## ST Working Group

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San Jose, California

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## Agenda

- Agenda bashing
- Status of draft
- Overview of changes
- Detailed review of draft
- Discussion on open issues
- Wrap-up

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## Status of draft: Protocol Specification

- Issued December 5
  - draft-ietf-st2-spec-01.{ps,txt}
- Second revision since Toronto
- Next revision in progress, to be issued in January
- All previous drafts merged
  - State machines to be issued separately
- Current draft updated per discussions in Toronto
  - Some sections still to be revised/updated
- Some minor technical details to be updated
- Sections to be added for clarity

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## Added/Updated Sections

| | | | |
|---|---|---|---|
| – 1 | Introduction | – 7.2 | Checksum Computation |
| – 3.1.2.1 | Empty Target List | – 7.3 | SCMP Reliability |
| – 3.1.2.2 | Long Target Lists | – 7.4 | IP Encapsulation of ST |
| – 3.2 | Stream Options | – 7.5 | IP multicasting |
| – 3.4.2 | Target Joins | – 7.6 | Routing |
| – 4.1.1,4.1.2 | Setup Failures | – 8 | FlowSpec |
| – 4.2.2 | Path Convergence | – 10.3.7 | Reason Codes |
| – 5.3 | Stream Preemption | | |
| – 6 | Groups of Streams | | |

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## Sections Needing Updates

| | | | |
|---|---|---|---|
| – 1 | Introduction | – 7.1 | Stream ID Generation |
| – 3 | SCMP Description | – 7.3 | SCMP Reliability |
| – 3.1.4.1 | ACCEPT Processing | – 7.5 | Packet Discard |
| – 3.2.2 | Join Authorization | – 7.7 | IP Multicasting |
| – 3.4.2 | Target Joins | – 8.3 | FlowSpec #7 |
| – 3.4.4 | Target Deleting Self | – 10.3.2 | FlowSpec |
| – 3.4.5 | Changing a FlowSpec | – 10.3.7 | Reason Codes |
| – 4.1.1,4.1.2 | Setup Failures | – 11.3 | CHANGE Message |
| – 4.2.2 | Path Convergence | – 11.6 | ERROR Message |
| – 5.2 | Failure Recovery | – 11.10 | REFUSE Message |
| – 6.1 | Group Name Generation | – 12 | Protocol Constants |

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## Review of draft

- Section 1
  - – 1 Introduction
    - » Merge with old draft #1 not complete
- Section 2
  - – No Changes
- Section 3
  - – 3 SCMP Functional Description
    - » Overview of types of streams to be added, includes impact on state and recovery
  - – 3.1.4.1 ACCEPT Processing
    - » Text to be updated to include missing optimization
      - Excess resources should be released when processing ACCEPT

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## Review of draft (continued)

- Section 3 (continued)
  - 3.2.2 Join Authorization
    - » Level 1 - Ask Origin
      - Identical functionality can be provided using out-of-band messages
      - Level to be deleted per GMU meeting
    - » New levels:

| Level | Maintained State | Recovery Supported | DISCONNECT by Origin |
|---|---|---|---|
| 0 - Refuse Join | Full | Yes | Yes |
| 1 - OK„ Notify Origin | Full | Yes | Yes |
| 2 - OK | Partial | No | ?? |

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## Review of draft (continued)

- Section 3 (continued)
  - 3.2.2 Join Authorization (continued)
    - » Issue: Should per target disconnects by origin be supported under level 2
    - » Alternatives: No - via administrative control
      Sometimes - when next hop is known
      Yes - via flooding when next hop unknown
    - » Conclusion: (from session)
      - Always support per targets disconnects
      - Resulting matrix:

| Level | Maintained State | Recovery Supported | DISCONNECT by Origin |
|---|---|---|---|
| 0 - Refuse Join | Full | Yes | Yes |
| 1 - OK„ Notify Origin | Full | Yes | Yes |
| 2 - OK | Partial | No | Yes |

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## Review of draft (continued)

- Section 3 (continued)
  - 3.4.2 Target Joins
    - » Join FlowSpec to be deleted
    - » Issue: No way to refuse a JOIN-REQUEST
    - » Alternatives: Add JOIN-REJECT message
      Use implied refuse after timeout
    - » Conclusion: (from session)
      - Add JOIN-REJECT message (per earlier meetings)
  - 3.4.4 Target Deleting Self
    - » Description of handling REFUSE for Join Level 2 to be added

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## Review of draft (continued)

- Section 3 (continued)
  - 3.4.5 Changing a FlowSpec
    - » Issue: CHANGE message may interrupt data delivery or even result in target being torn down.
    - » Proposal: Add "Don't Interrupt" flag
    - » Conclusion: (from session)
      - Make "Don''t Interrupt" the default
      - Add "Interruptable" flag

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## Review of draft (continued)

- Section 4
  - 4.1.1,4.1.2 Setup Failures due to CONNECT and ACCEPT Timeouts
    - » Missing support for case where CONNECT is acknowledged but ACCEPT never received
    - » Needs to be made consistent with Section 7.3
  - 4.2.2 Path Convergence
    - » Issue: Does not adequately describe handling of convergence
    - » Proposal: Add hint (in REFUSE message ) to allow agent at point of divergence to follow proper path
    - » Conclusion: (from session)
      - Proposal accepted

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## Review of draft (continued)

- Section 5
  - 5.2 Failure Recovery
    - » Issue: Is not always clear when recovery should be tried
    - » Proposal: Add NoRecovery flag to REFUSE
    - » Conclusion: (from session)
      - Proposal accepted
- Section 6
  - 6.1 Group Name Generation
    - » Needs full definition of GroupID and Group Timestamp

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## Review of draft (continued)

- Section 7
  - 7.1 Stream ID Generation
    - » Needs to be added
  - 7.3 SCMP Reliability
    - » Variable names to be defined
  - 7.5 Packet Discard on Net Congestion
    - » Needs to be added
  - 7.7 IP Multicasting
    - » Handling of case where next hop can not support IP multicast address needs to be added
- Section 8
  - 8.3 FlowSpec #7
    - » Missing IPHops field

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## Review of draft (continued)

- Section 9
  - No Changes
  - State machines to be published separately
- Section 10
  - 10 ST Header
    - » SID needs to be made contiguous
  - 10.3.2 FlowSpec
    - » Missing IPHops field
  - 10.3.7 Reason Codes
    - » Need to be reviewed

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## Review of draft (continued)

- Section 11
  - 11.3 CHANGE Message
    - » Add NoInterrupt flag
  - 11.6 ERROR Message
    - » ErroredPDU parameter is only used by ERROR message
    - » Parameter to be combined with ERROR message
  - 11.10 REFUSE Message
    - » Add NoRecovery flag
    - » Add ValidTargetIPAddress for use during stream convergence
- Section 12
  - 12 Suggested Protocol Constants
    - » List of constants needs to be created

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## Wrap-up

- Summary
- Review of actions
  - Review of ReasonCodes
  - Add section on differences between RFC1190 and ST2+
  - Review FlowSpec
  - Complete draft
  - Update State Diagrams
  - Publish State Diagrams draft

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## Working Group Information

- Mail List:
  st@ibminet.awdpa.ibm.com
- Request Address:
  st-request@ibminet.awdpa.ibm.com
- FTP Server:
  ibminet.awdpa.ibm.com:/pub/st
- Chairs:
  Lou Berger <lberger@bbn.com>
  Luca Delgrossi <luca@ibmpa.awda.ibm.com>

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