Cisco Self-Optimizing Networks (SON)

Increase cell capacity, improve customer experience

Optimize and automate your Radio Access Network (RAN)

Mobile networks were planned back in the 20th century for a small number of high-end users who made voice calls, with similar usage patterns every day. Today's networks need to handle infinitely more users, who are consuming a lot of data, mostly indoors, and in wildly unpredictable patterns.

In those early stages, networks were comprised of a single macro layer. Today, they consist of a mix of technologies (2G/3G/4G/5G), massively densified with small cells and Wi-Fi. To respond to these changes, the Radio Access Network (RAN) needs a new architecture, and a Self-Optimizing Network (SON) is its cornerstone.

Specialized expertise must be maintained to tune these network parameters and unfortunately, the existing manual process is time-consuming and potentially error-prone. In addition, this manual-tuning process inherently results in comparatively long delays in updating values in response to the often rapidly-changing network topologies and operating conditions, resulting in sub-optimal network performance.

Benefits

- Automate new cell deployment
- Dynamically balance network load
- Automatically manage neighbor relations
- Plan tracking areas
- Assign Physical Cell Identifiers (PCI)

How Cisco Self-Optimizing Network (SON) solves these challenges

Customers are building a completely automated network platform that self-monitors, adjusts, and optimizes the network without manual intervention. The machine-learning intelligence of the Cisco® SON Suite embeds intelligence into the network, takes proactive control from the hardware, and delivers the automated functions needed to compete more effectively. Its open, hyperprogrammable architecture consolidates multivendor, multidomain networks into sleek, agile, unified systems.

With complexity growing as networks scale, service providers are adopting more analytical software solutions to identify and react to triggers in their networks. How can they transform analysis into action? They need machine-learning automation that executes changes, while continuing to learn and create repeatable processes. This will help them create new services or even whole new markets that generate new revenue streams.

The mobile standards body, 3GPP, initiated the work toward standardizing self-optimizing and self-organizing network capabilities for 3G/LTE in Releases 8 through 10. The standards provide network intelligence, automation, and network management features to automate the configuration and optimization of wireless networks to adapt to varying radio channel conditions, thereby lowering costs and improving network performance and flexibility. This effort has continued in additional 3GPP releases with more enhancements in each of the above areas, as well as new areas to allow for inter-radio access technology operation, enhanced inter-cell interference coordination, coverage and capacity optimization, energy efficiency, and minimization of operational expenses through minimization of drive tests.

Implementing Cisco SON improves and unifies network operation across Universal Mobile Telecommunications Service (UMTS), Long-Term Evolution (LTE), small cells, and Wi-Fi. It is a highly efficient method to:

- Improve network Key Performance Indicators (KPIs), with a 10 to 40 percent improvement in call retention, load, and throughput
- Lower operating expenses, by automating engineering-intensive tasks
- Reduce capital expenditures, with improvement in network performance
- Boost the customer experience through network improvements

Cisco SON automation and simplification

The Cisco SON Suite enables Mobile Network Operators (MNO) to simplify and automate their network operations practices and to focus more on creating value for their customers. Service providers are envisioning the enrichment of SON with subscriber-specific information and predictive analysis for network performance.

Cisco SON can reduce OpEx by connecting with a Root-Cause Analytics (RCA) system to automate maintenance and optimization of the network. SON creates a closed loop for monitoring, analysis, and action, taking the manual factor out of the loop. Such integration can enable SON to perform user-centric analysis using new data sources, such as customer experience systems, geolocation, crowdsourcing, and big data analytics.

This is an example where the SON Suite can automate and optimize, bringing real recurring, sustainable value to service providers' customers, including proactive sleeping cell identification, predictive capacity management, golden parameter audit, Voice Over LTE (VoLTE) mute, and dropped calls.

Custom call to action

For more information on Cisco SON and how it can automatically your network and improve your customer experience: read the case study: "Airtel: Transforming the India Mobile User Experience with Zero-Touch RAN" @ https://www.cisco.com/c/dam/en/us/products/collateral/wireless/son-suite/airtel-customer-case-study.pdf

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