TGIF:  
NetDB for Power Users  
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Networking Systems
Topics

- What's NetDB for
- Help and Report Pages
- Node Configurations
  - Wireless, roaming, laptops, etc
- Full and log searches
- Questions
Purpose of NetDB- Review

• Data feed to DNS and DHCP
• Node record keeping for LNAs
• Network record keeping for Networking
• Reports for LNAs and Networking
DNS

- External DNS servers = 3As
  - argus, avallone, atalante
- Internal DNS servers = 3Cs
  - caribou, cassandra, cilantro
- DNS updates every 4 hours except midnight
  - 4am, 8am, noon, 4pm, 8pm
- ".Local" domain not resolved externally
  - security through obscurity
- ".NoDomain" domain- no DNS resolution
**DHCP**

- Updates every 10 minutes from NetDB
- DHCP logs under SUNet reports
Help and Reports

• NetDB help:

• SUNet reports- generated from NetDB and "reality"
  – http://www.stanford.edu/group/networking/dist/sunet.repports
Managing Multiple Nets/Depts

• User profile settings
  – 3 default settings inherited by new nodes
    • group, address space, domain

• "Use Node as Template" or Template Node
  – inherits fields:
    • dept, location, room, make/model, OS, admin, user, ip address range, group, domain, custom field name, expiration date
**Node Types**

- Simple (default)
- Router Node- for NetDB access control
- Template node- already discussed
- Advanced node- requires extra access
  - allows DNS names for IP addresses and interfaces
  - allows multiple names
Advanced Node

• DNS preferences on name
  – closest name is returned first. i.e., in this order:
    • ip address name, interface name, name (random)
• DNS preference on IP addresses
  – all addresses returned in random order
  – if request from same net, that address returned first in list
  – future option to set preferences in order
**Advanced node- example**

Name1: alpha.stanford.edu  
Name2: bravo.stanford.edu  
Interface1: charlie.stanford.edu  
\[171.64.20.10\] www-judo.stanford.edu  
\[171.64.30.10\]  
Interface2:  
\[171.64.40.10\]

1. IP for alpha? 171.64.20.10, 171.64.30.10, 171.64.40.10 in random order  
2. Name for 171.64.30.10? charlie, (alpha, bravo) random order for last two  
3. Name for 171.64.40.10? alpha and bravo  
4. Name for 171.64.20.10? www-judo, charlie, (alpha, bravo) random order for last two
**Node Configurations- Laptops**

- Laptop with multiple network cards
- Laptop in multiple campus networks
- Laptop between dorms and campus nets
- Laptop between off-campus and campus
**Node Configurations - Considerations**

- **Conserving roaming addresses**
  - use fixed address whenever possible

- **Accountability**
  - use fixed address, register hardware address

- **DHCP lease times**
  - 2 days for fixed IP, 42 minutes for roaming

- **DNS resolution**
  - if multiple IPs, random list of IPs returned
1. Computer with Multiple NICs

• Examples:
  – Laptop with docking station
  – Laptop with wired and wireless card

• Create node with an interface per NIC
  – Separate hardware address with DHCP
  – Assign IP per interface (including wireless!)
  – Laptop will get appropriate IP associated with interface
1. Computer with multiple NICs - Example

Name: mylaptop.stanford.edu
Interface 1:
   Hardware address: 0000.0000.1111  DHCP
   IP address: 171.64.20.10
Interface 2:
   Hardware address: 0000.0000.2222  DHCP
   IP address: 171.64.30.20
2. *Laptop in multiple campus nets*

- Two offices: assign two IP addresses with DHCP to one interface. DHCP will hand out IP address based on network location.
- One office and Stanford DSL: assign as above. HelpSU request to enable DHCP on DSL router.
- One office and roaming: assign one IP with roaming DHCP. DHCP will give fixed IP if on that net and will give roaming DHCP address otherwise.
2. Laptop in multiple campus nets

Example

Name: mylaptop.stanford.edu
Interface1:
  Hardware address: 0000.0000.1111  DHCP  Roam
  IP address1:     171.64.20.10
  IP address 2:    171.64.30.10
3. Laptop- dorm and campus nets

- Student should register laptop in the dorms
  - fees pay for support staff and equipment
- LNA requests access to that record through HelpSU (by adding group).
- LNA adds IP address to record
- Same if user has Stanford West connection since fee is involved
3. Laptop- dorm and campus nets Example

Name: shakespeare.stanford.edu
Interface:
  Hardware address: 0000.0000.1111 DHCP
  IP address 1: 128.12.40.7
  IP address 2: 171.64.20.10
Groups: Residential Computing
        English
4. *Laptop between off-campus & on-campus*

- User only roams on campus (wireless, library)
  - Create NetDB record with hardware address and roaming and no IP address
- User uses other ISP or dial-up at home and has office on campus
  - Create NetDB record with hardware address, DHCP and fixed IP address
**Node Power Searches**

- How many machines did I register this year?
- What machines on my network are supposedly running Solaris?
- What machines were added to my net by someone else?
Log Power Searches

- Who deleted my node?
- Who took my IP address?
ipm (IP management)

- Checks "theoretical" info in NetDB with "real" info from routers
- Routers polled every 4 hours for arp tables
- Printers and local devices may not show up
- /usr/pubsw/sbin/ipm -h
- Only for folks with NetDB accounts
**ipm examples**

- Has this stolen laptop been seen elsewhere on campus in the last 100 days?
  - "ipm mylaptop.stanford.edu"
    - Result: 171.64.20.10 0000.0000.0001
  - "ipm -d 100 0000.0000.0001"
    - Result: 171.64.20.10, 171.64.30.1

- Machine 171.64.20.10 hacked
  - "ipm 171.64.20.10" Result: 0000.0000.0001
  - Look in forwarding (i.e. mac table) on switches for hardware address
Questions?