



# Overview of work in TERENA

**Valentino Cavalli**  
**TERENA**

<http://www.terena.nl>



# The organisation

- Association of European National Research and Education Networks, small secretariat in Amsterdam
  - 32 National members as of December 2002
  - 11 Associated members (including DANTE, EMBL, NORDUNet, equipment vendors, operators)
  - International members: ESA, CERN
  - Permanent observer: European Commission



# The mission

- Promote and participate in the development of a high-quality information and telecommunications infrastructure for the benefit of research and education. This translates in:
  - Fostering new initiatives
  - Technical programme
  - Knowledge transfer
  - Promoting members' interest



# Technical programme

- Task Forces
- Projects



# Special interest areas

- Lower Layers (IPv6, MPLS, VPNs etc.)
- Quality of Service (including DiffServ)
- Videoconferencing and Streaming (Including IP Telephony)
- Content Delivery, Indexing and Searching
- Middleware (security, AAA)
- Mobility
- Grid and Campus coordination



# Lower Layers

- **TF-NGN**
- **EC Projects:**
  - **6NET**
  - **6LINK**
  - **SCAMPI**
  - **SEEREN**



# TF-NGN (I)

- TF-NGN investigates the suitability of advanced networking technologies for future implementation in research networks in Europe. The work includes the piloting of new services on GÉANT.
- Chair: Roberto Sabatino, DANTE
- Large number of activity areas (among others):
  - intra/inter-domain Network Monitoring Infrastructure including the definition and organisation of a Performance Enhancement Response Team (PERT)
  - Optical networking
  - Multicast
  - IPv6 deployment



## TF-NGN (II)

- Optical Networking activities led by Victor Reijs, HEANet
- Looking for an international testbed, creation of the ASTON group and FP6 Expression of Interest:
  - Transport at 40+ Gbit/s
  - Work on Bandwidth on Demand
  - 10GE over long distance
- Regular updates on national developments and experience with optical equipment and dark fibre
- Provide significant contribution to SERENATE study on equipment for Next Generation Networking



# 6NET

- To build a native IPv6-based network with both static and mobile components in order to gain experience of IPv6 deployment and migration from existing IPv4-based networks. To test a variety of new IPv6 services and applications, as well as interoperability with legacy applications
- Very large FP5 project for a large-scale international IPv6 testbed. January 2002 – December 2004. Total estimated budget 17 million euro.
- Led by Cisco Systems, about 30 participants including NRENs

## TERENA's role:

- Leading the workpackage on dissemination and exploitation of results
- Maintaining the 6NET website (IPv6 enabled): <http://www.6net.org>
- Organising workshops (Joint 6NET-Euro6IX workshop, Limerick 5 June 2002, next one 21 May 2003 in Zagreb)



# 6LINK

- Small accompanying measure in FP5 to support the IPv6 cluster activities. March 2002 – February 2005. Total estimated budget 1 million euro.
- The project is led by BT Exact, other partners are Telscom, T-Nova, University of Southampton, Consulintel, University College London, Polytechnical University of Madrid, Motorola, DANTE, TERENA, Universidad Carlos III de Madrid

## TERENA's role:

- Contribution to IPv6 Cluster meeting, next one at Madrid Global IPv6 Summit, May 2003

<http://www.6link.org>



# SCAMPI (I)

- To develop and test a scalable monitoring platform for the Internet, to enable, accelerate and promote the development of novel measurement tools for improving network services and networking research in Europe and beyond (network measurement at 10+ Gb/s)
- April 2002 – September 2004. Total estimated budget 5.5 million euro.
- led by TERENA, other participants are: IMEC, FORTH, Leiden University, Netikos, UNINETT, CESNET, FORTHNET, 4PLUS, Siemens

## TERENA's role:

- Leading the workpackage on project management and dissemination
- Maintaining the SCAMPI website: <http://www.ist-scampi.org>
- Organising workshops and BoFs (1<sup>st</sup> Workshop was held in Amsterdam in January 2003, a BoF will be held on 21 March 2003 in Zagreb)



# SCAMPI (II)

- Development of a standard Monitoring API (MAPI).
  - define a set of monitoring calls/primitives that will be collectively called as MAPI.
- Monitoring applications using this MAPI will be able to run on top of any monitoring environment without needing to be rewritten.
- The MAPI will enable communication of specific monitoring requirements to the underlying network monitoring system.
- Scalability through special purpose hardware and parallelism.
- The SCAMPI system is composed of a regular PC coupled with a Hardware Monitor connected to the system's I/O (e.g. PCI) bus. Different instantiations will require different hardware monitors:
  - Low-end monitoring systems will probably use a regular network interface.
  - High-end systems may employ a special-purpose adaptor, that has the computing capacity to not only capture packets, but also to process them and perform some simple (but fast) monitoring functionalities.



# SEEREN

- Accompanying Measure to support South-Eastern European Research & Education Networking. December 2002 – June 2004. Total estimated budget about 1.3 million euro.
- GRNET (Co-ordinator), HUNGARNET, RoEduNet, DANTE, TERENA; other participants: NRENs of Bulgaria, Albania, Bosnia-Herzegovina, FYROM, Serbia-Montenegro

## TERENA`s role:

- Contribute to analyse technical & operational requirements
- Contribute to dissemination activities, brochures, workshops, liaisons

<http://www.seeren.org>



# Videoconferencing and streaming

- TF-NETCAST
- IP Telephony Cookbook

[H.323 Videoconferencing:](#)

[Service Coordinator Training, 18 May 2003 in Zagreb](#)



# TF-NETCAST

- Prepare the creation of a portal for live-streaming announcements and to investigate the possible extension of the portal to an academic channel for live-streams and video-on-demand.
  - Conduct a survey of the state of national efforts in producing and delivering streaming-media content in academia in European countries, and of the (users') needs for an international effort in this area;
  - Create an announcements portal, by developing metadata, portal software, policies etc. into a working prototype of an announcements portal;
  - Promote the production of high-quality content;
  - Study the feasibility of a project for setting up a live-streaming infrastructure;
  - Develop a common metadata model and to study the feasibility of setting up a video-on-demand portal;
  - Propose a model for an academic netcasting channel.



# IP Telephony Cookbook (I)

Main partners:

- University of Pisa, TZI University of Bremen, FhG Fokus

Project contributors:

- CESNET, Karl-Franzens-University Graz, GRNET, SURFnet

Project size:

- 11 months duration with a total of 11 person-months.
- 51,000 Eur funding from TERENA and TERENA member organisations.



# IP Telephony Cookbook (II)

- Overview of available technologies and trends for the near future
- Models/scenarios for deploying IP telephony and building a IP Telephony infrastructure
- Guidelines on:
  - IP Telephony protocols and basic services set up
  - how to set-up advanced services
  - how to connect an IP Telephony island to a wider “dialing plan”
- Experiences on interoperability of IP Telephony equipment
- Information about IP telephony projects in Europe
- Regulatory and legal aspects



# Middleware

- TF-CSIRT
- Projects and services
  - Trusted Introducer Service
  - TRANSITS project
- Projects on Directories
  - Adding certificates to OpenLDAP
  - Directory Schema Registry
- TF-AACE



# TF-CSIRT

- TF-CSIRT provides a platform for information exchange and collaboration between Computer Security Incident Response Teams from NRENs, industry and government. Very active Task Force with a large membership. Some 30 CSIRTs actively participate, meetings have some 50 attendees. Latest meeting held in Zagreb on 23-24 January 2003, next one in Warsaw 29-30 May 2003 .
- The task force has established a working group on best-current-practice in CSIRTs to assist in the establishment of new CSIRTs
- Clearinghouse for incident handling tools <http://chiht.dfn-cert.de>
- Liaise on insertion of an IRT object in the RIPE database.
- Provides input to IETF inch working group on standardisation of Incident Object Description and Exchange Format



# Trusted introducers

- TI provides a form of accreditation of CSIRTs, thereby assisting the development of a 'Web of Trust'. Currently 31 CSIRTs accredited ("level 2" teams) and 89 listed (known teams, "level 0").
- Started as a pilot project The Trusted Introducer became a permanent service starting from 1 September 2002, with TERENA providing clearinghouse function.
- A meeting of accredited CSIRTs was organised in Syros, Greece on 26 September 2002 .

<http://www.ti.terena.nl/>



# TRANSITS project

- FP5 project to provide TRaining of Network Security Incident Teams Staff. Runs for three years from 1 July 2002.
- Develops and maintain course materials to train staff members of new CSIRTs and new staff members of existing CSIRTs. EU funding covers logistics costs, expenses of teachers and includes small budget to support participants from “poor” countries.

Project participants are TERENA and UKERNA

Next scheduled Training Course:

- Warsaw, Poland from 27-28 May 2003



# Projects on Directories

- Several projects were launched in the context of TF-LSD, the task force investigating the usability of LDAPv3 as a base for a wide range of Internet services. TF-LSD ended in December 2003, results are available on the TERENA web site.

## Project “Adding Certificate Retrieval to OpenLDAP”

- Carried out by the University of Salford, from September 2001 and approaching now final deliverables and results

## Project “Directory Schema Registry”

- Carried out by DAASI International on 1 August 2002, runs until summer 2003



# Open LDAP project

- Recommendations of IETF PKIX working group on to overcome limitations of LDAPv3 when using PKI
- OpenLDAP implementation:
  - Retrieve attribute values
  - Certificate matching rules
- LDAP client/s to demonstrate functionality and usability
- Design of an LDAP X.509 Parsing Server (XPS).



# Directory Schema project

- A directory Schema is the data model defining object classes, attribute types, syntax and matching rules.
- Setting up a LDAP Schema registry:
  - Search/web browsing interface
  - MIME-types based interface for submission of new schemas
  - Business model for service sustainability



# TF-AACE

- Coordinates the deployment of Authentication, Authorisation and other security services among European NRENs and liaise with Internet2 Middleware initiative and Global Grid Forum.
- Last meeting in Stockholm in November 2002, preceded by a TF-AACE workshop and followed by the Nordic GNOMIS workshop.
- Next meeting 18 May 2003 in Zagreb.

## Work items include:

- Defining interoperability requirements for European academic PKIs, including guidelines for PKI deployment at NRENs, **online questionnaire**
- Defining common requirements for inter-institutional authentication and authorisation, providing a framework for harmonising NREN initiatives
- Investigate existing initiatives on common identity on the Internet (e.g. Microsoft Passport, Liberty Alliance, etc.)



# Mobility

- TF-Mobility



# TF-Mobility

- Define and test an inter-NREN roaming architecture, evaluate mobile equipment and software as well as next generation mobile technology for handovers and roaming.
- Next meeting 18 May 2003 in Zagreb.

## Work items include:

- Glossary of terms
- Study available AuthN & AuthZ techniques
  - Web-based, RADIUS+802.1x, VPNs
- Study support of next generation equipment for MobileIP (v4 and v6)
- Set up a testbed for inter-NREN AuthN & AuthZ
- Liaise with TF-AACE and TF-NGN



# GRID

- TERENA disseminates information to bridge the GRID and the European research networking community
- Sessions on GRID at TNC2002 and TNC2003
- TERENA staff closely following developments, e.g. in Global Grid Forum and events (iGRID 2002), exchanging information and knowledge
- Proposing to participate in FP6 GRID initiatives as a information dissemination partner



# Support membership Policies

- SERENATE: **Study into European Research and Education Networking as Targeted by eEurope**

1 May 2002 - 30 September 2003



# SERENATE

- Study the evolution of research & education networking in Europe over the next 5-10 years. Technical, organisational and financial aspects, the market conditions and the regulatory environment.
- Comprises 14 areas of work, including workshops, studies and report writing.
- Reports available:
  - initial workshop results
  - experience of various communities that have experimented with "alternative" models of infrastructures
  - workshop on operators' views on infrastructure and likely evolution
  - present status of international connectivity in Europe and to other continents
  - expected development of the regulatory situation in European countries relevant for the SERENATE project

<http://www.serenate.org>



# Knowledge transfer

- COM-REN: the NREN Compendium
- GNRT: Guide to Network Resource Tools
- TERENA Networking Conference



# NREN Compendium

- Collecting information about national research and education networks in Europe.
  - Administrative data and legal form
  - Number of users and market share
  - Internal and external connectivity and capacity
  - Network traffic, load and congestion indicators
  - Services, staffing and funding
- 2002 edition available on the web:  
<http://www.terena.nl/compendium/>
- Preliminary version of 2003 edition to appear in May/June 2003



# GNRT

- 3<sup>rd</sup> Edition available on the web:  
<http://www.terena.nl/gnrt>
- 4<sup>th</sup> Edition being prepared now, including sections on:
  - Searching for information
  - Web Technology
  - Web publishing
  - Protecting users and information
  - Collaboration and sharing information
  - VoIP
  - Network tools for user

