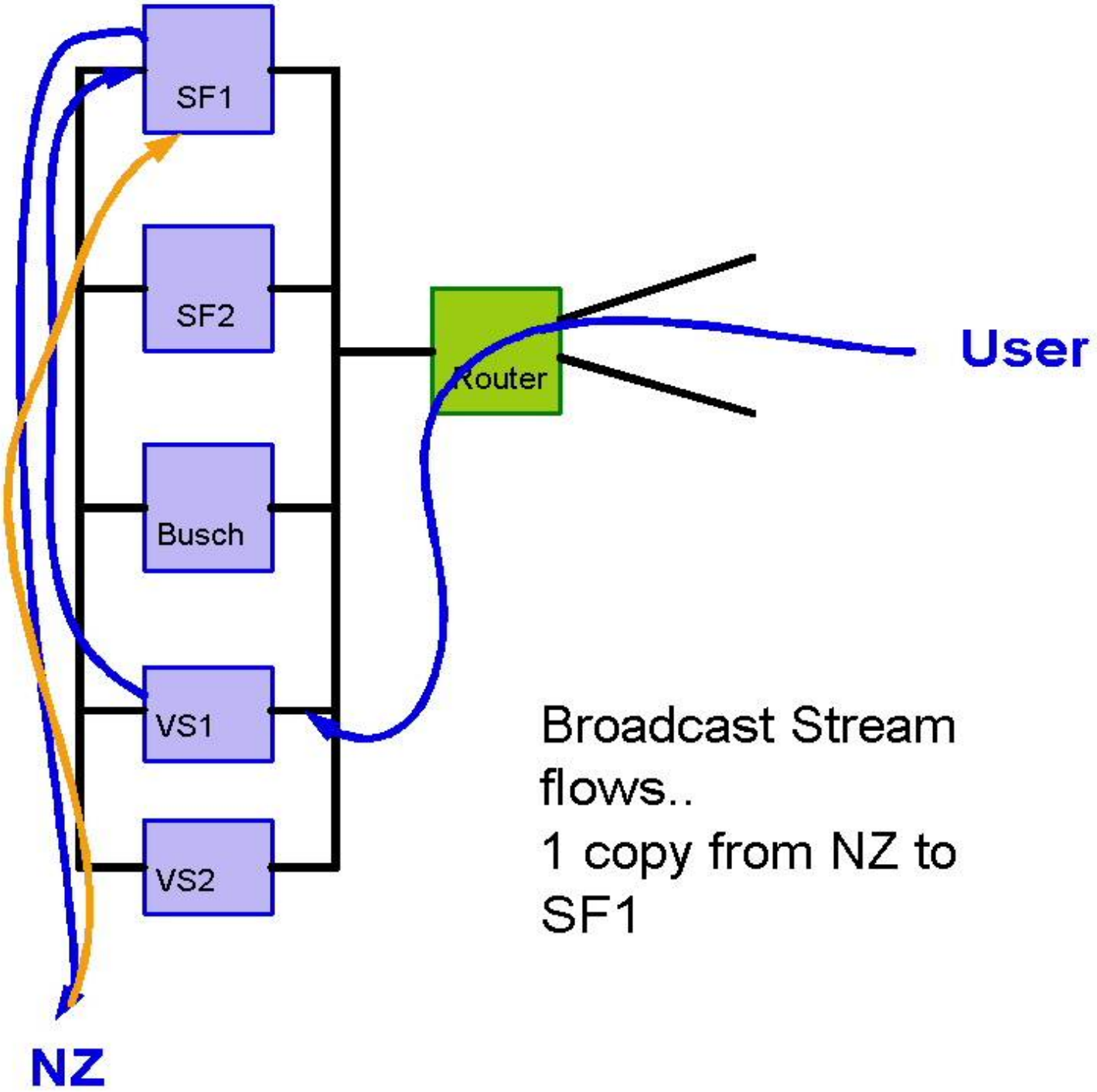
Broadcast



Broadcast Stream flows..
1 copy from NZ to SF1

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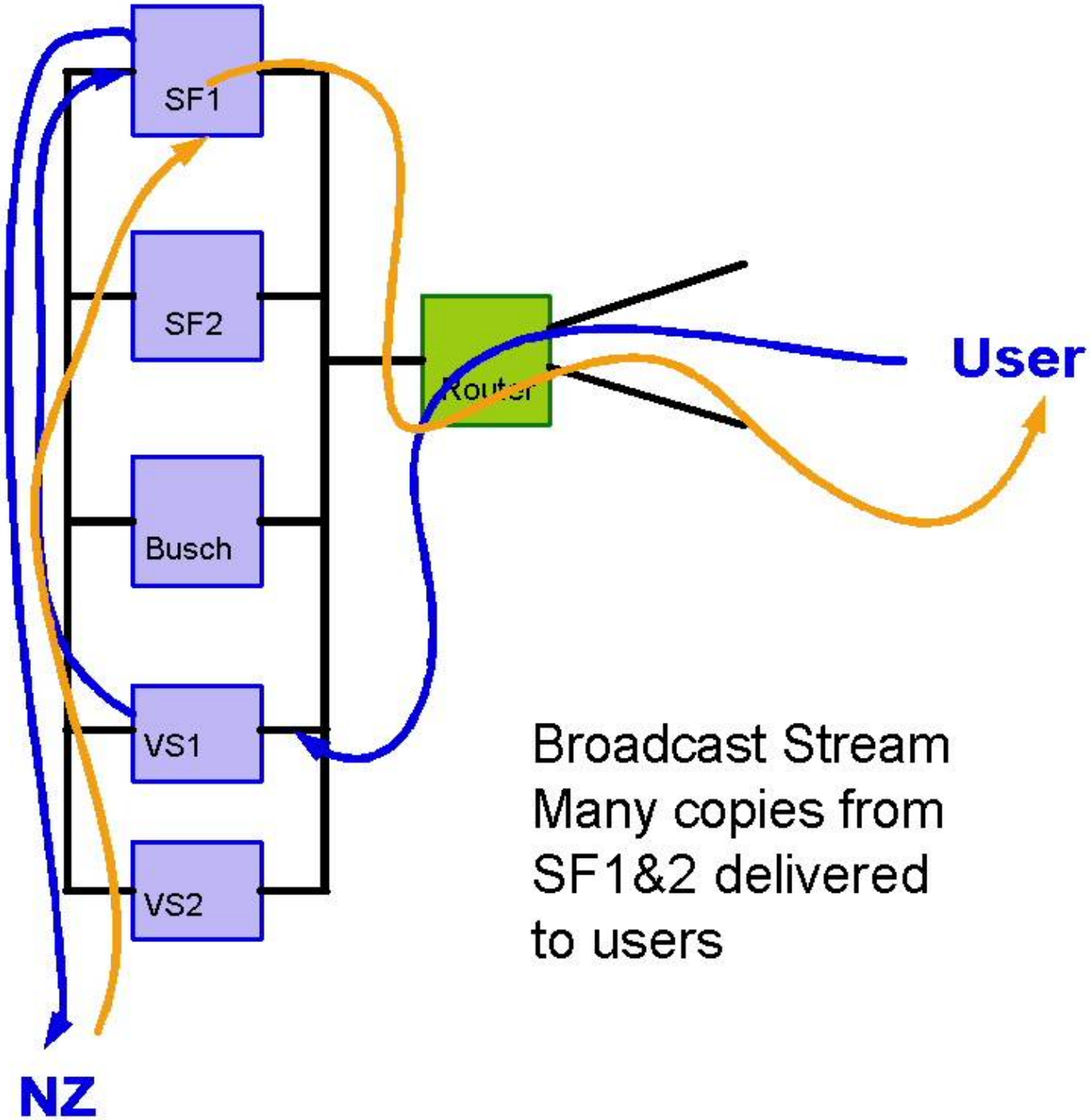
Broadcast



Broadcast Stream
Many copies from
SF1&2 delivered
to users

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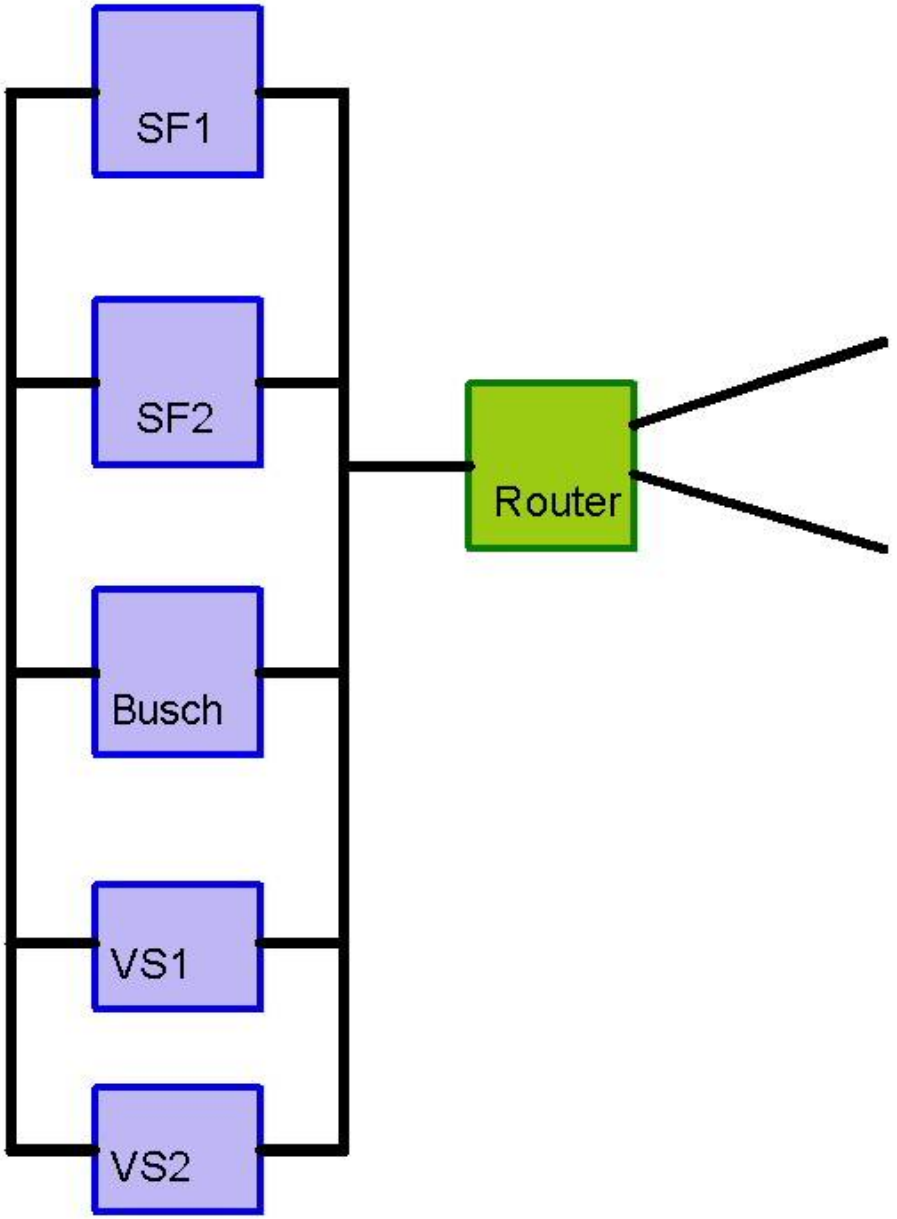
Cache



User

Customer Store

NZ

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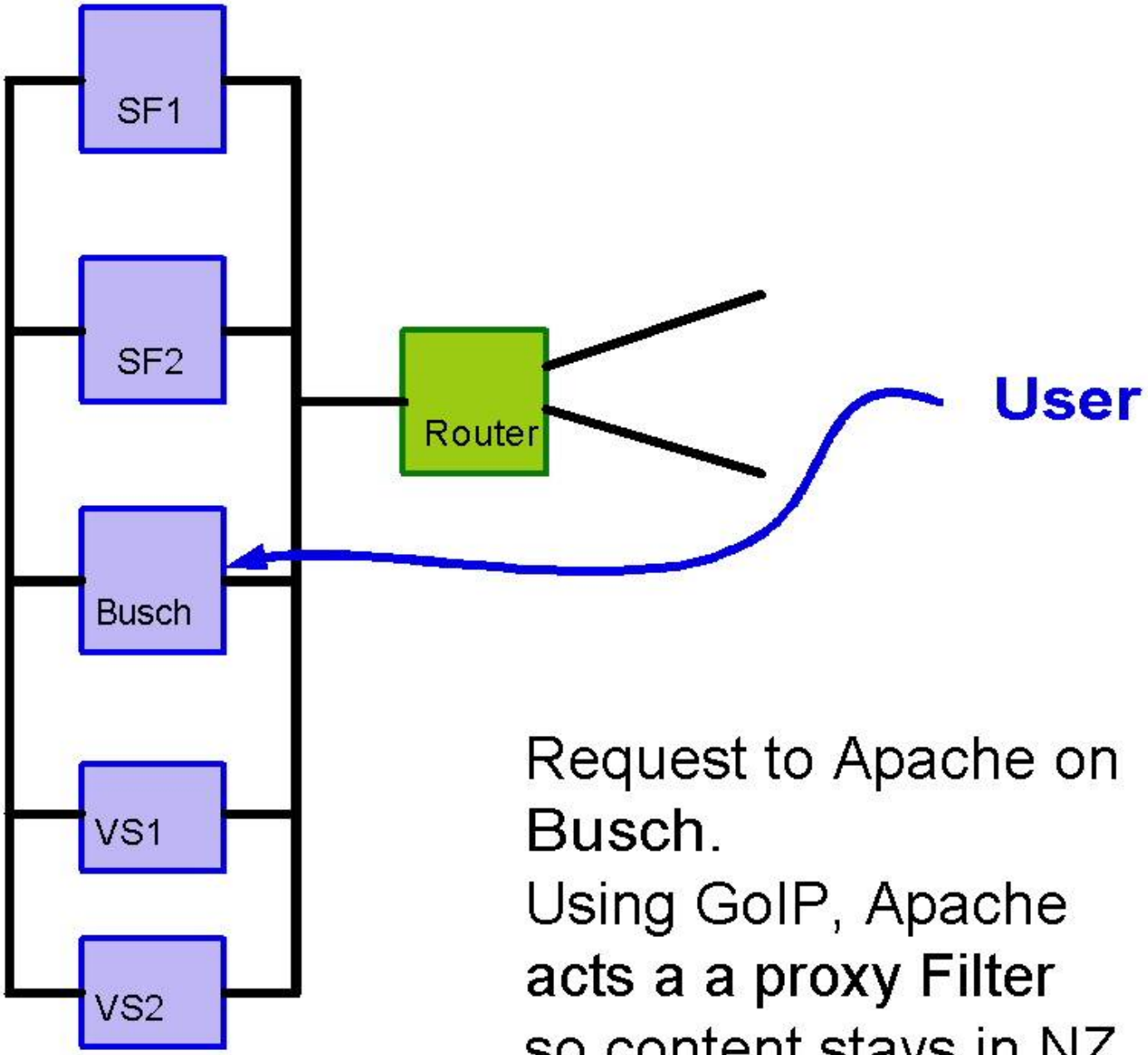
Cache



Request to Apache on **Busch**.
Using GoIP, Apache **acts a a proxy Filter** so content stays in NZ

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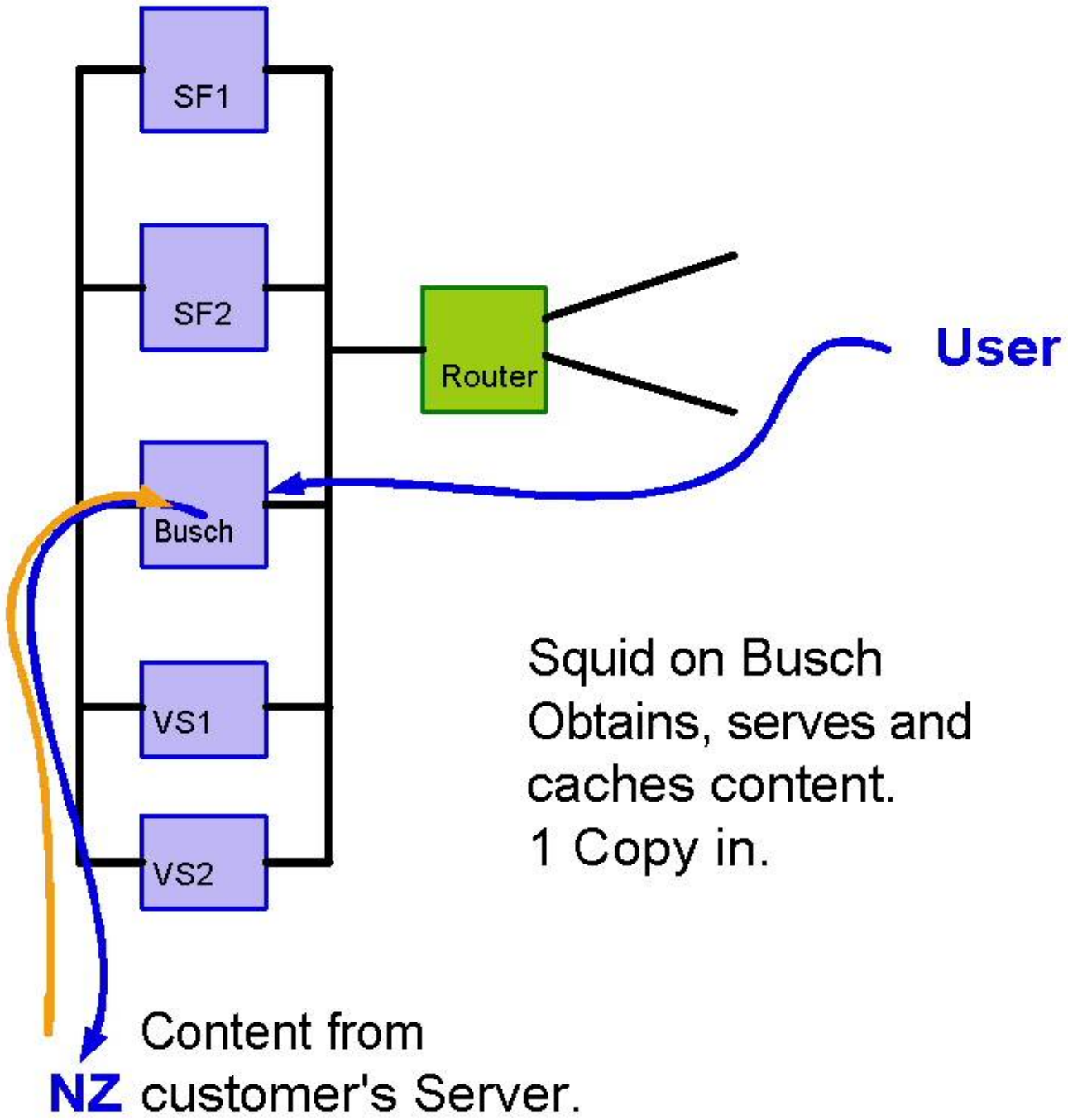
Cache



Squid on Busch
Obtains, serves and
caches content.
1 Copy in.

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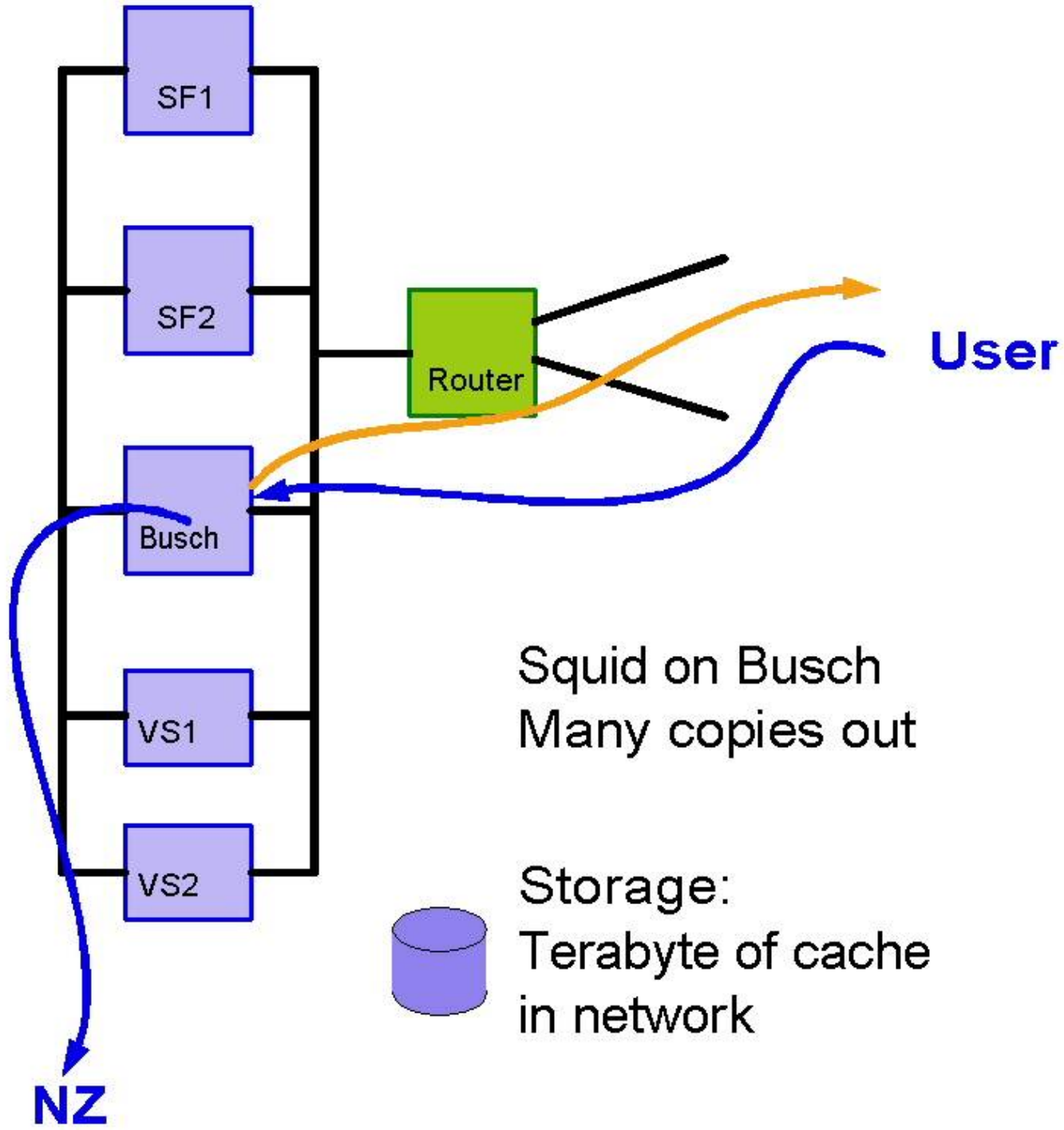
Cache



Squid on Busch
Many copies out

Storage:
Terabyte of cache
in network

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L4 Load Balancing

- Linux Virtual Server System
- Using IPVS (IP Virtual Server)
- which implements transport-layer load balancing inside the Linux kernel, so called Layer-4 switching. IPVS running on a host acts as a load balancer at the front of a cluster of real servers, it can direct requests for TCP/UDP based services to the real servers, and makes services of the real servers to appear as a virtual service on a single IP address.

Windows Streaming Media

- Thus..
- Windows Servers
- CityLink is a Unix shop
- Thus.....
- Managing Windows Servers in our Unix World

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Manage Windows Servers

- Cygwin.
  - Pro: Lets us use Perl and ssh
  - Con: Emulation not perfect
- Cygwin's ssh
  - Pro: ssh OK
  - Con: copy slow so scp & rsynch slow
  - Con: set dns up right or its real slow

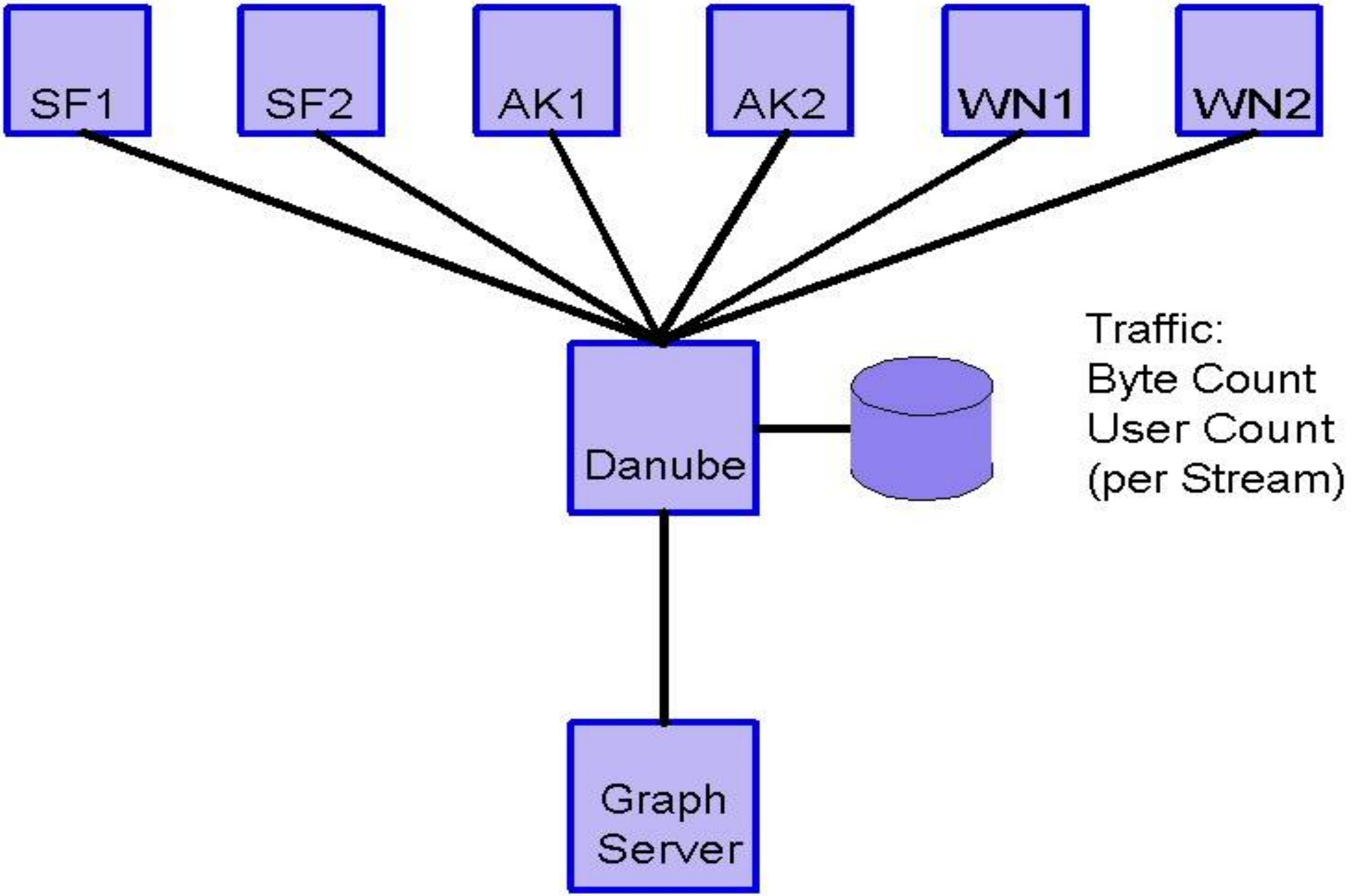
Perl Scripts for Windows

- Need scripts to manage stats
  - and
- Windows Provides Documentation *but*
  - focussed on C# and Visual Basic
  - Perl centric documentation needed
    - so..
- Document Translation Required

Graphing System

- Collects Data
- Produces Graphs
- Displays Graphs

Graphing System



Danube

- Scripts grab stats off the servers
  - ssh sessions running windows scripts
- Stored on Danube as text files
  - ak1:54
  - wn1:20
  - sf1:203
  - sf2:309
  - allhost:576

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Munim

- Node
  - Back end environment to process data
  - Plug-ins to link to source data
    - The guys like the interface
  - Stores graph data
  - Creates and stores graphs

Munim

- Front End
  - Provides html display
- CityLink uses ”Our Front End”
  - More Friendly
  - More Features
  - html with Munin's graphs

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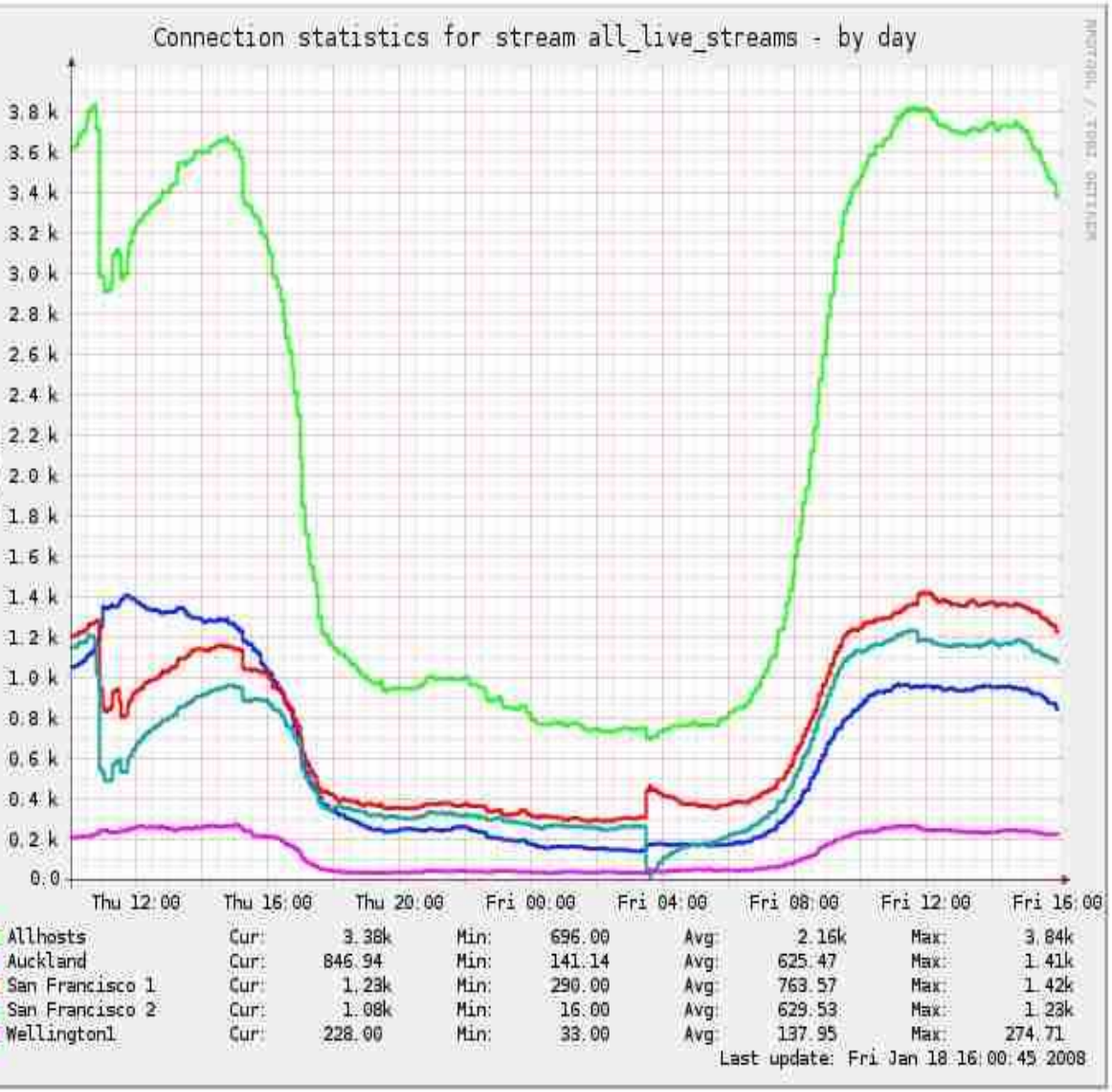
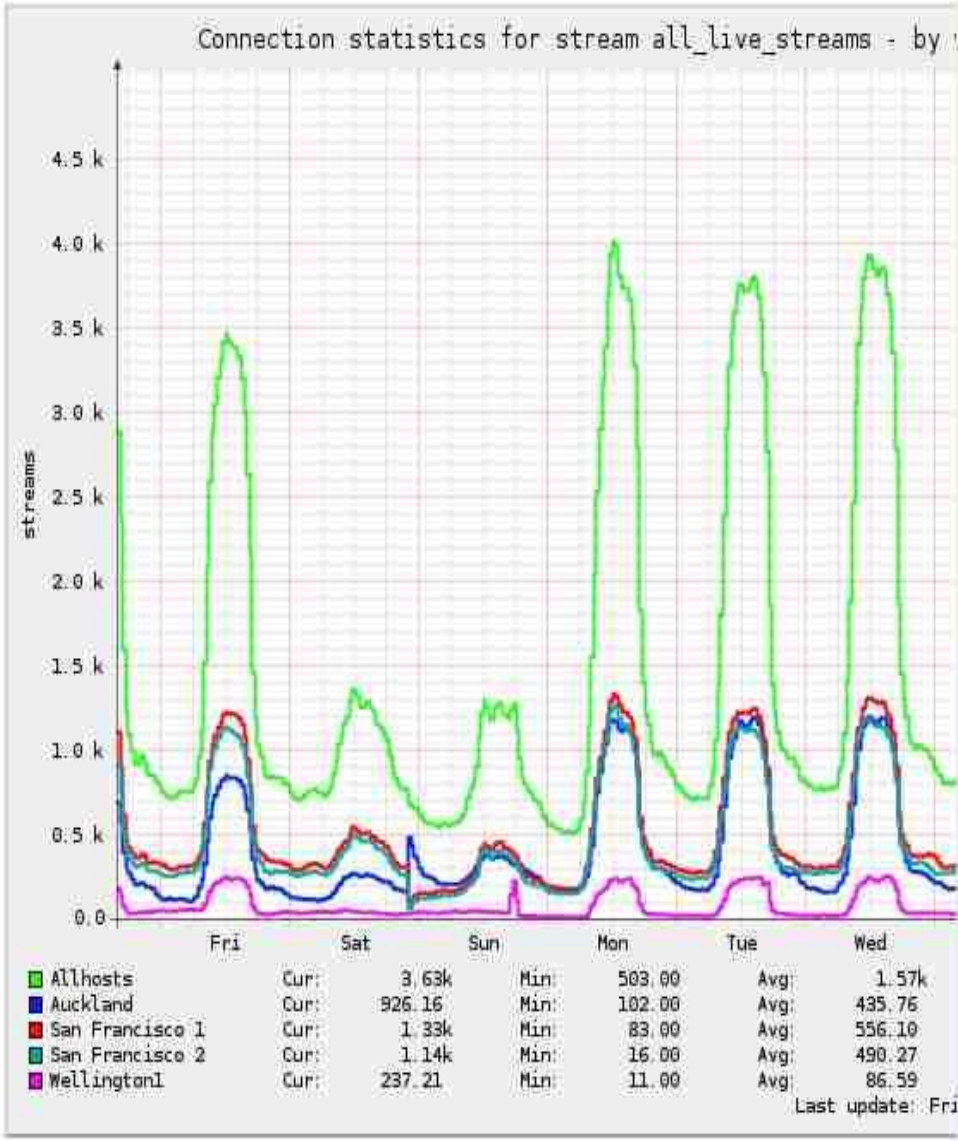
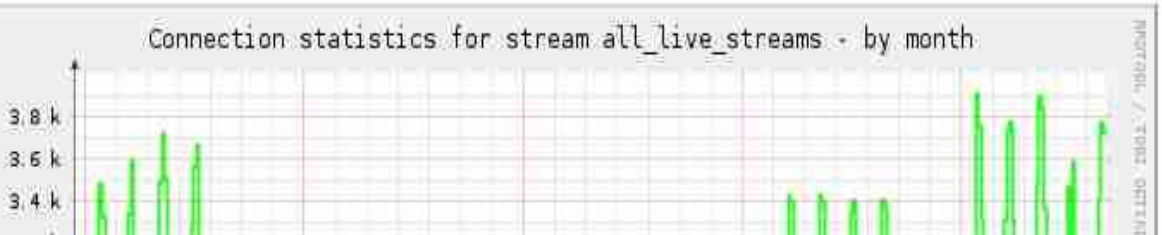
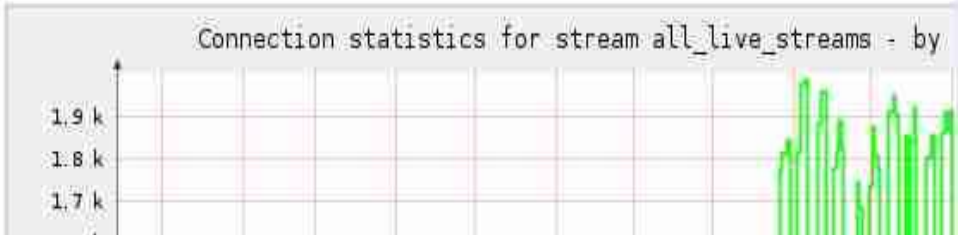
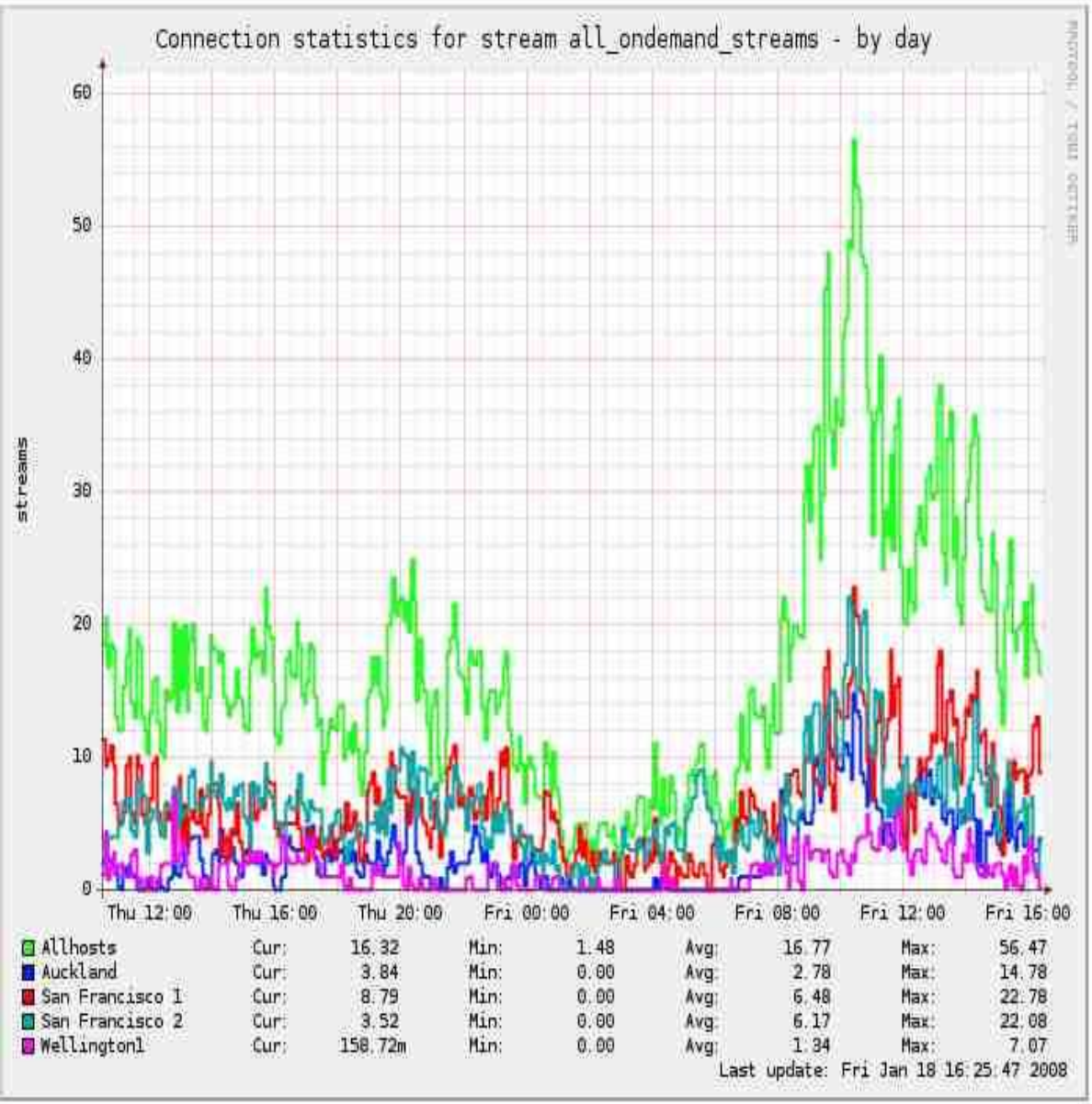
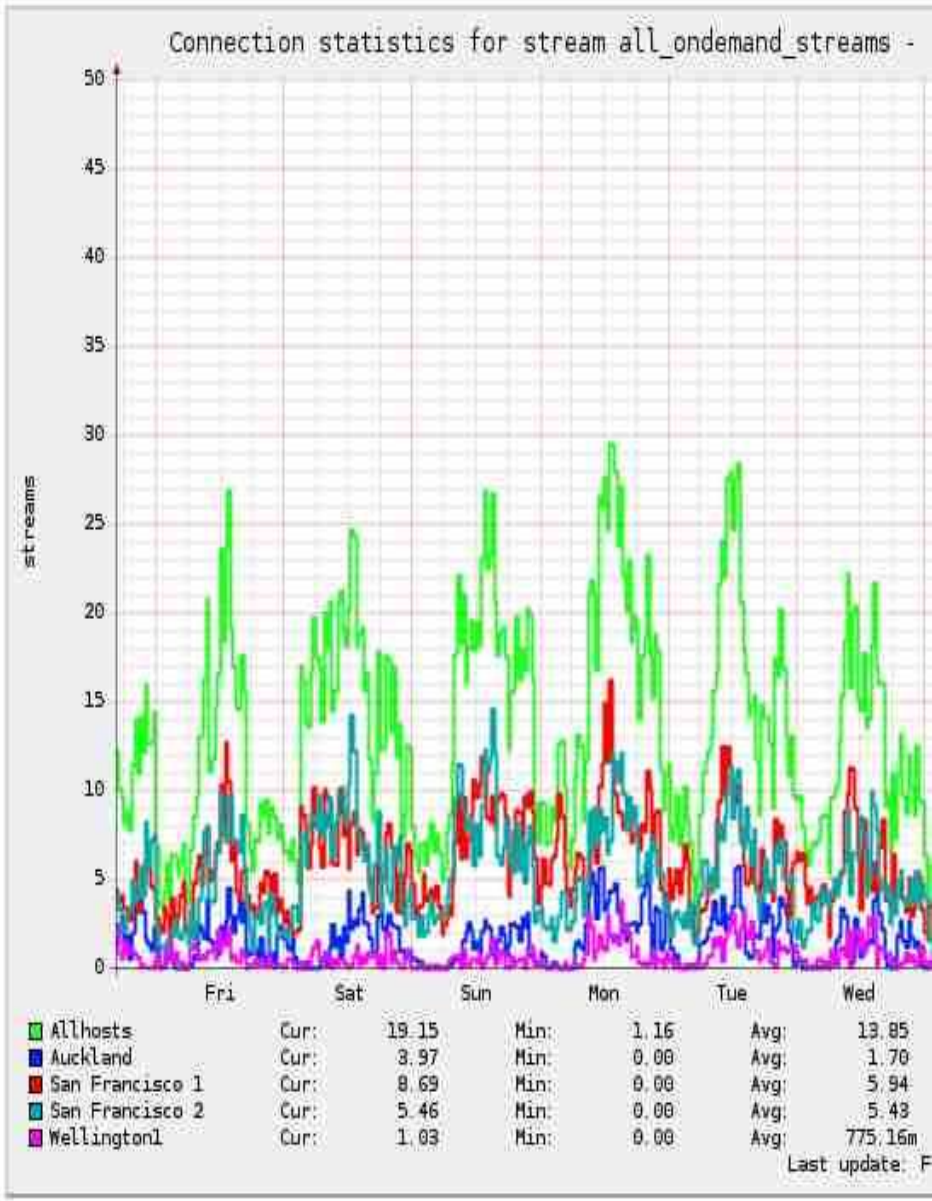

Connection statistics for stream all_live_streams - by day
3.8 k
3.6 k
3.4 k
3.2 k
3.0 k
2.8 k
2.6 k
2.4 k
2.2 k
2.0 k
1.8 k
1.6 k
1.4 k
1.2 k
1.0 k
0.8 k
0.6 k
0.4 k
0.2 k
0.0
Thu 12:00
Thu 16:00
Thu 20:00
Fri 00:00
Fri 04:00
Fri 08:00
Fri 12:00
Fri 16:00
Allhosts Cur: 3.38k Min: 696.00 Avg: 2.16k Max: 3.84k
Auckland Cur: 846.94 Min: 141.14 Avg: 625.47 Max: 1.41k
San Francisco 1 Cur: 1.23k Min: 290.00 Avg: 763.57 Max: 1.42k
San Francisco 2 Cur: 1.08k Min: 16.00 Avg: 629.53 Max: 1.23k
Wellington1 Cur: 228.00 Min: 33.00 Avg: 137.95 Max: 274.71
Last update: Fri Jan 18 16:00:45 2008

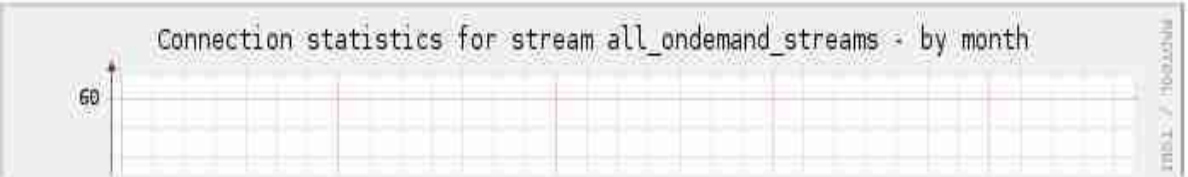

Connection statistics for stream all_live_streams - by
streams
4.5 k
4.0 k
3.5 k
3.0 k
2.5 k
2.0 k
1.5 k
1.0 k
0.5 k
0.0
Fri
Sat
Sun
Mon
Tue
Wed
Allhosts Cur: 3.63k Min: 503.00 Avg: 1.57k
Auckland Cur: 926.16 Min: 102.00 Avg: 435.76
San Francisco 1 Cur: 1.33k Min: 83.00 Avg: 556.10
San Francisco 2 Cur: 1.14k Min: 16.00 Avg: 490.27
Wellington1 Cur: 237.21 Min: 11.00 Avg: 86.59
Last update: Fri

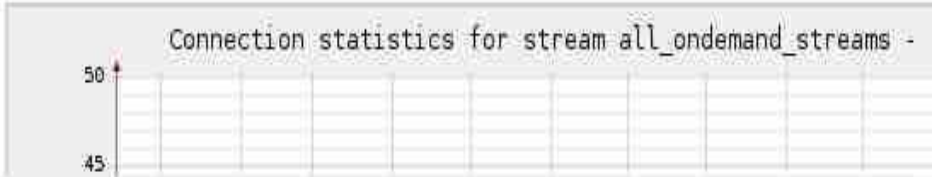

Connection statistics for stream all_live_streams - by month
3.8 k
3.6 k
3.4 k


Connection statistics for stream all_live_streams - by
1.9 k
1.8 k
1.7 k


Connection statistics for stream all_ondemand_streams - by day
streams
Thu 12:00
Thu 16:00
Thu 20:00
Fri 00:00
Fri 04:00
Fri 08:00
Fri 12:00
Fri 16:00
Allhosts Cur: 16.32 Min: 1.48 Avg: 16.77 Max: 56.47
Auckland Cur: 3.84 Min: 0.00 Avg: 2.78 Max: 14.78
San Francisco 1 Cur: 8.79 Min: 0.00 Avg: 6.48 Max: 22.78
San Francisco 2 Cur: 3.52 Min: 0.00 Avg: 6.17 Max: 22.08
Wellington1 Cur: 158.72m Min: 0.00 Avg: 1.34 Max: 7.07
Last update: Fri Jan 18 16:25:47 2008


Connection statistics for stream all_ondemand_streams -
streams
Fri
Sat
Sun
Mon
Tue
Wed
Allhosts Cur: 19.15 Min: 1.16 Avg: 13.85
Auckland Cur: 3.97 Min: 0.00 Avg: 1.70
San Francisco 1 Cur: 8.69 Min: 0.00 Avg: 5.94
San Francisco 2 Cur: 5.46 Min: 0.00 Avg: 5.43
Wellington1 Cur: 1.03 Min: 0.00 Avg: 775.16m
Last update: F

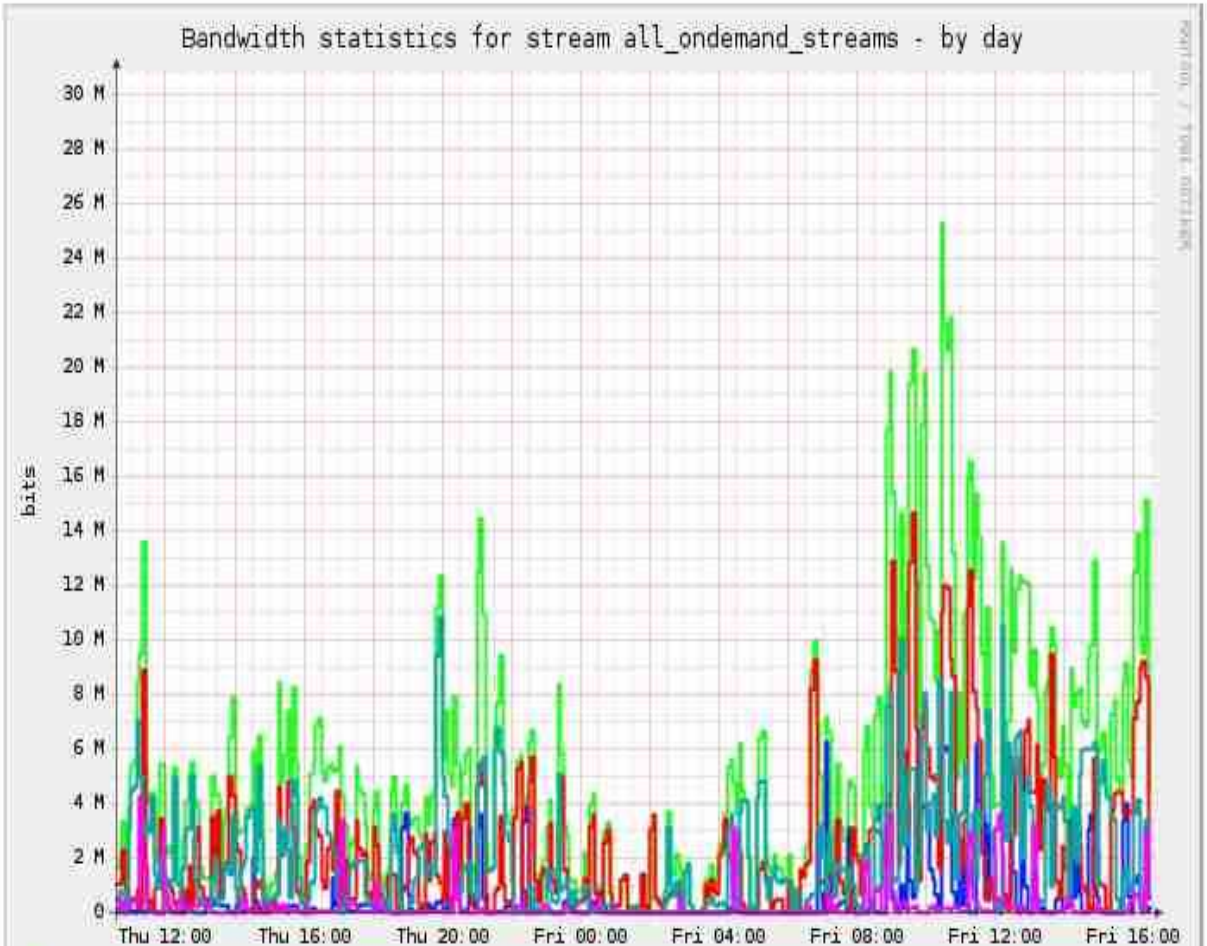

Connection statistics for stream all_ondemand_streams - by month

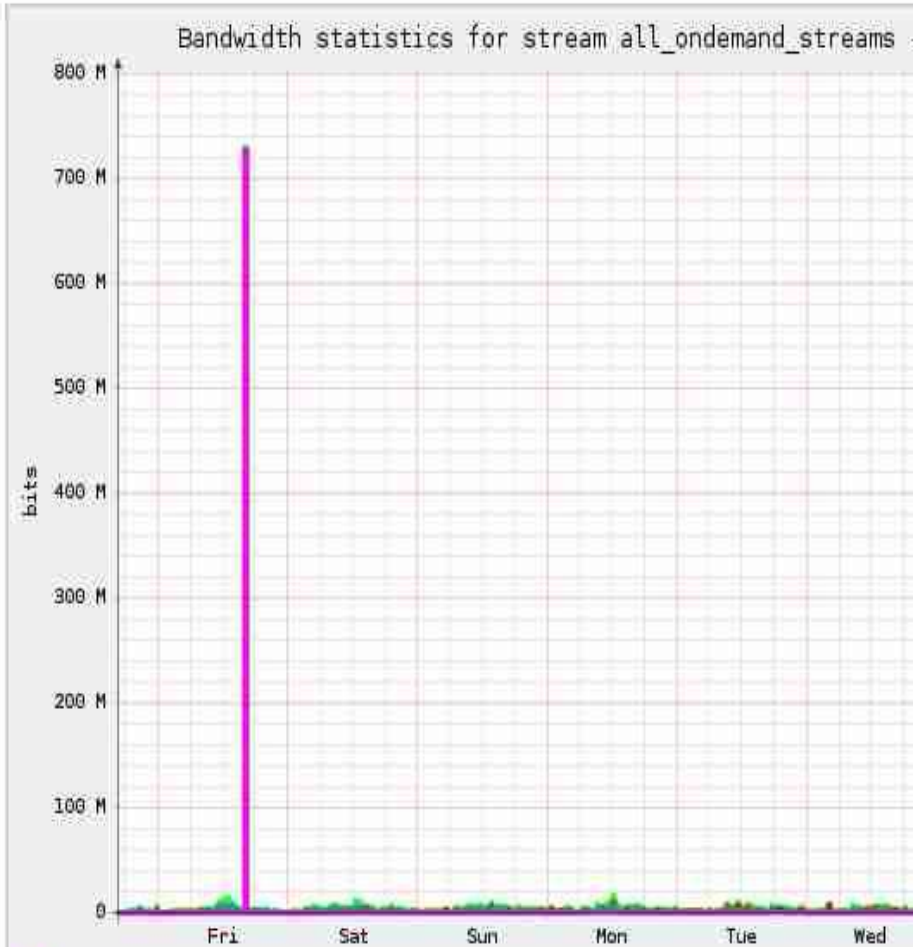

Connection statistics for stream all_ondemand_streams -

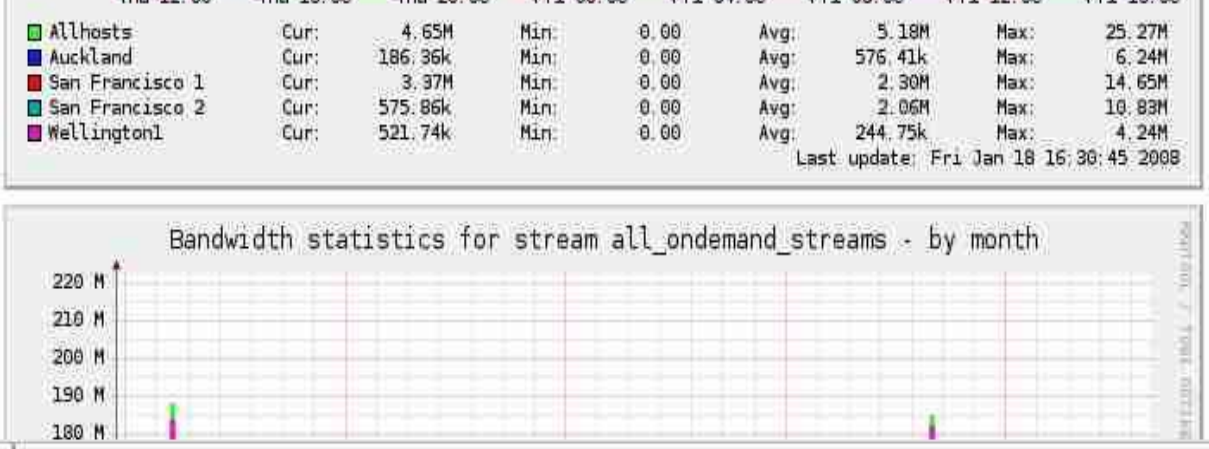
Overview :: streaming.net.nz

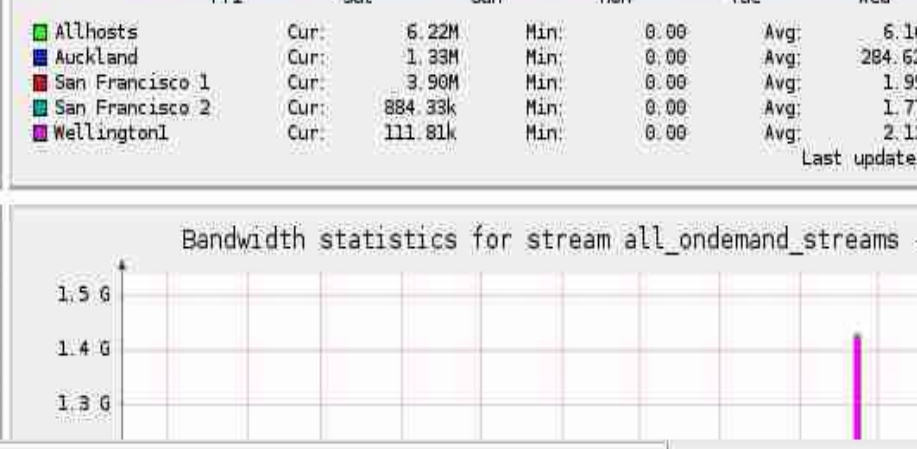
streaming.net.nz :: [day week month year]

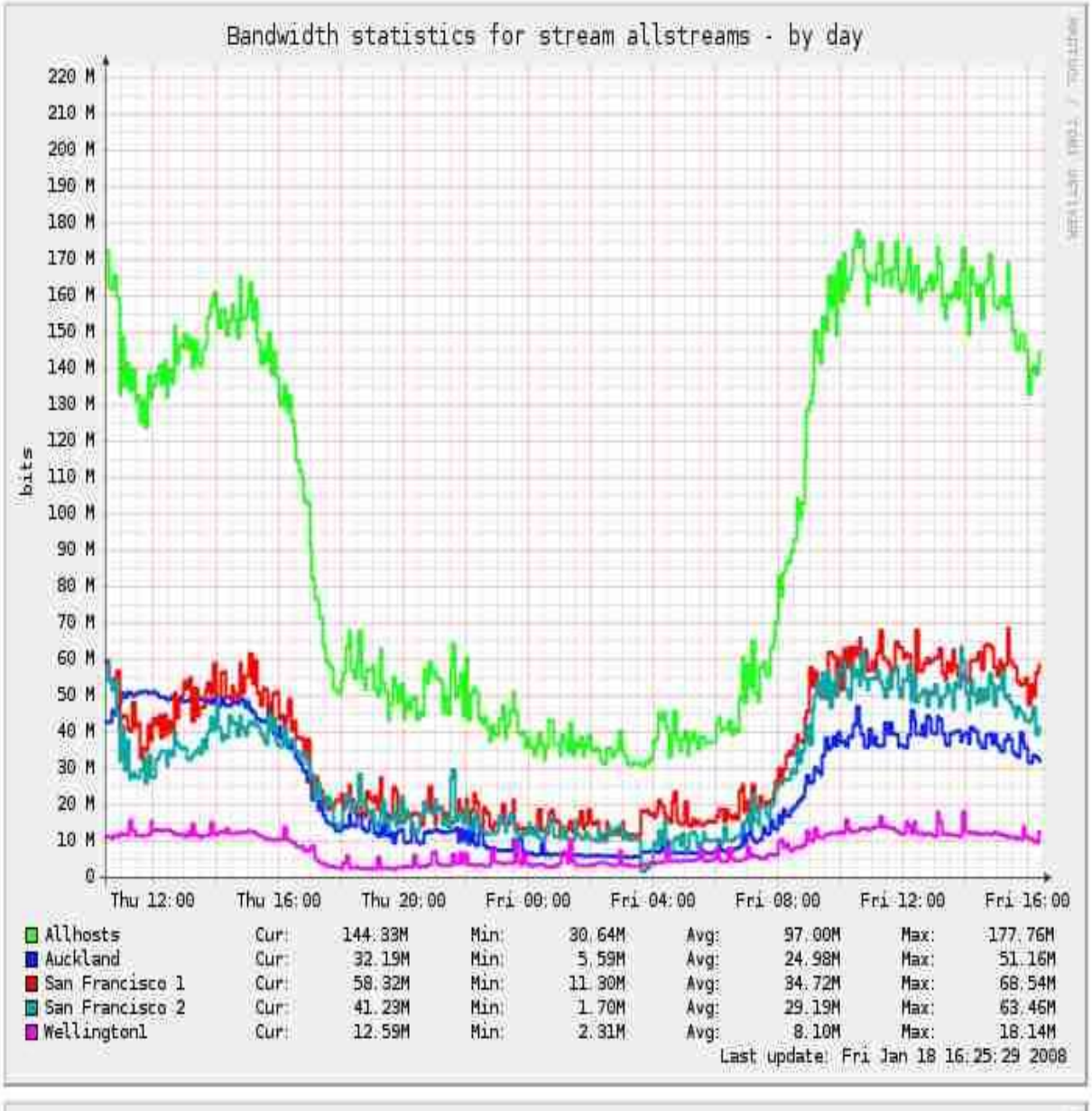
- ak1.streaming.net.nz
  - Disk
    - Filesystem usage (in %)
  - Network
    - Interface 65540 traffic
    - Interface 65540 errors
  - Other
  - Streaming
    - wmsConnectedPlayers
    - wmsPlayerAllocatedBandwidth
    - wmsStreamingHttpPlayers
    - wmsStreamingMmsPlayers
    - wmsStreamingPlayers
    - wmsStreamingRtspPlayers
  - System
    - Number of Processes
    - Number of users
- danube.streaming.net.nz
  - Disk
    - Filesystem usage (in %)
    - Inode usage (in %)
    - IOstat
  - Network
    - eth0 errors
    - eth1 errors
    - eth0 traffic

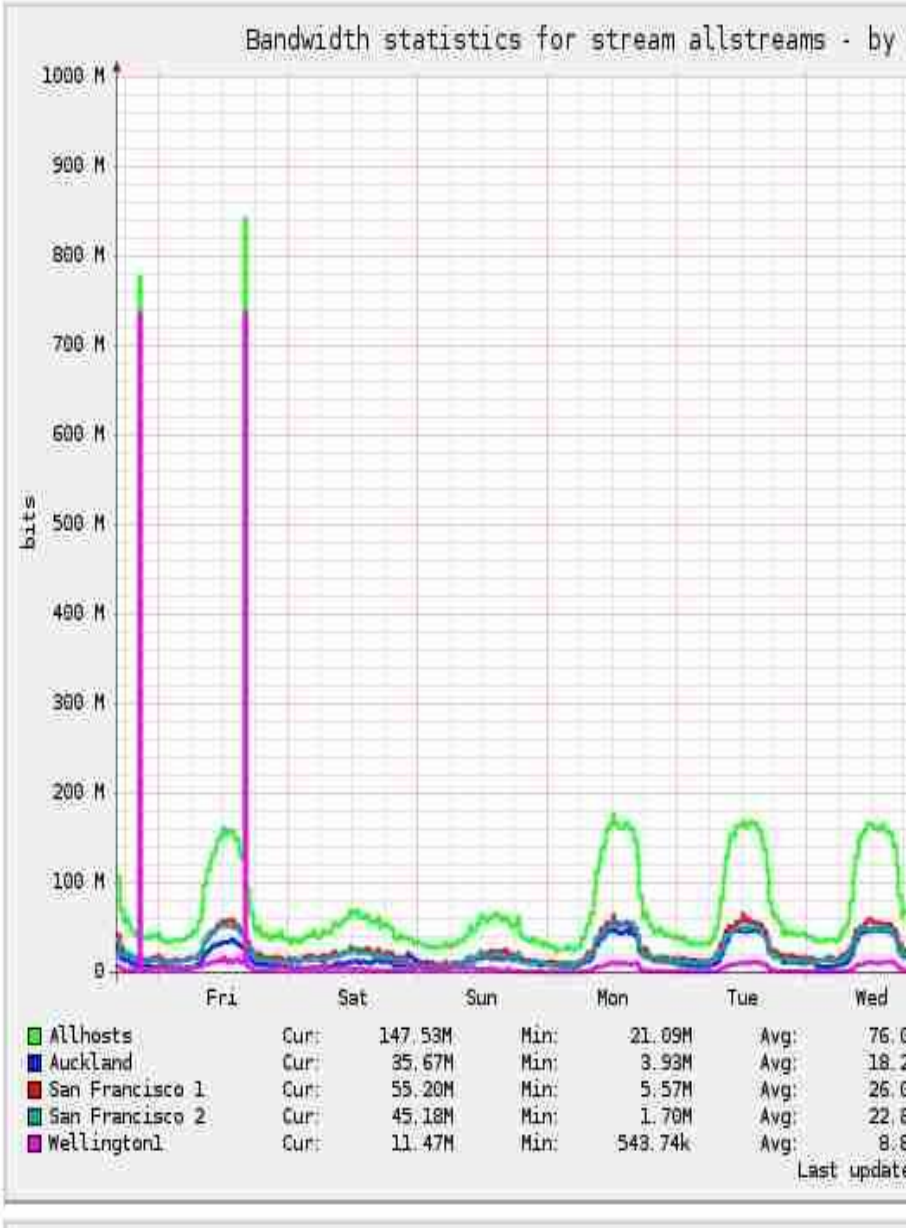

Bandwidth statistics for stream all_ondemand_streams - by day
bits
30 M
28 M
26 M
24 M
22 M
20 M
18 M
16 M
14 M
12 M
10 M
8 M
6 M
4 M
2 M
0
Thu 12:00
Thu 16:00
Thu 20:00
Fri 00:00
Fri 04:00
Fri 08:00
Fri 12:00
Fri 16:00
Allhosts Cur: 4.65M Min: 0.00 Avg: 5.18M Max: 25.27M
Auckland Cur: 186.36k Min: 0.00 Avg: 576.41k Max: 6.24M
San Francisco 1 Cur: 3.37M Min: 0.00 Avg: 2.30M Max: 14.65M
San Francisco 2 Cur: 575.86k Min: 0.00 Avg: 2.06M Max: 10.83M
Wellington1 Cur: 521.74k Min: 0.00 Avg: 244.75k Max: 4.24M
Last update: Fri Jan 18 16:30:45 2008

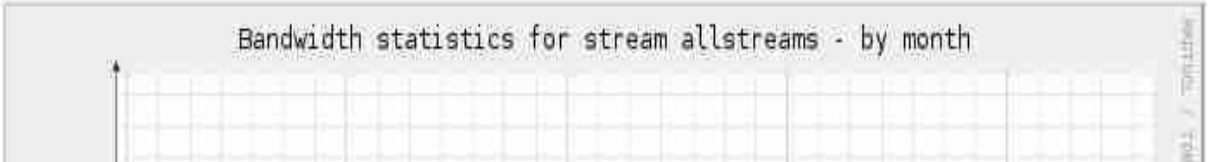

Bandwidth statistics for stream all_ondemand_streams
bits
800 M
700 M
600 M
500 M
400 M
300 M
200 M
100 M
0
Fri
Sat
Sun
Mon
Tue
Wed
Allhosts Cur: 6.22M Min: 0.00 Avg: 6.1
Auckland Cur: 1.33M Min: 0.00 Avg: 284.6
San Francisco 1 Cur: 3.90M Min: 0.00 Avg: 1.9
San Francisco 2 Cur: 884.33k Min: 0.00 Avg: 1.7
Wellington1 Cur: 111.81k Min: 0.00 Avg: 2.1
Last update

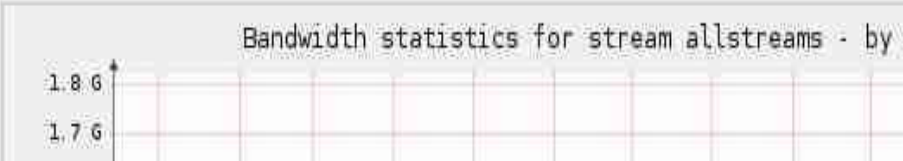

Bandwidth statistics for stream all_ondemand_streams - by month
220 M
210 M
200 M
190 M
180 M


Bandwidth statistics for stream all_ondemand_streams
1.5 G
1.4 G
1.3 G


Bandwidth statistics for stream allstreams - by day
bits
220 M
210 M
200 M
190 M
180 M
170 M
160 M
150 M
140 M
130 M
120 M
110 M
100 M
90 M
80 M
70 M
60 M
50 M
40 M
30 M
20 M
10 M
0
Thu 12:00
Thu 16:00
Thu 20:00
Fri 00:00
Fri 04:00
Fri 08:00
Fri 12:00
Fri 16:00
Allhosts Cur: 144.33M Min: 30.64M Avg: 97.00M Max: 177.76M
Auckland Cur: 32.19M Min: 5.59M Avg: 24.98M Max: 51.16M
San Francisco 1 Cur: 58.32M Min: 11.30M Avg: 34.72M Max: 68.54M
San Francisco 2 Cur: 41.23M Min: 1.70M Avg: 29.19M Max: 63.46M
Wellington1 Cur: 12.59M Min: 2.31M Avg: 8.10M Max: 18.14M
Last update: Fri Jan 18 16:25:29 2008


Bandwidth statistics for stream allstreams - by
bits
1000 M
900 M
800 M
700 M
600 M
500 M
400 M
300 M
200 M
100 M
0
Fri
Sat
Sun
Mon
Tue
Wed
Allhosts Cur: 147.53M Min: 21.09M Avg: 76.
Auckland Cur: 35.67M Min: 3.93M Avg: 18.
San Francisco 1 Cur: 55.20M Min: 5.57M Avg: 26.
San Francisco 2 Cur: 45.18M Min: 1.70M Avg: 22.
Wellington1 Cur: 11.47M Min: 543.74k Avg: 8.
Last update


Bandwidth statistics for stream allstreams - by month


Bandwidth statistics for stream allstreams - by
1.8 G
1.7 G

Nagios

- Clever systems monitor the streams
- ”Partially” self maintains
- Quick indications of ”Go” ”No Go”

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CityLink Media Services

- 143 Broadcast Streams
  - Audio
  - Video
- Management System
  - Partially ”Self Maintains”
  - Assists staff to resolve faults

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