

The European Face of Videoconferencing and other developments

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Internet2 Commons

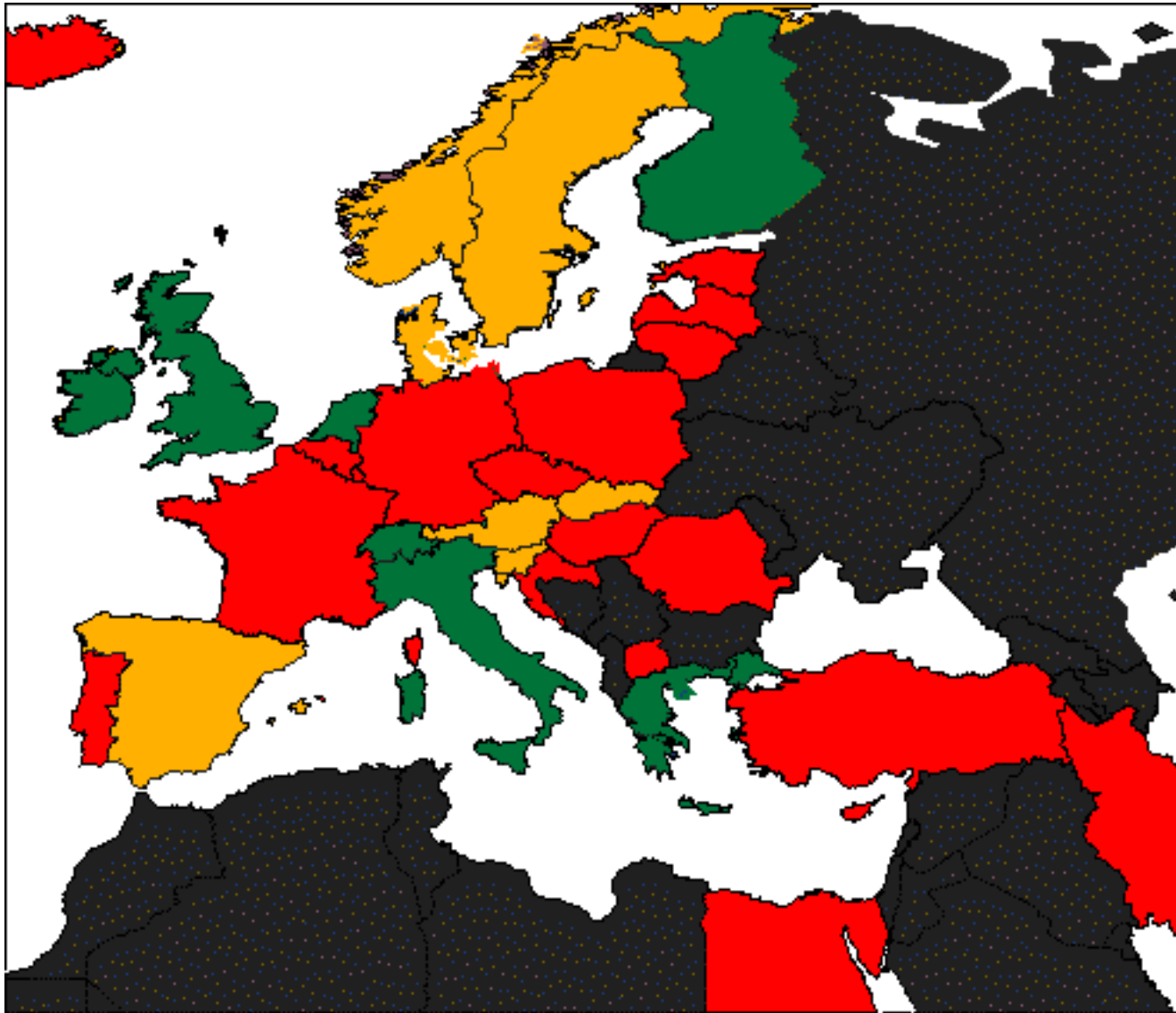
International coordination

- Why
 - Collaboration does not know boundaries
 - Present and upcoming (inter)national videoconferencing (and streaming) services
 - Interoperability & Connectivity
 - Shared interest/issues
 - Numbering schemes
 - *Identical dialing (whoever/wherever you are)*
 - Middleware issues
- How
 - Task-forces, R & D programmes, training material
 - Shared member- & leadership
 - Interconnection of vc core components (gk, gw,...)

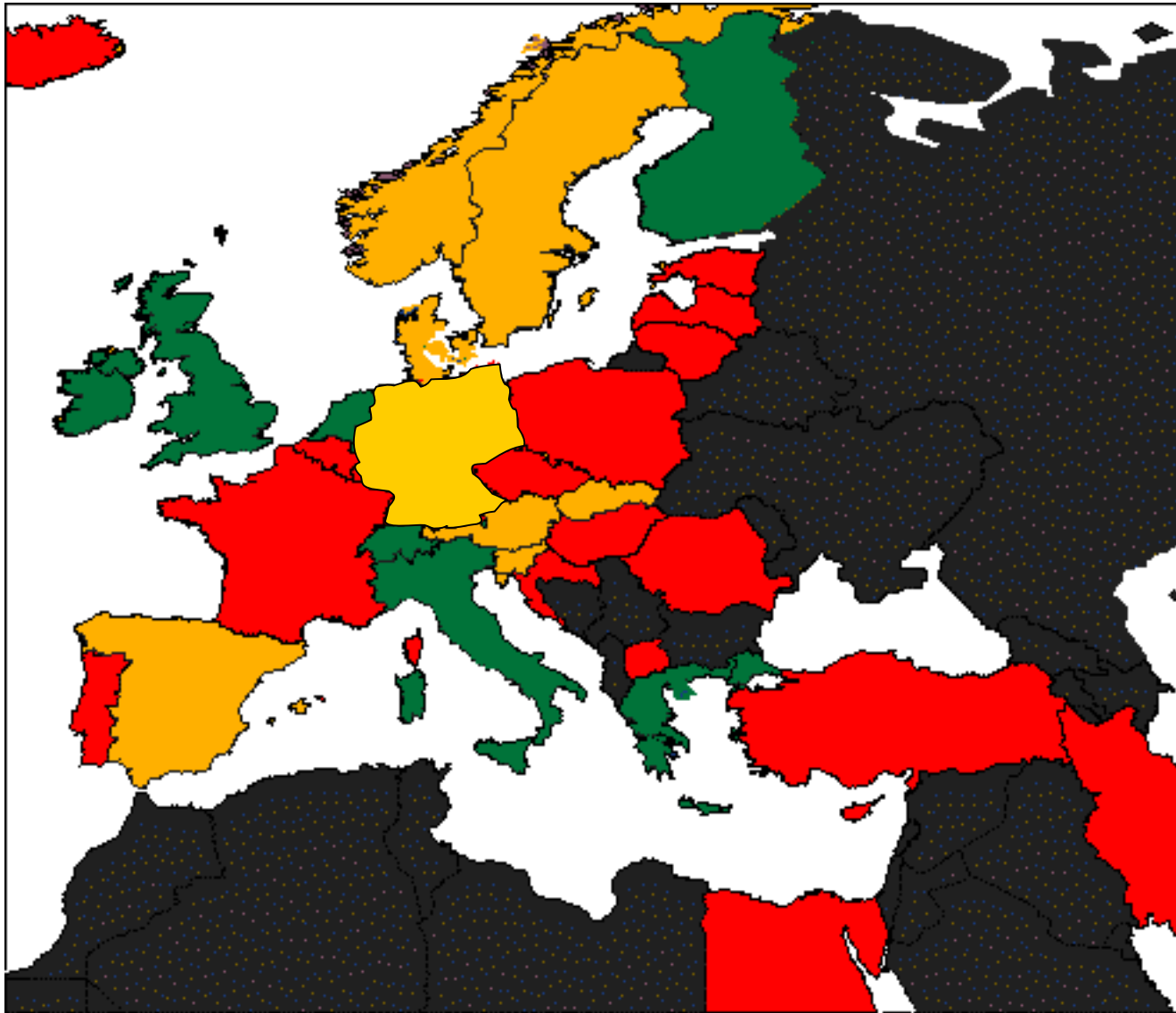
VC services in Europa

- At least some form of H.323 VC services:
 - Gatekeeper and/or
 - Help in setup and perform VC
 - Loaner program
 - Not counting mbone/Agnode use

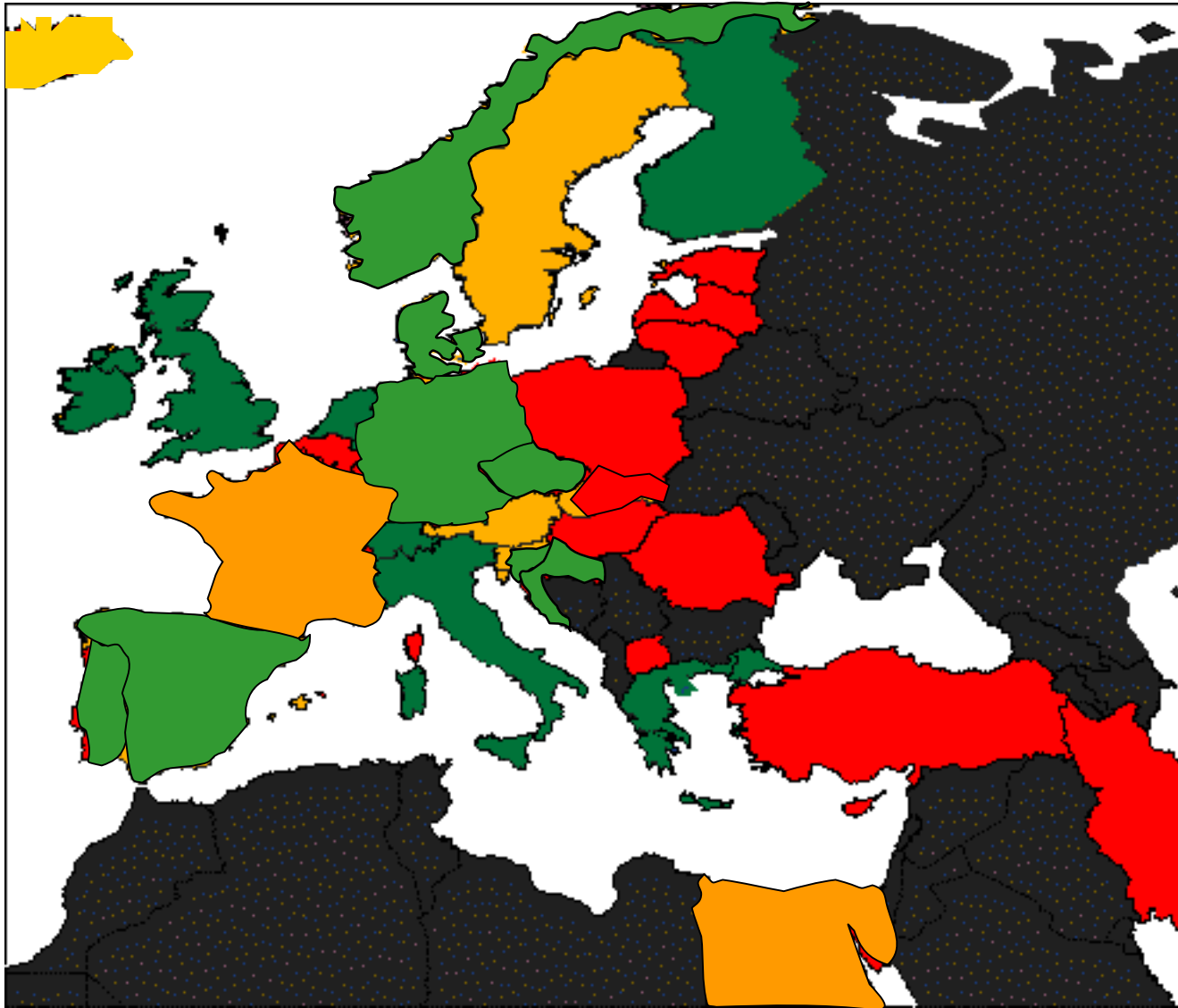
2001



2002



2003



May 2003

Higher ed. VC services

- European research networks

- **operational**: DFN (Germany), UKERNA (UK), SWITCH (Switzerland), HEAnet (Ireland), SURFnet (Netherlands), Funet (Finland), Uninett (Norway), RedIris (Spain), CARnet (Croatia), GARR/Cineca (Italy), GRnet (Greece), UNI-C (Denmark), FCCN (Portugal), CESnet (Czech Rep.), Arnes (Slovenia)

- North America

- ViDeNet, Internet2 Commons, Oarnet, Onenet, ...
- CANARIE (Canada)
- CUDI (Mexico)

- Asian-Pacific research networks

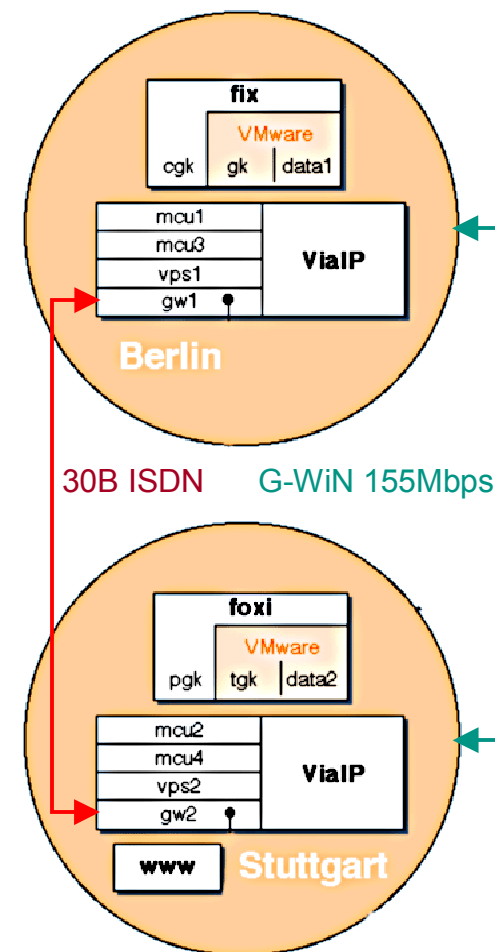
- AARNet (Australia)
- Plans for all APAN exchange points (Japan, China, Malaysia, Thailand,...)

- South America/Africa

- Known sites (Egypt, South Africa; Brasil, Chile)

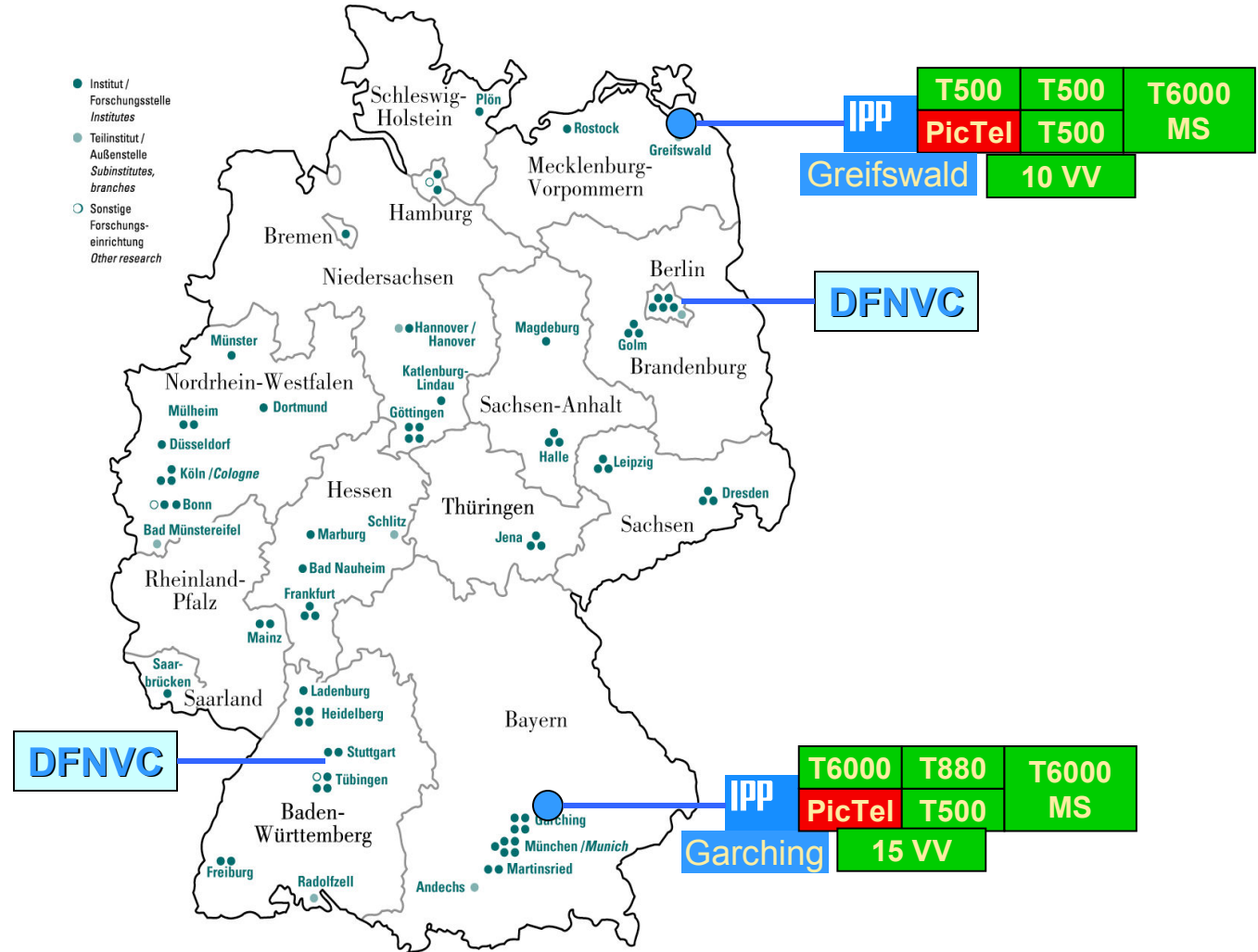
Example: DFNVC

DNS-Name	Verwendung	Zone	IP	Software	Hardware	Standort
Gatekeeper						
gk.vc.dfn.de	DFN Zone	0049100	194.95.240.4	Win2000, ECS 2.0	Intel-PC, VMware	Berlin
tgk.vc.dfn.de	Tests	0049101	194.95.240.219	Win2000, ECS 2.0	Intel-PC, VMware	Stuttgart
cgk.vc.dfn.de	Country	0049	194.95.240.3	GnuGK 2.0.2	Intel-PC, Linux	Berlin
pgk.vc.dfn.de	Public	0049102	194.95.240.220	GnuGK 2.0.2	Intel-PC, Linux	Stuttgart
MCU						
mcu1.vc.dfn.de	Adhoc	0049100	194.95.240.130	2.2	Radvision MCU-100	Berlin
mcu2.vc.dfn.de	Adhoc	0049100	194.95.240.194	2.2	Radvision MCU-100	Stuttgart
mcu3.vc.dfn.de	Tests	0049101	194.95.240.131	2.2	Radvision MCU-100	Berlin
mcu4.vc.dfn.de	Public	0049102	194.95.240.195	2.2	Radvision MCU-100	Stuttgart
Video Processing Server						
vps1.vc.dfn.de	mcu1	-	194.95.240.133	VPS 2.2.9	Radvision as-NT10	Berlin
vps2.vc.dfn.de	mcu2	-	194.95.240.137	VPS 2.2.9	Radvision as-NT10	Stuttgart
ISDN-Gateway (H.320)						
gw1.vc.dfn.de	ISDN-Rufe	0049100	194.95.240.132	1.0	Radvision gw-P20	Berlin
gw2.vc.dfn.de	ISDN-Rufe	0049100	194.95.240.196	1.0	Radvision gw-P20	Stuttgart
Application Sharing (T.120)						
data1.vc.dfn.de	mcu1, mcu3	-	194.95.240.133	Win2000, DCS 2.0	Intel-PC, VMware	Berlin
data2.vc.dfn.de	mcu2, mcu4	-	194.95.240.197	Win2000, DCS 2.0	Intel-PC, VMware	Stuttgart
WWW (Portal)						
www.vc.dfn.de	WWW	-	194.95.240.205	Linux, Apache	Intel-PC	Stuttgart



Q2: MCU-60, MVP, 3.0 for MPG

User group: MPI-IPP



MPI-IPP statistics

Desktops

~25 ViaVideo (H.323) - positive

> 10 connections / client / week
tight VNC in regular use - positive

Seminar rooms

3 Tandberg 500 in Greifswald - positive

2 Tandberg 500 /880 in Garching - positive

~10% H.320 > 10 point-to-point / room / week - positive

~ 2 multipoint (3-5) / room / week - positive

tight VNC in regular use - positive

Lecture Halls

~10% H.320 2 Tandberg 6000 (MS) (H. 323)

~ 5 point-to-point / week, 90 min - positive

~ 1-2 multipoint / month, 90 min - positive

NetMeeting in regular use - positive

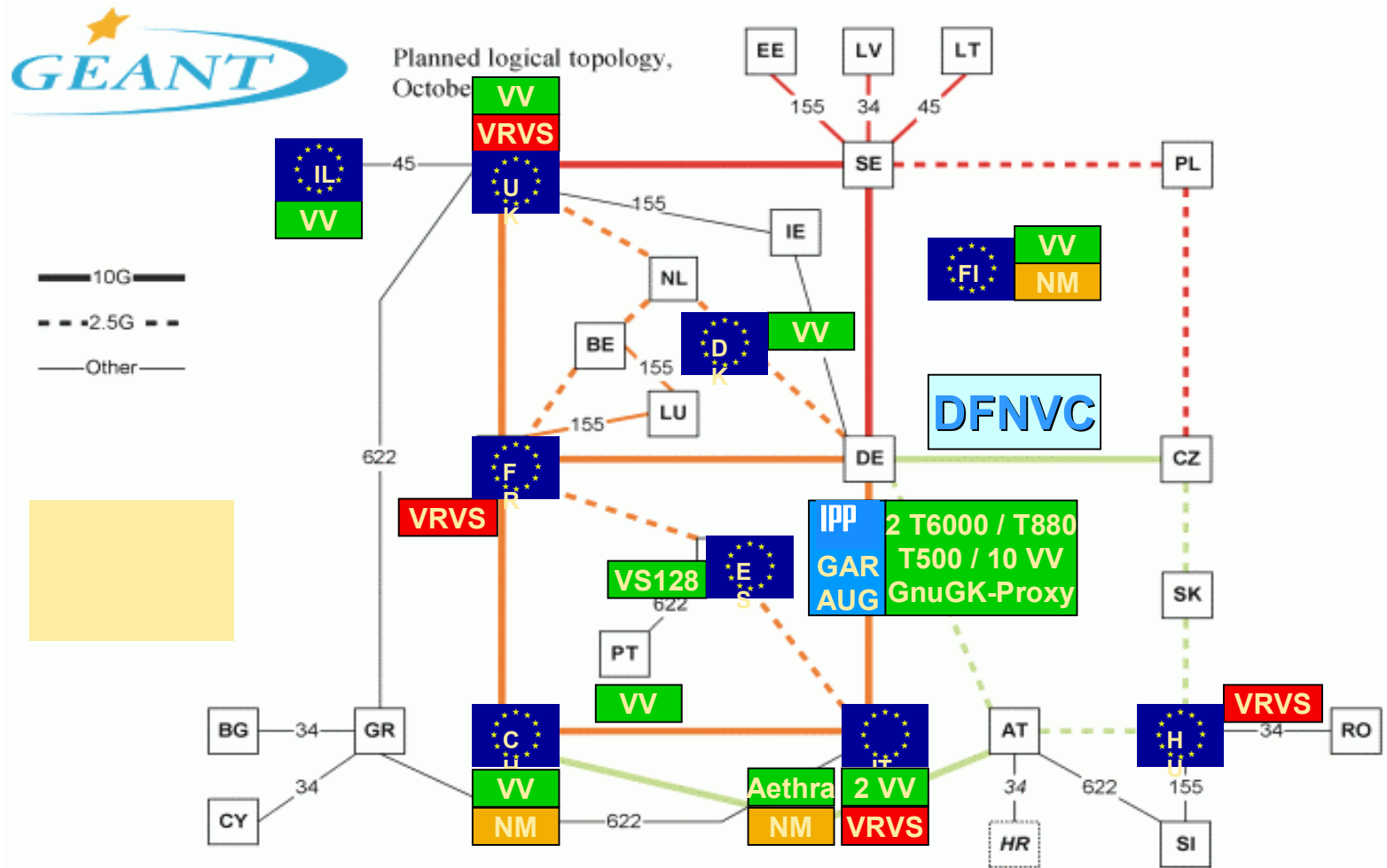
Failures

Lecture Halls: 1 IP, 1 ISDN interrupt
in 182 conferences in 2002 - positive

Compatibility?

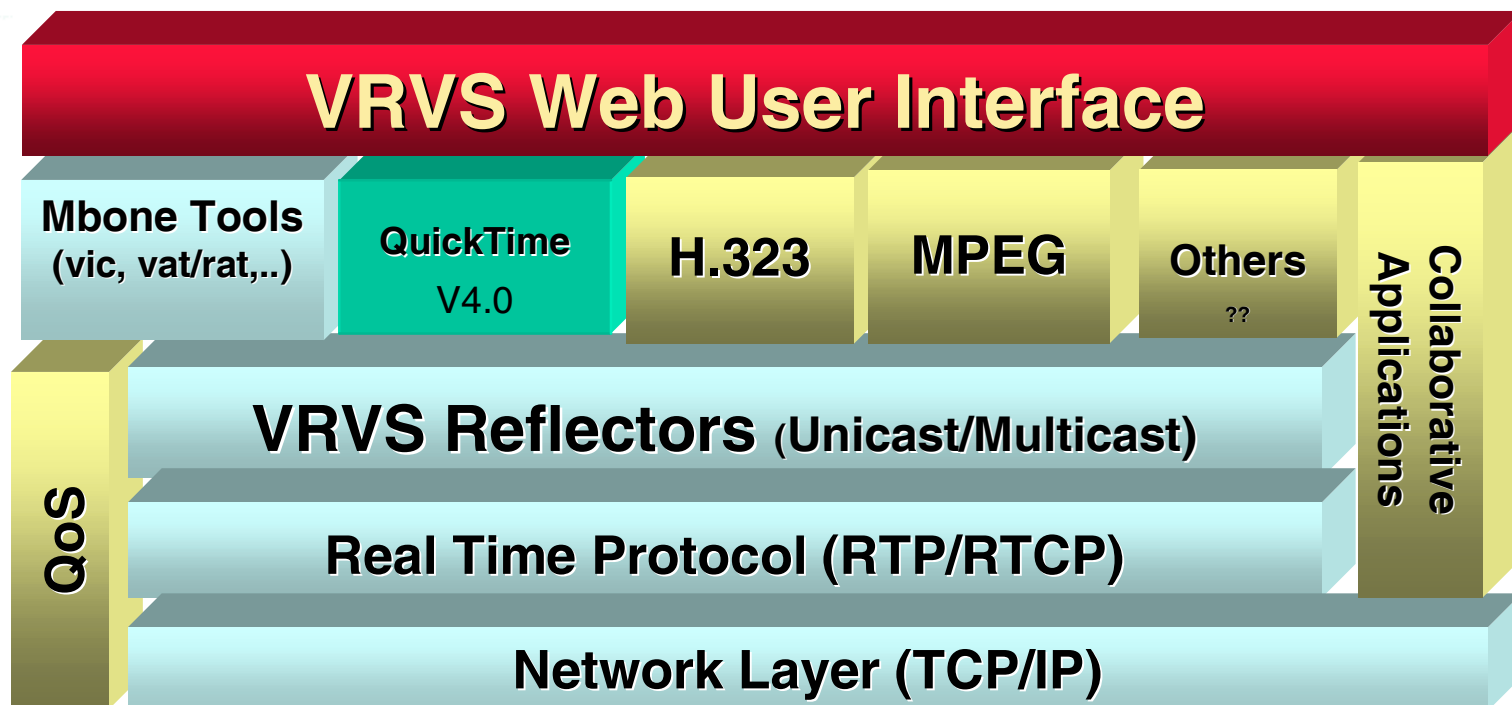
VRVS, AG, SW clients, old H.320 clients

Example user group: EFDA



Alternatives: VRVS

- VRVS
 - From the Physics community
 - Tens of reflectors, thousands of users, thousands of hours used
 - Scheduling





NetMeeting - 1 Connection

Call View Tools Help

Call View Tools Help

74 MARS_Virtual_Room

	David Collados (VRVS Team) doollado@137.138.30.34h261 8.3 f/s 249 kb/s (1.0%)
<input type="checkbox"/> mute <input checked="" type="checkbox"/> color info...	
	Philippe Galvez newman@192.74.212.109h261 7.3 f/s 104 kb/s (0%)
<input type="checkbox"/> mute <input checked="" type="checkbox"/> color info...	
	vader Channel 131.215.112.21h261 5.0 f/s 13 kb/s (0%)
<input type="checkbox"/> mute <input checked="" type="checkbox"/> color info...	
	Julian Bunn (Caltech) gjod@131.215.127.143h 0.8 f/s 28 kb/s (0%)
<input type="checkbox"/> mute <input checked="" type="checkbox"/> color info...	
	C. Isnard (CERN) isnard@137.138.30.37h261 6.3 f/s 106 kb/s (0%)
<input type="checkbox"/> mute <input checked="" type="checkbox"/> color info...	

VIC v2.8ucl3 Menu Help Quit

H.323 Setup - Netscape

H.323 CLIENT SETUP

H.323 Client:

Bandwidth: KB

VIDEO MODE SELECTION

Participants:

Display Mode:

Virtual Room Videoconferencing System (VRVS) - Netscape

File Edit View Go Communicator Help

Go to: <http://www.vrvs.org>

09:23:32
LOS ANGELES
UNTIL 20:30

VRVS MARS
"Staff meeting"

 Cern Daniel Flueck	 Fermilab Christian Isnard	 Caltech Gregory Denis	 Internet2 Christian Isnard
 Esnet Section IT IA CM	 Cern David Collados	 MBONE SHARED Gregory Denis	

DOC
Download
News
Schedule
JOIN
Call Someone
Your Profile
Admin

refresh

MBONE CHAT QTIME SHARING IL323

Attached documents:

VRVS UserInterface

The screenshot displays the VRVS User Interface within a Netscape browser window. The main content area shows a "Welcome to the MARS Virtual Room" page for the "Monarc Architecture Working Group". It features a grid of participant icons with names and affiliations, such as Lbnl (Harvey Newman), Femilab (Joel Butler, Irwin Gaines), Infn (Stefano Zani, Emanuele Leonardi, Mauro Campanella), Rutherford (Ian McArthur), and Cem (Gregory DENIS). A "CMS Conf. Room" icon is also present.

Overlaid on the browser are several video windows showing participants in a virtual meeting room. A participant list on the right side of the interface shows names like Gregory Denis, Mauro Campanella, Ian McArthur, Luciano Barone, and Pippo, along with their current video frame rates and mute status. A chat system window at the bottom displays a welcome message and a list of participants.

The interface includes various controls such as "Size...", "Modes...", and "Dismiss" for each video window, and "mute" and "Get Audio" buttons for the participant list. The browser's address bar shows the URL: `cern.ch/cgi-bin/calendar/Month_Calendar.pl?6/1998?264.299`.

Alternatives: AccessGrid



AccessGrid Node NERSC Berkeley

~100 nodes worldwide
Commercial Solutions
~40 K€
1-2 Technicians / node

What Is ViDeNet ?

- A test-bed for exploring issues associated with the creation of the global integrated video/voice over IP environment
- An interconnected network of h.323 zones
- A community of users sharing information

video to every (edu) person on Earth ...

ViDeNet Zones

- International
- Universities
- Educational institutes
- Research institutes
- Research and Educational Networks
- Companies
- Public Zone

100+ Zones !
10000+ endpoints
And counting

Global Dialing Scheme

- Principles
 - International, but Freedom of choice for local situation
 - E.164/tel.no. integration
 - Implemented by present gatekeeper technology
 - Compatible with existing network (ViDeNet)
 - Governed by ViDe's Numerical Address Space Management (NASM) working group
- Proposal
 - by SURFnet, UKERNA, HEAnet, UNC
 - Implemented by ViDeNet, Internet2 and NREN services and testbeds

Global dialling scheme/system

- Numeric

[<EZ>]<world gk><cc.> <org. ><clientno>[<suf>]

00 ITU cc uniqueID local no.

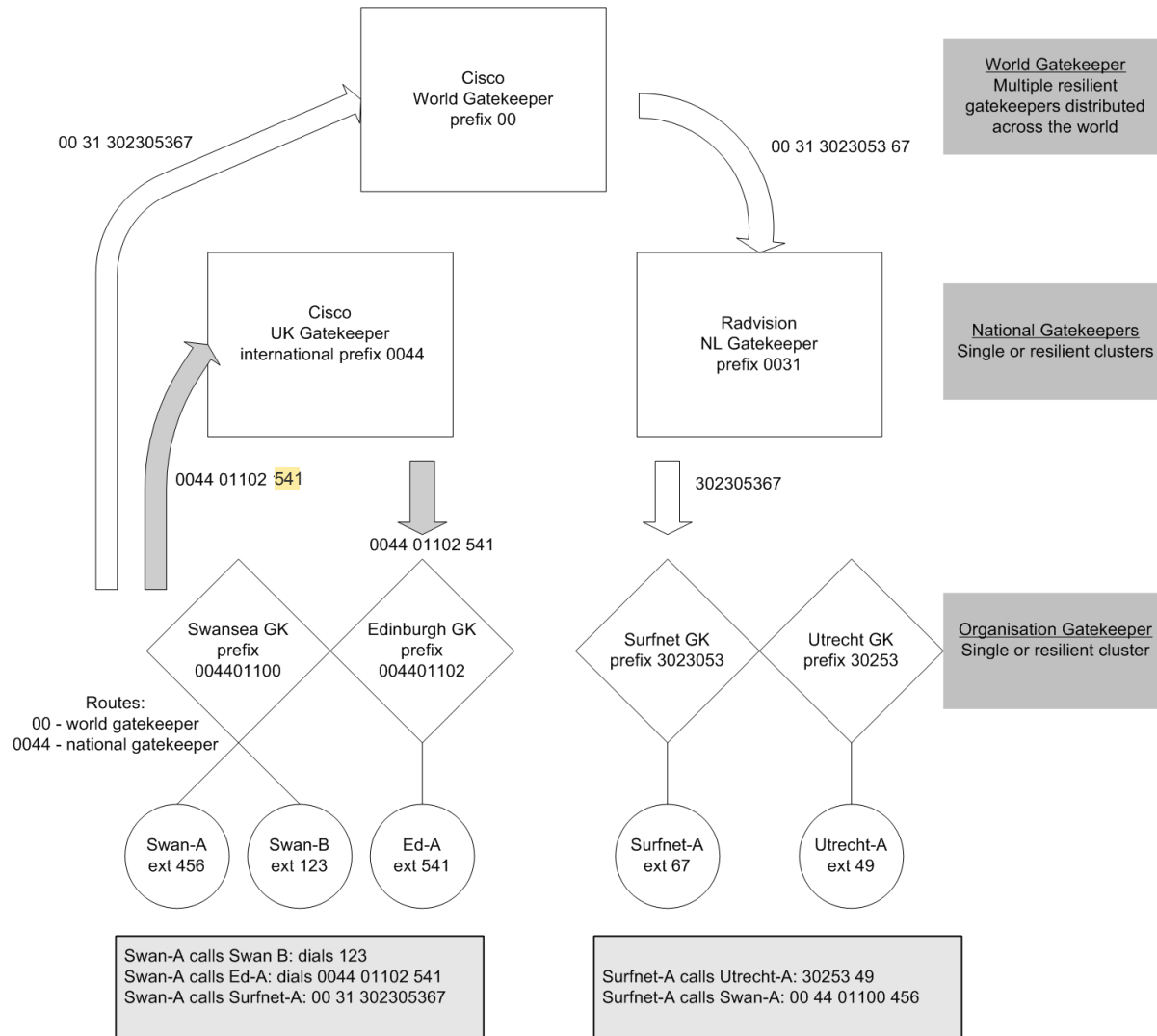
00 31 302305 367

- Alphanumeric

<userID>@<fully qualified domain name>

egon.verharen@surfnet.nl

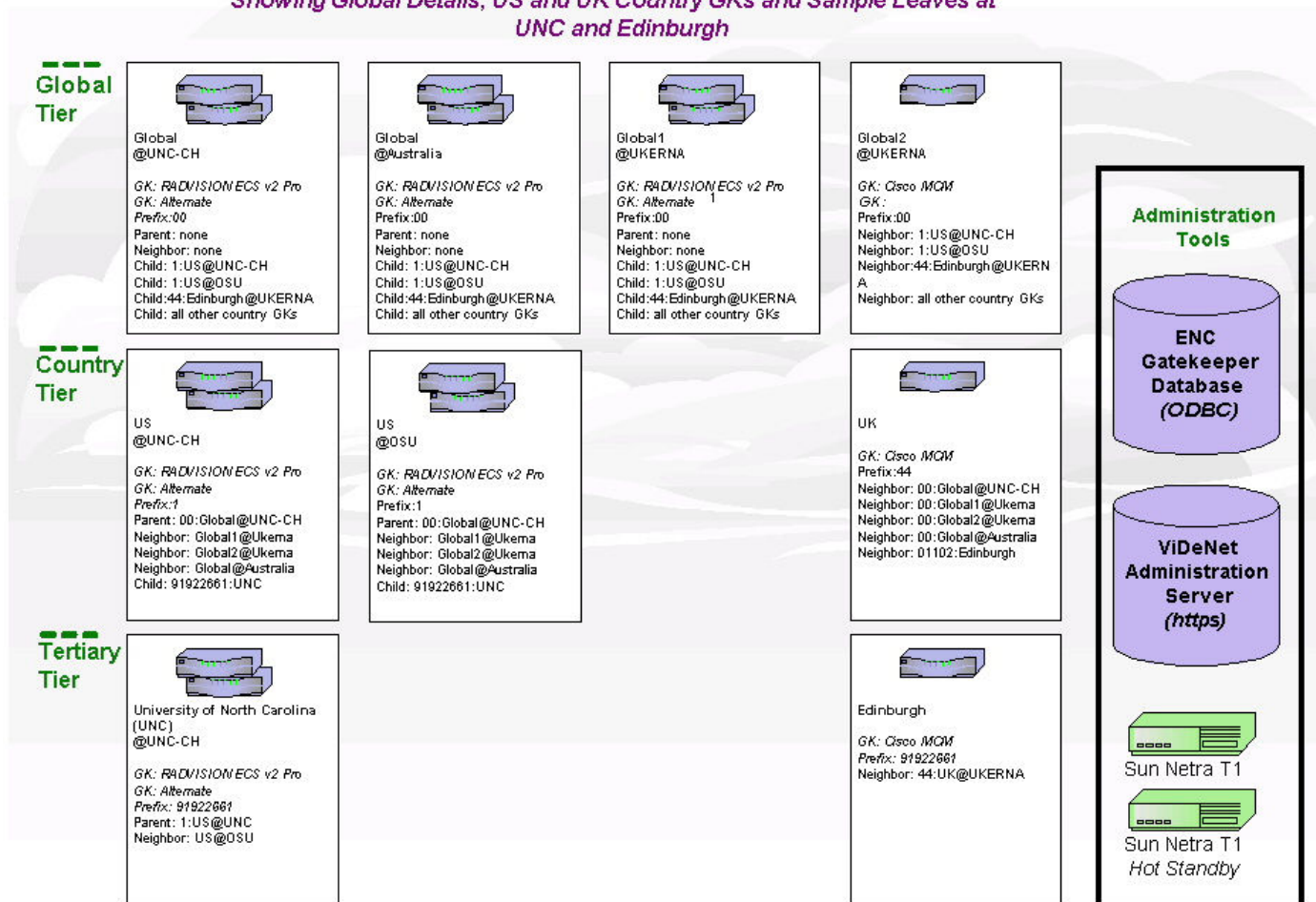
GDS in action



ViDeNet gatekeeper hierarchy

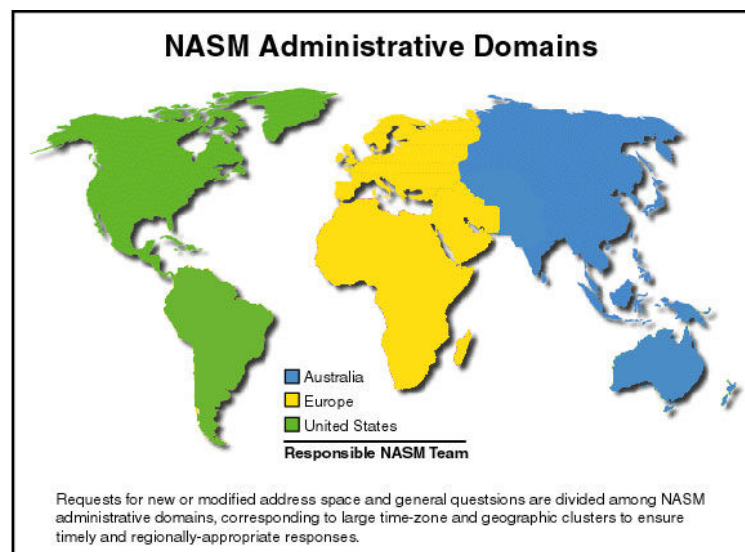
ViDeNet Gatekeeper Hierarchy Management

Showing Global Details, US and UK Country GKs and Sample Leaves at UNC and Edinburgh



Numerical Address Space Management (NASM)

- Core Dial Plan Management for ViDeNet
- Manage Root Gatekeeper Hierarchy
- ViDeNet admissions
- Root ViDeNet tool administration



Tools

- New (white pages) directory
- web-based management tools
 - for zone administrators to manage their users and zone
 - for users to manage directory information and endpoints



Internet2 Video

- The Internet2 Commons
 - Operational Service for IP Video to Internet2 Schools and Communities
 - Bridges H.323, SIP, VRVS, Voice, Data, streaming video, ...
 - Training
 - Megaconference (now no.5)
 - Cost recovery model
- Voice Over IP Working Group
 - SIP / h.323 deployment issues
- Video Middleware (VidMid)
 - *What the heck is video middleware ???*

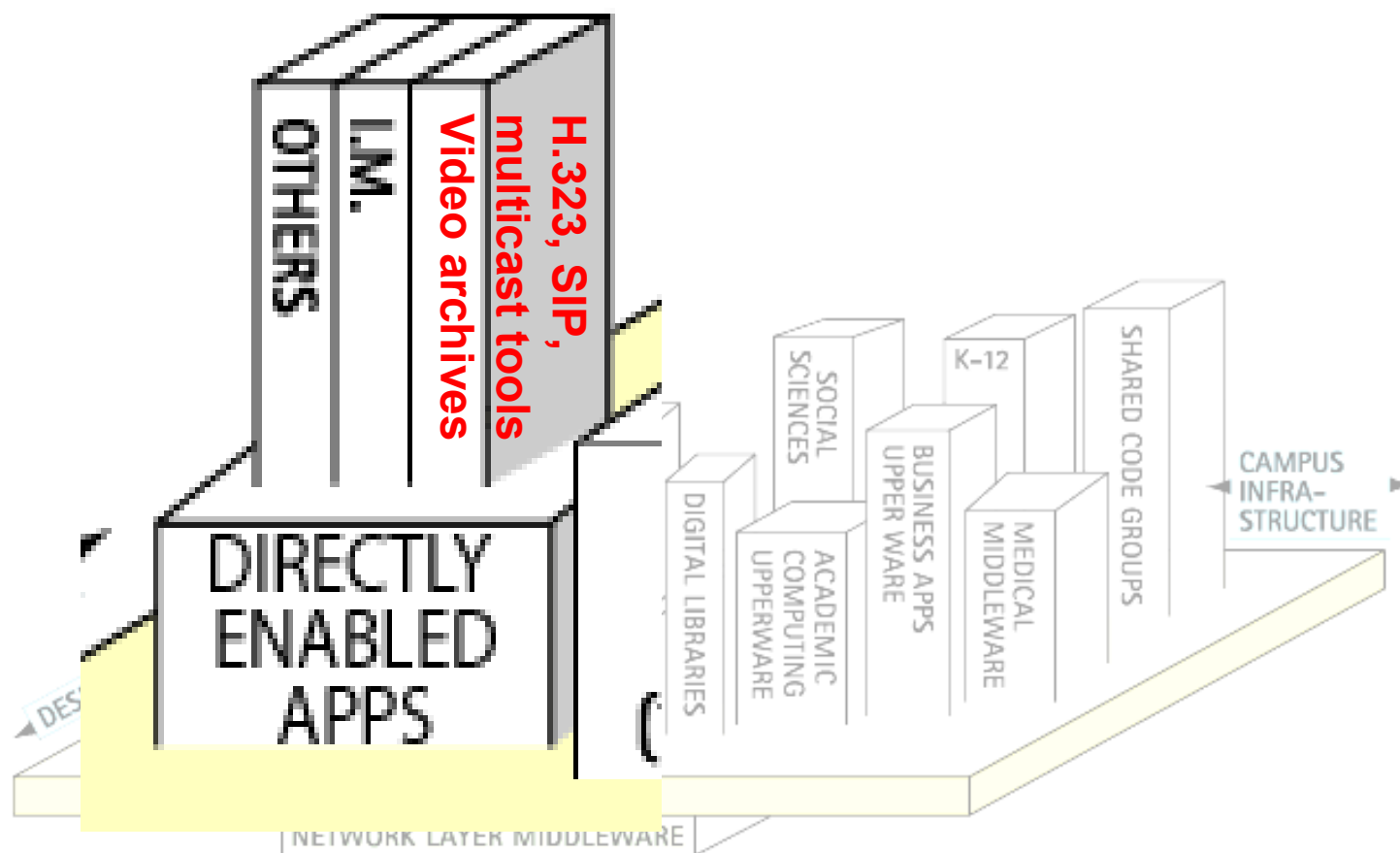
Goal for Video middleware

- Room for improvement. Today's VC apps:
 - No resource discovery – need to already know address of gatekeeper/proxy, target, gateway
 - Non-existent or unreliable authentication (who is calling?)
 - No authorization (all users have same access)
 - No security (eavesdropping)
- Develop Middleware Strategies and Prototype Working Code for
 - **FEDERATED** (No Root Authority; multiple policy)
 - **SECURE** (Authenticated Users; Ability to apply Usage policies; no eavesdropping)
 - **VIDEOCONFERENCING** (H.323 and SIP) Services

VidMid-vc

- Video Middleware
 - Essential 'glue' for connecting video networking protocols to institutional infrastructure
 - Needed in federated administration model "crossing institutional boundaries"
- Issues
 - Authentication & Authorization
 - Resource Discovery
 - Directory Services
- Ensure common approach for H.323 / SIP

Where are we ?



ViDe.Net

- National Science Foundation Grant No. 0222710
- Partners:
 - University of Alabama at Birmingham, Claremont Graduate University, University of North Carolina at Chapel Hill, SURFnet, RADVISION
- Goals
 - H.LDAP
 - framework for specification of VC security requirements and implement the security specification in SIP- and H.323-clients
 - Testbed
 - Video Middleware Cookbook

H.LDAP

- Goal: Standardized Directory Services for multiple video/voice protocols
 - ITU sg16 commObject ⇒ H.350 ⇒ H.LDAP
- Inter-institutional searching
- Implemented via web or endpoints
- Supported by gatekeepers for EP lookup
- Available in ViDeNet now

H.LDAP Structure

Enterprise Directory

inetOrgPerson
name
address
telephone
email
organization
organizational unit
commURI
RFC 1274
userPassword

commObject Directory

commOwner
commUniqueID
commPrivate
h323Identity
h323IdentityGKDomain
h323Identityh323-ID
h323IdentitydialedDigits
h323Identityemail-ID
h323IdentityURL-ID
h323Identitytransport-ID
h323IdentitypartyNumber
h323IdentitymobileUIM
h323IdentityUid
h323IdentityPassword
h323IdentityCertificate
h323IdentityEndpointType

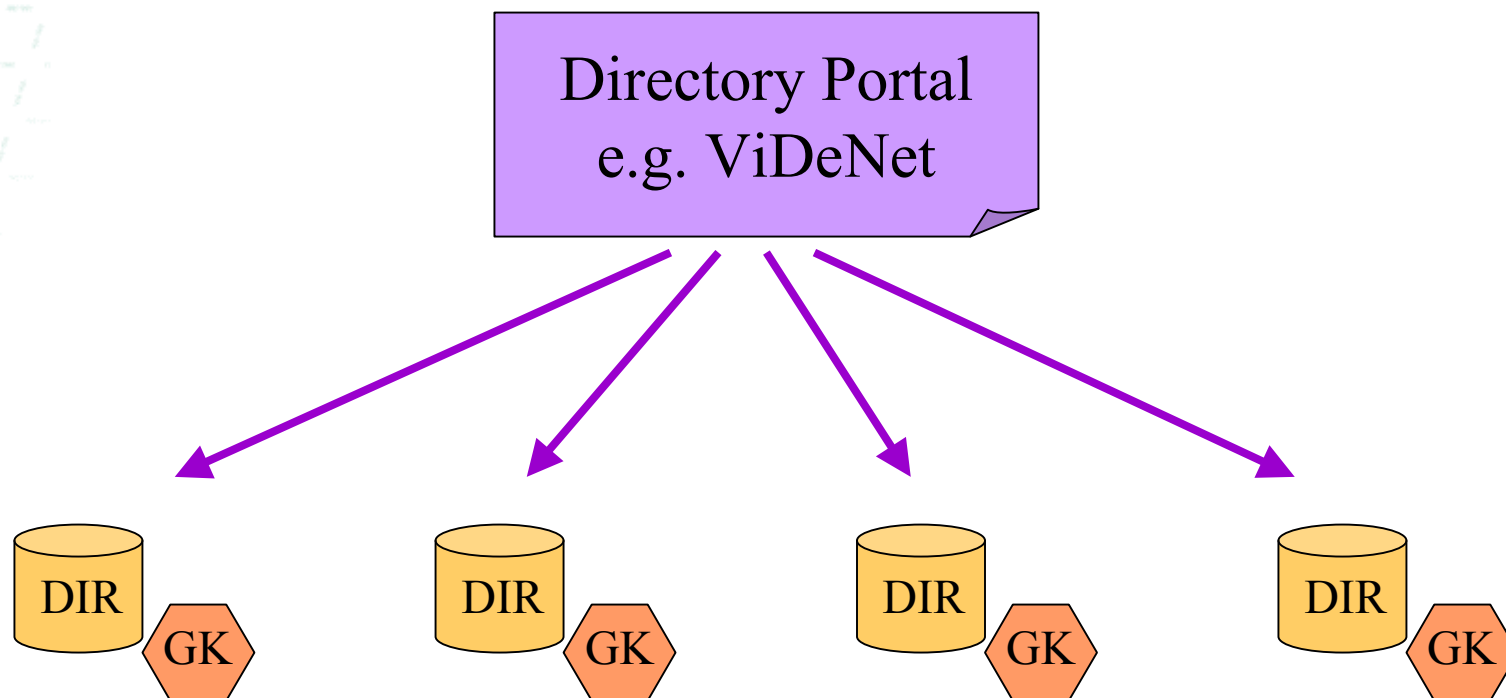
generic
super-class

Protocol-specific
h323Identity
SIPIIdentity
work on
VRVS
AccessGrid
MPEG
...

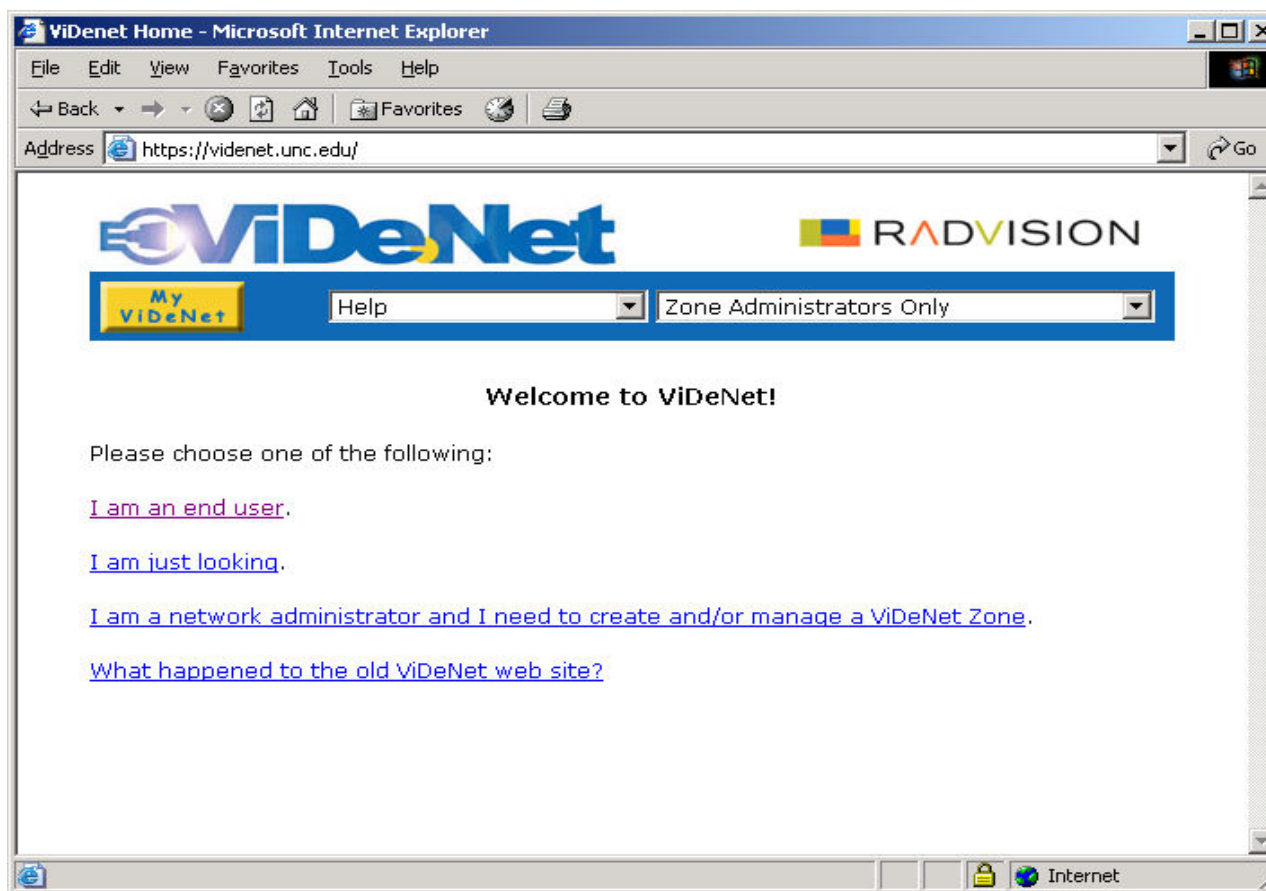
Add only one attribute
To your enterprise directory

H.LDAP In Action

- Find any user anywhere !
- Create value added portals



https://videnet.unc.edu/



What Can You Do ?

- Set up VC services
 - Come to training
- Join ViDeNet/GDS
 - International dialling
 - Interoperability testing
 - Experience sharing
- Join Vidmid-vc

References

- Vidmid-vc <http://middleware.internet2.edu/video/>
- ViDe.Net project <http://metric.it.uab.edu/vnet/>
- ViDe <http://www.vide.net/>
- ViDeNet <https://videnet.unc.edu/>
- ViDeNet dir. of video dir.s <http://videnet.unc.edu/video-dir/index.phtml>
- Numberplan <http://www.wvn.ac.uk/support/h323address.htm>
<http://www.surfnet.nl/innovatie/surfworks/conferencing/numberplan/>
- ViDe NASM <http://www.vide.net/workgroups/nasm/index.shtml>
- Internet2 <http://www.internet2.edu/>
- Internet2 Commons <http://commons.internet2.edu/>
- Megaconference <http://www.mega-net.net/megaconference/>
- Presentations
 - Vidmid <http://www.internet2.edu/presentations/spring02/20020507-VidMid-Verharen.ppt>
 - H.323 and Approaches to Authentication http://www.dpo.uab.edu/%7Ejgemmill/Presentations/Year_2002/Internet2AuthNZ2002.pdf
 - Secure videoconferencing http://www.vide.net/conferences/cnr2002/presentations/day_one/ill_a