SIPFIX:
Use Cases and Problem Statement for VoIP Monitoring and Exporting

draft-huici-ipfix-sipfix-00

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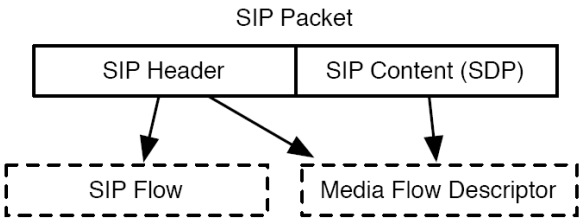
Motivation and use cases

- Motivation: **distributed monitoring and operations of VoIP networks**
  - Live monitoring of control plane (e.g., SIP) and media plane (e.g., RTP)
    - E.g., a voice-only call can be seen as two flows
      - ✓ SIP flow
      - ✓ RTP flow
- Use cases, i.e., why do we need to monitor VoIP networks
  - QoS, SLAs, Traffic Engineering, Troubleshooting, Security, Billing, Law enforcement, etc.
- Requirements (or challenges)
  - Distributed measurements (multiple observation points)
    - From (multiple) probes to (less and optional) mediators to (one) collector
  - Application layer semantics (Deep Protocol Inspection)
    - SIP, SDP, RTP, RTCP, etc.
  - Flexible exporting format to accommodate future changes in protocols
    - SIP defines a new one every day ☺
  - Correlation of control plane and media plane flows
- We need a standardize way to make probes, (mediators) and collectors talk to each other

What is our contribution?

- Now
  - Enumerate use cases
  - Define requirements of what we would need
- In the future
  - Just define some Information Elements (IEs) ☺ using IE template (RFC 5102)

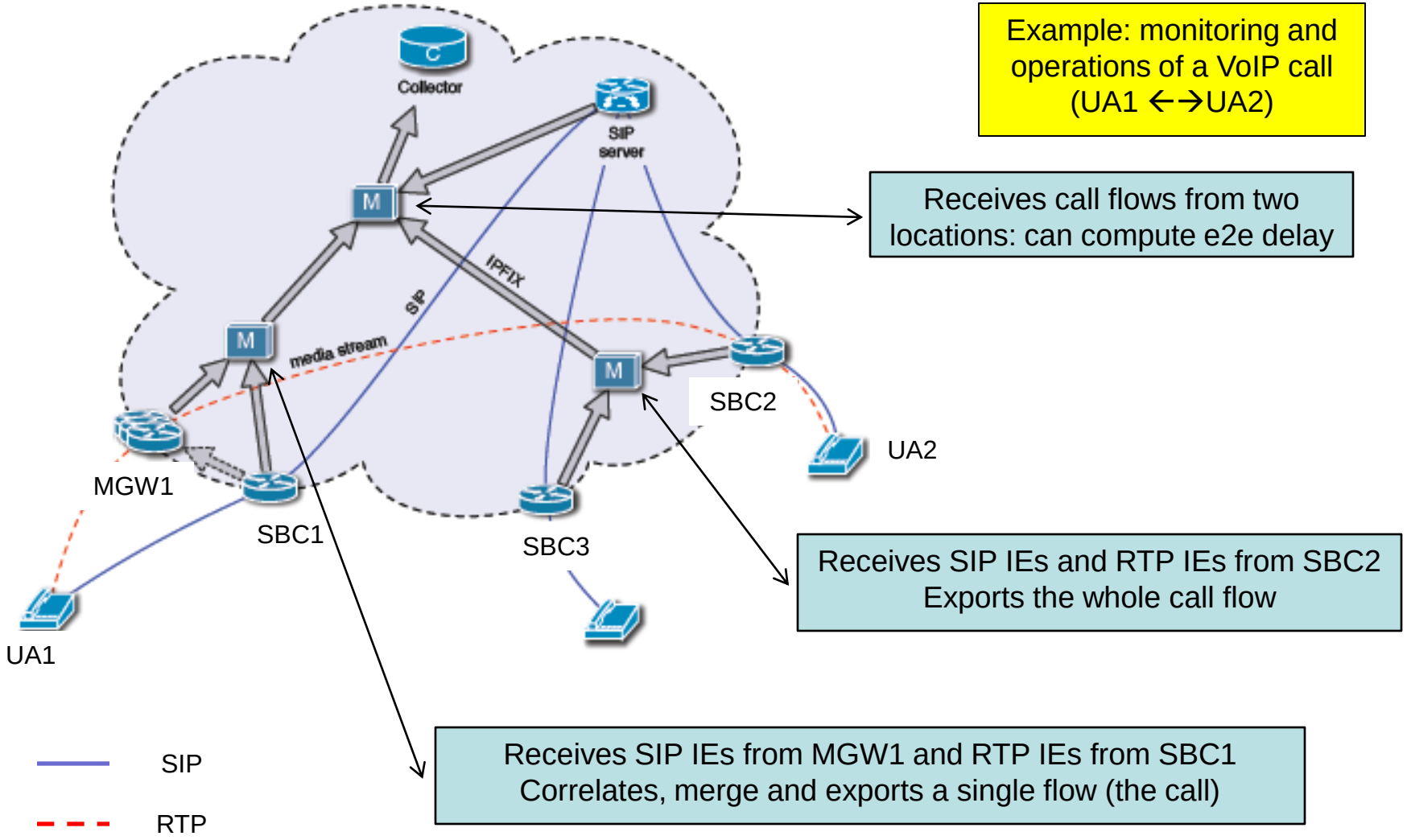


- Flow type definitions (main ones)
  - SIP Flow
    - "sipDialogId" composed of (sipFrom, sipTo, sipCallId)
    - May include other SIP header IEs
  - Media Flow
    - "sipMediaId": a unique identifier for a media stream description of a SIP dialog
  - Media Flow Descriptor
    - "Virtual" flow to correlate SIP and Media Flows (can be extracted from SIP Header or from SIP Payload, i.e., SDP)
      - ✓ Contains "sipDialogId" and "sipMediaId"
- Paper reference (for additional details)
  - Anderson, Niccolini, Hogrefe, "SIPFIX: A Scheme For Distributed SIP Monitoring"
    - IEEE International Symposium on Integrated Network Management (IM) 2009

Why IPFIX?

- To re-use what is there already
  - Build on existing standards instead of inventing new ones
  - Reduce development costs by making usage of many IPFIX libraries available
- Even more…
  - **SIP and RTP are indeed flows**
    - Just not at IP layer (something similar to IPFIX for other layers…)
- Even more…
  - A lot of **IPFIX extensions re-used**
    - **Mediation concepts**
      - ✓ fundamental for distributed monitoring scenarios
    - **Bidirectional Flows** (RFC 5103)
      - ✓ merging SIP request and responses still keeping per-direction counters
    - **Common Properties** (RFC 5473)
      - ✓ Defining a commonPropertiesID with fields common to many reports (sipFrom, sipTo, sipCallId), e.g., a long lasting call

Example of how SIPFIX makes usage of Mediation



Related work

- The Common Log File (CLF) format for the Session Initiation Protocol (SIP)
  - draft-gurbani-sipping-clf-01
- Binary Syntax for SIP Common Log Format
  - draft-roach-sipping-clf-syntax-01

- Similarities
  - IPFIX is being considered as a candidate for CLF
  - **IEs to be defined would probably overlap (need to talk)**
    - E.g., from, to, callid, etc.
- Differences
  - focused on particular use case
    - interpreting the state of SIP transactions
  - **not using mediation concepts** (correlating & merging)
  - only focused on control plane

Is there an home for this work?

- Just defining a bunch of Information Elements (IEs)
  - IPFIX supports this either by defining enterprise-specific IEs or by registering new IEs at the IANA registry
- Where to go? What to do?
  - Operations and Management Area ☺
    - we are talking about operations and management, we are talking about flows, we are highly re-using IPFIX concepts (mediation, biflow, common properties)
  - Real-time Applications and Infrastructure Area
    - SIP knowledge would be there
  - Just allocate the IEs and use them in products? ☹