Network Monitoring Architecture based on Home Gateways

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FIGARO is a novel network architecture centered around home gateways. The use cases of FIGARO require active and passive monitoring tools that can run continuously and online inside a large number of home gateways.

Why home gateways?
- interconnects home network to internet
- natural control point
- gateways in different homes can collaborate

Use cases
- home automation
- distributed content delivery
- content delivery optimizations
- network performance troubleshooting

CHALLENGES

Low-cost gateway hardware
- limited CPU, memory, storage

Online monitoring and troubleshooting
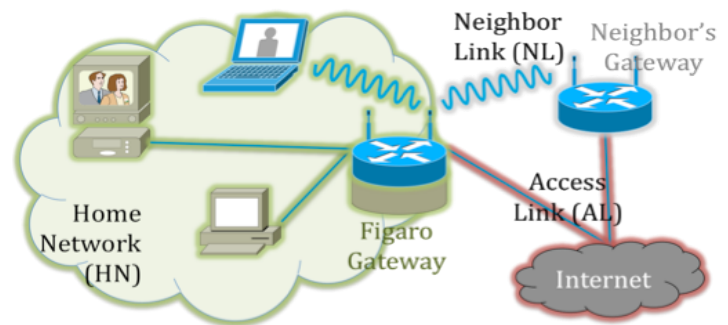- must not interfere with gateway's normal operations

Data storage
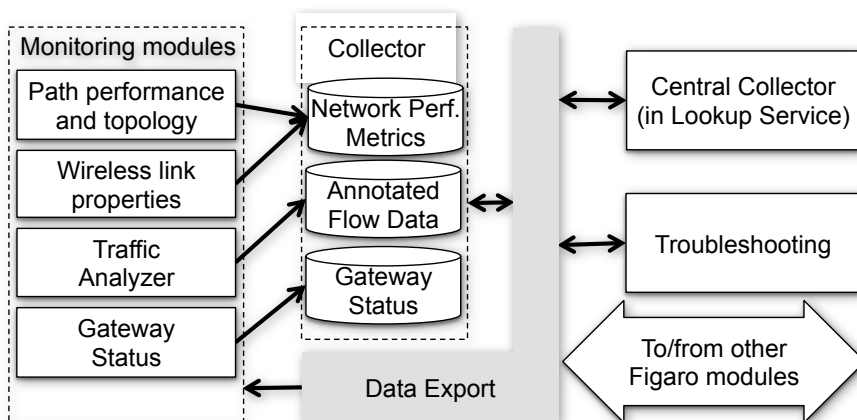- summarize data without loss of essential information

Large scale monitoring
- collect and store aggregated data from a large number of gateways

VANTAGE POINTS

SYSTEM DESIGN

Monitoring Framework Functional Architecture

Incoming data processing at the gateway Collector
- subsample or filter
- merge different streams
- bin over time
- aggregation

Data storage
- gateway: circular buffer
- central collector: cloud backend

Data Export
- publish/subscribe to data streams
- SQL interface

http://www.ict-figaro.eu