End-to-End Coordination Unit

Toby Rodwell,
Network Engineer, DANTE

TNLC, 28th September 06, Geneva

Connect. Communicate. Collaborate

E2E Coordination Unit

- Purpose
  - To communicate the state of international end-to-end circuits (transiting GN2) to all appropriate entities (transit domains, end-sites)

- Responsibilities
  - Monitor (indirectly) the state of all end-to-end circuits
  - Receive reports from all involved entities of changes to circuits (faults, planned maintenance)
  - Advise all entities of known changes to circuits (learned from direct reports and E2ECU monitoring)

GE✫NT2

DANTE

Assumptions

- An end-to-end circuit is considered to exist between the CPE ("Customer Premises Equipment") at one end site and the corresponding CPE at the other end-site.
  - For LCG this means between the CERN access router and the corresponding Tier 1 CPE (router)

- The transit NRENs deploy appropriate monitoring tools (e.g. those developed by perfSONAR)

Caveats/Notes

- The E2ECU will able to co-ordinate all trans-GÉANT2 circuits, but is currently organized with the LHC Optical Private Network (OPN) in mind

- The E2ECU is not contactable by end-users – only campus network admins

- The E2ECU is responsible for facilitating communications about end-to-end circuits – it is **not** responsible for the circuits themselves
  - Responsibility for the constituent circuits of an end-to-end circuit remains with the owners (NRENs, DANTE)

GEANT2

DANTE

E2E Coordination Unit Set Up

- Appoint organization to undertake E2ECU role
- Deploy Tools
  - Monitoring Tools
  - Trouble Ticket System
  - Database
- Develop Policies and Procedures
  - Fault Reporting and Service restoration
  - Hours of Coverage
  - Escalation Procedures
  - Periodic Reports

E2ECU Parent Organization

- Communication et Systemes [CS] located in Paris

- Currently providing services as GÉANT2 NOC

- Organized and supervised by DANTE

Monitoring Tools I

- Involved NRENs must deploy either 'E2E MP' or 'E2E MA' application so E2ECU can monitor circuit state

- Both work in a similar way ('MP' is a basic version of 'MA')

  – E2ECU monitoring software queries MP/MA for state of one or all circuits

  – MP/MA checks data repository (XML file for MP, database for MA)

- MP only reports current state - MA makes historical queries possible (in future)

GE☆NT2

DANTE

Monitoring Tools II

- The circuit information held by the MP/MA includes the following:

  – Operational status *Up, Down, Degraded, Unknown*

  – Admin status *Normal operations, Maintenance, Troubleshooting, UnderRepair, Unknown*

Note: the GN2 project does not mandate *how* to populate the XML file (in MP) or database (in MA)

- Further development needed to integrate the E2E Monitoring System with current applications used by C-S

GE☆NT2

DANTE

Trouble Ticket System

- Extension to existing system used by GEANT2 NOC

- Will be possible to send e-mails to specific community of users depending on the fault's impact

- Periodic updates

  - Updates to the E2ECU from the domains where the fault first occured => Then TT with latest updates forwarded to the remaining partners

Note: Unlike current ENOC, E2ECU will not extract information from other domain TTs (all communication via phone, direct e-mail or web interface)

Database

- Extension to existing GÉANT2 database
- Will contain information on
  - Links
  - Projects
  - Contact information of the network administrators
- Accessible by the E2ECU
- Developed by DANTE

Policies I

- Operational procedures are being drafted

- Fault Reports or Maintenances specifications
  - Via a web interface in the GEANT2 site
  - Via a dedicated phone number (TBE)
  - Via e-mail address (e2ecu@noc.geant2.net)

- Communication back to the entities involved
  - Via phone or e-mail in case of queries
  - E-mailed Trouble Tickets for relaying updated information

Policies II

- Coverage
  - From 8.00 – 22.00 (CET) Monday to Friday
  - From 9.00 – 18.00 (CET) Saturday to Sunday

- Escalation Procedures: From the entities involved in a project to the E2ECU (and vice versa)

- Monthly Reports to be provided describing the e2e links availability and tickets opened related to each specific project
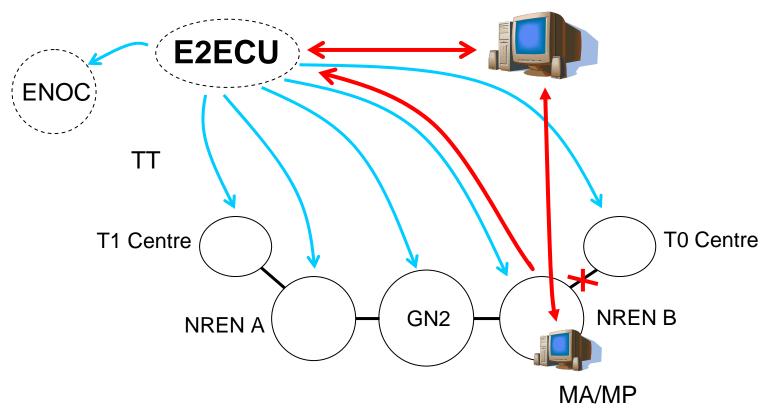
Fault Report and Restoration

E2E Monitoring System

E2ECU

ENOC

TT

T1 Centre

T0 Centre

NREN A

GN2

NREN B

MA/MP

GE🟊NT2

DANTE

Relation with ENOC

- E2ECU monitor LHC connectivity (circuits)
- ENOC manage the 'service' (ie. IP service)

- For E2ECU, ENOC is treated like all other NOCs which are part of the LHC OPN
  - ENOC will receive updated TTs
    - These will be forwarded to GGUS
  - ENOC can contact E2ECU (for queries etc)

Road Map

- Processes being developed

- Pilot E2ECU service planned for mid November
  - Focused on LHC support

- Full set up by January 2007
  - Temporary support for LHC to be provided by the ENOC

QUESTIONS?

Connect. Communicate. Collaborate

GE★NT2

DANTE