

20 Years of ACOnet Infrastructure

The Austrian National Research and Education Network (NREN)

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www.ACO.net

NREN++

- ACOnet is the Austrian NREN, connecting & serving
 - Universities & Academies
 - Colleges & Research Institutes
 - Austrian School Network (EDUnet), student dormitories (VCampus)
 - Museums, educational and cultural institutions

 - Hospitals
 - Ministries, Federal Agencies
 - Federal Chancellery, Presidential Offices
 - Provincial Government and Administration
 - ...

- Legal Entity & Management: University of Vienna

- Operation: UniVie + other participating institutions

In memoriam



Walter Kunft, 1946 - 2004

ACOnet Backbone History (very briefly)

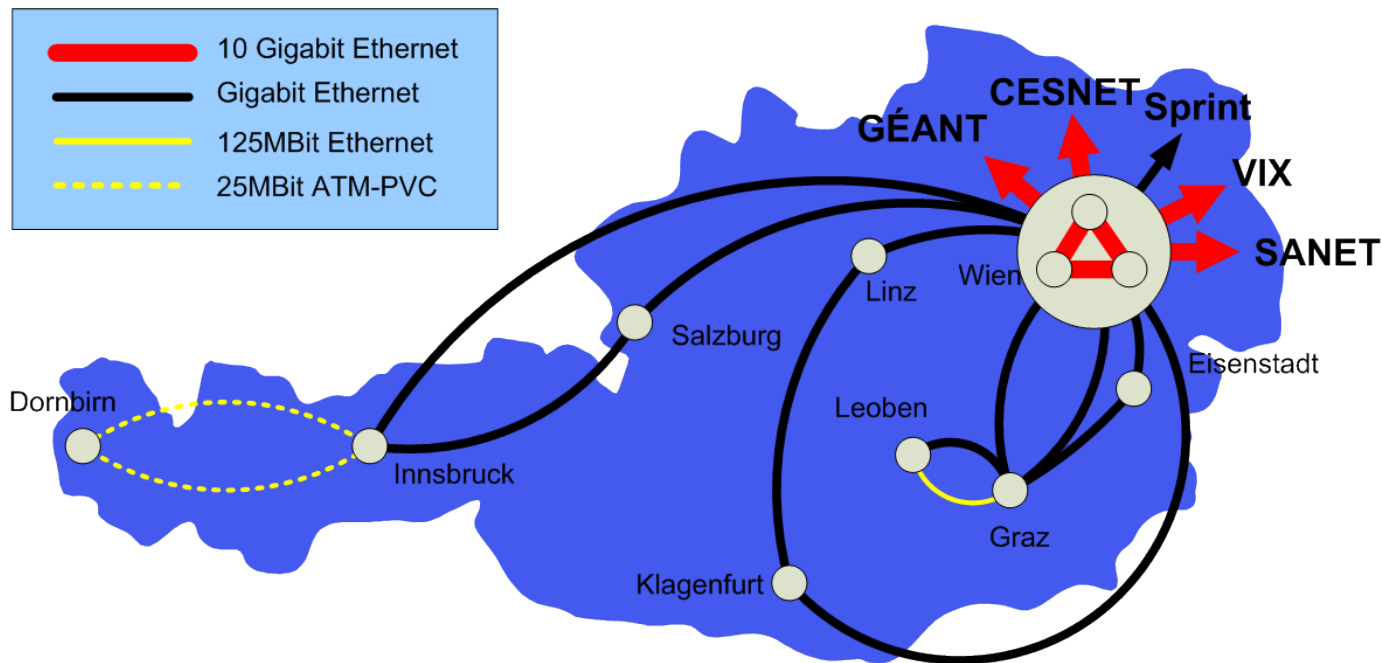
- Before 1990:
 - BIBOS, EARN, UNA/HEPNET, ...
- 1990: common ACOnet infrastructure established
 - ring-shaped backbone
 - private X.25 network (Dynatech switches)
 - PTA leased lines (9.6 – 64kbps)
- also 1990: 64kbps EASINET connection between University of Vienna and CERN migrated to TCP/IP
-> first permanent “Internet” connection to NSFnet from Austria

ACOnet Backbone History (continued)

- 1992:
 - ACOnet backbone line protocol migrated from X.25 to TCP/IP using Cisco AGS routers
 - ACOnet team & operational responsibility moved from TUWien -> UniVie
- 1994-1997:
 - MAN/SMDS ring, 2Mbps service by PTA
 - Cisco 7000/7500 Routers
- 1996-2003: ATM (155Mbps) service by PTA

ACOnet Backbone History (continued)

- 2001-2007/2008:
 - GigabitEthernet service by Telekom Austria
 - Cisco Catalyst6500 (Layer2 & Layer3 services)



Requirements 2007++

- Improved national Infrastructure
 - higher bandwidth & better redundancy for main cities
 - support for Special/Closed User Groups
- Internationally coordinated evolution of backbone
- Cooperation with NRENs, TERENA and Dante/GÉANT
 - fibre-optic backbone
 - LightPath Services
 - possible Cross Border Fibre scenarios

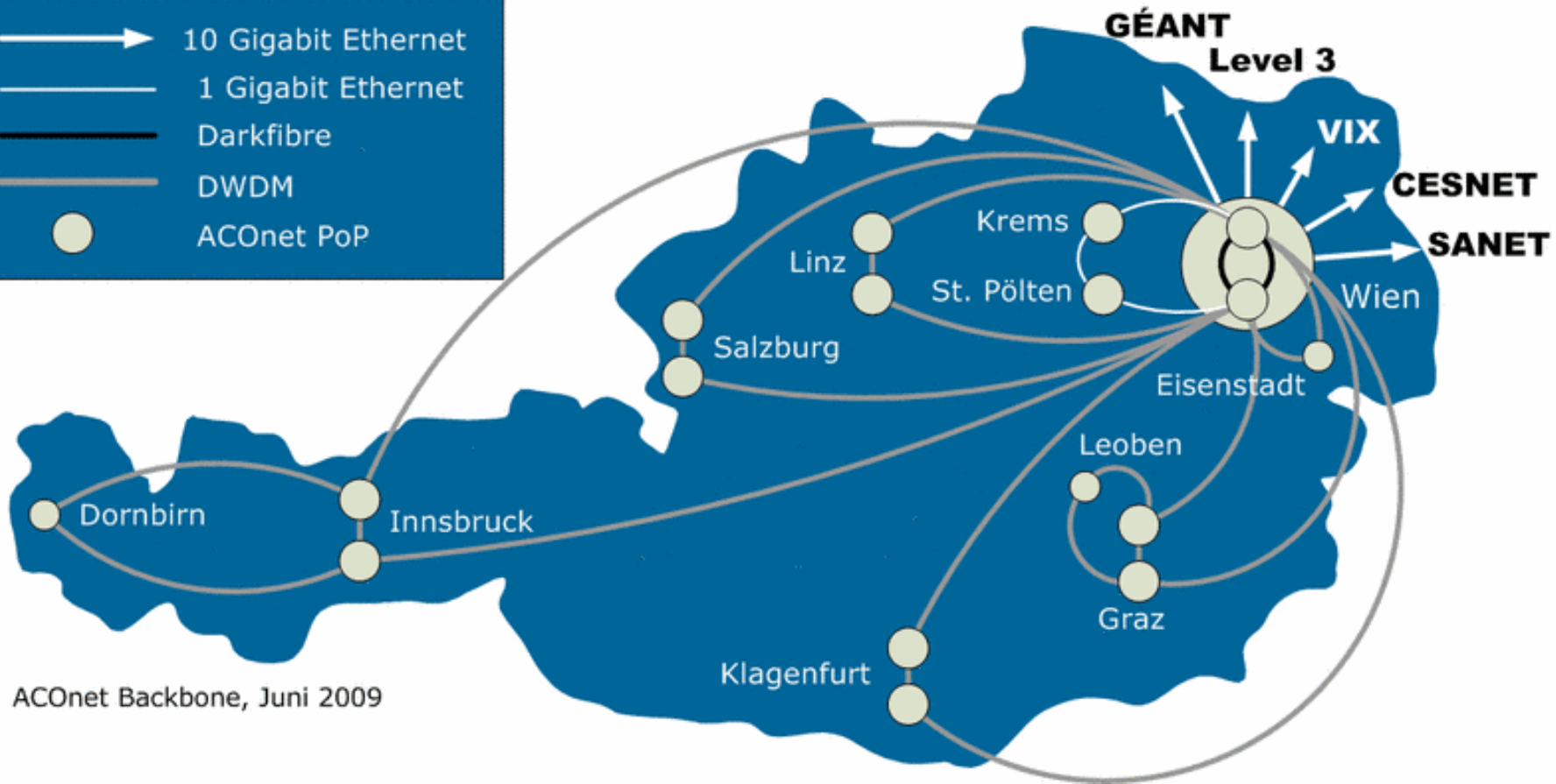
Call for Proposals - „ACOnet 2007“

- Two-stage Public Procurement Procedure by European Public Tender, aimed at „wavelength-transparent fibre-infrastructure“ (amplified and managed, **not** dark-fibre)
- Winning proposal by Telekom Austria (signed 07/2007)
 - Framework contract (10-15years) with IRU fallback
- wavelength-transparent fibre-pairs (10Gig-Lambdas)
 - including optical amplifiers
 - and active e2e monitoring
 - alien wavelengths within specs allowed
- 100Gig-Lambda support will be made available „asar“ (= as soon as reasonable and required)



New ACOnet Topology from June 2009

-  10 Gigabit Ethernet
-  1 Gigabit Ethernet
-  Darkfibre
-  DWDM
-  ACOnet PoP



ACOnet Backbone, Juni 2009

Increasing Service Focus

apart from “premium” global IPv4 & IPv6 connectivity:

■ Comprehensive Serviceportfolio (“all-inclusive”)

- ac.at Domainregistry
- ACOnet-LIR (IP registry) (since 1993)
- ACOnet-CERT (“Security-NOC”) (since 2003)
- *eduroam* (WLAN Roaming) (since 2005)
- PERT (“Performance-NOC”) (informally since 2005)
- TERENA Certificate Service (since 2006)
- ACOnet-AAI Pilot Service (since 2008)
- Meetings, Trainings, Workshops
- ...

What's next?

- Now we have:
 - a high-capacity fibre-optic **backbone**
 - some very useful **middleware** services:
 - *eduroam* (secure 802.1X WLAN roaming)
 - TCS (TLS/SSL + Personal Certificates)
 - AAI federation technology (SAMLv2/Shibboleth)
 - a very cooperative and **trusted community**

- Is there a need for:
 - Community **Cloud Services**?
 - e.g. Web&Video Collaboration Tools
 - Bandwidth/Circuit-on-demand Services?

What's next?

- What are other NREN's doing?
- What are researchers, teachers and students (*“digital natives”*) expecting from NREN's in the 21st century?
- Are we just all “going Google”?
- Looking forward to hear and discuss today:
 - comments, views, visions and demands

Contact

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Links

- <http://www.ACO.net>
- <http://www.VIX.at>
- <http://www.GEANT.net>
- <http://www.TERENA.org>
- <http://www.eduroam.org>
- <http://Shibboleth.Internet2.edu>
- <http://www.GLIF.is>