



A Two-Level Architecture for Internet Signaling

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RSVP Reuse

- MPLS
- VPN Provisioning
- Optical Network Path Setup
- Link Layer QoS Setup
- TIST
- AFSP

Two Level Architecture

- ALSP – Application Layer Signaling Protocol
 - End-to-End Semantics
 - RSVP, MPLS, ...
- CSTP – Common Signaling Transport Protocol
 - Hop-by-Hop Semantics
 - Transport, Security, State Management, Demultiplexing

Decompose Functionality

- Path (Tree) Oriented Signals
- Object Based Message Format
- Soft State
- Multicast Security
- Reliable Multicast Transport (Congestion Control, Ordered Delivery)
- Fragmentation and Message Bundling
- Tunneling
- Transport without Reliability Mechanisms

CSTP Downcalls

- SendNewSAPU
 - Reliably deliver a new soft state entities and initiate refreshes
- SendModSAPU
 - Reliably deliver a modification of an existing soft state entities
- SendTearSAPU
 - Reliably deliver a soft state deletion request
- SendEventSAPU
 - Reliably deliver a stateless message
- SendInfoSAPU
 - Send a stateless message without reliability or refreshes

CSTP Upcalls

- SendFail
 - Asynchronous error notification
- RecvNewSAPU
 - Receive new soft state entities
- RecvModSAPU
 - Receive modifications of new soft state entities
- RecvTearSAPU
 - Receive deletions of soft state entities
- RegenSAPU
 - Request for ALSP layer to regenerate a subsequent refresh

Waypoint

- An incremental approach to realizing CSTP (3 layers?)
- Remove complex (Transport) features
 - Soft State
 - Reliable Transport
 - Bundling
- More like a IP/IPSEC/UDP for signaling
 - Demultiplexing
 - Options
 - Checksum
 - Security

Documents

- A Two-Level Architecture for Internet Signaling
- Waypoint – A Path Oriented Delivery Mechanism for IP based Control, Measurement, and Signaling Protocols
- <http://www.isi.edu/rsvp/pub.html>

Beyond Signaling

- Path Oriented Network Management
- Traceroute, Pathchar
- Topology Mapping

Conclusion

- Lessons learned could be applied to an RSVPv2
- Much broader applicability with all the new path oriented signaling protocols
- IETF NSIS working group
- Should we get there incrementally?
- There are interesting Path Oriented Network Management functionality yet to be explored