Requirements for ECRTP over MPLS
(draft-ash-ecrtp-over-mpls-reqs-01.txt)

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Outline
(draft-ash-ecrtp-over-mpls-reqs--01.txt)

- AVT WG charter extension
- changes from previous version
- motivation & problem statement
- goals & requirements
- issues (to be addressed in solutions drafts)
  - protocol extensions for ECRTP & RSVP-TE
  - scalability
    - LDP application as the underlying LSP signaling mechanism
- next steps

AVT WG Charter Extension

- these milestones have been added to the AVT charter
  - Nov 2003 Initial draft requirements for ECRTP over MPLS; discuss with MPLS WG
  - Mar 2004 Finish requirements for ECRTP over MPLS; re-charter for subsequent work

Major Changes from Previous Version

- focus on requirements for ECRTP over MPLS
  - defer other requirements until later
- eliminate MPLS jargon such as CE, PE, etc.
  - just talk about routers R1, R2, etc.
- eliminate absolute performance objectives
  - state requirement to 'minimize delta degradation'
- eliminate absolute scalability requirements
  - state goal to improve scalability of the number of compressed flows that can be handled
- discussion of ECRTP & ROHC
  - ECRTP should be used
    - more tolerant of packet loss
    - guard against frequent resynchronizations
    - minimize need for error recovery
  - ROHC can also be considered
    - ROHC does not accommodate packet reordering to protect against out-of-sequence packets (can occur on MPLS LSPs)

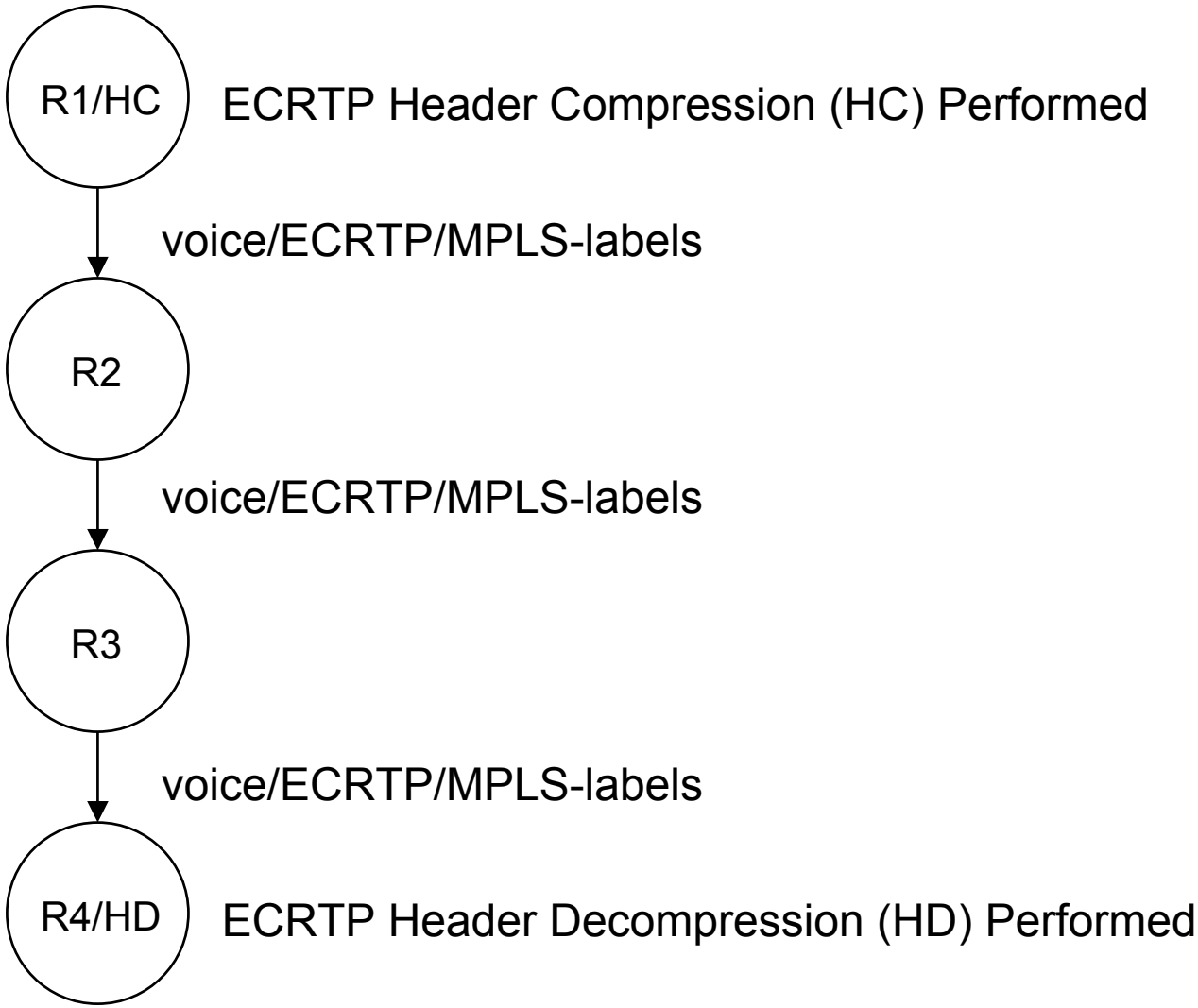
Motivation & Problem Statement
(draft-ash-ecrtp-over-mpls-reqs-01.txt)

- motivation
  - carriers evolving to converged MPLS/IP backbone with VoIP services
    - enterprise VPN services with VoIP
    - legacy voice migration to VoIP
- problem statement
  - VoIP typically uses voice/RTP/UDP/IP/ encapsulation
    - voice/RTP/UDP/IP/MPLS with MPLS labels added
  - VoIP typically uses voice compression (e.g., G.729) to conserve bandwidth
    - compressed voice payload typically no more than 30 bytes
    - packet header at least 48 bytes (60% overhead)
  - cRTP not highly scalable

Goals & Requirements
(draft-ash-ecrtp-over-mpls-reqs-01.txt)

- goals
  - provide more efficient voice transport over MPLS networks
  - increase scalability of VoIP header compression to a large number of flows
  - not significantly increase packet delay, delay variation, or loss probability
- requirements
  - use existing protocols (e.g., ECRTP, ROHC) to compress RTP/UDP/IP headers
    - provide efficient voice transport, tolerance to packet loss, & resistance to loss of session context
  - allow ECRTP over an MPLS LSP
    - avoid hop-by-hop compression/decompression cycles
  - minimize incremental performance degradation due to increased delay, packet loss, & jitter
  - use standard protocols to signal context identification & control information (e.g., [RSVP], [RSVP-TE], [LDP])

ECRTP over MPLS Concept



Issue 1 - Protocol Extensions for ECRTP & RSVP-TE

- extensions to ECRTP
  - new packet type field to identify FULL_HEADER, CONTEXT_STATE, etc. packets
- extensions to RSVP-TE
  - new objects to signal session context IDs (SCIDs)
  - extensions need coordination with MPLS WG

Issue 2 - Scalability

- RSVP-TE advantages
  - allows VoIP bandwidth assignment on LSPs
  - QoS mechanisms
  - may require a large number of LSPs to be created
    - scalability concern
- desirable to signal MPLS tunnels with LDP
  - many RFC2547 VPN implementations use LDP as underlying LSP signaling mechanism
  - scalable
  - requires extensions to LDP
  - LDP issues
    - no bandwidth associated with LSPs
    - QoS mechanisms limited

Next Steps

- propose <draft-ash-ecrtp-over-mpls-reqs-00.txt> to become AVT WG draft
- begin to progress solution I-D's within AVT
  - with review by other WGs (e.g., MPLS WG)