

HPE ContexWare

HPE Carrier-SDN Solution

HPE ContexWare Virtual Network Function delivers a comprehensive set of functions that enable operators to optimize network performance, generate revenue, and deliver high quality of experience.

Features

- TCP optimization
- HTTP header enrichment
- Media optimization API
- Data sampling API
- Analytics collection
- URL blocking
- All in software

TCP optimization

A significant issue facing mobile operators today is that actual TCP throughput that their customers experience is much less than what can be delivered by the 4G RAN technology they have deployed. Many studies have shown UDP throughput in real live conditions matching the design target speeds but for TCP, which is the transport mechanism for almost all the traffic, the speeds achieved are significantly slower.

A TCP bridge implemented in software between the two networks can help improve speeds greatly. Given the volume of traffic, it is best to use a software or NFV solution for this. HPE ContexWare TCP optimization enables higher data rates due to:

- Increased window size at TCP split towards RAN
- Lower latency for each TCP connection
- Larger initial congestion window
- Faster growth of congestion window due to reduced latency
- RAN specific congestion control based on latency
- Ignoring temporary delay (jitter) due to RF retransmission

HPE ContexWare TCP optimization is a field-proven solution that currently provides on average 39 percent increase in TCP download speeds and has been shown to result in improvement of air resources by eNodeB traffic schedulers.

Header enrichment

Leading mobile operators realize that they need to bring innovative revenue generating service models to access. For example, they can implement targeted advertising schemes where third-party websites are paid to place an ad customized to the needs of the specific subscriber.

HPE ContexWare can insert entries with subscriber information into the HTTP header of every GET or POST packet sent by subscribers with the HTTP header enrichment feature enabled. The subscriber information is derived from AAA (radius and diameter). HTTP header enrichment configuration includes the ability to configure the websites (hostnames) for which header enrichment is to be performed (whitelist), or for which header enrichment is not to be performed (blacklist). Additionally, when configuring whitelists, the header enrichment fields to be inserted can be configured on a per-website basis.

Benefits

- Significant improvement in RAN utilization
- Enables innovative revenue models for targeted advertising
- Better quality of experience
- Detailed analytics per flow provides data for any standard data analytics engine
- Significant ROI savings on both CAPEX and OPEX

Table 1: HPE ContexWare operations, performance, and scale

Element and network management	<ul style="list-style-type: none">• Command line interface for configuration and control• Graphical user interface for configuration and monitoring• Statistics counters per connection, session, interface, system• Mirroring to external application per connection, session, interface• SNMPv1/v2/v3, SNMP traps, Syslog• Network time protocol• Software installation, upgrade, and rollback
Security	<ul style="list-style-type: none">• Linux® security: IP tables• User authentication using RADIUS and authorization using LDAP/TACACS+• Internal user authentication when external not available• Secure encrypted management access with strong passwords• Strong passwords• Multiple, role-based access levels• Encryption of user information• Secure file transfer
Software platform	<ul style="list-style-type: none">• Linux CentOS 6.4
Performance and capacity (Per server)	<ul style="list-style-type: none">• Up to 20 Gbps• 2 million TCP connections• 500,000 subscribers

Data sampling API

HPE ContexWare includes a data sampling API, which can provide service elements with a small sample of HTTP session data, allowing them to take action based on analysis of this data. Examples of applications that can utilize this sampling include media optimization, interstitial advertising, LTE multicast, and more. The data sampling API is triggered when an HTTP session meets configured criteria for the application.

Analytics collection

HPE ContexWare collects data on each HTTP session and every TCP connection and can deliver this data to a data warehouse via an analytics collector. Data is delivered using IPFIX (RFC 5101) records. Analytics data is derived from the bearer packets as well as the information on the subscriber that was received from AAA. IPFIX records can be load balanced across a group of collectors, with individual subscribers' requests routinely being sent to the same collector as long as it is available. HPE ContexWare performs health checks to the collectors to ascertain their availability.

URL blocking

HPE ContexWare can block traffic to and from a configurable set of websites. The websites are selected by hostname.

Learn more at hpe.com/csp/nfv



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