

# Hands-on Session C

## Applications

*South East Europe 6DISS Workshop  
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# IPv6 & Services

- Goals
  - Support access to services over IPv6
  - Sustain IPv6-related information
- Basic Services
  - Name Service (*DNS*), Web Hosting (*HTTP*), Electronic mail (*SMTP*), File transfer (*FTP*), Dynamic Configuration (*DHCP*), Clock Synchronisation (*NTP*), etc.
- Other Services
  - Databases, directories (e.g. *openLDAP*), instant messaging (e.g. *Jabber*), IRC, file sharing, news, etc.



# Name Service (DNS)

- BIND ([www.isc.org/index.pl?/sw/bind](http://www.isc.org/index.pl?/sw/bind))
- Four entries per node are needed in a dual stack network
  - Two forward records under the same label
    - www.grnet.gr IN A 195.251.25.37
    - www.grnet.gr IN AAAA 2001:648:2ffc:200::2037
  - One reverse PTR record under in-addr.arpa
  - One reverse PTR record under ip6.arpa
    - 7.3.0.2....1.0.0.2.ipv6.arpa IN PTR www.grnet.gr.
- DNS queries are supported over IPv6
  - Not all root servers support it!
  - Broken IPv6 connectivity between host and server may influence the performance.



# Web Hosting (HTTP)

- Servers
  - Apache2 (native), Apache 1.3 (patched)
  - Internet Information Services (IIS) v4+
  - If upgrade to IPv6-enabled version is not feasible, you may use *reverse HTTP proxy!*
- Clients
  - Mozilla, Firefox, Explorer, Opera, Konqueror, Lynx, Safari, etc
- Proxies
  - Squid, Ffproxy, etc.



# Other basic services (1/2)

- Electronic Mail (SMTP)
  - Multiple servers
    - Sendmail (8.10+), MS Exchange, Qmail (patch), Postfix (patch), Exim
  - Multiple clients
    - Mozilla, Thunderbird, etc.
  - MX records support IPv6 entries
- File Transfer (FTP)
  - Multiple servers
    - ProFTPD ([www.proftpd.org](http://www.proftpd.org)),
  - Multiple clients
    - Lftp ([lftp.yar.ru/](http://lftp.yar.ru/)), tnftp, cftp, web browsers, etc



# Other Basic Services (2/2)

- Dynamic Host Configuration (DHCP)
  - “Stateful” DHCPv6 (RFC 3315)
    - Similar to IPv4 counterpart protocol
    - Advertise more than IP addresses!
  - Stateless DHCPv6 (RFC 3736)
    - Advertise only no-IP related info
    - Combine it with IPv6 Stateless autoconfiguration (RFC2462)
- Network Synchronisation (NTP)
  - IPv6-enabled server & client available ([www.ntp.org](http://www.ntp.org))
  - Alternative solutions
    - RIPE Test Traffic Measurement
    - Meinberg NTP server (commercial product)



# Management tools

- SNMP and MIBs
- Basic tools
- Tools (protocols & graphs)
- Tools (monitor & measure)

Management tools is a *strict* requirement  
for every IPv6/4 network





# SNMP & MIBs

- IPv6-related MIBs
  - Unified IPv4/6 MIBs are standards except BGP4
- SNMP over IPv6
  - SNMP queries over IPv6 are supported from most vendors
- Implementation issues
  - Different levels of support: mixture of *private*, *IPv6-standard MIBs*, *Unified MIBs*.



# Basic tools

- Most commercial routers support IPv6 connections over SSH and TELNET
  - Periodic scripts can retrieve information from the routers over IPv6
- TFTP over IPv6 is also well supported
  - Software images/configuration can be transported over IPv6



# Tools (protocols & graphs)

- **ASPath\_Tree** ([carmen.ipv6.tilab.com/ipv6/download.html](http://carmen.ipv6.tilab.com/ipv6/download.html))
- **Looking Glass** ([w6.loria.fr](http://w6.loria.fr))
- **IPFlow/Netflow**
- **Mping** ([mping.uninett.no](http://mping.uninett.no))
- **Cricket** ([cricket.sourceforge.net](http://cricket.sourceforge.net))
- **MRTG&Weathermap** ([netmon.grnet.gr/weathermap/](http://netmon.grnet.gr/weathermap/))
- **RIPE Test Traffic Measurement**

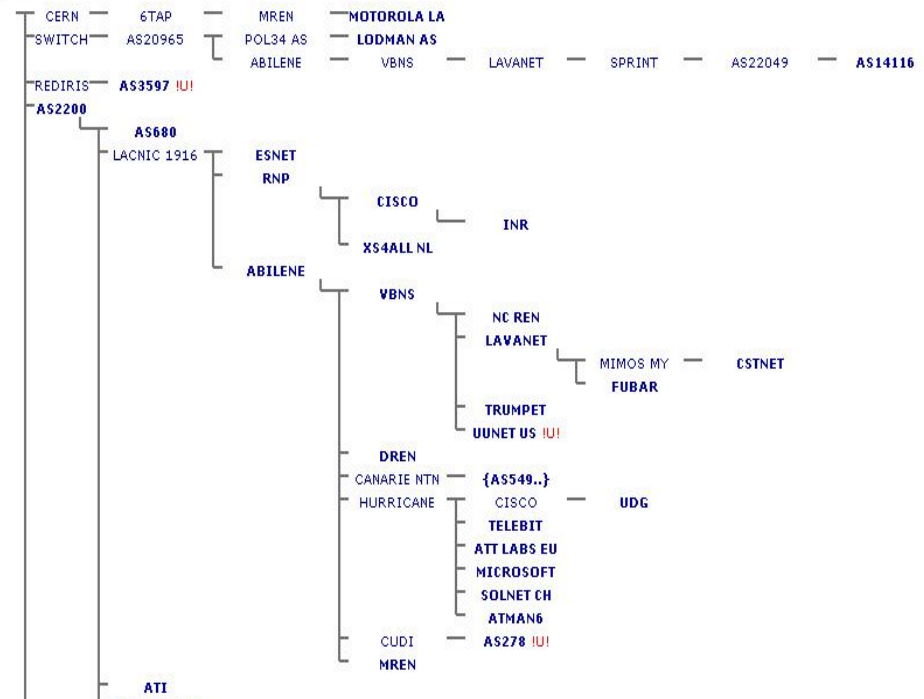


# ASpath-Tree

- Displays inter-domain network "topology" by collecting BGP routing table
- Automatic generation of HTML pages.

*Renater* The whole IPv6 BGP table

RENATER Project Network



<http://www.join.uni-muenster.de/bgp/bgp.html>



# Looking Glass

- Get information from a router via a Web interface
- End user don't need to login to router
- Allows the user to detect causes of failures w/o asking the NOCs

**Greek Research & Technology Network**  
MINISTRY of DEVELOPMENT  
GENERAL SECRETARIAT for RESEARCH & TECHNOLOGY

**GRNET Looking Glass (IPv4/IPv6)**

**Router:**

- athens.gnet.gr
- athens-2.gnet.gr
- athens-3.gnet.gr
- ilissos.gnet.gr
- acropolis.gnet.gr
- athens.gnet.gr
- 6net.gnet.gr
- thessaloniki.gnet.gr
- thessaloniki-2.gnet.gr
- patra.gnet.gr
- patra-2.gnet.gr
- heraklio.gnet.gr
- heraklio-2.gnet.gr
- larissa.gnet.gr
- larissa-2.gnet.gr
- ioannina.gnet.gr
- ioannina-2.gnet.gr
- syros.gnet.gr
- xanthi.gnet.gr
- athens-1.gnet.gr

**IPv4 Query:**

- show ip route <ip address>
- show interface <interface>
- show ip ospf database external <ip address>
- show ip bgp <ip address>
- show ip bgp summary
- show ip bgp dampening dampened-paths
- show environment all
- show ip bgp dampening flap-statistics
- show ip mroute <ip address>
- show ip rpf
- show ip mbgp <ip address>
- show ip sdr
- show ip sdr detail
- show ip msdp sa-cache <as number>
- show ip msdp sum
- show ip msdp count
- show ip msdp peer <ip address>
- nino <ip address>

**IPv6 Query:**

- show ipv6 route <ipv6 address>
- show ipv6 interface <interface>
- show bgp ipv6 <IPv6 prefix network/length>
- show bgp ipv6 summary
- show bgp ipv6 flap-statistics
- ping ipv6 <ipv6 address>
- trace ipv6 <ipv6 address>

**MPLS Query:**

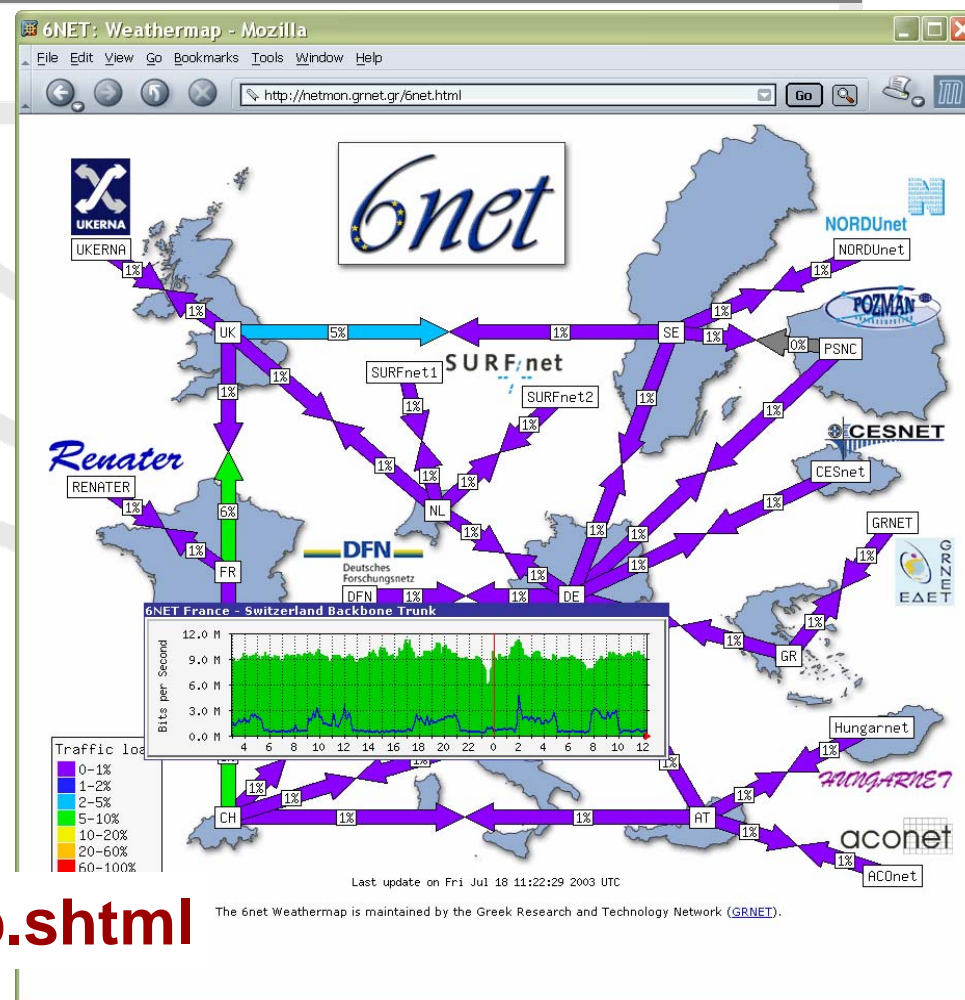
- show mpls l2transport vc
- show mpls l2transport vc detail
- show mpls forwarding-table <interface>
- show ip vrf
- show ip vrf detail
- show ip route vrf <VPN name>
- ping vrf <VPN name> <ip address>
- trace vrf <VPN name> <ip address>

<http://netmon.grnet.gr/lg.shtml>



# Weathermap

- SNMP-based network traffic grapher
- Monitor the link utilisation



<http://netmon.grnet.gr/map.shtml>



# Tools (monitor and measure)

- Argus ([argus.tcp4me.com](http://argus.tcp4me.com))
- Nagios ([www.nagios.org](http://www.nagios.org))
- Ethereal ([www.ethereal.com](http://www.ethereal.com))
- Multicast Beacon ([dast.nlanr.net/Projects/Beacon](http://dast.nlanr.net/Projects/Beacon))
- iperf ([dast.nlanr.net/Projects/Iperf](http://dast.nlanr.net/Projects/Iperf))
- ntop ([www.ntop.org](http://www.ntop.org))
- Open\_Eye/Panoptis ([panoptis.sourceforge.net](http://panoptis.sourceforge.net))



# Argus

- Monitor
  - Network element status, e.g. PCs, switches, routers. etc
  - Node availability
  - Traffic
  - Services, e.g. http, ftp, dns, imap, smtp, etc
- Easily extendible

Top:Serveurs-SIPA User: jdurand

name Serveurs-SIPA  
status up

| Name           | Status               |
|----------------|----------------------|
| data-ipv6 IPv4 | Ping FTP             |
| data-ipv6 IPv6 | Ping FTP             |
| sem2 IPv4      | Ping HTTP renater.fr |
| sem2 IPv6      | Ping HTTP renater.fr |

Status: up since Thu 11 Nov 20:59:44 2004

|              | start                    | elapsed time    | % up  | % down | times down |
|--------------|--------------------------|-----------------|-------|--------|------------|
| Today        | Mon 22 Nov 00:00:00 2004 | 10:00:00        | 100.0 | 0.00   | 0          |
| Yesterday    | Sun 21 Nov 00:00:00 2004 | 1d 0:00:00      | 100.0 | 0.00   | 0          |
| 2 Days Ago   | Sat 20 Nov 00:00:00 2004 | 1d 0:00:00      | 100.0 | 0.00   | 0          |
| This Month   | Mon 1 Nov 00:00:00 2004  | 21d 9:48:49     | 98.28 | 1.72   | 1          |
| Last Month   | Fri 1 Oct 00:00:00 2004  | 1m 1:00:00      | 99.97 | 0.03   | 1          |
| 2 Months Ago | Mon 13 Sep 11:14:37 2004 | 17d 12:33:52    | 100.0 | 0.00   | 1          |
| This Year    | Mon 13 Sep 11:14:37 2004 | 2m 10d 23:22:41 | 99.46 | 0.54   | 3          |

Thu 11 Nov 20:59:44 2004 up TRANSITION - data-ipv6\_IPv4  
Thu 11 Nov 12:08:57 2004 down TRANSITION - data-ipv6\_IPv6  
Wed 13 Oct 17:13:44 2004 up TRANSITION - data-ipv6\_IPv4  
Wed 13 Oct 17:02:33 2004 down TRANSITION - data-ipv6\_IPv6  
Mon 13 Sep 11:28:39 2004 up TRANSITION - sem2\_IPv4

Argus: 3.3  
10:48  
lundi  
22/11/2004





# Nagios

- Monitor
  - Services
  - Network
- Could be a complex tool for a small network
- New features can be added with plug-ins, e.g. BGP monitoring

The screenshot displays the Nagios web interface. On the left is a navigation menu with sections for 'General' (Home, Documentation) and 'Monitoring' (Tactical Overview, Service Detail, Host Detail, Status Overview, Status Summary, Status Grid, Status Map, 3-D Status Map, Service Problems, Host Problems, Network Outages, Comments, Downtime, Process Info, Performance Info, Scheduling Queue). The main content area includes:

- Current Network Status:** Last Updated: Thu Jan 8 09:33:05 CET 2004, Updated every 90 seconds, Nagios® - [www.nagios.org](http://www.nagios.org), Logged in as ?
- Host Status Totals:**

| Up | Down | Unreachable | Pending |
|----|------|-------------|---------|
| 1  | 1    | 0           | 0       |

| All Problems | All Types |
|--------------|-----------|
| 1            | 2         |
- Service Status Totals:**

| Ok | Warning | Unknown | Critical |
|----|---------|---------|----------|
| 1  | 0       | 1       | 3        |

| All Problems | All Types |
|--------------|-----------|
| 4            | 5         |
- Host Status Details For All Host Groups:**

| Host                      | Status | Last Check          | Duration         | Status Information                 |
|---------------------------|--------|---------------------|------------------|------------------------------------|
| <a href="#">data-ipv6</a> | DOWN   | 08-12-2003 15:26:43 | 148d 21h 58m 44s | /bin/ping -n -U -c 1 193.49.159.67 |
| <a href="#">sem2</a>      | UP     | 08-12-2003 15:27:43 | 148d 21h 55m 22s | (Host assumed to be up)            |

2 Matching Host Entries Displayed



# Ethereal

- Packet capturing tool
- Useful for connectivity and troubleshooting
- Available for most platforms

Intel(R) PRO/100 VE Network Connection (Microsoft's Packet Scheduler) : Capturing - Ethereal

File Edit View Go Capture Analyze Statistics Help

Filter: Expression... Clear Apply

| No. | Time      | Source                               | Destination                          | Protocol | Info                                                     |
|-----|-----------|--------------------------------------|--------------------------------------|----------|----------------------------------------------------------|
| 99  | 18.041823 | 2001:200:0:8002:203:47ff:fea5:3085   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | HTTP     | HTTP/1.1 304 Not Modified                                |
| 100 | 18.043191 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:200:0:8002:203:47ff:fea5:3085   | HTTP     | GET /logo/1/images/kame3.png HTTP/1.1                    |
| 101 | 18.069029 | 2001:200:0:8002:203:47ff:fea5:3085   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | HTTP     | HTTP/1.1 304 Not Modified                                |
| 102 | 18.185625 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:200:0:8002:203:47ff:fea5:3085   | TCP      | 1234 > http [ACK] Seq=1087 Ack=557 win=16724 Len=0       |
| 103 | 18.356567 | 2001:200:0:8002:203:47ff:fea5:3085   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | HTTP     | HTTP/1.1 304 Not Modified                                |
| 104 | 18.487387 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:200:0:8002:203:47ff:fea5:3085   | TCP      | 1235 > http [ACK] Seq=663 Ack=390 win=16891 Len=0        |
| 105 | 19.112371 | fe80::201:4dff:fe18:26c7             | ff02::1:ff97:4c94                    | ICMPv6   | Multicast listener report                                |
| 106 | 22.829347 | 2001:800:40:2a05:1                   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | ICMPv6   | Neighbor solicitation                                    |
| 107 | 22.829384 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:800:40:2a05:1                   | ICMPv6   | Neighbor advertisement                                   |
| 108 | 29.559766 | fe80::200:87ff:fe28:a0e0             | ff02::d                              | PIMv2    | Hello                                                    |
| 109 | 31.291516 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:630:d0:131:230:48ff:fe51:564d   | TCP      | 1236 > http [SYN] Seq=0 Ack=0 win=16384 Len=0 MSS=1440   |
| 110 | 31.341843 | 2001:630:d0:131:230:48ff:fe51:564d   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | TCP      | http > 1236 [SYN, ACK] Seq=0 Ack=1 win=5760 Len=0 MSS=14 |
| 111 | 31.341878 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:630:d0:131:230:48ff:fe51:564d   | TCP      | 1236 > http [ACK] Seq=1 Ack=1 win=17280 Len=0            |
| 112 | 31.342115 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:630:d0:131:230:48ff:fe51:564d   | HTTP     | GET / HTTP/1.1                                           |
| 113 | 31.391834 | 2001:630:d0:131:230:48ff:fe51:564d   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | TCP      | http > 1236 [ACK] Seq=1 Ack=418 win=6432 Len=0           |
| 114 | 31.635986 | 2001:630:d0:131:230:48ff:fe51:564d   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | HTTP     | HTTP/1.1 200 OK[Unreassembled Packet]                    |
| 115 | 31.637772 | 2001:630:d0:131:230:48ff:fe51:564d   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | HTTP     | Continuation or non-HTTP traffic                         |
| 116 | 31.637807 | 2001:800:40:2a05:7975:8ec8:5897:4c94 | 2001:630:d0:131:230:48ff:fe51:564d   | TCP      | 1236 > http [ACK] Seq=418 Ack=2881 win=17280 Len=0       |
| 117 | 31.690628 | 2001:630:d0:131:230:48ff:fe51:564d   | 2001:800:40:2a05:7975:8ec8:5897:4c94 | HTTP     | Continuation or non-HTTP traffic                         |

Frame 106 (86 bytes on wire, 86 bytes captured)  
Ethernet II, Src: 00:00:87:28:a0:e0, Dst: 00:01:4a:18:26:c7

Internet Protocol Version 6  
Version: 6  
Traffic class: 0x00  
Flowlabel: 0x0000  
Payload length: 32  
Next header: ICMPv6 (0x3a)  
Hop limit: 255  
Source address: 2001:800:40:2a05:1  
Destination address: 2001:800:40:2a05:7975:8ec8:5897:4c94

Internet Control Message Protocol v6  
Type: 135 (Neighbor solicitation)  
Code: 0

```
0000 00 01 4a 18 26 c7 00 00 87 28 a0 e0 86 dd 60 00  ...J.&...(. ...
0010 00 00 00 20 3a ff 20 01 08 00 00 40 2a 05 00 00  ...*...@*...
0020 00 00 00 00 00 01 20 01 08 00 00 40 2a 05 79 75  ...x.L...
0030 8e c8 58 97 4c 94 87 00 fd f3 00 00 00 00 20 01  ...@*.L...X.L...
0040 08 00 00 40 2a 05 79 75 8e c8 58 97 4c 94 01 01  ...@*.L...
0050 00 00 87 28 a0 e0
```



MonitoringToolsList - the 6NET WikiWikiWeb - Microsoft Internet Explorer

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# 6net MonitoringToolsList

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Here is a list of monitoring tools that are currently being evaluated by wp6 members. If you are responsible for evaluating or/and migrating a tool to ipv6, then please make sure that the corresponding page is always updated with the latest information.

If you are evaluating a tool not listed in here, please update this page with a [WikiName](#) and then provide a description of the tool.

Any page can be edited by anyone by selecting the EditText link at the bottom of the page.

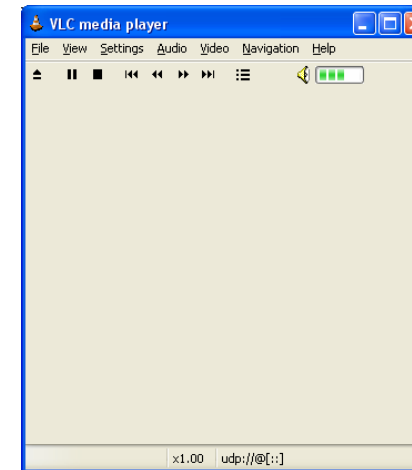
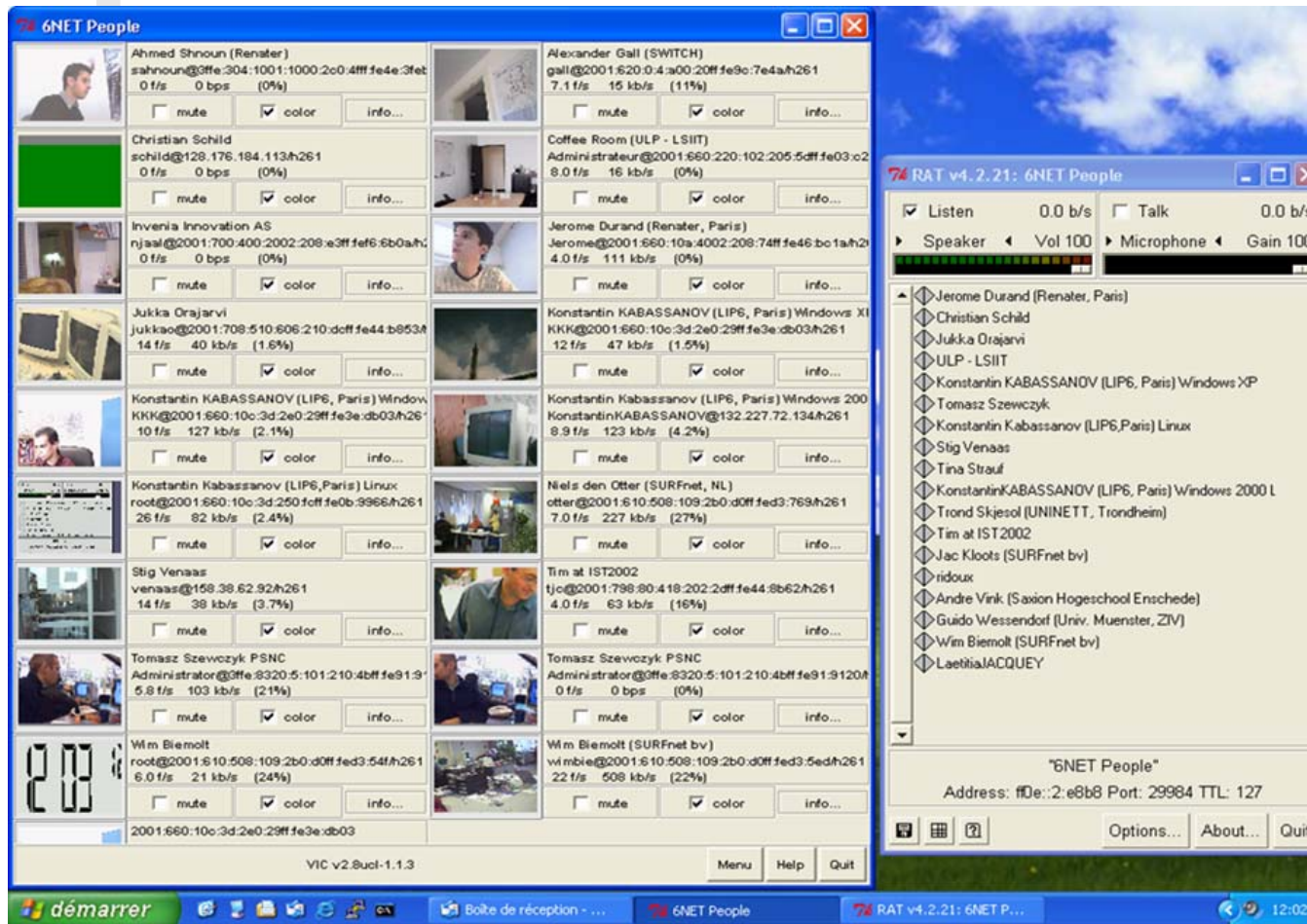
- Analyzer ([AnalyzerTool](#))
- Argus ([ArgusTool](#))
- AS Path Tree ([AsPathTree](#))
- Cisco Works Campus Manager ([CiscoWorksCM](#))
- Cricket ([CricketTool](#))
- Ethereal ([EtherealTool](#))
- flow-tools ([FlowTools](#))
- HP [OpenView](#) Network Node Manager ([HP OpenView](#))
- [InfoVista](#)
- IPm ([IpmTool](#))
- IPv6 Management Gateway ([Ipv6Mg](#))
- IRDD Tool Set ([IrrddToolSet](#))
- Java SNMP Programming Environments ([JavaSnmpProgrammingEnvironments](#))
- Jnettop ([JnetTop](#))
- JOIN-TV ([JoinTv](#))
- Looking Glass Service ([LookingGlassService](#))
- MERIT's 6bone Routing Report ([Merit6BoneRoutingReport](#))
- Mping ([MpingTool](#))
- MRTGv6 ([MrtgV6Tool](#))
- MTR ([MtrTool](#))
- Multicast Beacon ([MulticastBeacon](#))
- Nagios ([NagiosTool](#))
- [NatKit](#)
- NetSNMP ([NetSnmp](#))
- Netflow/IPFIX ([NetflowIpFix](#))
- Netflow: IPv6 Support for Netflow v9 in IOS ([NetFlowIos](#))
- Netflow: UTC collector ([NetFlowUtc](#))
- NMIS: Network Management Information System ([NmisTool](#))
- NTOP ([NtopTool](#))
- NTPv4: Meinberg Lantime ([NtpMeinberg](#))
- Open-eye: ([OpenEye](#))
- PCHAR ([PcharTool](#))
- Rancid ([RancidTool](#))
- SNMP Session ([SnmpSession](#))
- SNMP Proxy ([SnmpProxy](#))
- Lan Topology Discovery Service ([LanTopologyDiscoveryService](#))
- Polyphemus ([PolyphemusTool](#))
- Ripe NCC Test Traffic Tools ([RipeNccTestTrafficTools](#))
- Tunnel Trace ([TunnelTrace](#))
- Weathermap ([WeathermapTool](#))

# Some IPv6-enabled applications

- Real-time videoconference and media streaming
  - GnomeMeeting, Softphone, OpenMCU, VideoLAN, DVTS, MPEG4IP(Darwin Stream Server), VIC/RAT, NTE etc.
- Directory Services
  - OpenLDAP, Sun iPlanet
- On-line games
  - Quake
- E-business solutions
  - WEB Sphere portal



# Snapshots of videoconferencing applications





6net Application database - Microsoft Internet Explorer

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Address <http://6net.laares.info/apps.phtml> Go Links

# 6net Applications summary

Click on the column headers to change sorting order

| <u>name</u>     | <u>category</u> | <u>class</u> | <u>summary</u>                                      | <u>status</u>                                                                                                                                                                 | <u>responsible</u> | <u>modified</u> |
|-----------------|-----------------|--------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|
| 6UMS            | Streaming       | C            | IPv6-enabled unified messaging system               | 6UMS is being developed by UoS in Euro6IX, but will be made available to 6NET. Existing tools will be re-used where appropriate.                                              | UoS                | 2003-01-16      |
| Agent Framework | E-business      | C            | Framework for agent research                        | Available, in Java. Unicast works. Multicast not tested yet.                                                                                                                  | UoS                | 2003-01-24      |
| AMUSE           | Streaming       | C            | Adaptive MULTimedia Support Environment             | Available. Usage limited to Sony and WP5. Work planned to support MobileIPv6.                                                                                                 | Sony               | 2003-01-27      |
| AWM             | E-business      | No           | Application Workload Modeler                        | Released product with IPv6 support for zSeries. Needs special build for Linux/Intel.                                                                                          | IBM                | 2003-04-14      |
| Bonephone       | Streaming       | B            | Internet phone sending and receiving SIP messages   | Demo version released.                                                                                                                                                        | FhG                | 2003-04-10      |
| CDN             | Edge Services   | C            | Content Distribution Networks                       | No specific work at the moment.                                                                                                                                               | Cisco              | 2003-01-16      |
| DVTS            | Streaming       | C            | Application for sending and receiving Digital Video | The source and binaries for DVTS on various platforms are available from the DVTS URL.                                                                                        | UCL                | 2003-01-16      |
| Edge Server     | Edge Services   | C            | IBM Edge Server                                     | Porting to IPv6 in progress.                                                                                                                                                  | IBM                | 2003-01-16      |
| EGP             | Gaming          | No           | Experimental Gaming Platform                        | Sony has stopped working on EGP. This activity has been dropped.                                                                                                              | Sony               | 2003-03-27      |
| FreeAMP         | Streaming       | A/B          | Free unicast/multicast MP3 player                   | The code has been released on the web. Both a unicast and a multicast MP3 source will be activated in a network which will be available to all 6Net partners.                 | GARR               | 2003-01-24      |
| FunnelWeb       | E-business      | C            | Application level active services                   | Implemented as a Java application. Available on request within the project.                                                                                                   | UCL                | 2003-01-16      |
| Globus          | E-business      | C            | GLOBUS toolkit (Grid)                               | Release 2.0 available. Globus 3.0 is expected early 2003. 6NET expectation is to get IPv6 support enabled as a patch for Globus 2.0, later as an integral part of Globus 3.0. | UCL                | 2003-01-16      |
| GnomeMeeting    | Streaming       | C            | Open source H323 Linux application                  | Deployment and support in progress for Greek Research Network community                                                                                                       | GRNET              | 2003-02-05      |
|                 |                 |              | Tool for sending and receiving MP3                  | HAT works on MSR IPv6 stack. Another version which works on                                                                                                                   |                    |                 |

Start | D... | E... | M... | d... | A... | u... | M... | T... | S... | Internet | 14:57

6net Application database - Microsoft Internet Explorer

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|                 |            |     |                                                                         |                                                                                                                                                                                |         |            |
|-----------------|------------|-----|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------|
| HAT             | Streaming  | No  | Tool for sending and receiving MP3 audio                                | HAT works on MSR IPv6 stack. Another version which works on Microsoft Tech Preview IPv6 will be released.                                                                      | UCL     | 2003-01-22 |
| Hypermedia LS   | E-business | No  | Hypermedia Link Services                                                | Two servers available to experiment with an IPv6-enabled link service (output of 6WINIT)                                                                                       | UoS     | 2003-01-16 |
| IBP             | E-business | A   | Internet Back Plane protocol - Middleware for Network Storage           | Works. IPv6/IPv4. IPv6, if present, is automatically selected                                                                                                                  | GARR    | 2003-04-11 |
| IRC             | E-business | A   | Internet Relay Chat communication system                                | Works.                                                                                                                                                                         | GARR    | 2003-04-11 |
| MCast6          | Streaming  | B   | Tool for multimedia streaming in a computer network                     | Open source initiative. Mature versions will be widely available in the Internet. Architecture is designed to make other parties capable to change, adjust or add new modules. | PSNC    | 2003-01-22 |
| MMCR            | Streaming  | No  | Multicast MultiMedia Conference Recorder                                | Running. MMCR is fairly stable, and provides good performance.                                                                                                                 | UCL     | 2003-01-17 |
| MPEG4IP         | Streaming  | B   | Streaming video tool suite                                              | Darwin Streaming Server will be ready by end 2003. Rest of MPEG4IP suite already ported to IPv6.                                                                               | Telin   | 2003-04-23 |
| MUD             | Gaming     | C   | MUD gaming environment                                                  | Local to UoS. Can connect from anywhere via Telnet.                                                                                                                            | UoS     | 2003-01-16 |
| Multicast Radio | Streaming  | No  | Multicast Radio                                                         | Running. Available to all within UoS site. Proprietary (doesn't currently use RTP).                                                                                            | UoS     | 2003-01-17 |
| MUST            | Streaming  | C   | MBONE Web-interface                                                     | Deployment and support in progress for Greek Research Network community                                                                                                        | GRNET   | 2003-01-22 |
| NTE             | Streaming  | C   | Network Text Editor                                                     | NTE is currently fairly stable, and provides good performance. Further work is required on transcoding and support for interleaved formats.                                    | UCL     | 2003-04-30 |
| Open-LDAP       | E-business | C   | Open source implementation of the Lightweight Directory Access Protocol | Available. Ported to IPv6.                                                                                                                                                     | UNINETT | 2003-01-17 |
| OpenH323        | Streaming  | C   | Open source H.323 protocol implementation                               | Test version on IPv6 available. Final application expected by end 2003.                                                                                                        | CTI     | 2003-01-23 |
| PKI             | E-business | C   | Public Key Infrastructure                                               | Available on request within the project from the PKI URL.                                                                                                                      | UCL     | 2003-01-16 |
| Portals         | E-business | C/A | IBM Websphere Portal Technology                                         | Equipment being prepared by IBM.                                                                                                                                               | IBM     | 2003-03-26 |
| Quake           | Gaming     | C   | Multiplayer FPS action game                                             | Works. Used at GARR.                                                                                                                                                           | Sony    | 2003-01-17 |
| RAT             | Streaming  | A   | Robust Audio Tool (audio)                                               | RAT is currently fairly stable, and provides good performance. Further work is required on transcoding and support for                                                         | UCL     | 2003-04-30 |

Start D... E... M... d... A... u... M... T... S... 6... h... 6... O... I... A... M... Internet 14:58

6net Application database - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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Address <http://6net.laares.info/apps.phtml> Go Links

|             |            |     |                                                   |                                                                                                                                                        |         |            |
|-------------|------------|-----|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------|
| Portals     | E-business | C/A | IDM websphere Portal technology                   | Equipment being prepared by IDM.                                                                                                                       | IDM     | 2003-03-26 |
| Quake       | Gaming     | C   | Multiplayer FPS action game                       | Works. Used at GARR.                                                                                                                                   | Sony    | 2003-01-17 |
| RAT         | Streaming  | A   | Robust Audio Tool (audio conferencing)            | RAT is currently fairly stable, and provides good performance. Further work is required on transcoding and support for interleaved formats.            | UCL     | 2003-04-30 |
| RQM         | Streaming  | C   | RTP Quality Matrix (background tool for testing)  | RQM is currently fairly stable, and provides good performance.                                                                                         | UCL     | 2003-01-16 |
| SCS         | Streaming  | A   | Secure Conference Store of conference information | SCS is currently fairly stable, and provides good performance.                                                                                         | UCL     | 2003-04-30 |
| SDR         | Streaming  | No  | Session Directory Tool                            | Not stabilised.                                                                                                                                        | UCL     | 2003-04-30 |
| SPAR        | Streaming  | A   | SDP Parser Applet (component of SCS)              | SPAR is currently stable, and provides good performance.                                                                                               | UCL     | 2003-04-30 |
| TAG         | E-business | C   | Transcoding Active Gateway                        | Implemented in Java. JDK1.4 required if used in IPv6 environment. Initial release available for download to project partners.                          | UCL     | 2003-04-30 |
| TUR         | Streaming  | A/B | Trondheim Underground Radio                       | Running. Publicly available. Multicast support planned by mid 2003.                                                                                    | UNINETT | 2003-01-17 |
| TZI-Gateway | E-business | C   | Call signalling and media transcoding gateway     | Supports IPv6 for SIP and H.323 on Linux-2.4 and Solaris (Intel). Tested with a number of agents/clients.                                              | UCL     | 2003-01-16 |
| VIC         | Streaming  | A   | Video Conferencing Tool                           | VIC is currently fairly stable, and provides good performance. Further work is required on use of direct video display and integration of more codecs. | UCL     | 2003-04-30 |
| VideoLAN    | Streaming  | A   | Streaming video server and player                 | Works. Ported to IPv6 by Btexact for 6WINIT. May be good multicast and QoS demonstrator.                                                               | SURFnet | 2003-05-08 |
| VIP         | Streaming  | No  | Video over IP (search and retrieval system)       | Active at Telin. Central service would be delivered from Telin DataCenter through Surfnet                                                              | Telin   | 2003-01-17 |
| VOCAL       | Streaming  | B   | SIP-based VoIP client                             | The SIP user agents have been ported for use with IPv6 and are undergoing testing. Supports ENUM.                                                      | UoS     | 2003-01-20 |
| WBD         | Streaming  | C   | Whiteboard for conferencing                       | WDB is currently fairly stable, and provides good performance.                                                                                         | UCL     | 2003-01-16 |
| XPilot      | Gaming     | C   | Network game                                      | Ported to IPv6. Field trial started.                                                                                                                   | UNINETT | 2003-01-22 |

*Add a description*

Internet 15:00



# Questions?



Thank you!

