

Automated Network Learning

HIGHLIGHTS

- Dynamic, graphical network topology mapping provides holistic visibility for improved provisioning, troubleshooting, and security
- Stateful traffic inspection enables network, session, subscriber, and device-aware traffic forwarding
- Software-based control processing architecture offers scale, programmability, and on-demand network intelligence

Intelligent Topology Mapping for Mobile Networks

The geographical spread, layered architectures, and technological diversity of mobile networks pose numerous operational challenges for Mobile Network Operators (MNOs), whose siloed organizational structures often create further roadblocks for comprehensive network monitoring, troubleshooting, and security.

To efficiently monitor their networks, MNOs deploy out-of-band network monitoring tools as well as network packet brokers: nodes that aggregate, replicate, optimize, and deliver relevant traffic flows to out-of-band monitoring tools. The productivity of network packet brokers, however, is gated by the extent to which their users or administrators have visibility into the topology of the network.

It is not uncommon, especially in large mobile networks, for operations staff to have visibility only into the regional or operational silos they manage. This problem is further compounded by the fact that mobile networks are constantly changing to meet the growing demand for bandwidth. Manual approaches for mapping network topology, therefore, are neither adequate nor efficient. For holistic and real-time network awareness, MNOs need automated tools that can inspect traffic at wire-speed and can provide a granular, end-to-end view of the network.

Brocade Automated Network Learning Solution

Brocade[®] Packet Brokers deliver a comprehensive set of capabilities that enable pervasive monitoring of physical and virtual network workloads. Unlike

legacy packet broker solutions, the Brocade solution offers a scalable, software-based control processing entity, called the Brocade Session Director, which provides enhanced mobile network awareness, real-time programmability, and scale.

The Automated Network Learning function of the Brocade Session Director inspects traffic on mobile control interfaces (such as S1-MME, S11, and S6-a LTE interfaces) to construct a logical network topology map.

The topology map, which spans radio access and core network elements, is rendered in an intuitive graphical user interface, which updates automatically as changes are detected in the network.

With Automated Network Learning, network operators can gain a holistic, real-time view of the network. This enables them to define flow forwarding rules on Brocade Packet Broker visibility nodes based on a rich and diverse set of criteria.

Advanced Network Intelligence

In addition to mapping the network's topology graphically, the Brocade Automated Network Learning solution provides advanced network intelligence in the form of easy-to-understand reports. Some examples for types of available reports are described below.

Source-IP to IMSI and IMEI Report

Scanning mobile bearer traffic reveals only the IP address associated with the subscriber or device that is generating traffic. Operators sometimes need to map observed IP addresses to the International Mobile Subscriber Identity (IMSI) or the International Mobile Equipment Identity (IMEI) that is associated with the IP address.

Automated Network Learning statefully inspects network traffic to maintain a dynamic map of IP addresses to IMSI and IMEI. This report can be invoked on demand, enabling the operator to perform advanced traffic analysis.

IRAT Handover Report

Inter Radio Access Technology (IRAT) handovers occur when a subscriber's session gets handed over from one radio access type to another. A common example of IRAT handover involves 4G/LTE subscriber sessions falling back to 3G access. This typically occurs when 4G coverage is weak or when there is significant network congestion in the 4G radio access network.

Automated Network Learning identifies IRAT handovers as they occur and generates a report of handovers that occurred within a configurable timeframe. This enables operators to monitor, manage, and troubleshoot the network and improve operational efficiency.

Learn More

Brocade partners with companies of all sizes to deliver innovative solutions that help organizations maximize the value of their most critical information. To learn more, visit www.brocade.com.

About Brocade

Brocade networking solutions help organizations transition smoothly to a world where applications and information reside anywhere. Innovative Ethernet and storage networking solutions for data center, campus, and service provider networks help reduce complexity and cost while enabling virtualization and cloud computing to increase business agility. Learn more at www.brocade.com.

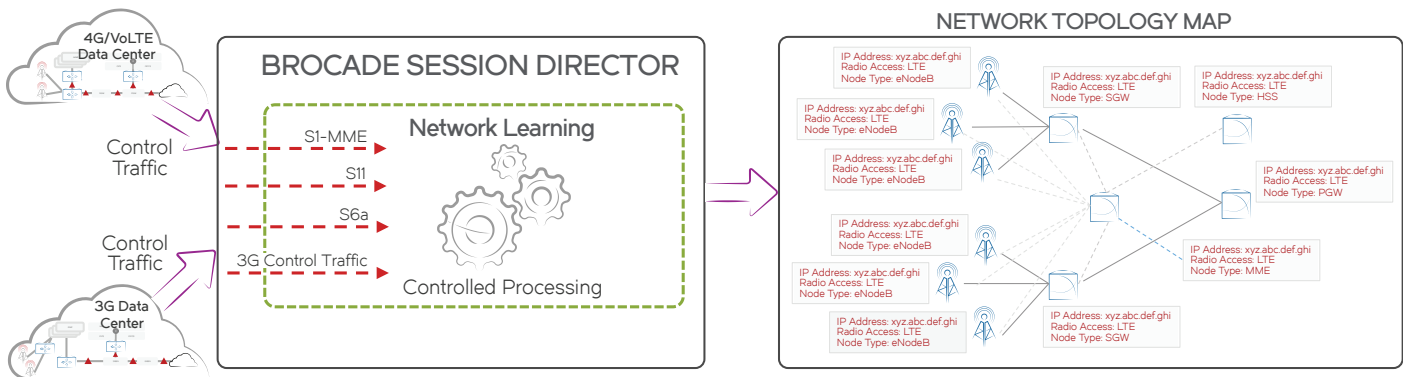


Figure 1. Automated network topology mapping with Brocade Session Director.

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