



Abilene Measurement

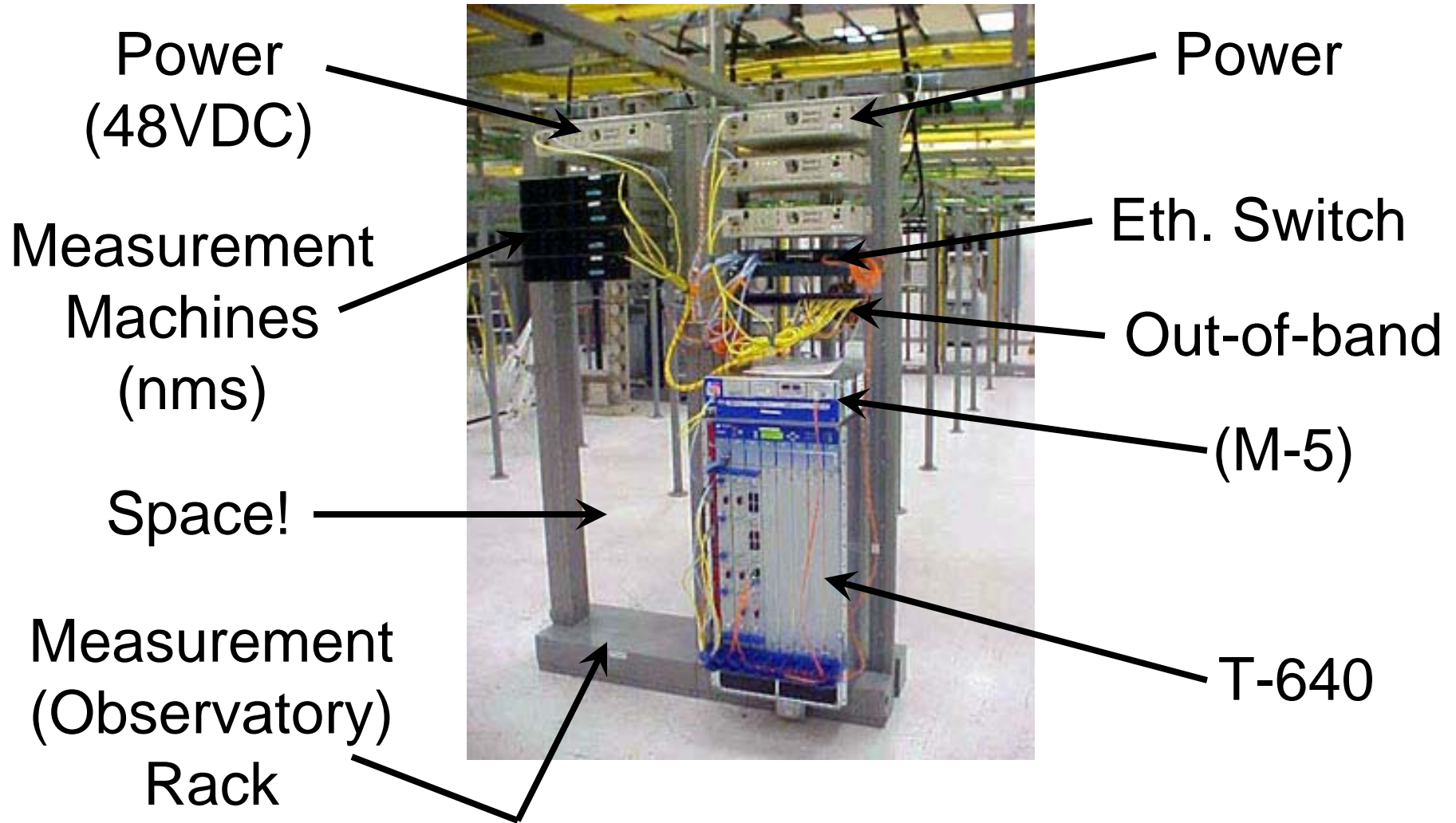
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JET Roadmap Workshop

13-Apr-2004

- Publishing measurement data
 - Stuff we collect for operations
 - Stuff we collect for research
- The ability for research projects to add their equipment, or run software on our platform
 - Peer reviewed
 - Why? Passive, collocation makes analysis easier
 - AMP [1, going to 11], PMA [tbd], Planetlab

Abilene router node



Dedicated servers at each node

- nms1: throughput tester (iperf)
 - gigE direct to T-640, MTU 9000
- nms2: ad-hoc on-demand (+ ndt + routing)
 - gigE to switch to T-640, MTU 1500
- nms3: statistics collection (flow, snmp)
 - 100bT to switch to T-640
 - Local data collection to capture during network instability
- nms4: latency tester (owamp, troute)
 - 100bT to switch to T-640
 - CDMA “GPS” timing source from endruntechnologies.com

Hardware

- Intel SR2200 from ioncomputer.com
- Intel SCB2 motherboard
- Dual 1.26 GHz Pentium III, 512K L2
- 1GB PC-133 DRAM in two banks
- ServerWorks ServerSet HE-SL chipset
- 64 bit 64 MHz PCI
- Syskonnect GigE SK-9843 SX
- Redundant 48VDC

■ nms1 and 2

- Linux 2.4.20, SMP, Web100 kernel as of last week
- All traffic default routed through gigE
- Buffers tuned a-la LBL document
- 990 Mb/s TCP between any two nms1s

■ nms3-4:

- FreeBSD 4.6-STABLE
- Buffers tuned



Measurement Capabilities

- One way latency, jitter, loss [owamp]
 - IPv4 and IPv6
- Regular TCP/UDP throughput tests – ~1 Gbps
 - IPv4 and IPv6; On-demand available [bwctl]
- SNMP (NOC) [octets, packets, errors; collected frequently]
 - NOC working on SNMP proxy
- “Netflow” (ITEC Ohio) [anon. by 0-ing last 11 bits]
- Multicast beacon with historical data
- Routing data (BGP & IGP) [IGP under development]
 - Looking at Zebra + mods, Japanese routing research is driver
- (Optical splitter taps on backbone links at select location(s))

- Single page to see ‘10 worst’ measurements
 - Throughput data
 - Losses
 - Variation in latency (95th – min) for links
 - Maybe top utilization measurements too for comparison
- Expect to iterate presentation to find “best” presentation for us

Adding other nodes: on demand

- New iperf test harness has provision for controlled on-demand testing
- Code: <http://e2epi.internet2.edu/bwctl/>
- Request access, give AES key to `ami-key@internet2.edu`
- Can also do owamp
 - <http://e2epi.internet2.edu/owamp/>
 - Key to `ami-key@internet2.edu`

“Visual Backbone”

- XML access of 1/hr snapshots
 - Lots of show commands
 - Show config
 - Show isis
 - Show bgp
 - Show interface
 - Multicast stuff
 - <http://loadrunner.uits.iu.edu/~gcbrowni/Abilene/>
- Router proxy: ask questions of router:
safely, rate controlled

Other Monitoring

- AMP monitors being installed
 - Parallel experiments
- “Web services” access to data
 - MonaLisa can present the data
 - Other diagnostics can use data, eventually ask for tests

- <http://abilene.internet2.edu/observatory>
 - Pointers to all measurements/sites/projects
- <http://www.abilene.iu.edu/>
 - NOC home page. Weathermap, Router Proxy, SNMP measurements
- <http://netflow.internet2.edu/weekly/>
 - Summarized flow data
- <http://www.itec.oar.net/abilene-netflow/>
 - “Raw” – matrices; (Anon) feeds available on request



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