SWIM

Case Study:
Edge Intelligence & Telecommunications Service Providers

Objectives

- Improve visibility into handset, CPE and network performance
- Apply local analytics and machine-learning to existing telecoms services
- Develop digital twin models of handsets, CPE and network elements
- Identify early predictive maintenance, service failures and performance issues

- Reduce volume of data passing across the network
- Reduce central processing, database and storage costs
- Track high value assets
- Improve asset and data security
- Enable fast application development

Summary

Telecommunications providers run highly complex networks composed of many assets: fibre, transmission assets, switches, routers, POPs, set-top boxes, WiFi devices, handsets, SIM cards, CPE and many more. The amount of data available from these devices is ever escalating. The volume and complexity of this data can be greatly reduced, and better visibility/insights produced by the use of edge intelligence (edge data processing and compute, analytics, machine learning applied locally on existing equipment). SWIM.AI provides a software solution, EDX, which enables a number of improvements and cost reductions for multiple aspects of telecoms business.

Solution

SWIM software can be broadly applied across the telecoms business. Use cases include:

Telemetry and monitoring of edge devices. With EDX installed on a device (mobile handset, set-top box, router, switch, CPE etc.) with access to the device control data the SWIM system can be used to monitor the state of the device. For example, sitting on an android handset EDX can monitor the state of the APN settings, GPS location, device settings, application usage, memory usage, etc. A digital twin can then be locally constructed of the device, used to generate warning alerts and send a summary set

of data to another EDX instance (for example running in the operator's customer service department) or to record historic data (eg in a central database).

Machine Learning real-time enhancement of services. A SWIM EDX instance running on a Wi-Fi set-top box can access the Wi-Fi channel performance statistics (where such data is available) and can be used to make real-time recommendations or changes – for example selecting the optimal Wi-Fi channel to use to maximize performance and throughput.

Network Performance & Monitoring. With SWIM EDX instances running on handsets and EDX instances running on cell-sites (or local POPs) digital twins can be constructed of the handset performance, the cell site performance and the network performance. This can be used to provide real-time visibility of the current state of the devices & network, and further can be used to build a digital twin model of actual performance – which can be used to identify connectivity blackspots, areas of poor coverage, network 'hotspots' and other issues that can better inform network design and operational decisions.

Asset Monitoring. For assets which produce a data stream or have a means of identification (eg RFID tag, bar-code or other tagging) SWIM EDX can be used to aggregate data from assets, greatly reduce data volumes (necessary to transmit) and produce a real-time mapping of assets and their behavior.

Security Behavior: EDX instances running on edge devices (routers/switches/firewalls) would be able to monitor the state of local usage/ports etc. and could be programmed to check behavior against know 'risky profile' behavior. Local real-time warning of security issues or unusual behavior can complement existing security and risk controls.

Data Security: SWIM EDX is able to use underlying network encryption (e.g. TLS) to encrypt raw data streams as information is sent from the edge across the network. This can help to further secure edge, sensor and IOT data streams.

Fast Application Development: SWIM EDX is able to greatly simplify application development solving issues of edge data volumes, multiple data formats, poor network connectivity, bandwidth constraints, limited local compute resources and enabling edge delivery of custom code and applications.

SWIM EDX

SWIM.AI software (EDX) is lightweight edge data software solution providing:

- Data reduction, analytics, machine learning and digital twin prediction locally on existing equipment from 'edge' data (using edge computing)
- Analyses data in real-time as its produced, not requiring central data storage or databases
- Provides a real-time graphical or API view of data/insights from existing equipment
- EDX offers fast, economic local analytics, prediction and digital twins on existing equipment
- EDX is lightweight and runs on relatively small compute devices (handsets, CPE, routers, PCs, servers as well as cloud and servers)
- EDX is designed to handle poor network connectivity/latency and preserve data privacy
- EDX software complements existing hardware and software solutions (including existing data-collection, big-data, OSS, analytics and cloud projects)
- Supports many use-cases: real-time reporting; telemetry; critical event identification; anomaly detection; preventative maintenance; process optimization; security improvements and others

Learn More

Learn more about how SWIM.AI uses edge intelligence to deliver real-time insights from streaming device data by visiting www.swim.ai