Network Monitoring and Management
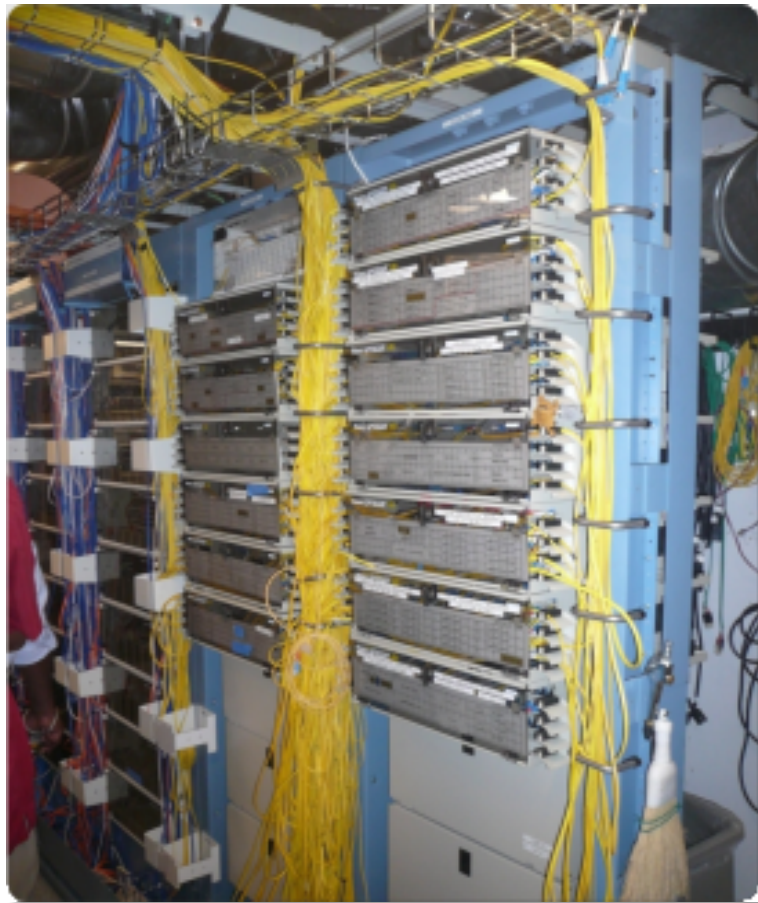
Network Documentation

Documentation

Maybe you've asked, "*How do you keep track of it all*?"…

Document, document, document…

Documentation

Basics, such as documenting your switches...

- What is each port connected to?
- Can be simple text file with one line for every port in a switch:
  - health-switch1, port 1, Room 29 – Director's office
  - health-switch1, port 2, Room 43 – Receptionist
  - health-switch1, port 3, Room 100 – Classroom
  - health-switch1, port 4, Room 105 – Professors Office
  - .....
  - health-switch1, port 25, uplink to health-backbone

- This information might be available to your network staff, help desk staff, via a wiki, software interface, etc.
- Remember to label your ports!

Documentation: Labeling

Nice…

Network Documentation

More automation might be needed. An automated network documentation system is something to consider.

- You can write local scripts to do this.
- You can consider some automated documentation systems.
- You'll probably end up doing both.

NOCs: Network Operation Centers

Where documentation, monitoring and management can all come together:

– Links to monitoring tools

– Ticketing systems

– Help Desk staff

- General Help Desk

- Network Services Help Desk

- Other (Administrative Systems)

– Documentation systems access

- Diagrams

- Netdot

- Wikis

The Network Operations Center

NOC = Network Operations Center

- Come in many forms and depend on the size of your organization and your goals.
- "One or more locations from which control is exercised over your network."
- NOCs can be:
  - Virtual
  - Located at the core of your network
  - With your help desk
  - Built in pieces
  - Etc.

A BIG NOC

There are even bigger NOCs out there…

A small NOC

In the same room there is a desk with a phone, another computer and a monitor. This acted as the group's Help Desk.

Many network problems could be detected and solved on the spot!

Our Virtual NOC: noc.ws.nsrc.org

Network Monitoring and Management Workshop
PacNOG 11 - Denarau Island, Nadi, Fiji

Workshop Resources

- **Workshop Wiki**
- **Workshop Agenda**
- **Network Diagram**
- **References**

NSRC PacNO
Network Startup Resource Center
Denarau Island, Na

Utilities

- Putty SSH Software
- Configuration Files
- SNMP MIBs
- TFTP Server Repository
- Ubuntu ISO Images
- VirtualBox Software

Monitoring

- Cacti (Performance)
  user: *guest* | **password:** *guest*
- Nagios (Availability)
  user: *guest* | **password:** *guest*
- NfSen (NetFlow analyzer)
- RRDtool (traffic on gw-rtr)
- SmokePing (Reliability)

Last updated 07/02/2012 22:44:49

Denarau Island, Nadi, Fiji

logged in as admin | Logout | Preferences | Help/Guide | About Trac

| Wiki | Timeline | Roadmap | View Tickets | New Ticket | Search | Admin |

wiki: WikiStart

Start Page | Index | History

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PacNOG 11: Network Monitoring and Management Workshop

Dates: July 2-6 (Monday-Friday), 2012
Venue: ⇒Hotel Sofitel Fiji, Denarau Island, Nadi, Fiji
Course Language: English
Instructor Languages: English, French, Spanish, Dutch, German

Goal

This workshop is part of the ⇒PacNOG 11 meeting and conference and is designed for engineers and system staffs at ISPs and large networks including academic networks who are involved with system management, network monitoring and management and problem response. The course is for those who need to manage diverse Network and NOC operations. Please review the Agenda to see the topics to be covered. Labs constitute about 60% of the course.

Requirements

- A laptop with wireless capability
- IPv4 addressing and general network concepts.
- Knowledge of UNIX and/or Linux.

If you need assistance gaining this knowledge please be sure to attend the Unix and Networking Introduction session on Sunday, July 1 in the afternoon at the Hotel Sofitel Fiji.

Required Software in Class

- ⇒PuTTY SSH client for Windows (SSH)
- Linux, UNIX (Mac OS) already have SSH installed.

Workshop Items

- Agenda
- Instructors
- Participants
- Photos
- ⇒Mailing list
- References
- Overview of Tools Covered

Network Operations

- Network Diagram
- ⇒Configuration Files
- ⇒Software

Automated Documentation Systems

There are quite a few automated network documentation systems. Each tends to do something different:

- IPplan:

    http://iptrack.sourceforge.net/

- Netdisco:

    http://netdisco.org/

- Netdot:

    https://netdot.uoregon.edu/

- Rack Tables:

    http://www.racktables.org/

IPplan: [[IPplan]]

From the IPplan web page:

"IPplan is a free (GPL), web based, multilingual, TCP IP address management (IPAM) software and tracking tool written in php 4, simplifying the administration of your IP address space. IPplan goes beyond TCPIP address management including DNS administration, configuration file management, circuit management (customizable via templates) and storing of hardware information (customizable via templates)."

Lots of screenshots:

http://iptrack.sourceforge.net/doku.php?id=screenshots

Netdisco:

- Project launched 2003. Version 1.0 released October 2009.

- Some popular uses of Netdisco:
    - **Locate** a machine on the network by MAC or IP and show the switch port it lives at.
    - **Turn Off** a switch port while leaving an audit trail. Admins log why a port was shut down.
    - **Inventory** your network hardware by model, vendor, switch-card, firmware and operating system.
    - **Report** on IP address and switch port usage: historical and current.
    - **Pretty pictures** of your network.

Racktables: RackTables

From the http://racktables.org page:

- Have a list of all devices you've got
- Have a list of all racks and enclosures
- Mount the devices into the racks
- Maintain physical ports of the devices and links between them
- Manage IP addresses, assign them to the devices and group them into networks
- Document your firewall and NAT rules
- Describe your load balancing policy and store load balancing configuration
- Attach files to various objects in the system
- Create users, assign permissions and allow or deny any actions they can do
- Label everything and even everyone with flexible tagging system
- Access all this from the web

Netdot: {net.} NETwork DOcumentation Tool

Includes functionality of IPplan and Netdisco and more. Core functionality includes:

– Device discovery via SNMP

– Layer2 topology discovery and graphs, using:

- CDP/LLDP
- Spanning Tree Protocol
- Switch forwarding tables
- Router point-to-point subnets

– IPv4 and IPv6 address space management (IPAM)

- Address space visualization
- DNS/DHCP config management
- IP and MAC address tracking

Netdot: {net.} NETwork DOcumentation Tool
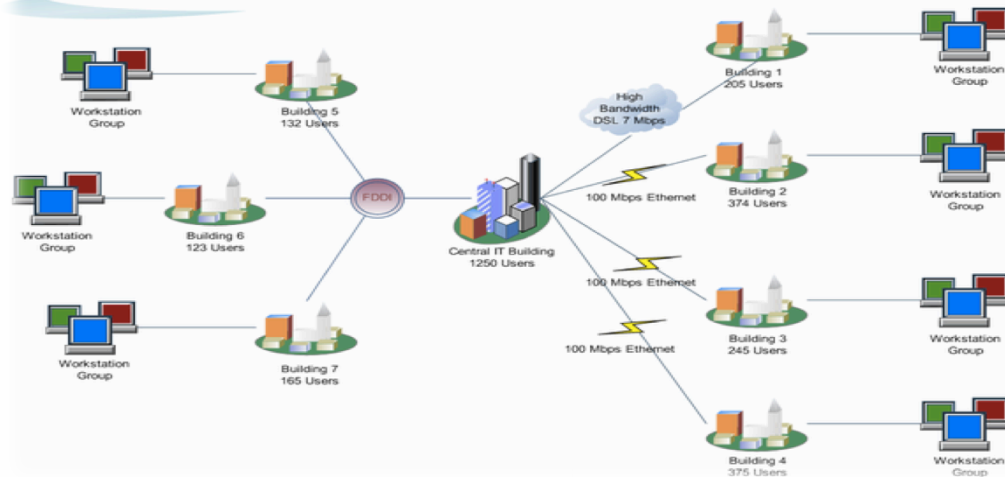
Functionality continued:

- Cable plant (sites, fiber, copper, closets, circuits...)
- Contacts (departments, providers, vendors, etc.)
- Export scripts for various tools (Nagios, Sysmon, RANCID, Cacti, etc)
    - I.E., how we could automate node creation in Cacti!
- Multi-level user access: Admin, Operator, User
- It draws pretty pictures of your network

Management	Contacts	Cable Plant	Advanced	Reports	Export	Help

Devices	VLANs	Address Space	DNS Records	DNS Zones	DHCP

Device Tasks   [new] [hide]

Find Devices

Name/IP/MAC: [_____]

[search]

© GPL. Netdot: NETwork DOcumentation Tool v.0.9

Documentation: Diagrams
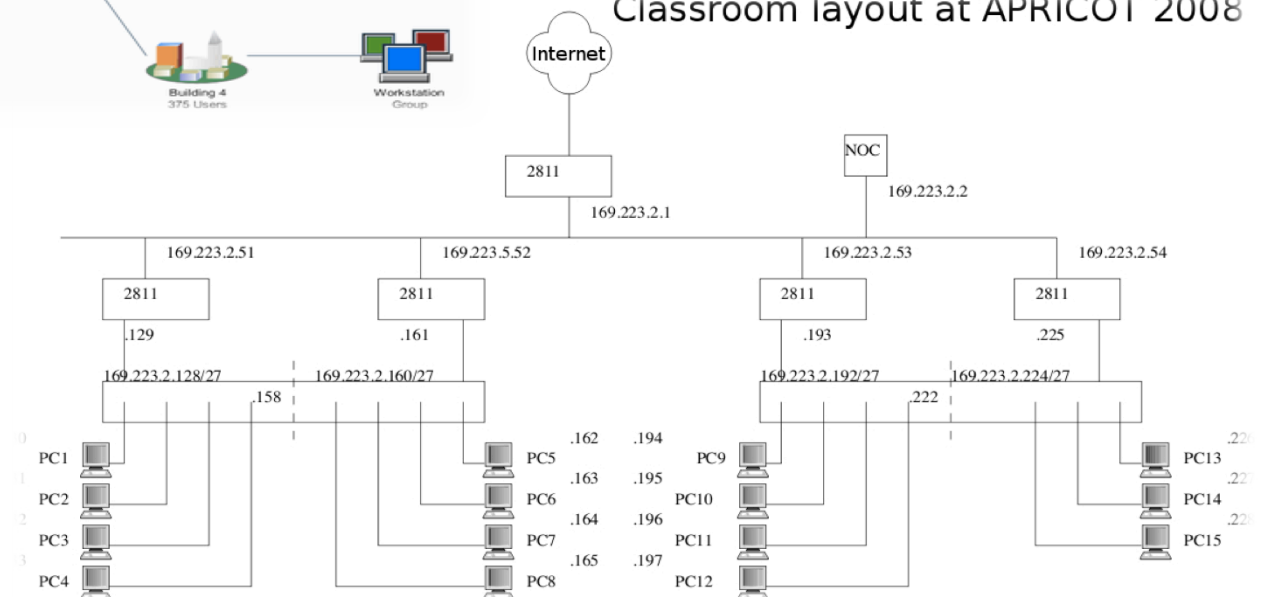
Diagramming Software

Windows Diagramming Software

- Visio:

  http://office.microsoft.com/en-us/visio/FX100487861033.aspx

- Ezdraw:

  http://www.edrawsoft.com/

Open Source Diagramming Software

- Dia:

  http://live.gnome.org/Dia

- Cisco reference icons:

  http://www.cisco.com/web/about/ac50/ac47/2.html

- Nagios Exchange:

  http://www.nagiosexchange.org/

Questions

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