{net.} NETwork DOcumentation Tool

NANOG 49

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What does Netdot do?

- Discovers devices and topology using SNMP
- IPv4 and IPv6 Address Management (IPAM)
- Documents cable plant details
- Organizes contact information
- Generates configurations for other tools
- Has role-based access control

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Why Netdot?

- Centralize and integrate network information
- Reduce manual processes
  - manual == outdated
- Generate reports more easily
- Delegate tasks to departments/customers
- There were no similar open source projects
  - Other tools do only one thing

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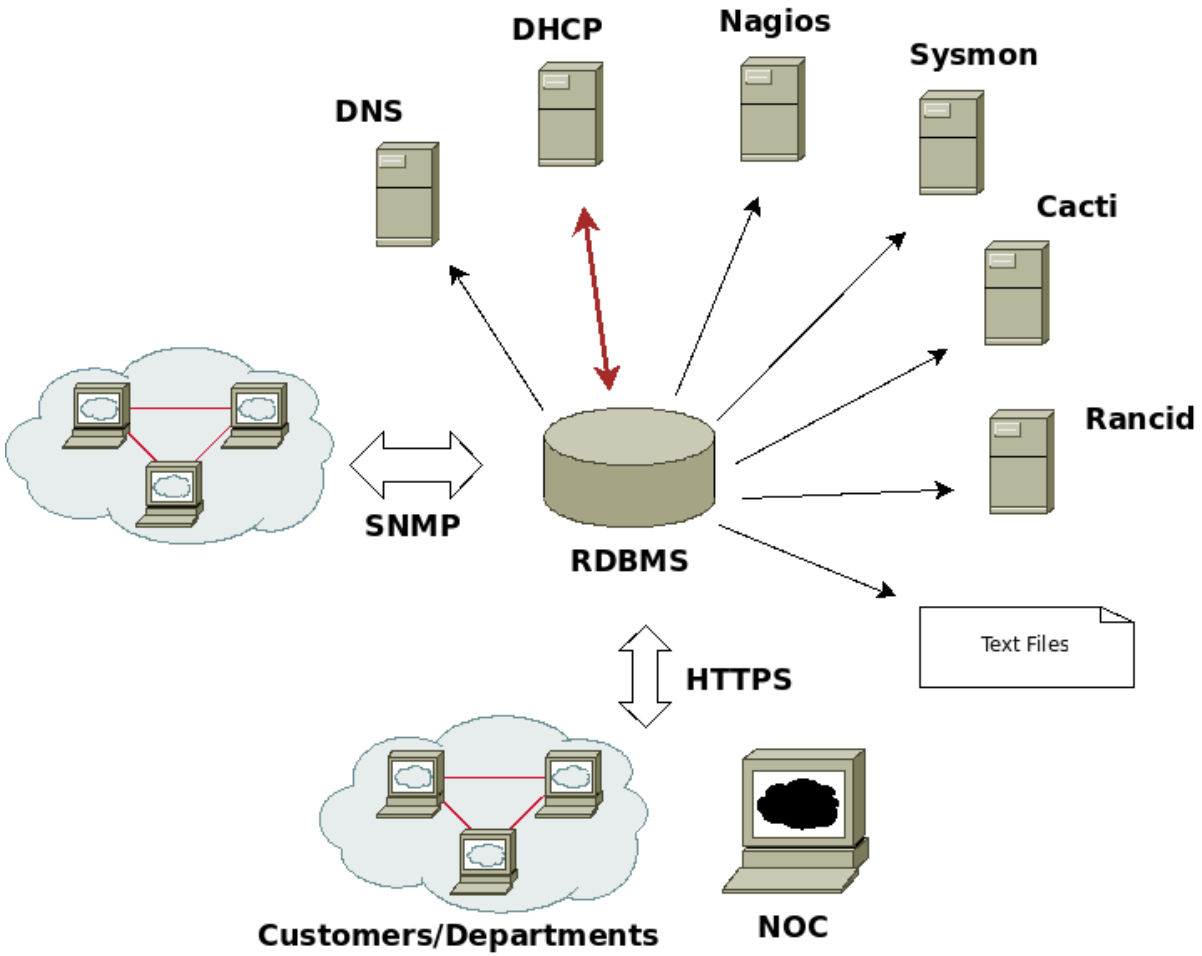
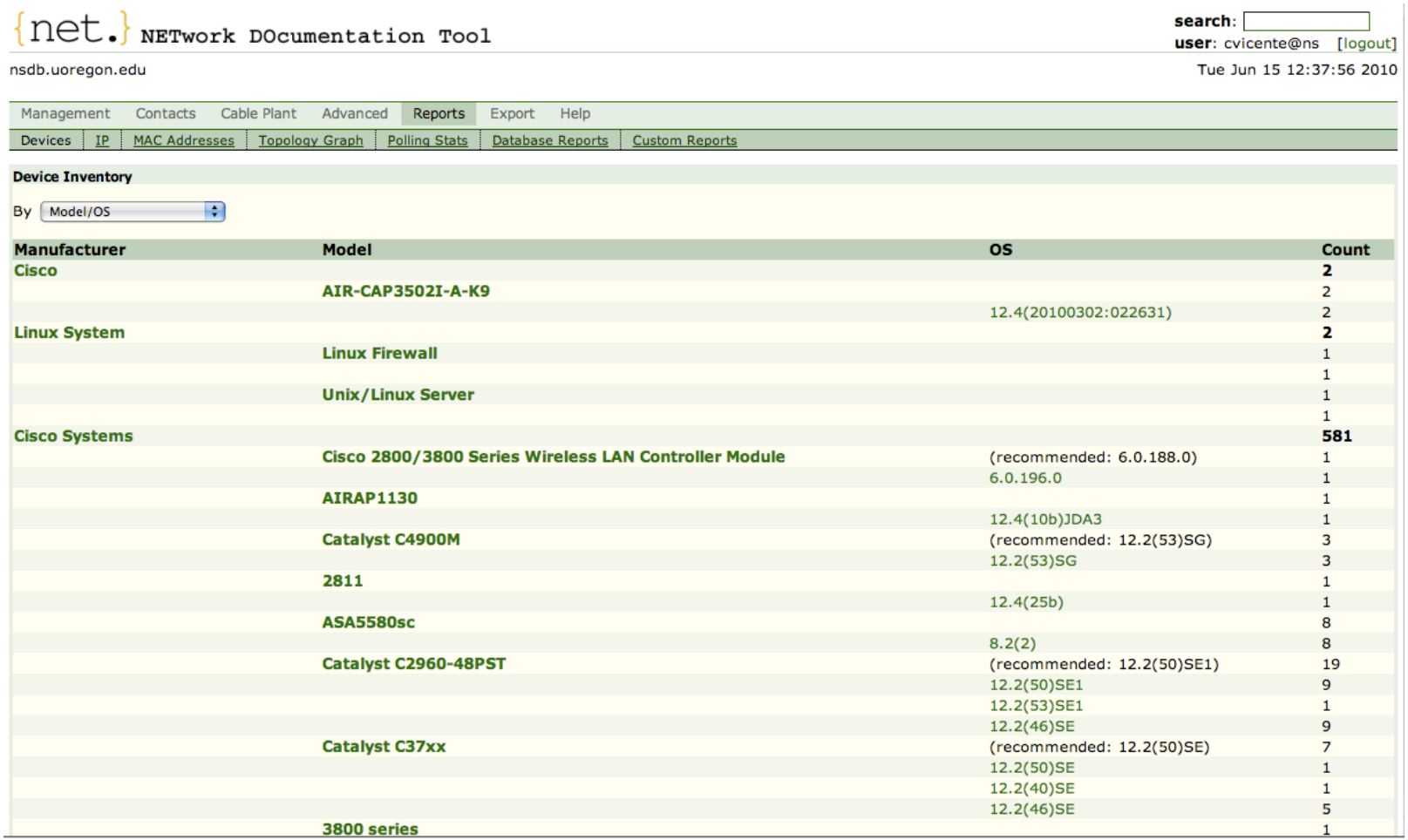
Netdot – The source of “truth”



Device Documentation

- Device information:
  - Interfaces and IPs, subnets, VLANs, modules
  - ARP tables, forwarding tables, Spanning Tree
  - manufacturer, model, OS version, etc.
  - Uses SNMP::Info (from Netdisco project)
- Discovers Layer 2 Topology
  - Collects and analyzes CDP/LLDP, Spanning Tree and Forwarding Table data
- We can add more information manually
  - Location, contacts, monitoring, port assignments,

Device Inventory



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search:
user: cvicente@ns [logout]

nsdb.uoregon.edu

Tue Jun 15 12:37:56 2010

Management | Contacts | Cable Plant | Advanced | Reports | Export | Help

Devices | IP | MAC Addresses | Topology Graph | Polling Stats | Database Reports | Custom Reports

Device Inventory

By Model/OS

Manufacturer	Model	OS	Count
Cisco			2
	AIR-CAP3502I-A-K9		2
		12.4(20100302:022631)	2
Linux System			2
	Linux Firewall		1
			1
	Unix/Linux Server		1
			1
Cisco Systems			581
	Cisco 2800/3800 Series Wireless LAN Controller Module	(recommended: 6.0.188.0)	1
		6.0.196.0	1
	AIRAP1130		1
		12.4(10b)JDA3	1
	Catalyst C4900M	(recommended: 12.2(53)SG)	3
		12.2(53)SG	3
	2811		1
		12.4(25b)	1
	ASA5580sc		8
		8.2(2)	8
	Catalyst C2960-48PST	(recommended: 12.2(50)SE1)	19
		12.2(50)SE1	9
		12.2(53)SE1	1
		12.2(46)SE	9
	Catalyst C37xx	(recommended: 12.2(50)SE)	7
		12.2(50)SE	1
		12.2(40)SE	1
		12.2(46)SE	5
	3800 series		1

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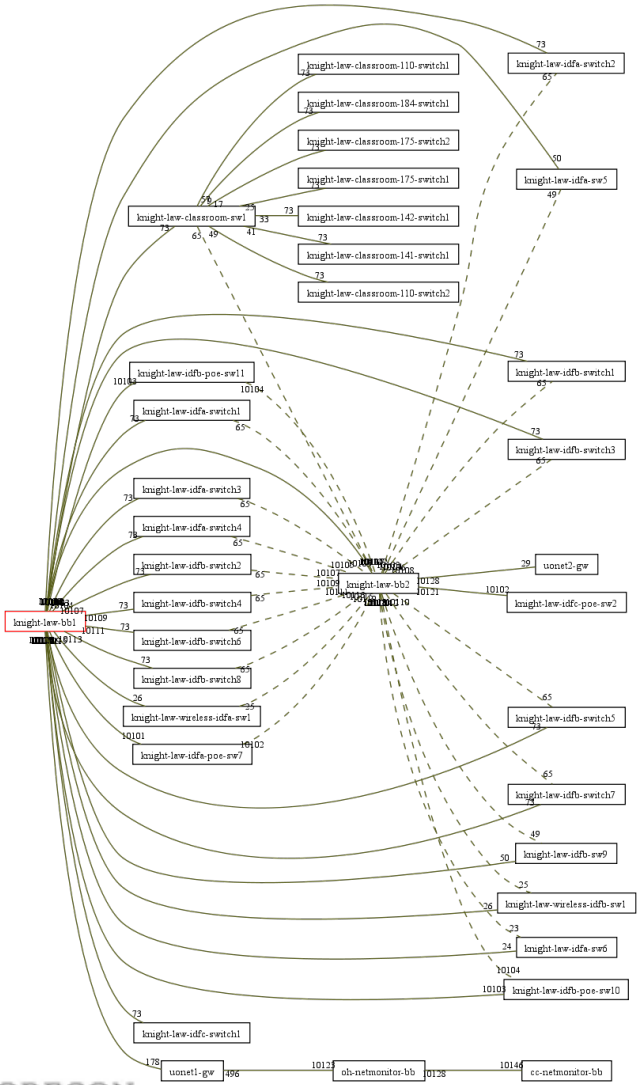
Topology Graphing



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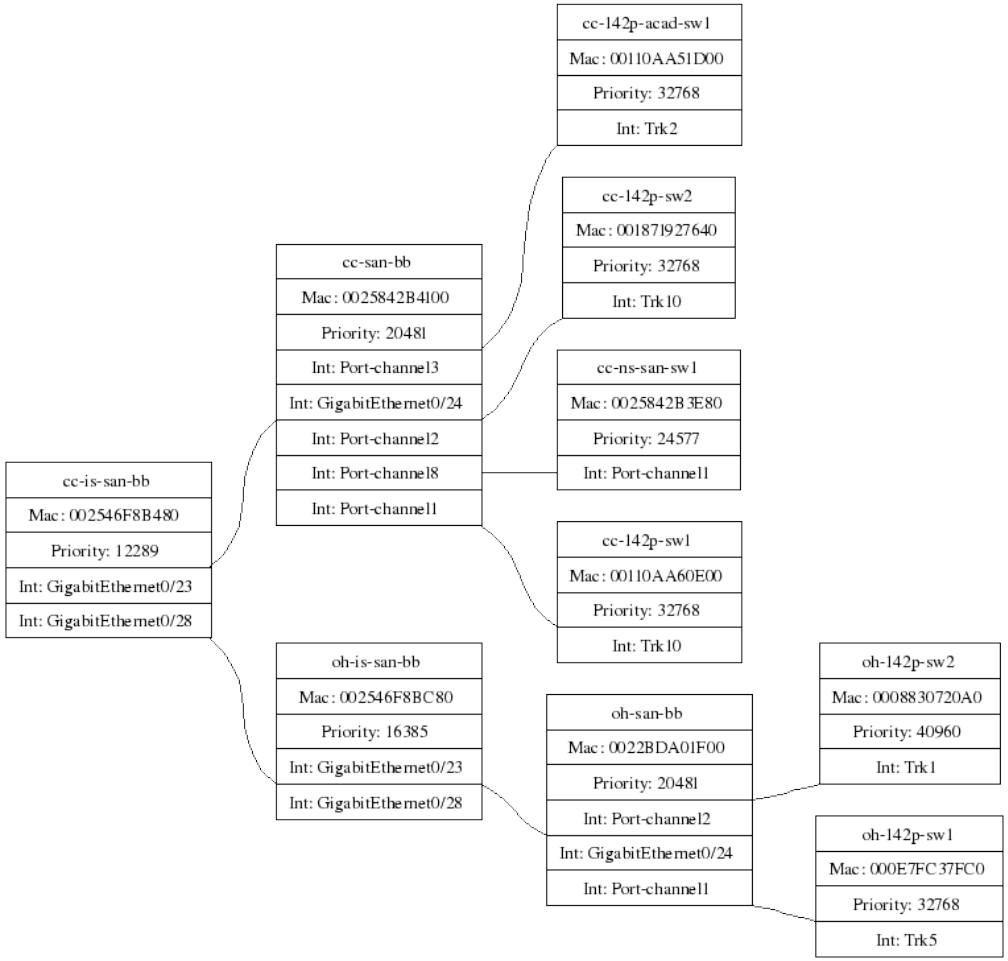
Spanning Tree Visualization



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IP Address Management

- Organizes v4 and v6 address space hierarchically
  - Learns subnets from L3 devices
- Shows graphical representation of IP blocks
- Generates DNS zone files and DHCP configurations
  - ISC BIND and DHCPD
- Tracks IP and MAC addresses over time
- Generates A/AAAA records for router interfaces
- We can delegate the management of addresses and DNS records to customers

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Graphical IPv4 block view

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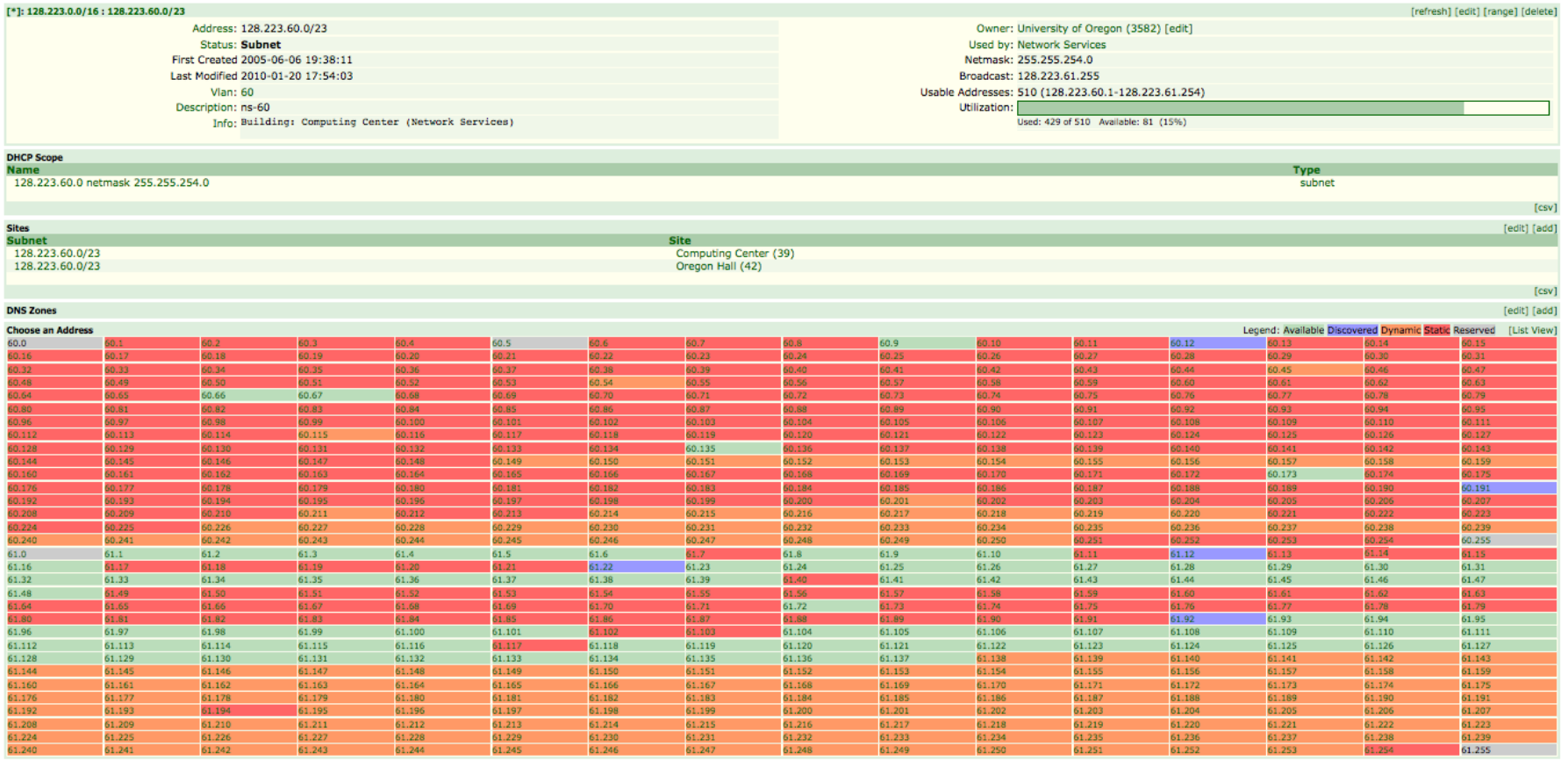
IPv4 Subnet View



[*]: 128.223.0.0/16 : 128.223.60.0/23 [refresh] [edit] [range] [delete]

Address: 128.223.60.0/23
Status: **Subnet**
First Created 2005-06-06 19:38:11
Last Modified 2010-01-20 17:54:03
Vlan: 60
Description: ns-60
Info: Building: Computing Center (Network Services)

Owner: University of Oregon (3582) [edit]
Used by: Network Services
Netmask: 255.255.254.0
Broadcast: 128.223.61.255
Usable Addresses: 510 (128.223.60.1-128.223.61.254)
Utilization:
Used: 429 of 510 Available: 81 (15%)

DHCP Scope

Name	Type
128.223.60.0 netmask 255.255.254.0	subnet

[csv]

Sites [edit] [add]

Subnet	Site
128.223.60.0/23	Computing Center (39)
128.223.60.0/23	Oregon Hall (42)

[csv]

DNS Zones [edit] [add]

Choose an Address Legend: Available Discovered Dynamic Static Reserved [List View]

60.0	60.1	60.2	60.3	60.4	60.5	60.6	60.7	60.8	60.9	60.10	60.11	60.12	60.13	60.14	60.15
60.16	60.17	60.18	60.19	60.20	60.21	60.22	60.23	60.24	60.25	60.26	60.27	60.28	60.29	60.30	60.31
60.32	60.33	60.34	60.35	60.36	60.37	60.38	60.39	60.40	60.41	60.42	60.43	60.44	60.45	60.46	60.47
60.48	60.49	60.50	60.51	60.52	60.53	60.54	60.55	60.56	60.57	60.58	60.59	60.60	60.61	60.62	60.63
60.64	60.65	60.66	60.67	60.68	60.69	60.70	60.71	60.72	60.73	60.74	60.75	60.76	60.77	60.78	60.79
60.80	60.81	60.82	60.83	60.84	60.85	60.86	60.87	60.88	60.89	60.90	60.91	60.92	60.93	60.94	60.95
60.96	60.97	60.98	60.99	60.100	60.101	60.102	60.103	60.104	60.105	60.106	60.107	60.108	60.109	60.110	60.111
60.112	60.113	60.114	60.115	60.116	60.117	60.118	60.119	60.120	60.121	60.122	60.123	60.124	60.125	60.126	60.127
60.128	60.129	60.130	60.131	60.132	60.133	60.134	60.135	60.136	60.137	60.138	60.139	60.140	60.141	60.142	60.143
60.144	60.145	60.146	60.147	60.148	60.149	60.150	60.151	60.152	60.153	60.154	60.155	60.156	60.157	60.158	60.159
60.160	60.161	60.162	60.163	60.164	60.165	60.166	60.167	60.168	60.169	60.170	60.171	60.172	60.173	60.174	60.175
60.176	60.177	60.178	60.179	60.180	60.181	60.182	60.183	60.184	60.185	60.186	60.187	60.188	60.189	60.190	60.191
60.192	60.193	60.194	60.195	60.196	60.197	60.198	60.199	60.200	60.201	60.202	60.203	60.204	60.205	60.206	60.207
60.208	60.209	60.210	60.211	60.212	60.213	60.214	60.215	60.216	60.217	60.218	60.219	60.220	60.221	60.222	60.223
60.224	60.225	60.226	60.227	60.228	60.229	60.230	60.231	60.232	60.233	60.234	60.235	60.236	60.237	60.238	60.239
60.240	60.241	60.242	60.243	60.244	60.245	60.246	60.247	60.248	60.249	60.250	60.251	60.252	60.253	60.254	60.255
61.0	61.1	61.2	61.3	61.4	61.5	61.6	61.7	61.8	61.9	61.10	61.11	61.12	61.13	61.14	61.15
61.16	61.17	61.18	61.19	61.20	61.21	61.22	61.23	61.24	61.25	61.26	61.27	61.28	61.29	61.30	61.31
61.32	61.33	61.34	61.35	61.36	61.37	61.38	61.39	61.40	61.41	61.42	61.43	61.44	61.45	61.46	61.47
61.48	61.49	61.50	61.51	61.52	61.53	61.54	61.55	61.56	61.57	61.58	61.59	61.60	61.61	61.62	61.63
61.64	61.65	61.66	61.67	61.68	61.69	61.70	61.71	61.72	61.73	61.74	61.75	61.76	61.77	61.78	61.79
61.80	61.81	61.82	61.83	61.84	61.85	61.86	61.87	61.88	61.89	61.90	61.91	61.92	61.93	61.94	61.95
61.96	61.97	61.98	61.99	61.100	61.101	61.102	61.103	61.104	61.105	61.106	61.107	61.108	61.109	61.110	61.111
61.112	61.113	61.114	61.115	61.116	61.117	61.118	61.119	61.120	61.121	61.122	61.123	61.124	61.125	61.126	61.127
61.128	61.129	61.130	61.131	61.132	61.133	61.134	61.135	61.136	61.137	61.138	61.139	61.140	61.141	61.142	61.143
61.144	61.145	61.146	61.147	61.148	61.149	61.150	61.151	61.152	61.153	61.154	61.155	61.156	61.157	61.158	61.159
61.160	61.161	61.162	61.163	61.164	61.165	61.166	61.167	61.168	61.169	61.170	61.171	61.172	61.173	61.174	61.175
61.176	61.177	61.178	61.179	61.180	61.181	61.182	61.183	61.184	61.185	61.186	61.187	61.188	61.189	61.190	61.191
61.192	61.193	61.194	61.195	61.196	61.197	61.198	61.199	61.200	61.201	61.202	61.203	61.204	61.205	61.206	61.207
61.208	61.209	61.210	61.211	61.212	61.213	61.214	61.215	61.216	61.217	61.218	61.219	61.220	61.221	61.222	61.223
61.224	61.225	61.226	61.227	61.228	61.229	61.230	61.231	61.232	61.233	61.234	61.235	61.236	61.237	61.238	61.239
61.240	61.241	61.242	61.243	61.244	61.245	61.246	61.247	61.248	61.249	61.250	61.251	61.252	61.253	61.254	61.255

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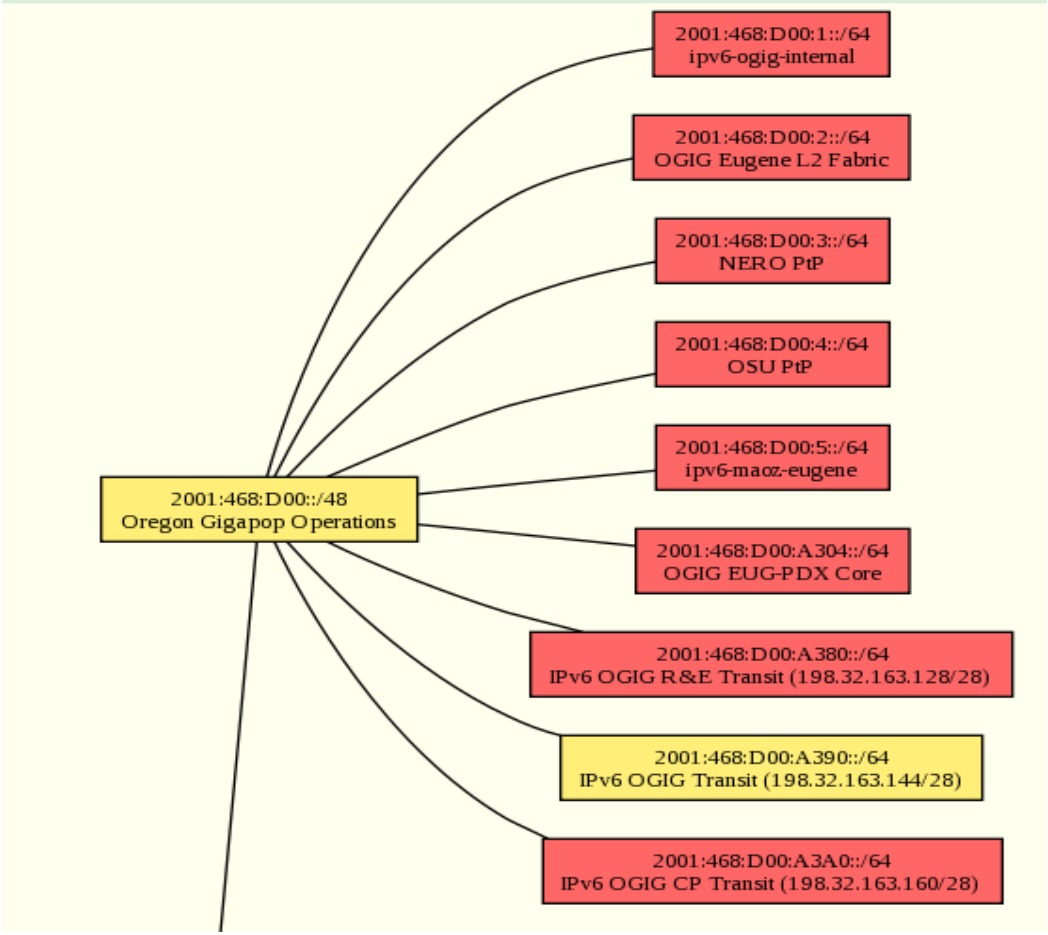
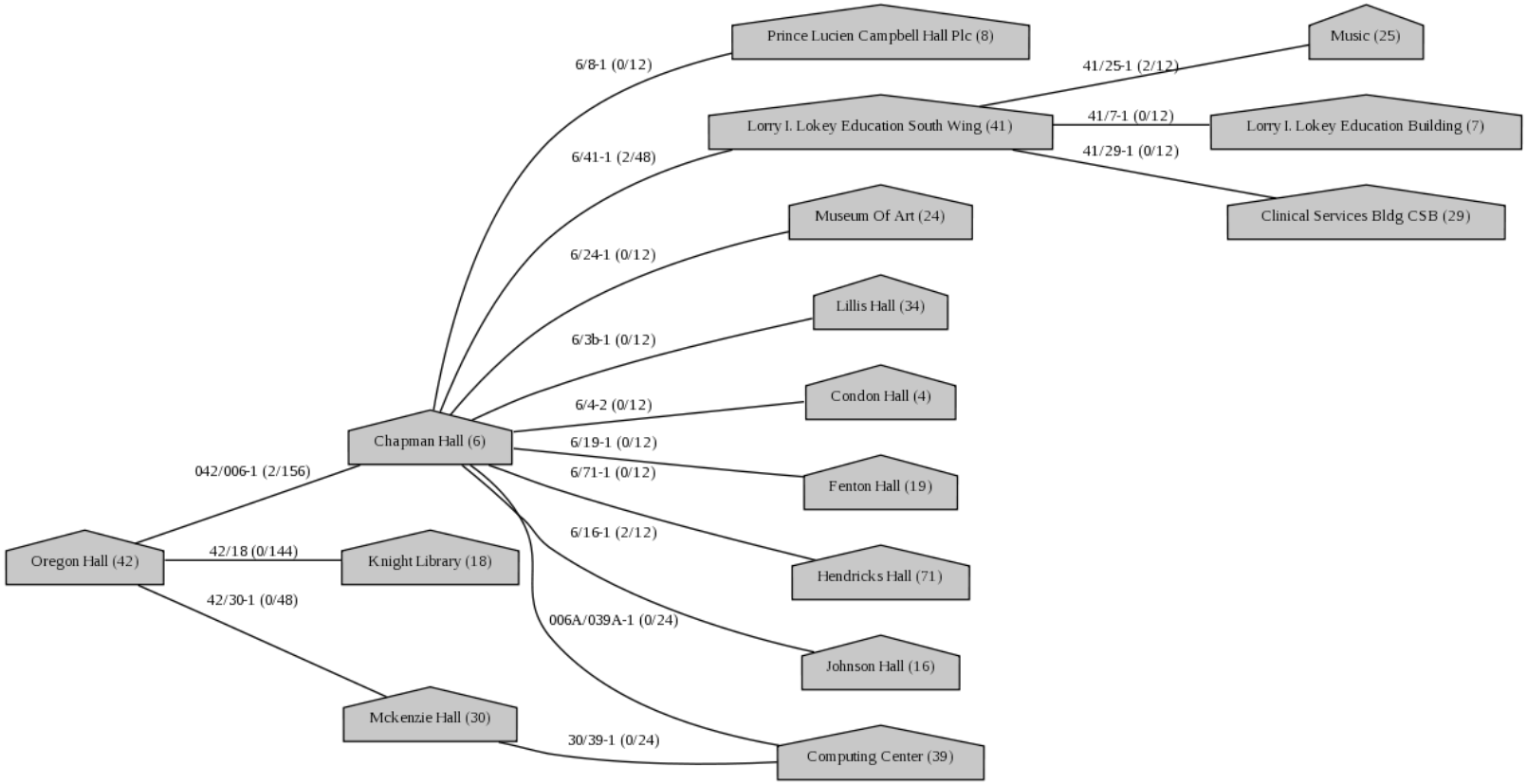
IPv6 Block Tree View



Cable Plant

- We can document inter-building fiber and copper bundles
- In-building fiber and copper distribution
  - Rooms
  - Jacks
  - Closets
- We can create fiber circuits using sequences of fiber pairs

Backbone Cable Plant



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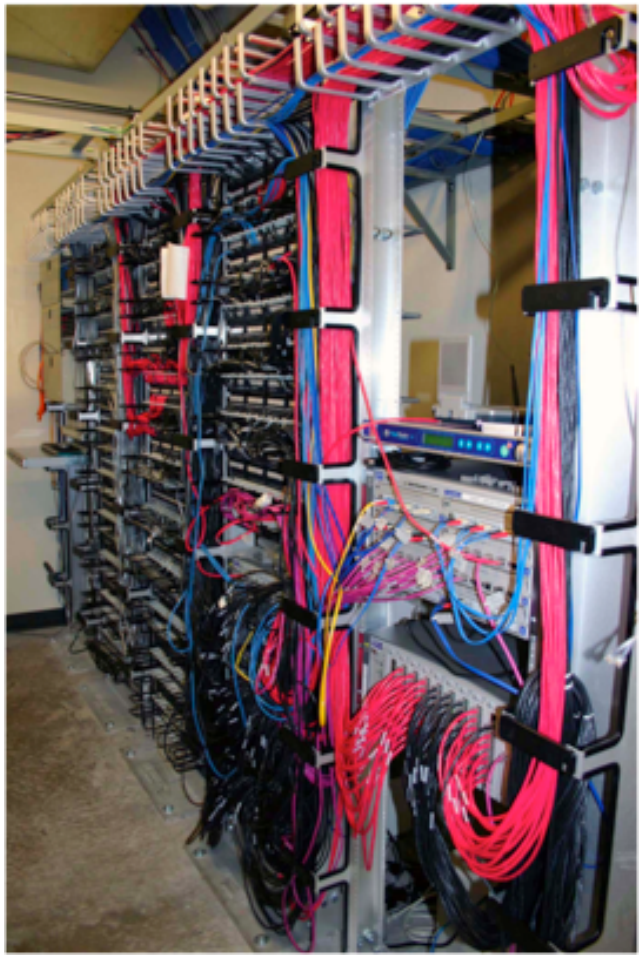
Closet Pictures



Upcoming features

- RESTful API
- IPv6 space visualization
  - Playing with a hierarchical quadtree model
- IPv6 address collection via SNMP
- DHCPv6 configuration support
- DNS updates with *nsupdate*

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Upcoming features

- Improved cable plant section
- Inventory of equipment stock
  - Take advantage of bar-code scanners
- More access control granularity

Try it out!

- http://netdot.uoregon.edu