

Secure audio/video services – → H.323, H.350 and Firewalls

H.323 videoconferencing: Pros and Cons

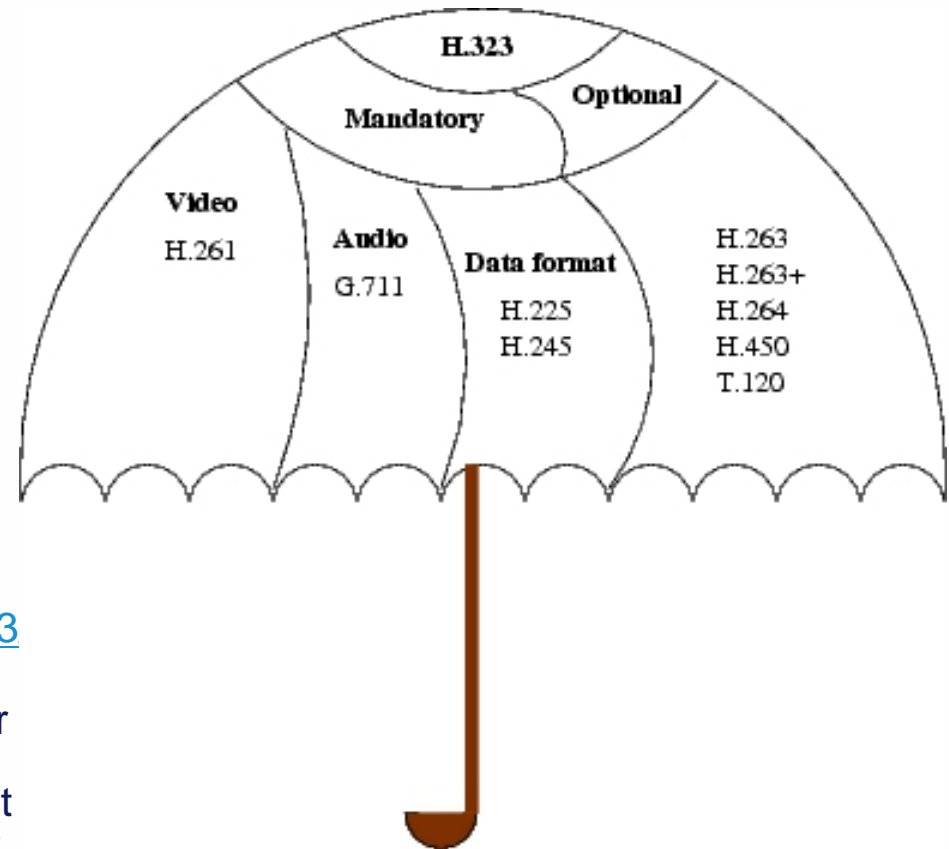
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→ H.323 at a glance

- ITU standard developed by study group 16
- V.1.0 release in 1996
- Current versions 5
 - Most implemented version today V. 4
- Umbrella standard
 - H.225.0
 - H.245
 - ...
- Draft version available for download at <http://www.packetizer.com/voip/h323standard.html>
- H.323 describes terminals and other entities that provide multimedia communication services over packet switched network (PBN). QoS is not provided.



→ Pros

- Widely used
- 'Large' infrastructure in place
 - 4 international root Gatekeeper, 28 Country Gatekeeper, hundreds of Organizational Gatekeepers, 'Free Love' Zones, MCUs, Gateways
- Has been proven that it works ? next slide

→ Pros

- It works – Megaconference (<http://www.megaconference.org>)
 - World largest videoconferencing over advanced computer networks
 - Initiated by Dr. Bob (Bob Dixon), OSU
 - Last years event (12/2004)
 - 372 participants around the world
 - All continents, except Antarctica
 - Screenshots available at <http://ag.triumf.ca/megac04/>
 - Streams on web side
 - Very good/helpful mailinglist
 - Sibling: Megaconference Jr. (mainly for K12)

→ Cons

- The protocol is fairly complex
 - Hard to debug and find errors/problems
- Several different protocols are involved
 - H.225 Control channel (TCP)
 - H.245 Signaling channel (TCP)
 - 4-8 UDP streams per videoconference

```
registrationRequest {
  requestSeqNum = 25560
  protocolIdentifier = 0.0.8.2250.0.2
  discoveryComplete = FALSE
  callSignalAddress = 1 entries {
    [0]=ipAddress {
      ip = 4 octets {
        91 ef 65 69
      }
      port = 1720
    }
  }
  rasAddress = 1 entries {
    [0]=ipAddress {
      ip = 4 octets {
        91 ef 65 69
      }
      port = 1127
    }
  }
  terminalType = {
    vendor = {
      vendor = {
        t35CountryCode = 181
        t35Extension = 0
        manufacturerCode = 9009
      }
      productId = 8 octets {
        56 69 61 56 69 64 65 6f
      }
    }
  }
}
```

→ Cons

- Only a few fixed ports
 - 1718, 1719 tcp
 - 4 to 8 ports per call
 - UDP ports (media streams) a negotiated dynamically using the ports >1024 and <65535
- ? this triggers the so called H.323-Firewall problem (*How do you open ports on a firewall if you don't know them?*)

Process	Protocol	Local Address	Remote Address	State
win32.exe:3096	TCP	chimere:8000	chimere:0	LISTENING
win32.exe:3096	UDP	chimere:177	...	
winlogon.exe:988	UDP	chimere:1026	...	
vovs.exe:448	TCP	chimere:1720	chimere:0	LISTENING
vovs.exe:448	UDP	chimere:1436	...	
vovs.exe:448	TCP	chimere:1436	videomv2.zq.mpg.de:1720	ESTABLISHED
vovs.exe:448	UDP	chimere:48154	...	
vovs.exe:448	UDP	chimere:48155	...	
vovs.exe:448	UDP	chimere:48156	...	
vovs.exe:448	UDP	chimere:48157	...	
thunderbird.exe:3812	TCP	chimere:1049	localhost:1050	ESTABLISHED
thunderbird.exe:3812	TCP	chimere:1050	localhost:1049	ESTABLISHED
thunderbird.exe:3812	TCP	chimere:1051	mail.ec.suckbind.ac.nz:993	ESTABLISHED
System:4	TCP	chimere:microsoft-ds	chimere:0	LISTENING
System:4	TCP	afs.netbios-ssn	chimere:0	LISTENING
System:4	TCP	afs.netbios-ssn	chimere:1040	ESTABLISHED
System:4	TCP	chimere:netbios-ssn	chimere:0	LISTENING
System:4	TCP	chimere:1040	afs.netbios-ssn	ESTABLISHED
System:4	UDP	chimere:microsoft-ds	...	
System:4	UDP	afs.netbios-ns	...	
System:4	UDP	afs.netbios-dgm	...	
System:4	UDP	chimere:netbios-ns	...	
System:4	UDP	chimere:netbios-dgm	...	
svchost.exe:1884	UDP	afs:1900	...	
svchost.exe:1884	UDP	chimere:1900	...	
svchost.exe:1884	UDP	chimere:1900	...	
svchost.exe:1700	UDP	chimere:1027	...	
svchost.exe:1700	UDP	chimere:1062	...	
svchost.exe:1700	UDP	chimere:1354	...	
svchost.exe:1332	TCP	chimere:epmap	chimere:0	LISTENING
svchost.exe:1332	UDP	chimere:epmap	...	
Psi.exe:3768	TCP	chimere:8010	chimere:0	LISTENING
Psi.exe:3768	TCP	chimere:1178	130.163.24.249:https	ESTABLISHED
Psi.exe:3768	TCP	chimere:1188	nbq2.eniac.ds:6223	ESTABLISHED
firefox.exe:552	TCP	chimere:1052	localhost:1052	ESTABLISHED
firefox.exe:552	TCP	chimere:1053	localhost:1052	ESTABLISHED
d3tr.exe:1698	UDP	chimere:1103	...	
cyprnd.exe:694	UDP	chimere:62515	...	
cyprnd.exe:694	UDP	chimere:62517	...	
cyprnd.exe:694	UDP	chimere:62519	...	
cyprnd.exe:694	UDP	chimere:62521	...	
cyprnd.exe:694	UDP	chimere:62523	...	
cyprnd.exe:694	UDP	chimere:62524	...	
Apache.exe:608	TCP	chimere:http	chimere:0	LISTENING
Apache.exe:608	TCP	chimere:2345	chimere:0	LISTENING
...



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