Information Elements for IPFIX Metering Process Location

draft-irtf-nmrg-location-ipfix-01

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Motivation and scope

- IPFIX protocol
  - Time based aggregate view on network traffic
- Network traffic usage in space
  - How much network traffic is generated in a specific location?
- Coupling space and time to understand network usage
  - relate service quality parameters to location changes
  - Anomaly detection, provider-independent measurements

Use cases

- Smart Phones traffic
  - Exporter location can be of interest
  - Where often do users interact with their phones?
  - How many applications does a user run in a specific location?
- Virtualized environments
  - Virtual machines change location during migration and replication
  - What are the current locations of flows processed by VMs ?

Information Elements: overview

- **geospatialLocationLat**: coordinate information value of the latitude
- **geospatialLocationLng**: coordinate information value of the longitude
- **geospatialLocationRadius**: radius value of location using a circular area (known certainty)
- **CivicLocationValue**: civic address
- **deviceId**: identifier of the physical device acting as IPFIX exporter

Example 1: geographic location

- Point record: there is no known uncertainty

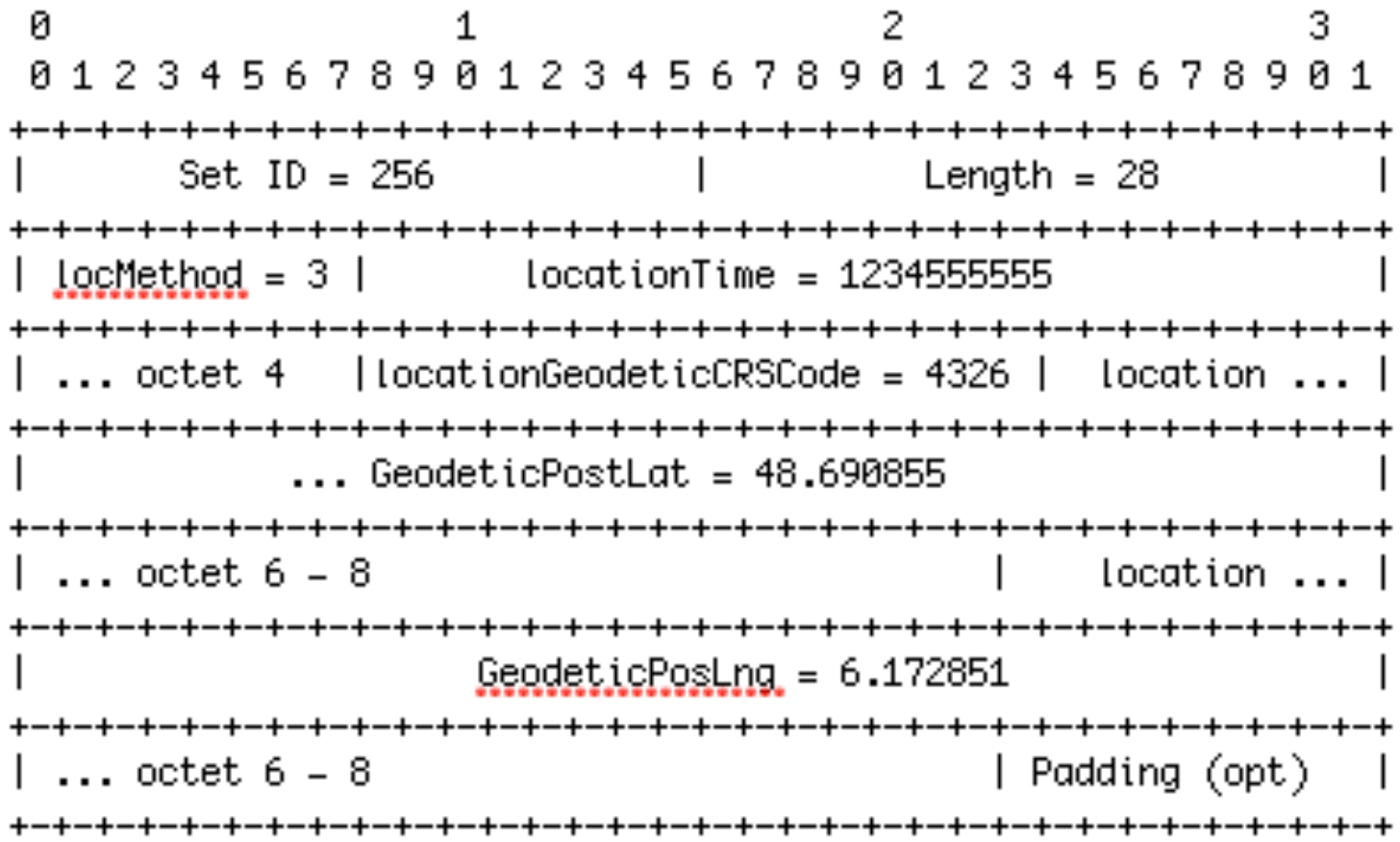
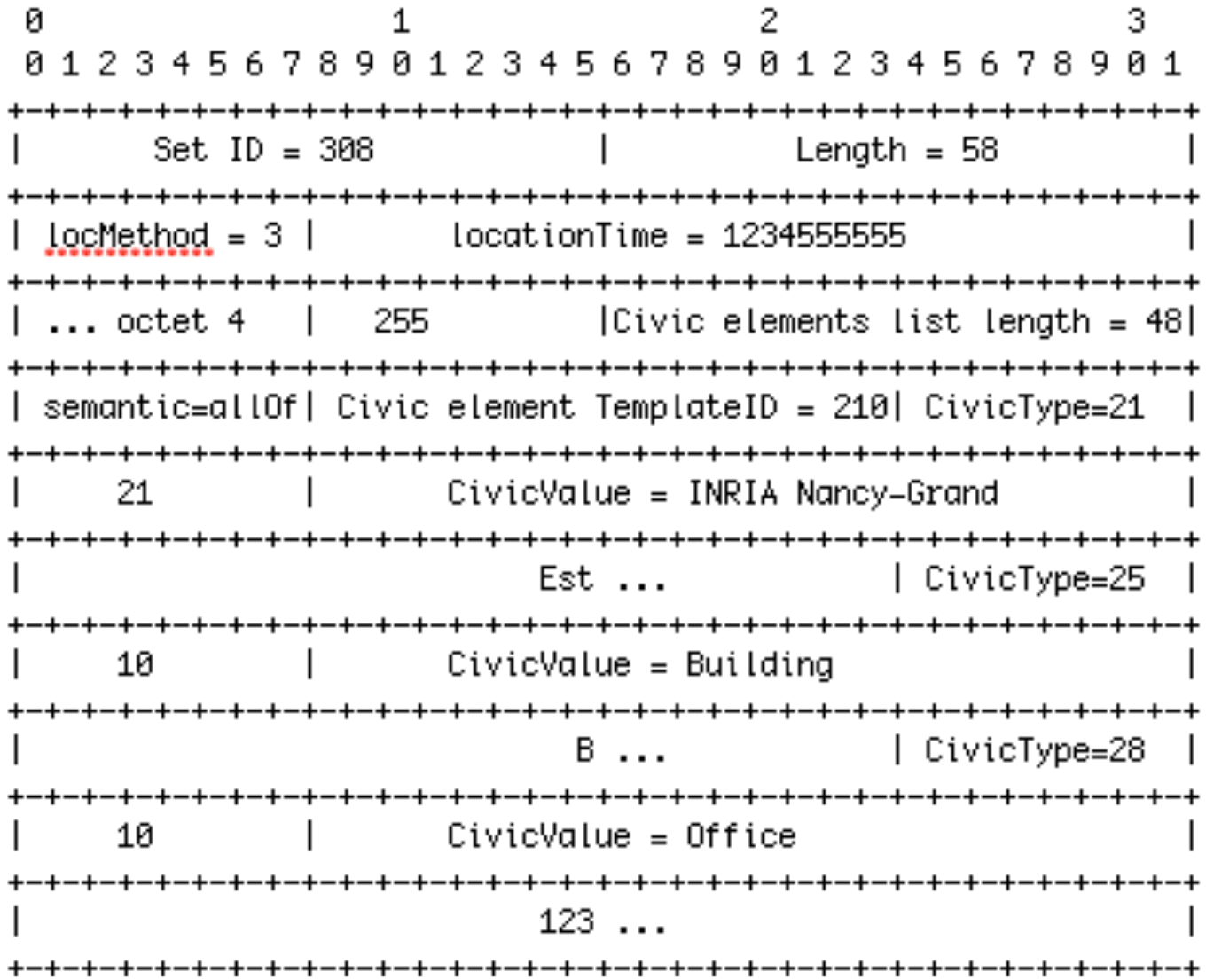


Figure 2: Data record of a geodetic 2D point location

Example 2: Civic location



Proof of Concept: Android devices

Start time	Src IP Addr:Port	Pkts	Bytes	Latitude	Longtitude
20:19:21.852	173.194.40.113:443	9	2730	48.690855	6.172851
20:21:42.307	91.202.200.229:80	13	9137	48.690855	6.172851
20:22:38.084	73.194.40.113:80	8	1799	48.690855	6.172851
…					
21:17:13.498	173.194.45.80:443	12	2830	48.713145	6.17526
21:17:13.498	10.21.20.232:49233	15	2301	48.713145	6.17526
21:17:16.919	10.21.20.232:15572	1	72	48.744506	6.154815

Draft history

- First version published within NMRG in 2012
  - Presented in IETF 83, Paris
- Three versions as an individual submission to be discussed within IPFIX working group
  - Presented in IPFIX WG in IETF 87, Berlin and NMRG WG
  - Several remarks to enhance the draft
- Current version within IRTF NMRG WG
  - Intended status: Informational

Conclusion

- Integrating location in IPFIX records
  - Geographic location information in the Internet is growing
  - Cars, mobile devices, Virtual machines, Sensors
- Interesting use cases
  - Location aware network traffic usage
  - Verification of flows processing locations
  - Measurement applications
- Security considerations
  - IPFIX messages carrying location information should be signed and encrypted