Network Monitoring and Management

Network Documentation

Documentation

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

**Document,
document,
document…**

Updated Documentation is essential

- So that you can remember what you did 6 months ago
- So that others in your team can troubleshoot problems quickly
- Think about these questions:
  - What would happen to the network if the main engineer moves to another job?
  - How would your team deal with problems if you were sick? Or on vacation?

Documenting is hard

- It's tedious
  - "I'm so busy, I don't have time right now"
- It's difficult to keep organized
  - You need to have an established methodology that everyone can follow
  - Otherwise it becomes crazy with time
- It becomes outdated very quickly
  - Old information is useless and can be even dangerous!

Guidelines

- Create a documentation policy
  - What's the responsibility of each person?
  - What is the process? Order of tasks?
  - How to verify completeness/quality?
  - Methodologies
    - Consistent naming schemes
      - For devices, cabling, etc.

Guidelines

- Label EVERYTHING
  - Devices: routers, switches, servers, access points, etc.
  - Cabling
  - Network jacks
  - Racks

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!

Pautas

- Etiquete TODO
  - Servidores, routers, switches, puntos inalámbricos, UPS, etc…
  - Cables
  - Tomas de red
  - Racks

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
- Documentation systems
  - Diagrams
  - Databases
  - 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!

Automated Documentation Systems

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

- Netdot:
  https://netdot.uoregon.edu/
- IPplan:
  http://iptrack.sourceforge.net/
- Netdisco:
  http://netdisco.org/
- Rack Tables:
  http://www.racktables.org/

Netdot: {net.} NETwork DOcumentation Tool

It's a very comprehensive tool:

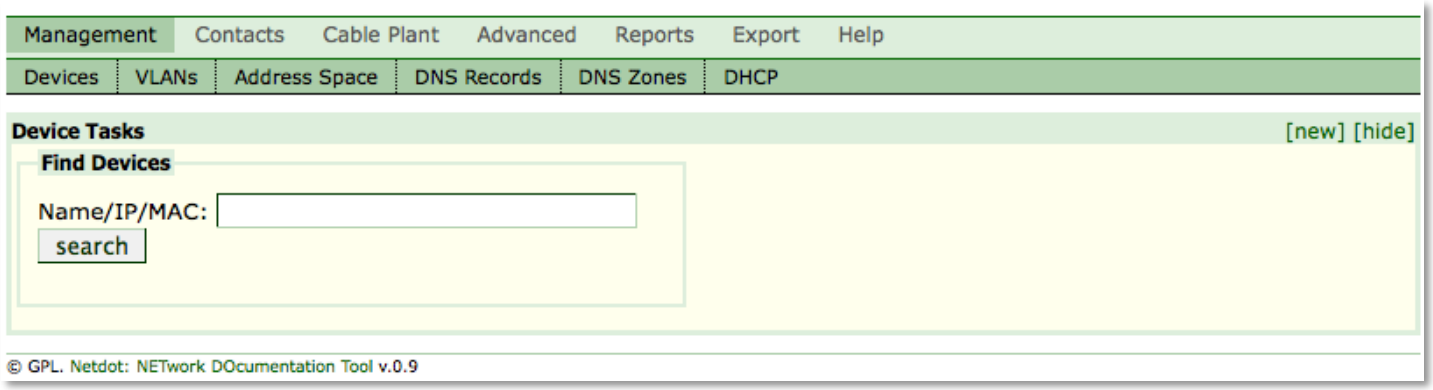
- Device discovery via SNMP
- Layer2 topology discovery and graphing, using:
  - CDP/LLDP
  - Spanning Tree Protocol
  - Switch forwarding tables
  - Router point-to-point subnets
- IPv4 and IPv6 address space management (IPAM)
  - Address space visualization
  - DNS/DHCP config management
  - IP and MAC address tracking

Continued ➔

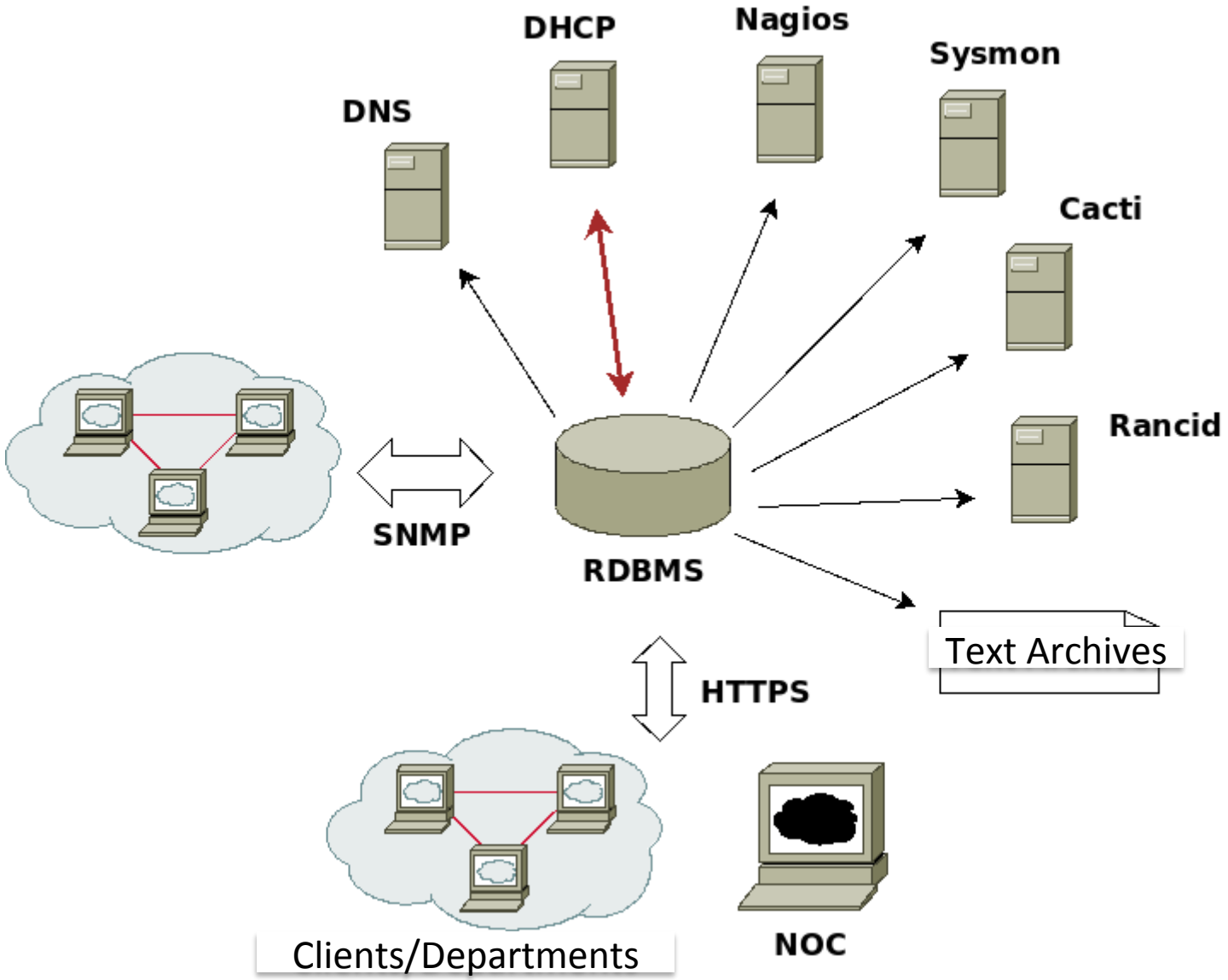
Netdot: {net.} NETwork DOcumentation Tool

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



Netdot: NETwork DOcumentation Tool



Netdot Topology example

Netdot can draw the topology of a network or a segment of a network dynamically.

Questions

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