

Understanding Netdot

May 9, 2012

Installation

- Option 1: install the prebuilt VM image
- Option 2: install under Ubuntu 10.04 (LTS): https://osl.uoregon.edu/redmine/projects/netdot/wiki/Installing_Under_Ubuntu_10041_Server
 - Quite a few steps and dependencies. Read carefully.
 - Get help from the netdot-users mailing list!
- I recommend you set your timezone, and restart mysqld if already installed
 - `sudo dpkg-reconfigure tzdata`

Netdot “Device”

- Represents a piece of *infrastructure* which you manage via SNMP
 - e.g. switch, router, AP, server
- Can add individual devices manually via the GUI (SNMP or not)
- Add SNMP devices via command line
 - `updatedevices.pl -H 10.10.0.254 -I -c NetManage`
- Can sweep a subnet for SNMP devices
 - `updatedevices.pl -B 10.10.0.0/24 -I -c NetManage`
 - Warning: everyone will see your community string!
 - And you might want to use the loopback address anyway
- Or add a list of devices from a text file (see manual)

Naming of devices

- Each device must have a primary IP and name
- Several sources, in configurable order, e.g.
 - resolve SNMP sysName
 - reverse DNS of the snmp target
- Unfortunately doesn't work well unless your DNS is already working
 - Not good if you are planning to use Netdot to fix your DNS!
- The device name is a key in Netdot's DNS tables, but may not be associated with an A record (RR)
 - This is confusing
- Device serial numbers are checked, but you only get a warning if they overlap
 - Sometimes we see the same serial number more than once, e.g. with emulated hardware (dynamips) or faulty equipment

End user PCs are not “Devices”

- They are auto-detected from ARP tables and forwarding tables
- You can search for them by IP or MAC address
- You can see which switch port they were last plugged into
- You can see when the IP was last active

Polling of devices

- A cron job polls your devices periodically (say) every hour
 - Don't forget to `cp netdot.cron /etc/cron.d/netdot`
- `updatedevices.pl -DIFAT`
 - Poll only devices in databases
 - Refresh basic information (sysName, sysLocation etc)
 - Read forwarding tables from switches
 - Read ARP tables from routers

- Read CDP/LLDP topology
- This can be turned on/off per device
 - e.g. if you don't want to poll forwarding table on a particular switch

“Address” (a.k.a. “ipblock”)

- Represents a single IP, or a prefix
- Prefix can be “container” or “subnet”
 - A “subnet” is something actually seen on a router interface
 - A “container” can contain subnets or other containers (recursively)
 - A “subnet” *cannot* contain subnets or containers
 - A “container” will be turned into a “subnet” if it's seen on a router interface
- Single IPs have different states
 - Static - belongs to a device interface, or manually set to static
 - Discovered - seen in ARP table
 - Dynamic - defined as part of a DHCP pool
 - Reserved - should not be assigned

Address views

- View as list, tree, or graphical block form
- Clicking on an individual IP marks it as “static”
 - One-click IP allocation!
 - But it doesn't have a confirmation dialog

VLANS

- Discovered from switches/routers
- Right now, a dot1q tag must be unique across your network

DNS

- Must create a DNS zone first, then the records
- Create reverse DNS zones, or you won't get PTR records created
- Netdot can create unique DNS names for each device interface, based on e.g. interface type and number
 - This is configurable, and you can write a module for your own naming convention if you wish
- Using “DNS ... new” actually allocates a new IP address
 - Perhaps this is in the wrong place in the UI
 - You need to link one or more zones to a subnet to make this work

DHCP

- Can create config files for ISC DHCP server, e.g. to give static IPs to particular hosts
- Create a DHCP “scope”
- Then you mark a row individual IPs as “dynamic”, using the bulk update facility
 - So that the DHCP range doesn't have to fall on subnet boundary
 - Probably won't scale to v6 :-)

Not covered in this presentation

- Cable plant
- Contacts and People
- Reports
- Exporting (e.g. DNS zone files, Nagios configs, dhcpd configs)

Documentation

- Finding stuff can be difficult
 - “I know that Netdot can show my network topology, but where was it again?”
- It’s open source, you can contribute to the documentation
 - The manual
 - wiki

Platform

- apache + mod_perl
- mysql
- rrdtool
- graphviz
- ... lots of perl dependencies

Database structure

- DB schema diagram: linked from <https://osl.uoregon.edu/redmine/projects/netdot/wiki/Documentation>
- Traditional SQL design
- Most important tables: device, ipblock