CityLink Streaming Update
Topics

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

- What is it?
- An IP Address range is reused 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
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  - Route withdrawn on node failure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
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
Anycast in CityLink

- Same address range used across three nodes
  - WIX
  - APE
  - San Francisco

- Rationale
  - Resilience considerations
  - Commercial considerations
SF Upgrade

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

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

Request to L4 Load Balancing Device
On Demand

Request passed to Server.
On Demand

Content prepositioned on Busch Server takes data from Busch

User
On Demand

Windows Server sends file from File Store to User.
Broadcast

Broadcast content delivery
Request passed to Server.
One server grabs content from the other.
Broadcast Stream delivered to user
1 copy from NZ to SF1
Many copies from SF1&2 to users
Broadcast Stream flows...
1 copy from NZ to SF1
Broadcast Stream
Many copies from SF1&2 delivered to users
Request to Apache on Busch.
Using GoIP, Apache acts as a proxy Filter so content stays in NZ.
Cache

SF1

SF2

Router

User

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

Content from customer's Server.

NZ
Cache

Squid on Busch
Many copies out

Storage:
Terabyte of cache in network

User

NZ
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
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
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
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
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 %)
  - I/Ostat
- Network
  - eth0 errors
  - eth1 errors
  - eth0 traffic
  - eth1 traffic
Nagios

- Clever systems monitor the streams
- "Partially" self maintains
- Quick indications of "Go" "No Go"
CityLink Media Services

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