TF-NOC Flash presentation

Belnet – Pieter Hanssens
2nd TF-NOC - 15 February 2011

Belnet
dedicated connectivity

.be

Network

- What infrastructure has your organization deployed? (e.g. fiber + equipment)

- What services are your organization offering and maintaining?

- Which tools are you using to manage/monitor the network?

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Network

- 3 networks:
  - Belgian NREN (Belnet network)
  - Belgian National Internet Exchange (Bnix)
  - Federal Metropolitan Area Network (FedMAN)

- All networks:
  - Routing equipment (L2 + L3)
  - Juniper / Cisco / Force10

- Belnet + BNIX network:
  - Optical equipment (ALU 1696 ROADM's)
  - Fiber (IRU for 15 years)

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Network - Services

- Broadband connectivity in IPv4 / IPv6 & Graphs

- PTP / PTMP connections

- Prim & Sec DNS / revDNS / LIR / NTP / Jabber

- Certificates / eduroam / R&E federation

- CERT & BeGRID

- Videoconferencing (MCU)

- 24/7 helpdesk & NOC

- Belnet Leased Line & Belnet Service Router (CPE)

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Network - Tools

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Network

- SNMP + RRD + MRTG for graphs

- Nagios for monitoring (implementing NagViz)

- Rancid + cvs for configs

- Splunk + syslog for syslog msg's

- Proprietary CRM system & (change) ticketing system

- Arbor Peakflow SP for traffic analysis

- Mediawiki: dedicated wiki for external use: procedures

- RPM for traffic measurements

- Custom-tailored scripts

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NOC Structure

- Which roles and coverage and responsibility does your

  staff have?

  (e.g. dispatchers or experts, 24/7 or daytime)

- How is your NOC organized?

  (e.g. centralized, distributed or out-sourced)

- How does the NOC work with different kinds of tools? (e.g.

  tool integration)

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NOC Structure

- Experts – 3rd line / Business Hours only with escalation path

- Every network engineer knows all networks
  - Past: chinese walls; Present: Shared, general knowledge

- Responsibilities
  - Network architecture & Projects
  - Change management
  - Customer's support questions
  - Software upgrades
  - PoP maintenance (patching / documentation / labelling / maintenance)

Belnet

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NOC Structure

- **24/7 NOC for each network is outsourced**
  - 1 party for the IX and the NREN network (Alcatel – Lucent)
  - 1 party for the FedMAN network (Belgacom – Telindus)

- **Parties chosen through Call For Tender**

- **One of the outsourced parties is distributed**

- **The other one is centralised**

- **Why outsourced? The Belnet engineers do not have a legal framework to get compensated outside "Business Hours"**

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NOC Structure

- **NOC tools are independent of the Belnet tools, but:**
  - We use their ticketing system for updates regarding incidents
  - We experienced added delay and confusion when using their documentation system

- **Since documentation is key:**
  - Belnet took the documentation role
  - Belnet is responsible for maintaining / updating the docs

- **Having two separate monitoring tools proves a good thing**

- **How to monitor the NOC when you are blind?**

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Front End

- What types of users are using your network and services?

- How does the SLAs or agreements you have with your customers look like?

- Which tools are used to communicate with and keep track of users?

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Front End

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NOC Structure

- ## Belnet network:

  - students / teachers / academics / researches / administrative personnel

  - Very specific demands / power users / demanding projects

- ## FedMAN network:

  - Civil servants

- ## BNIX:

  - ISP's / Content Providers / Public services / Banks / …

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Front End

- What types of users are using your network and services?

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NOC Front-End

- No real SLA, no penalties attached

- Present: SLD with best effort parameters

- Recent Past: Belnet in control of Core + Access, not the last mile nor the customer equipment

- Encouraging of connecting critical infrastructure in a redundant way

- Present & near future: Belnet in control of Core + Access + local loop + CPE device (phased approach)

- End-to-end SLA possible

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NOC Front-End

- Incidents: customer is updated via the tools of the respective NOC (NOC's ticketing system), customer can request updates by phone if needed.

- Changes: customer is updated via the Belnet tools (ticketing system integrated in the CRM)

- Major incidents: Automated voice message and Bulletin Board

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Inter-NOC Communication

- How does your NOC communicate internally and with other groups in your organization?

- How does your NOC communicate with NOCs outside your organization?

  (e.g. provider and/or customer NOCs)

- Which tools are used to facilitate inter-NOC communication?

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Inter-NOC Communication

- Automatic mails sent by their ticketing system when an update is foreseen

- Different e-mail aliases for different ticket queues

- Different escalation matrices for different services

- Instant messaging between 2nd line and 3rd line

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Inter-NOC Communication

- Automatic mails sent by their ticketing system when an update is foreseen

- All contact information about our customers and third parties is available to them on our systems

- NOC has the same view: only ONE base of information, no synching, no exports, no worries

- NOC communicates depending on the initial method of contacting. Can be altered if requested by the initiator

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Inter-NOC Communication

- To find the contact info of the concerned third-party NOC, our NOC has a view in the CRM

- Information is put in our NOC's ticketing system

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Documentation

- What information does your NOC document?

- Which tools are used to create and update documentation?

- Do you have any Best Practice Documents available to share?

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Documentation

- The NOC documents ticketing info, …

- … saves a backup of the config of the devices every night,

- … has escalation matrices per impacted service,

- … has workflow for the most common / generic problems

- … creates monthly performance reports for Service Level Meetings

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Documentation

- What information does your NOC document?

- Which tools are used to create and update documentation?

- Do you have any Best Practice Documents available to share?

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Documentation

- The NOC has a shared workspace environment

- Giving them the responsibility to maintain the documents proved quite cumbersome

- Quite frankly: it became a mess rather quickly

- Better solution (in our opinion): maintain most of the documentation yourself as you are better versed in the network than an outsourced NOC

- A single point of information is not a recommendation, it's a truth

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Documentation

- What information does your NOC document?

- Which tools are used to create and update documentation?

- Do you have any Best Practice Documents available to share?

Documentation

- Belnet doesn't have a library of custom Best Practices Documents

- Belnet is willing to share its workflows, because a lot of the TF-NOC community problems are also our problems

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Discussion