IMSI Filtering with Cubro Products

APPLICATION NOTE

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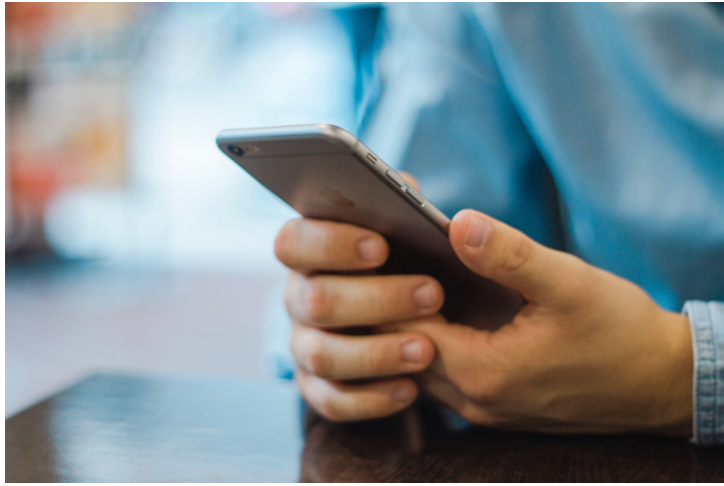
NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

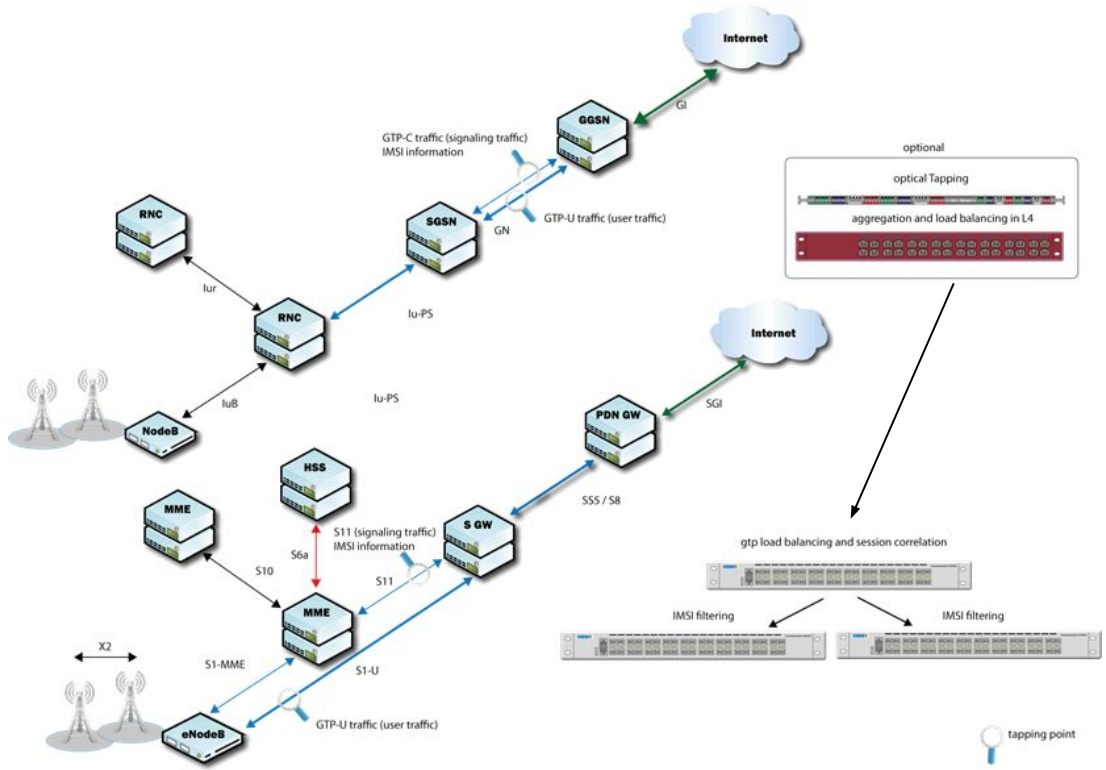
Why IMSI* Filtering?

- To reduce the load towards monitoring solutions by allowing selection of subscribers by IMSI
- Selection and tracing of subscribers requested by the law enforcement
- Selection of specified subscribers for troubleshooting and for network quality and assurance, possibly using Wireshark and similar tools
- Help for drive test analytics



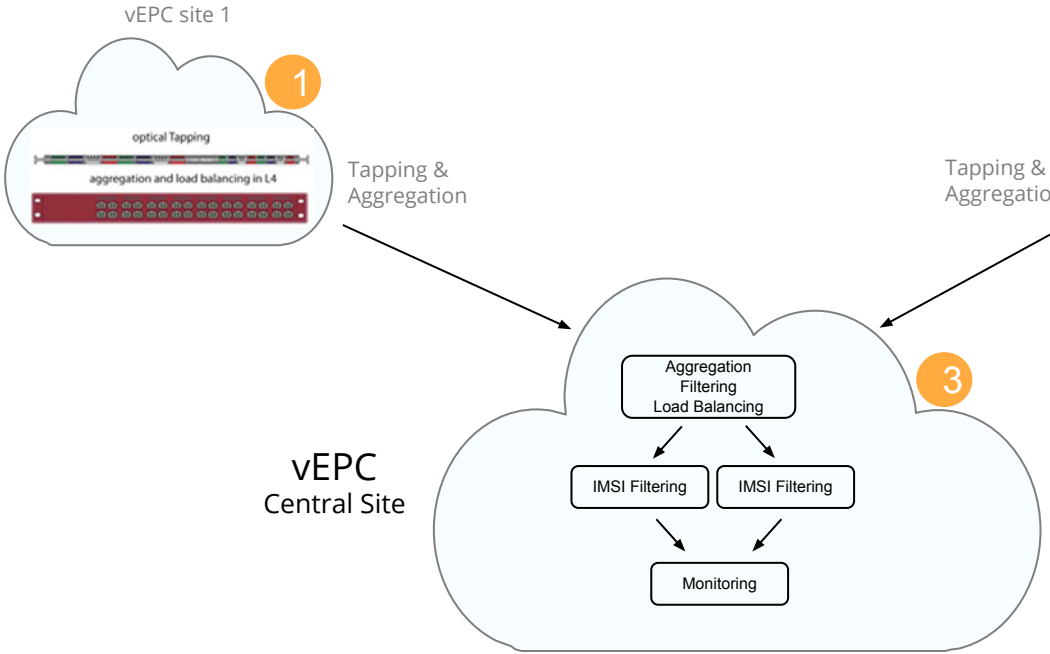
*The international mobile subscriber identity (IMSI) is a number that uniquely identifies every user of a cellular network

Challenges on IMSI Filtering



- In order to find specified IMSIs all the packets need to be checked resulting in high load.
- IMSI is not found in all packets – not all network events carry IMSI (depends also on network design and used technology)
- Successful IMSI filtering requires packet collection, aggregation, load balancing and session correlation used in combination (see drawing on the left)

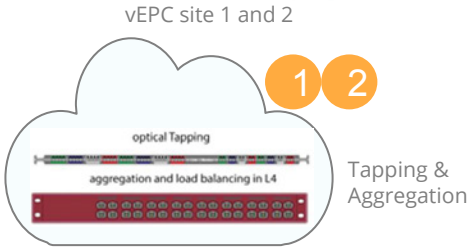
Solution - Deployment Overview



- Tapping, aggregation and load balancing is done at every remote site
- Central site collects the data and does IMSI filtering sending the data to monitoring system

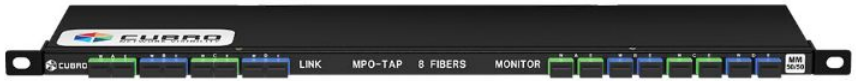
Deployment Example

Layer 1 Tapping at Site 1 and 2



Cubro MTP TAP

- 4 MTP Links in 1/3 U 19”
- Supports 40G and 100G
- Totally passive and secure



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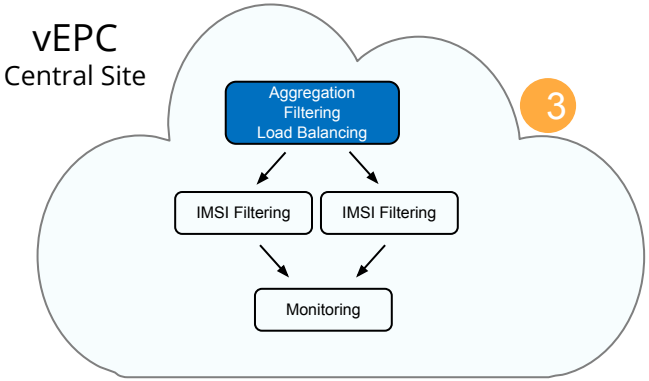
Central Site – Filtering & Load-balancing

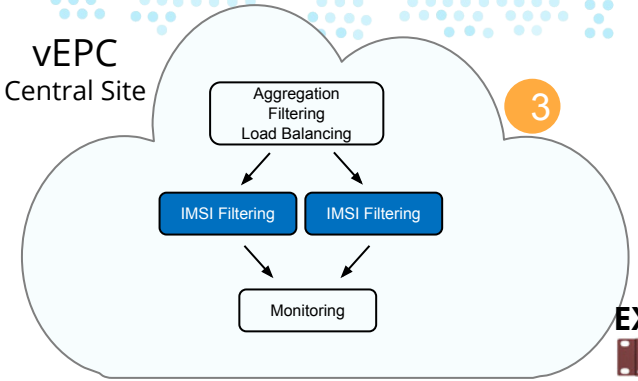


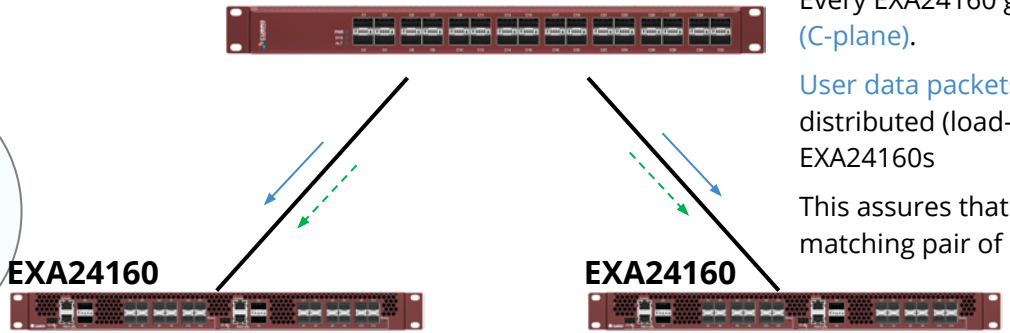
Cubro EXA32100

- 32 x 40G/100G ports (can also be used as 128 x 10G solution)
- Filtering including GTP Layer; separates signalling and user traffic
- GTP Load-balancing based on inner (user) IP address; distribute user traffic evenly to the IMSI filtering solution.

Load-balancing S1-U traffic using GTP inner IP is the only feasible way to share user traffic between the different IMSI Filter boxes

Central Site - IMSI Filtering





Every EXA24160 gets full signaling (C-plane).

User data packets (U-plane) are distributed (load-balanced) among the EXA24160s

This assures that every EXA24160 has matching pair of C- and U-plane

Cubro EXA24160

- Correlation between GTP-U and GTP-C
- Forward only traffic from selected user
- Up to 80Gb/s correlation performance per unit

De-Duplication and Keyword search are available on this unit

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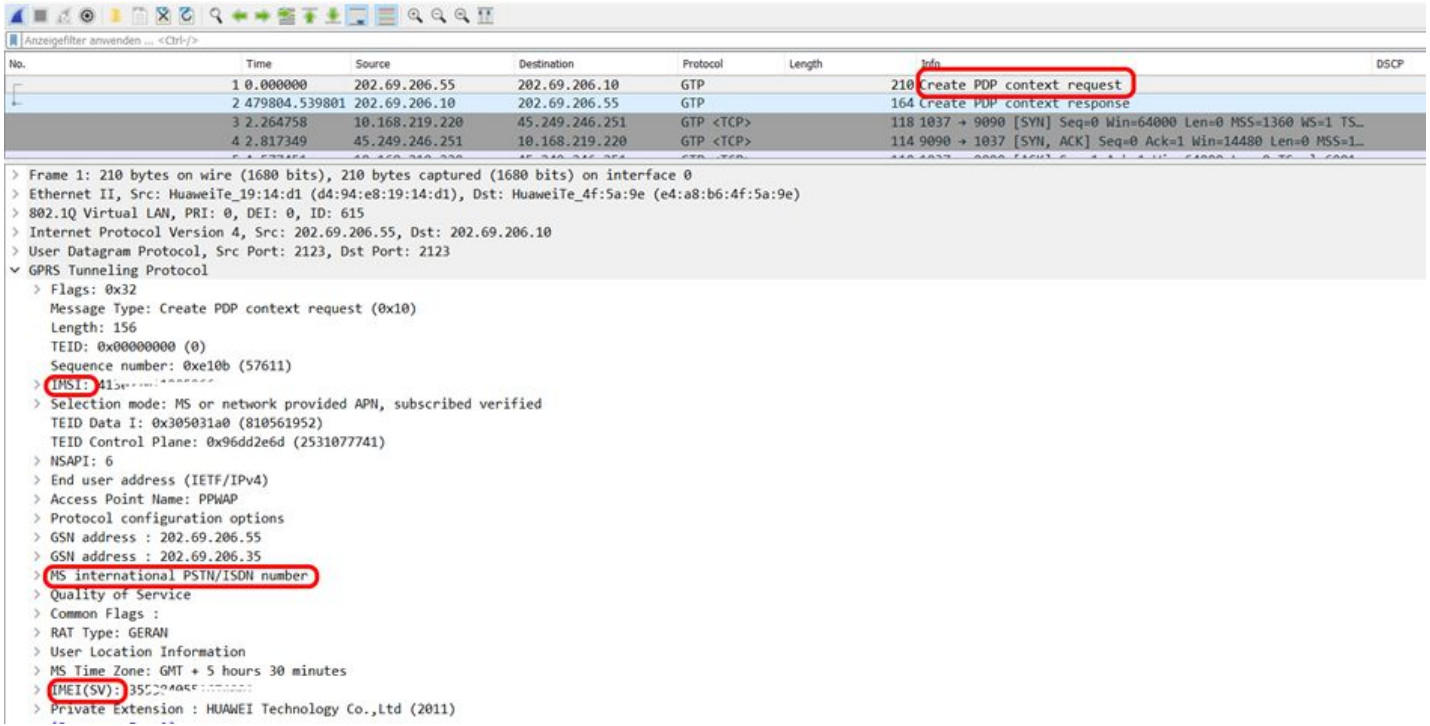
IMSI Filtering Overview of functionality

- IMSI Filtering provides ALL signalling and user packets of a call
- Enables finding of signalling messages that contain the IMSI
- Certain messages only include the IMSI information – correlation is required
  - PDP Context Request (3G)
  - Session Create Request (4G)
  - After finding these messages a correlation mechanism is applied
- Find ALL signalling and ALL user traffic data that belong to this call
  - Send all correlated packets to an external analyser/probe

Example - Session Create Message

Cubro **EXA24160** Sessionmaster finds the message and ALL other packets that belong to this call



Summary

Future-proof (investment protected) – Just add EXA24160s when traffic grows

Easy to use and straight-forward to implement

Flexible – add/remove probes/analyzers without affecting others

Full solution from Layer 1 tapping to traffic correlation from a single vendor

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