

The Foodservice Distribution
CONFERENCE & EXPO
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Disaster Planning and Infrastructure Redundancy Ideas for Today and Tomorrow



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Labatt Food Service



Our Systems Today

- More efficient than ever
- More complex than ever
 - Desire for automation and operational excellence guarantees additional complexity in the future
- System Failure more costly than ever



What are Systems Missing?

- Software that improves visibility into their behavior
- The (a) necessity of system availability coupled with (b) system complexity and (c) risk of failure means implementing software that improves visibility into our systems is **necessary** not recommended.



What are we doing wrong!?

- Continuing to drive with Check Engine Light on because 'things still work!'
- Undiagnosed problems are always more costly in the long run.
- Users do not always report problems – they just 'deal' with them*
- If they do report them, not easy to find, let alone fix.



Goal and Objective

- What I am NOT going to talk about.
 - UPS
 - Multiple Data Links
 - Tape Backup
- What I am going to talk about
 - Improving Visibility impacts bottom line
 - Two methods we implemented on our network
 - Vision and Hearing



Who I Am

- Logan Ramirez (7 yrs)
- Labatt Food Service
- Network System Manager
- Focused on Network Infrastructure (backbone)



One Story

- In 2004 had poor service level on outer office data circuits;
- 10 hours average downtime per year, per office

	2004
Total Company Revenue (in millions)	\$ 400
Total Employees	500
Total Data Centers	1
Total Distribution Centers	2
Total Sales Offices	7
Percent WAN Service Level (uptime)	99.89%
Percent to Sales Telecom Expense (\$\$\$)	0.083%



One Story

- Significant Improvement by 2007
- 1 hour outages per year, per office

	2004	2007
Total Company Revenue (in millions)	\$ 400	\$ 700
Total Employees	500	1200
Total Data Centers	1	2
Total Distribution Centers	2	4
Total Sales Offices	7	7
Percent WAN Service Level (uptime)	99.89%	
Percent to Sales Telecom Expense (\$\$\$)	0.083%	0.053%



How Did We Get There?

- Standards Based
- Best Practices
- Better Hardware
- Changed Telecom Carriers
- Software Systems that Improved Visibility into Core Devices
 - Buy bandwidth as needed, not wanted
 - Proactive Ticketing for Carrier
 - Detailed Logging of Error Messages
 - Detailed Service Level Reports to submit to carrier and hold them accountable



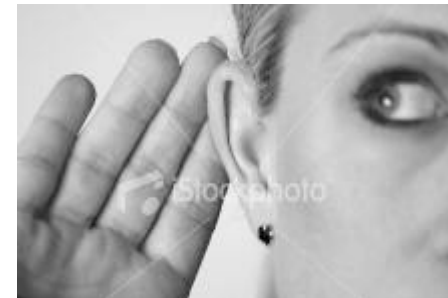
Today's Agenda

- “...learn steps take to build redundancy during disaster and unpredictable circumstances”
- Not just major systems, but all systems
- Two Case Studies at Labatt where better visibility in the network saved time and money
- Present two *Open Source* tools (\$0) you can get for your network today that help improve visibility into your network



How do People Identify Problems?

- Consider how identify problems with your car
- **VISION**
 - See the check engine, or oil, or fuel light.
 - See oil or coolant leak (or flames!)
- **HEARING**
 - Grind of gears or brake pads
 - Engine Idles High



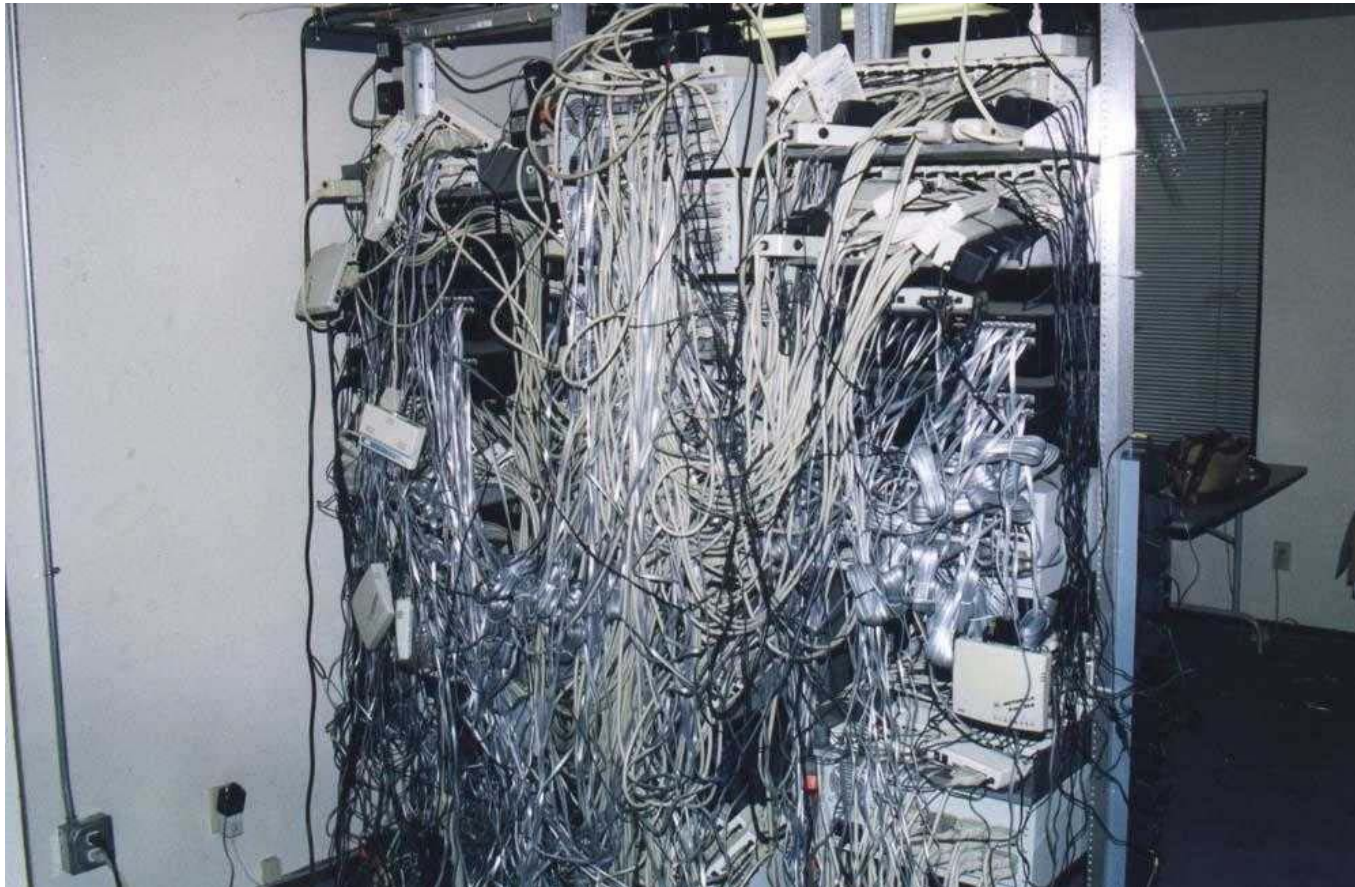


How do Networks Identify Problems?

- Consider how identify problems with network
- VISION
 - Historical Graphing
 - Utilization Reporting
- HEARING
 - Message Logging
 - Email Notifications

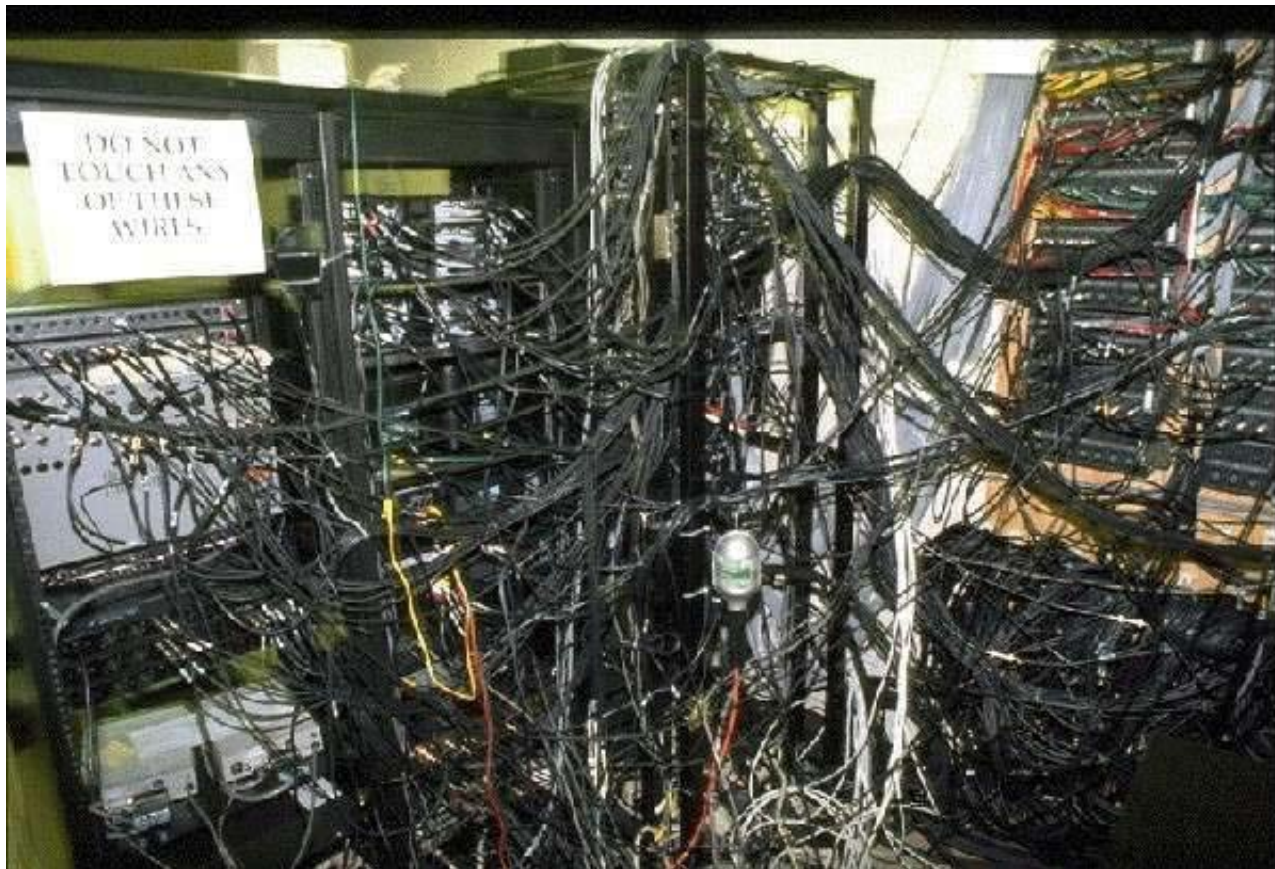


Definition – What is The Network?





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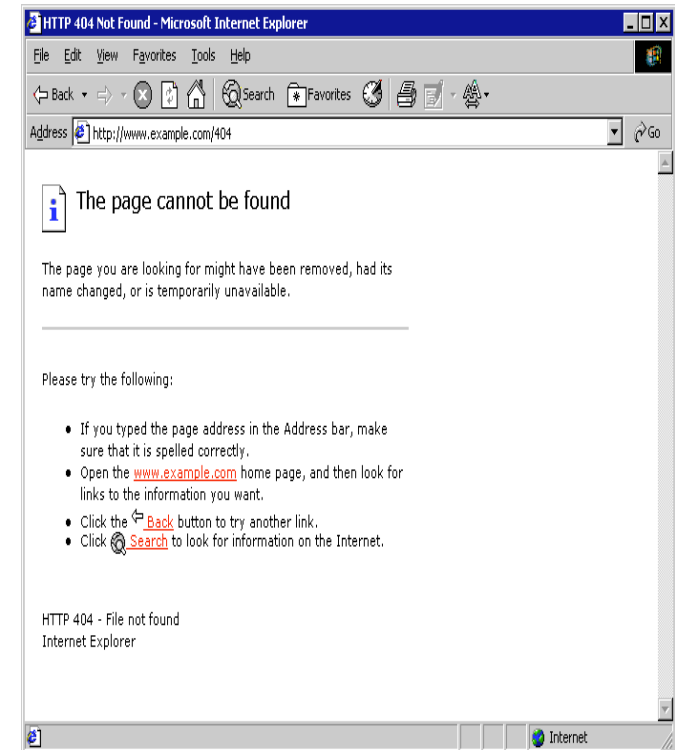
- What is Networking Gear?
- Is all of it really important?*
- Why is it so easy to point to problems in it?
 - Media – ‘It’s the Network’
 - Outages in the network are the extremely visible
 - Business Class vs. Home/Personal equipment
- Appears ‘Static’ but data is extremely ‘Dynamic!’
- All of your data (all of it!) is traveling through the wires.



Case Study 1 – Better Vision

A Graphical Representation of What is Going On in Your Network

- Page Can't Be Displayed on our website
- Problem is either
 - Customer PC
 - Network Transport
 - Server Hardware/Software
 - Web Application
- Upgrade Network (\$40K)





Case Study 1 – Better Vision

A Graphical Representation of What is Going On in Your Network

- Networking 101
- In Networking, problems happen when:
 - Hardware Fails
 - Bandwidth Insufficient
- Q: How do you know how heavy your traffic is?

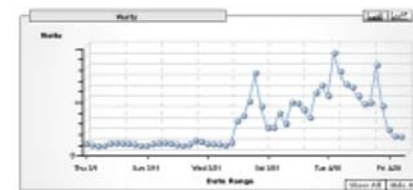
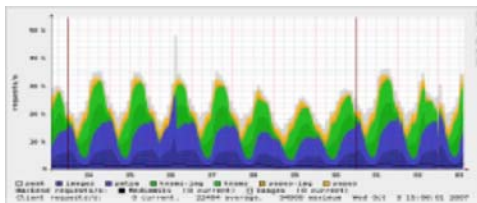




Case Study 1 – Better Vision

A Graphical Representation of What is Going On in Your Network

- Answer: Graphing!
- Many ‘Open Source’ tools available
 - MRTG - \$0
 - CACTI - \$0
- Many Proprietary (\$) tools available
- Basic Configuration adequate to get started

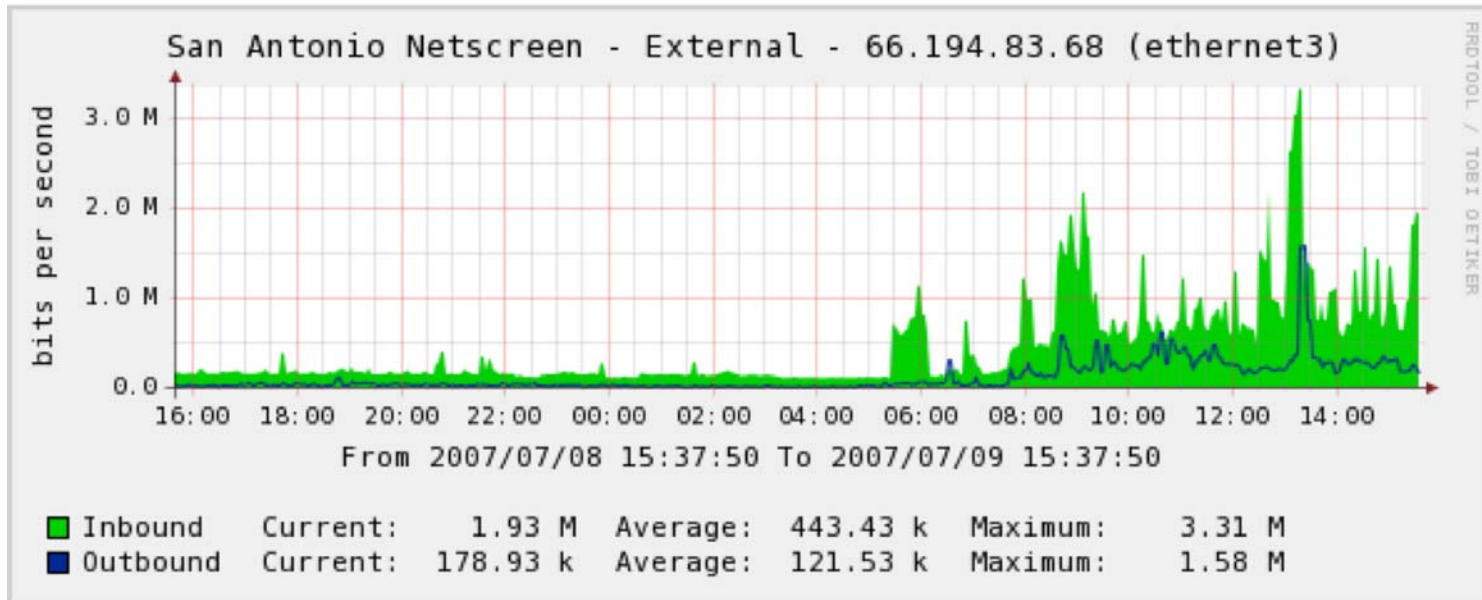




Case Study 1 – Better Vision

A Graphical Representation of What is Going On in Your Network

MRTG Graph for Internet – SA Data Center





Case Study 1 – Better Vision

A Graphical Representation of What is Going On in Your Network

- By improving visibility with graphing on the network we **were** able to
 - Focus man hours to the right areas by ruling out the network as the culprit*
 - Provide statistical data for networking conditions during
 - any given time period
 - any where in the network
 - Avoid ‘throwing money’ at it (\$40K)
- Project used Open Source tools so (\$0)



Case Study 1 – Better Vision

A Graphical Representation of What is Going On in Your Network

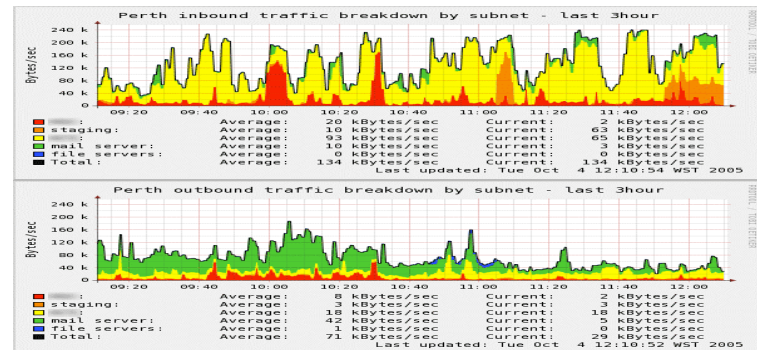
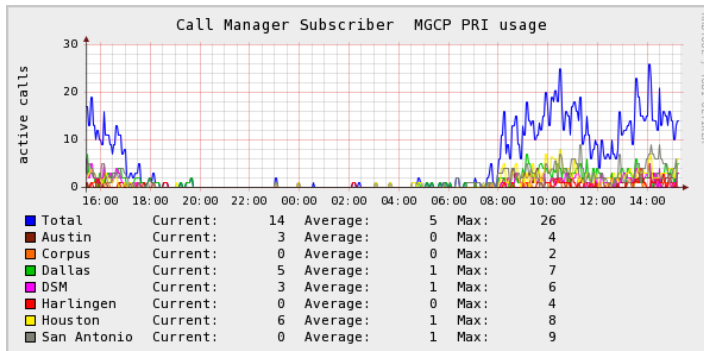
- By improving visibility with graphing on the network we **are** able to
 - Purchase bandwidth based on statistics
 - Important in success of our DR strategy
 - Outer office savings (upgrade as needed, not wanted)
 - Purchase equipment based on statistics
 - Identify high traffic zones
 - Historically view data movement throughout the network
 - Monitor Disk Space, CPU load, Memory Usage...
 - What's next?



Case Study 1 – Better Vision

A Graphical Representation of What is Going On in Your Network

- Historical Views
 - Recreate Streams
 - Real-Time Network Analysis
- Multi-Layer Graphing



Case Study 2 – Better Hearing



Centralized Logging to Listen to your Devices

- Consider how humans communicate
 - When sick?
 - When tired?
 - When angry?

Case Study 2 – Better Hearing



Centralized Logging to Listen to your Devices

- Networks do the same thing
 - When reboot?
 - When over heat?
 - When security violation?
- Questions
 - Are you listening?
 - How can you listen?



Case Study 2 – Better Hearing



Centralized Logging to Listen to your Devices

- Answer: LOGGING!
 - SYSLOG is a standard (RFC 3164, 3195)
 - Open Source tools available
 - SYSLOG-NG
 - Kiwi Tools
 - Propriety tools available, too.
 - Messages are (mostly) in plain English text
 - Support of SYSLOG is part of our purchasing requirements for new hardware

Case Study 2 – Better Hearing



Centralized Logging to Listen to your Devices

- 2004 Dallas warehouse employees ‘drop’ their connection for a few minutes
 - All devices! Scanners, VMU, Voice Units
- Always came back a few minutes later.
- Not always same location
- Never at the same time in the day
- Some days never have the problem

Case Study 2 – Better Hearing



Centralized Logging to Listen to your Devices

- We spent almost 3 weeks troubleshooting
- Brought in outside specialist
- Sent two different techs from our group
- Almost replaced everything (\$30K)
- One administrator literally heard a device reboot itself
- We had to get better at this – Implement permanent solution.

Case Study 2 – Better Hearing



Centralized Logging to Listen to your Devices

- Fast forward 2 years
- Another division calls our help desk about some office employees lost connectivity for a few moments (sound familiar?)
- Our Network Group searched through logs, found word '**RESTART**' associated with Ethernet switch
- Replaced switch within 4 hours
- 3 weeks vs. minutes to isolate issue
- 3+ weeks vs. hours to resolve!



Case Study 2 – Better Hearing

Centralized Logging to Listen to your Devices

- By improving visibility with centralized logging on the network we **were** able to
 - Quickly identify problematic hardware
 - Correlate General Problems to specific hardware
- Project Cost - \$0 capital expense (Open Source)
- Avoid spending \$30k in hardware replacement

cisco_2811_harlingen	local7	err	2006-09-16 22:55:53	Sep 16 22:55:53: %LINK-3-UPDOWN: Interface Serial0/0/1:1, changed state to down
cisco_2811_harlingen	local7	err	2006-09-16 22:55:53	Sep 16 22:55:53: %LINK-3-UPDOWN: Interface Serial0/0/1:23, changed state to up

216.64.149.174	local7	err	2006-09-24 16:07:15	Sep 24 21:10:26.603: %LINK-3-UPDOWN: Interface 0/0/1:23(3),changed state to Administrative Shutdown
216.64.149.174	local7	err	2006-09-24 16:07:15	Sep 24 21:10:26.603: %LINK-3-UPDOWN: Interface 0/0/1:23(1),changed state to Administrative Shutdown

Case Study 2 – Better Hearing



Centralized Logging to Listen to your Devices

- By improving visibility with centralized logging on the network we **are** able to
 - Know about problems when they happen (seconds) with:
 - real-time notification
 - Keyword analysis (reboot, shutdown, overheat)
 - Send specific data (logs) to vendor for support
 - Send specific data (logs) to carrier for reimbursement on failed Service Levels
 - Example: Harlingen Data Circuit



Closing Notes I

- Software necessary for
 - business productivity AND
 - business continuity
- Don't over complicate; think simple first!
- All tools we use are open source and we (still!) have not spent any money to implement them.
- Systems like this mean
 - Permanent Problem Resolution
 - Accurate 1st Diagnosis!
 - Problem Correlation



Closing Notes II

- Overwhelming amount of DR resources available
- Need to have a system in place for DISASTER
- More applicable to daily operations, however, is Continuity Planning
 - ALL kinds of disasters (small ones are big to someone!)
 - These systems help to avoid disasters by helping uncover problems BEFORE they become disastrous!

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People need people!

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