TERENA
2nd Workshop: Connecting Schools to NRENs

Technical issues in videoconferencing

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Where have schools ‘visited’ this term?

France
Switzerland
Slovenia
Norway
Canada
United States
Mexico
Sweden
Greece
Italy
Russia
Poland
Libya
Croatia
Hong Kong
Brazil
Cyprus

Over 300 conferences this term
What will we look at

- Standards
- Global Dialling Scheme
- Experiences
- Proprietary systems
- Possible solutions
Common Standards used in videoconferencing

- H.320
- H.323
  - H.261-H.264 video
  - G.711-G.722 audio
  - T.120 data
- H.239
  - Data with Audio/Video
- H.460.18 & H.460.19
  - Firewall traversal & NAT
- SIP
  - Session Initiation Protocol
  - Multimedia sessions
  - Modular design
The Global Dialling Scheme

- Standard international dial plan developed
- Each registered endpoint has a unique international E.164 number
- UK example: 0044 02001 1 1234 123

<table>
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<tr>
<th>International Prefix</th>
<th>Regional/Local Prefix</th>
<th>Category</th>
<th>DFES number</th>
<th>Endpoint number</th>
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<tr>
<td>0044</td>
<td>02001</td>
<td>1</td>
<td>1234</td>
<td>123</td>
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</table>
Gatekeeper Hierarchy

World Gatekeeper
prefix 031

JANET
UK Gatekeeper
international prefix 0044

Swansea
Gatekeeper
prefix 004401100

Edinburgh
Gatekeeper
prefix 004401102

SURFnet
Gatekeeper
prefix 30253

Utrecht
Gatekeeper
prefix 30253

Swan-A
ext 456
Swan-B
ext 123
Ed-A
ext 541

World Directory
Gatekeepers
Multiple resilient
gatekeepers
distributed across the world

National Directory
Gatekeepers
Single or resilient clusters

Organisation
Gatekeepers
Single or resilient cluster
# Global Dialling Scheme

## Partners

<table>
<thead>
<tr>
<th>Country</th>
<th>Country</th>
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<tbody>
<tr>
<td>SLOVENIA</td>
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<td>BRAZIL</td>
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<td>GREAT BRITAIN</td>
<td>NORWAY</td>
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Experiences

- Restrictions within country
  - Systems work well internally, but poor external connectivity

- Links to other MCUs
  - More collaboration required from manufacturers – standards!

- Links direct to international endpoints
  - Firewall issues
  - Gatekeeper registrations

- Gatekeeper Hierarchy and Neighbouring
  - Hop-count/incompatibility issues
  - Lack of configuration
More Experiences

Security
- NAT
- Proxy
  - Restrictions on concurrent conferences
  - Increased Latency

E.164
- Lack of gatekeeper!

ISDN lines
- Dial in/out – billing

Equipment incompatibility
Even More experiences

- **Booking & Communication**
  - Time Zones
  - Language
  - Technical expertise

- **Bandwidth!**
  - Packet loss
  - Duplex mismatches

- **Suppliers**
  - Incorrect advice
  - Sales driven
Proprietary Systems

- External connectivity – gateway
- Security
- Support
- Scalability
- Booking
Possible Solutions

- Testing & more testing
  - MCUs
  - Gatekeepers
  - Endpoints
- Understanding of global requirements
- Standards
- Quality Assurance & conference pre-checks
  - Endpoints
  - Pre-conference checks for guest endpoints
- VTAS
- Feedback to manufacturers
- Brief Suppliers
Quality Assessment

- Objective and Subjective
- Video & Audio
- Network Stats
- Interoperability test
- Guests – connectivity test
Summary

- Collaboration – requires guaranteed interoperability
- Technical issues well documented
- Requires political endorsement
Documentation

All VCSP documentation at

www.jvcs.ja.net/schools

www.ja.net/schools
Any Questions?

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