% Netdot exercise
% Network Management Topics

Introduction

The Network Documentation Tool (Netdot) is an open source software designed to
help network administrators collect, organize and maintain network documentation. Netdot is actively developed at the University of Oregon.

Goals

In these exercises we will install Netdot and demonstrate some of its most
important features.

Notes

* Commands preceded with "$" imply that you should execute the command as
  a general user - not as root.
* Commands preceded with "#" imply that you should be working as root.
* Commands with more specific command lines (e.g. "RTR-GW>" or "mysql>")
  imply that you are executing commands on remote equipment, or within
  another program.

Installation

Netdot may already be installed in your PC. Ask the instructor.

Download the Package

First check if it's available in your classroom's NOC server:

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$ cd
$ wget http://noc.ws.nsrc.org/downloads/netdot-1.0.2.tar.gz
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If not, try from the official site:

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# wget http://netdot.uoregon.edu/pub/dists/netdot-1.0.2.tar.gz
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Unpack the tarball:

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$ tar xzvf netdot-1.0.2.tar.gz
$ cd netdot-1.0.2
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Install dependencies:

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# apt-get install build-essential
# make apt-install

Which RDBMS do you plan to use as backend: [mysql|Pg]? mysql

We need to add a temporary repository of Netdot dependencies until
all packages
are in Debian/Ubuntu official repositories.
Would you like to continue? [y/n] y
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This will download a lot of packages. Be patient.

(If you had not installed mysql-server, you'll be asked for a DBA
password.
Ask the instructor for the Mysql root password).

Say yes here:

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We will install the MIB files now. Continue? [y/n] y
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You will see a list of Perl modules, most of them installed OK. If
any of them

are missing, type:

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$ make installdeps

Which RDBMS do you plan to use as backend: [mysql|Pg]? mysql
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This will try to install the missing modules using the CPAN archive. At the
end, all the modules should show "ok".

Initialize the site configuration:

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$ cp etc/Default.conf etc/Site.conf
$ editor etc/Site.conf

  Find and change the following values:

NETDOTNAME => 'pcX.ws.nsrc.org',
DB_DBA_PASSWORD => '(the password you used when installing mysql)',
DEFAULT_SNMPCOMMUNITIES => ['NetManage', 'public'],
DEFAULT_DNSDOMAIN => 'ws.nsrc.org',
DEVICE_NAMING_METHOD_ORDER => ['sysname', 'snmp_target'],
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Save and exit from the file.

Install the application and initialize the database.

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make installdb
make install APACHEUSER=www-data APACHEGROUP=www-data
ln -s /usr/local/netdot/etc/netdot_apache2_local.conf \
/etc/apache2/conf.d/
service apache2 graceful
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Install the cron jobs for automated tasks

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cp netdot.cron /etc/cron.d/netdot
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Operation

Log into the web interface

In your browser, go to:

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http://pcX.ws.nsrc.org/netdot
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Log in with username: admin and password: admin

Changing default passwords

Netdot comes with three default user accounts. You should change the default passwords on those.

Go to the "Contacts" tab, then search for "Admin". You should see the details for the Admin user. Click on [edit], and find the Password field. Type the password you used to log in to your PC, then click on the "Update" button.

Repeat the same steps for the other default users:

* operator
* guest

Discovering devices

If you have not done so yet, configure SNMP on your PC and your router.

Ask the instructor to provide you with instructions for configuring SNMP on Cisco routers and Linux

Now back to Netdot. Let's create a file with all the devices in the
lab network
that respond to SNMP:

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$ editor /home/sysadm/discoverme.txt
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Copy and paste the following list:

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gw.ws.nsrc.org NetManage
s1.ws.nsrc.org NetManage
sw.ws.nsrc.org NetManage
ap1.ws.nsrc.org NetManage
rtr1.ws.nsrc.org NetManage
rtr2.ws.nsrc.org NetManage
rtr3.ws.nsrc.org NetManage
rtr4.ws.nsrc.org NetManage
rtr5.ws.nsrc.org NetManage
rtr6.ws.nsrc.org NetManage
pc1.ws.nsrc.org NetManage
pc2.ws.nsrc.org NetManage
pc3.ws.nsrc.org NetManage
pc4.ws.nsrc.org NetManage
pc5.ws.nsrc.org NetManage
pc6.ws.nsrc.org NetManage
pc7.ws.nsrc.org NetManage
pc8.ws.nsrc.org NetManage
pc9.ws.nsrc.org NetManage
pc10.ws.nsrc.org NetManage
pc11.ws.nsrc.org NetManage
pc12.ws.nsrc.org NetManage
pc13.ws.nsrc.org NetManage
pc14.ws.nsrc.org NetManage
pc15.ws.nsrc.org NetManage
pc16.ws.nsrc.org NetManage
pc17.ws.nsrc.org NetManage
pc18.ws.nsrc.org NetManage
pc19.ws.nsrc.org NetManage
pc20.ws.nsrc.org NetManage
pc21.ws.nsrc.org NetManage
pc22.ws.nsrc.org NetManage
pc23.ws.nsrc.org NetManage
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pc24.ws.nsrc.org NetManage
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Now, tell Netdot to discover those devices:

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# cd /usr/local/netdot
# bin/updatedevices.pl -E /home/sysadm/discoverme.txt -IAF
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```

When that is done, go to the web interface and navigate to

    Management -> Devices

Leave the search box empty, and click on the "Find" button.

You should see all the discovered devices in that list. Go to the link for your
group's router (e.g. rtrX.ws.nsrc.org)

* Navigate to all the tabs: Basic, Interfaces, Modules, IP Info, etc.
  Netdot allows you to augment the information gathered from the device
  with details entered manually.

* In the ARP section, you should see one entry with a timestamp.
  Click on that entry. You should see a table associating IP addresses
  with MAC addresses. This is the ARP table discovered from rtr1. You should
  see your PC's IP address and MAC address.

Finding a computer in your network

* Obtain the MAC address from your laptop (or desktop). Copy it in the clipboard.
* In the Netdot web interface, go to Management -> Devices
* Paste your MAC address and hit ENTER

Netdot will show you which devices were seeing that MAC address the last
time that it discovered the network.
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Managing IP address space

Go to Management -> Address Space

You should see a list of private IP blocks (from RFC-1918). These come
pre-installed in Netdot.

Click on 10.0.0.0/8

You will see a list of discovered IP blocks, which are marked as "Subnets".
These were found in routers.

* Click on 10.10.1.0/24.
* Click on [edit]
* In the Description field, type "Group 1 PCs"
* Click "Save"

Create a container to include all the group subnets

In the section called "Address Space Tasks" on top, click on the "[new]"
button and enter the following:

* IP/Prefix: 10.10.0.0/16
* Owner: click on [new].
* In the new "Entity" window, enter:
  * Name: NSRC Lab
  * Insert button, then [close]
* Used by: (leave blank)
* Status: Container
* Description: NSRC lab student networks
* Save

You should now see the new Container page. It shows a graphical representation
of the /16 block. All the existing subnets are shown in red. The green space
represents unused or available address space.

* On the top of the graph there is a section called "Zoom: set one row equal to"
  Select /24 from the drop-down menu. Each row now represents a /24 block
* Click on [tree view] to see a tree graph view of the IP hierarchy

Polling devices

Periodically you will want to connect again to your routers and switches to
fetch their routing tables, forwarding tables etc. Run the command which
does this:

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# /usr/local/netdot/bin/updatedevices.pl -DIFAT
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* -D: poll all devices already in the database
* -I: get device info (e.g. sysName)
* -F: get switch forwarding tables
* -A: get router ARP tables
* -T: re-calculate the topology

To avoid having to run this by hand, you can install a crontab which will
do it automatically at set times of day. Have a look at the contents of the
file `/usr/local/src/netdot-1.0.2/netdot.cron`. This is what we did earlier
in this lab, when we copied the file directly into `/etc/cron.d/` so that it
it will run periodically.

More information

[Official Netdot Website](http://netdot.uoregon.edu)