GRNET NOC
flash presentation

TF-NOC
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Network & Equipment

- **Optical Network:**
  - ~70 cities (+30 within next year)
  - 15years-leased dark fiber
  - DWDM/CWDM network

- **Optical Equipment:**
  - Alcatel 1626LM, 1696MS, 1678MCC
  - Adva FSP2000

- **Routing Equipment:**
  - Juniper T1600, Juniper MX960
  - ~10x Cisco 12000s,
  - a few Cisco 7200s/7300s

- **Switching Equipment:**
  - Several Cisco 3750, Cisco 2970, Juniper ex4200, Extreme X450a/X350
  - Cisco 6500

- **Storage Equipment:**
  - Netapp/IBM N5300 (180TB)
  - EMC Celerra NS-480 (280TB)

- **Computing Equipment:**
  → **Virtualization (KVM)**
  - 12 Blade servers, HP BL-460c
  - Cluster of 30 1U servers (1 rack)
  - Soon: +20 racks

Services

- To "direct" clients (i.e. ~100 universities, research institutes etc)
  - Local Internet Registry (LIR)
  - Connectivity: Internet (v4/v6 unicast/multicast) and VPN

  - Secondary DNS & Backup MX, news
  - PKI – server certificates
  - AAI (Shiboleth)
  - Eduroam
  - Virtual Private Servers (VPS)
  - Conferencing and voip
  - …

- To "indirect" end-users (i.e students, faculty,…)
  - Student DSL
  - Storage service
  - PKI – personal certificates
  - Soon: "Cloud service"
  - …

- To the entire community
  - Public recursive dns, as112, k-root, .gr, 6-to-4, …

- GR-IX (Greek Internet Exchange)

Tools

- **NMS & Monitoring**
  - Alcatel & Adva NMS
  - HP OV
  - **Nagios, Munin, mrtg/rrd**
- **Networking**
  - Rancid
  - IRRToolset/RtConfig
- **Servers**
  - OS: Debian
  - Virtualization: Ganeti & KVM
  - Management: Puppet
  - …

- **In-House development**
  - GRNETDB
  - Integrated tools
    - Network Visualization
    - Ticketing
    - Hostmaster
    - Contacts
    - …

OpenSource!!! *Exim Ganeti Debian Drupal proftpd IRRToolset rsyslog KVM Subversion Quagga Cacti Collectd vsftpd Sendmail Asterisk MySQL Rails Linux HAProxy ejabberd GnuGK pmacct dbeacon PowerDNS sflowtools Bacula OpenLDAP Nagios Open-iSCSI FreeRADIUS Openfire lldpd OpenSIPS Sympa OpenVZ inn dvblast RadSecproxy munin Ruby Xen Puppet nginx Perl JBoss OpenSSL Tomcat Pure-FTPd OpenSSH rancid mrtg Apache Mercurial Django Shibboleth vlc Dovecot OpenVPN Mailman BIND redmine Postfix git spamAssassin mongrel ffmpeg Python PostgreSQL Samba …*

NOC structure

- Which roles and coverage and responsibility does your staff have? How is your NOC organized?
  - **In-house NOC:** daily operation, short/mid term design, participation in long-term design
    - Admin (Head of noc & techical coordinator)
    - Teams: **Optical**, **Routing & switching**, **Server**, **Development**
    - Operation: NOC: 5x11 (unofficially on call 24x7)
  - **Outsourced:** Helpdesk/Call center(s) (5x12+2x8), NOC subtasks
- How does the NOC work with different kinds of tools? (e.g. tool integration)
  - Open Source tools & In-house development
  - Integration of most tools with **GRNET DB**

Front end

- What types of users are using your network and services?
  - Traditionally: University (and other research institution) **NOCs**
  - Currently: End users (students, professors, staff …)
- How does the SLAs or agreements you have with your customers look like?
  - No strict SLAs exist
- Which tools are used to communicate with and keep track of users?
  - Ticketing & contact database

Inter-NOC communication

- How do your NOC communicate internally and with other groups in your organization?
  - Ticketing
  - Non-typical procedures (verbally/mail…)
    - we are a small group of people…
- How does your NOC communicate NOCs outside your organization?
  (e.g. provider and/or customer NOCs)
  - Ticketing/Mail
  - Helpdesk
- Which tools are used to facilitate inter-NOC communication?
  - Custom ticketing + contact database

Documentation

- **What information do your NOC document?**
  - Topologies, procedures, policies, contacts, …
- **Which tools are used to create and update documentation?**
  - Mainly wiki + automated documentation.
- **Do you have any Best Practice Documents available to share?**
  - Very few, and these are in Greek.