Hewlett Packard
Enterprise

Drive customer loyalty

HPE Customer Experience Assurance Solution

Telecom is experiencing profound change—an explosion in users, devices, apps, and data traffic volume, and seamless, ubiquitous connectivity. Cloud, Big Data, mobile devices, analytics, apps, and social media are the building blocks, ushering in an era of seamless connectivity.

Differentiate to survive

Facing harsh competition from over-the-top (OTT) suppliers and needing to differentiate themselves, communication service providers (CSPs), like you, must look into new markets and more than ever, understand why your customers change or stay.

Customer experience management (CEM) addresses the need—taking into account all the facets of interaction among you and your customers. Different dimensions of the customer experience enter into the holistic perception that a customer has. These include price and bundles; quality of interactions with call centers and self-service websites; the emotional attachment to your brand, products, and services; and the quality of the experience when using your services.

Typically, a customer's perception of quality, availability, and reliability—when using services—is most often the deciding factor in ensuring customer loyalty.

Typically, customers' perception of quality, availability, and reliability—when using services—is most often the deciding factor in ensuring loyalty. After all, as long as everything works as expected, the customer won't need to call customer care or consult support pages.

While enabling the best customer experience—down to individual users—requires collecting and analyzing huge amounts of data; such data holds tremendous value for multiple stakeholders within your organization. For example, information related to degraded service quality and the impacted subscribers may be correlated to subscribers' profiles and their subscriptions, triggering promotions to help reduce customer churn.

Assuring optimal quality of experience (QoE) to customers, while using the services, is referred to as customer experience assurance (CEA). A comprehensive CEA solution should give you an understanding of individual customers' experiences in real time and ideally provide a single solution that serves the interests of multiple departments—customer care, marketing, service and network operations, and network engineering and planning.

As such, it should provide continuous visibility of the actual user experience across multiple dimensions including handset type—if a mobile user, geographic localization, health and performance of the service, and network infrastructure, service plans, usage behavior, traffic and capacity, and so forth. With such capabilities, you gain visibility into issues that existing solutions often fail to identify—such as signaling traffic saturation due to badly configured devices—and can anticipate and resolve service quality problems before they negatively impact customer experience.

Review our approach to CEA

Hewlett Packard Enterprise (HPE) addresses CEA as a key element of an operations support system (OSS) and business support system (BSS) solution, taking advantage of our true one-stop shopping from a single vendor for a complete, integrated solution. The overall solution embraces end-to-end business transformation and governance, business process model optimization, and software solution design, deployment, and support. These can be delivered as independent modules, or in combination to provide a complete OSS/BSS transformation, if required.

This approach helps you resolve specific pain points experienced today:

• Improve business processes/functions associated with customer experience responsibilities across network engineering, operations, customer care, marketing, and quality.

HPE CEA has been successfully deployed at tier 1 mobile service providers to meet the following needs:

- Collect and analyze customer experience metrics for mobile broadband services, in particular

  – Measure QoS, such as, errors, latency, and throughput down to the application level, including web browsing, mobile apps, DNS, email, file sharing, and video/audio streaming

  – Determine whether the problem's root cause is in the network, at the customer side, or more importantly, the OTT provider

- Provide easy adaption and integration with the existing network environment, including network nodes, probes, and deep packet inspection (DPI) tools

- Overcome the complexity of managing networks, services, and subscribers across technical and user experience dimensions.

- Provide decision-making visibility into network traffic, service usage, and user experience to each of the different stakeholders, so abnormal situations can be addressed without delays.

- Create value from a variety of heterogeneous data sources, including those not being exploited today, as an alternative or in addition to probes, such as logs and xDRs.

- Gain visibility—with a unified dashboard—into individual user's experience, services, and network out of huge data volumes, with easy-to-use drill downs into necessary details.

- Manage network capacity in accordance with traffic growth and policies.

- Scale to accommodate traffic and broadband services growth across multiple network technologies.

Learn the details

Use one solution for multiple needs

HPE CEA collects, processes, and analyzes network and subscriber data to produce the right information to each of your different key stakeholders. It provides timely, actionable information so the right decisions can be taken within each domain of applicability (see Figure 1).

- **Customer experience**—Get visibility of how users experience your services and validate if they get what they paid for, to improve satisfaction, reduce churn, and increase revenue.

- **Network intelligence**—Understand how the network is used by subscribers, gain insight into traffic and use, and identify where there are issues and bottlenecks to optimize network use, adjust network policies, plan additional capacity, and optimize network investments.

- **Customer intelligence**—Get combined insight into how users use services, applications, and their service plans to identify up-sell opportunities, provide better promotions, and recommend more targeted product-price mixes.

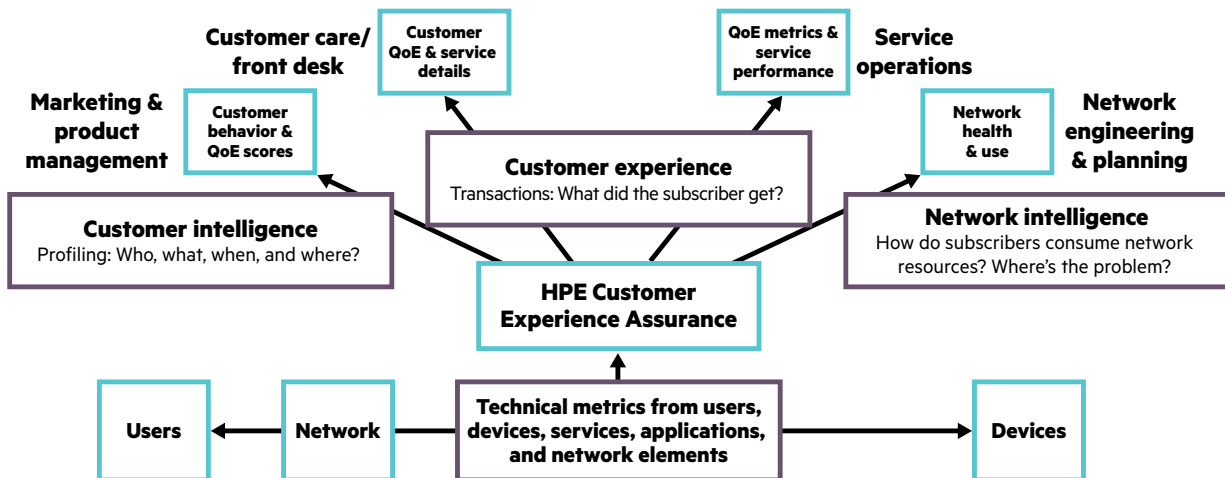Each of these three corresponds to HPE CEA components, or applications, described further.

Figure 1. HPE Customer Experience Assurance Solution

HPE CEA is powered by a real-time, highly scalable, and distributed, massively parallel processing (MPP) platform, which brings and adapts key paradigms from major internet players such as Google™ and Yahoo for Telco operators. It processes large volumes of structured and unstructured data in real time and provides insight into customers' experience and precisely how the network and services are used. The solution targets primarily tier 1, 2, and 3 CSPs, offering mobile voice and broadband services. It also addresses the requirements of fixed line service providers who offer triple- and quad-play services, and experience similar customer experience challenges.

Review the HPE CEA Solution

HPE CEA provides real-time insight into customers' experiences and how services and applications are used by individuals or groups, including the region, network resources, and device. It also provides ongoing monitoring of network resources, services used, and customers' experience.

It detects issues that affect users, the location where these issues occur, and enables you to investigate the technical cause of them. And you can drill down into them—to the individual subscriber's transactions, network resource behavior, and application usage.

The solution reports on customer experience, achievements, service usage, and network quality so immediate and longer-term decisions can be made to improve the customer experience, optimize technical resource usage and investment, and differentiate service offers.

It's powered by a Google-like search engine that enables the platform to handle high volumes of complex, disperse, and heterogeneous data from a large variety of data—including the operator's network, and exploits log files, xDRs, and existing probes.

Due to its scalability and flexibility, HPE CEA works with multiple network and service generations, accommodates traffic growth, and supports a large variety of devices and diversified product offerings.

HPE CEA helps operations immediately understand what issues affect which users, rapidly diagnose the root cause, and prioritize repair activities. This information is also available to customer care front-desk representatives for in-depth investigation of user reporting issues, enabling a more personalized customer service as an additional contribution to better experience.

By providing full visibility into network resources' behavior, traffic trends, service usage, and user behavior, the solution gives network engineering the right visibility to fix network element issues and adjust network usage policies. It helps decrease the risk of capacity shortages, while enabling better capacity planning and focused investments.

In addition, customers' behavior can be put in the perspective of their subscription, service usage, and consumed resources in synthetic user views. With such capabilities, marketing can adjust existing service plans and develop new offers. Valuable information is available for market intelligence and customer profiling.

Learn about the components

HPE CEA solution capabilities are provided by the components outlined in Figure 2.

- **Customer Experience Application** focuses on services by individual subscribers/groups, providing visibility on how well services perform for each customer. User-affecting indicators such as availability, accessibility, latency, throughput, and error codes can be segmented in multiple dimensions, for example, by service, error code, location, device, and enterprise. The information may be used for proactive problem detection and resolution purposes (OSS Assurance), and for triggering personalized policies (BSS).

- **Network Intelligence Application** covers the network, carried traffic, and user transactions. It continuously monitors, aggregates, and correlates data from multiple network and service data sources. It provides node-level key performance indicators (KPIs) and service-level key quality indicators (KQIs) and statistics. These can be segmented by service, network, subnet, network element, and the path taken by the user's service throughout the operator's network. The information targets operations, and network engineering and planning. It's also used by customer service to investigate issues reported by customers.

- **Customer Intelligence Application** focuses on subscribers' use of services. It provides information about subscribers' interests, their behavior, network usage, and how and when they use each service including OTT services and applications. This customer visibility can further be segmented into small groups defined by complex, multi-dimensional patterns, such as behavior, interest, and localization. The information may target, for example, market intelligence, personalized profiling, up-sell campaigns, and advertisements.
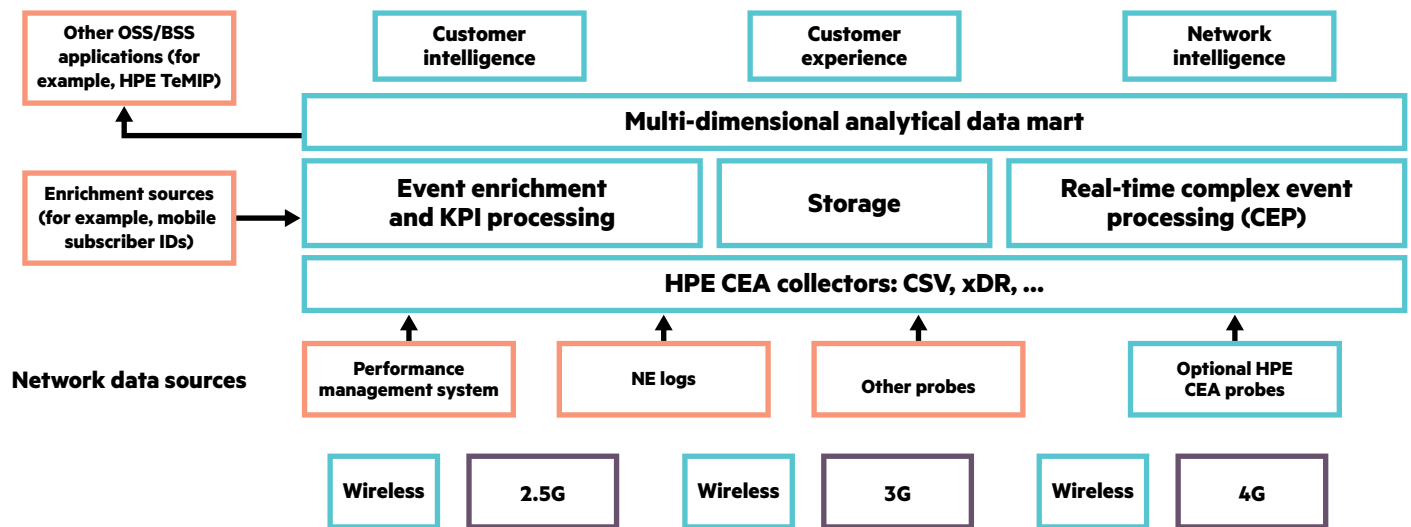
Figure 2. HPE Customer Experience Assurance Solution components

- **Application packages** provide predefined QoS and/or QoE indicators with corresponding predefined reports and preconfigured dashboards for fixed or mobile broadband traffic analysis, mobile broadband QoE, voice services, and web and video optimization.

- **Core platform capabilities** process, in real time, large amounts of data related to customers' use of services collected from multiple sources. Its "in-data store" massive parallel processing, analytics correlate and extract summarized customer information and present it to users through Google-like web graphical user interfaces and reports. Since HPE CEA has its own built-in data store, it's independent of third-party database licenses. Threshold crossing alerts can be triggered when traffic or customer experience trends deviate from their baseline. Additionally, they can also trigger actions on other systems to automate further actions. Aggregated data and their summaries can be exported to external applications, such as enterprise-wide business intelligence systems. The core platform comes with self-management features, a software development kit, and APIs for OSS and BSS integrations.

- **Library of collectors** provides out-of-the-box components to collect data from a large variety of relevant data sources. The library includes IT collectors covering the most common IT sources, and Telco-specialized collectors for numerous data sources in any format. Supported files and interfaces include Comma Separated Value (CSV), XML and ASN.1 files, JDBC and ODBC databases, web services, LDAP, xDR, 3GPP S-CDRs and G-CDRs, RADIUS, DNS, and Diameter log files, IP traffic capture (PCAP) files, and UDRs and EDRs collector. The core platform—SDK—can be used to develop new collectors, should these be needed.

Integrate with others

As the CEA solution responds to multiple needs in your organization, it integrates with other OSS and BSS applications from Hewlett Packard Enterprise—and third-party vendors—to support the transformation to customer-centric processes in the NOC, SOC, and CRM teams.

OSS integration
- Provides customer-centric operations with automated customer impact and root cause analysis, trouble resolution, and reporting, taking advantage of the link among customer, service, and network trouble tickets

BSS integration
- Helps customer service representatives better serve customers at the front desk by tracing individual user's transactions and providing pertinent information at the first call, such as, if the issue is related to the network, handset, or application

- Provides business decision information—from the Customer Intelligence Application—to marketing and business groups, for example, understanding which promotions and product/price offerings would make sense for targeting particular subscribers based on their service usage in order to drive new revenue

- Enriches the business intelligence (BI) domain with information on customers' experience when using services to help address the full scope of CEM

Integration with network engineering tools
- Fixes issues, optimizes traffic routes, and guides new investments based on information about the actual paths taken by user traffic in the network, combined with specific application use

- Combines network traffic and capacity views to improve network capacity planning and management

- Enables an understanding of usage patterns and adapting traffic management policies, for example, being able to offload specific network equipment

Figure 3 shows how HPE CEA integrates with the rest of the OSS Assurance environment, and also indicates the interfaces with other CSP functions.
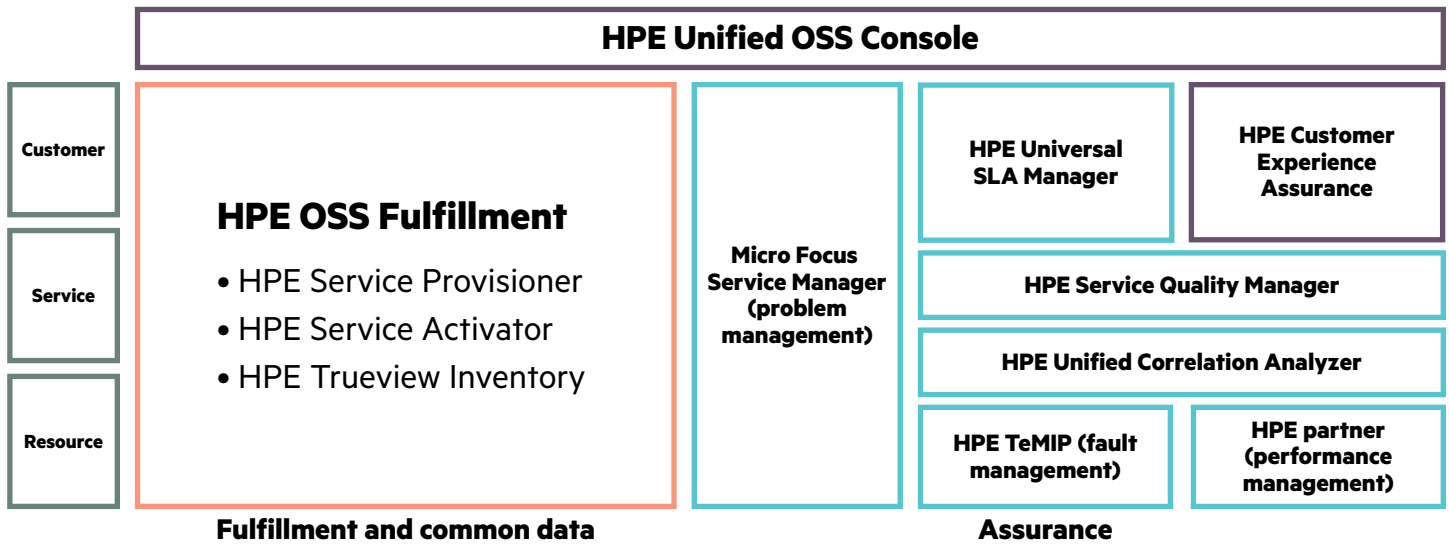
HPE is equally active with the Information Technology Infrastructure Library (ITIL®) and is the only technology vendor to author one of the five ITIL v3 core books. In addition, we authored the ITIL glossary and built the overarching process maps for the new library.

Figure 3. HPE CEA in the OSS environment

Gain these benefits

Improve customer loyalty and preference
Drive better customer satisfaction; directly impact your customers' perception of you, as a service provider. Bring multiple benefits to your different departments with HPE CEA:

- **Operations**—Empower customer-centric operations, run and adapt operational processes according to the actual user experience, and allocate priorities to the most critical service issues. This is done through real-time views and continuous tracking of user experience indicators, automated detection of deviations from expected indicators, and easy drill down into details to isolate root causes. These capabilities are key to acting on and improving the quality of services as perceived by users.

- **Customer care**—Personalize support and better serve customers affected by issues, since the solution provides knowledge about which problem affects which individual user, prior to receiving their complaints. The result is a reduction in the number of actual customer complaints and shortened time to resolve the issues, due to close cooperation with operations.

HPE CEA solution exploits and integrates with your existing assets; this results in important overall cost savings by preserving previous investments.

- **Network engineering and planning**—Understand the network capacity used and network usage patterns, and get better insight into abnormal network and resource behavior and traffic trends. It also identifies potential shortages in order to better plan additional resources and investments, anticipate new network usage behavior, and adjust network policies in peak traffic conditions.

- **Marketing**—Get an understanding and insight into precisely how customers use services—their behavior, network usage, and how and when they use each service including OTT services and applications. The information enables strategic business decisions and may target, for example, market intelligence, personalized profiling, and up-sell campaigns and ads, leading to improved customer preference and boosted average revenue per user.

Leverage your current investment

Another key benefit of HPE CEA is exploiting and integrating with your existing assets, and supporting a large variety of data sources as an alternative or in addition to probes, such as logs and xDRs. This results in important overall cost savings of the OSS/BSS solution by preserving previous investments. HPE CEA is also an investment for the future, due to its state-of-the-art technology and massive scalability that enables anticipating dramatic future data growth.

Improve cost structure

Operational efficiency—HPE CEA can collect and determine what events may affect the customer's perceived QoS, and drill down to the root cause anywhere among the customer device, network, and OTT provider. Also, problems related to customer device issues that were previously very complex to identify, may now easily be resolved. The entire customer impact and root cause identification process is accelerated, due to the solution's fine-time granularity. The result is dramatically improved efficiency in operations, overall problem resolution time, and customer satisfaction.

Optimized network costs—You get visibility of how services are used end-to-end in the network with HPE CEA. In fact, it provides traffic statistics by network element, service, and subscriber, and any combination of these. This information may be used to perform "traffic-value planning"—moving subscribers off a saturated path and node, and investing intelligently in new network resources where needed. The result is increased network utilization, which ultimately drives important cost savings.

Review the differentiators

- Umbrella concept provides numerous data sources, not only probes, to exploit existing data rather than add new data. Collectors include xDRs—probe and DPI; CDRs—3GPP and billing; logs—IT and fulfillment; and traces—LTE

- Smart architecture, state-of-the-art software

  – MPP—Expert system with no hidden cost

  – Usability—Familiar, easy-to-use user interface (UI) that exploits and adapts state-of-the-art internet search and analytics technologies for CSPs

- Massively scalable and high availability, HPE CEA is a distributed, MPP platform with a built-in data store

- Flexible and modular solution lets you easily customize it and "a la carte" lets you start small and grow as needed

- Granularity means you can optionally—down to seconds—trace a user transaction, if using probes, traditionally 15 minutes for performance collectors

- Minimal administration requirements, proactive and zero-administration discovery of new problem types

- Real-time problem detection, as deviations of multi-dimensional customer experience indicators (CEIs) and KQIs from typical patterns

- Application-level zoom

- Library of flexible collectors

- Open platform, SDK enables developing own applications

- Packaging advantages

  – Independent of third-party database licenses due to its own built-in data store

  – Inexpensive hardware used—Intel® x86-based servers—and makes use of commodity SAS/SATA disks

Get the HPE advantage

As a trusted partner, Hewlett Packard Enterprise combines many years of transformation consulting experience gained from small to very large and complex OSS transformation projects worldwide, industry-leading solutions, mature deployment methodologies, and highly experienced delivery teams.

We are an active member of the TM Forum (TMF), helping drive the development and adoption of TMF Frameworx standards, including eTOM. With more than 15 years of experience in service management, we can help your company respond quickly to change.

Combining this rich experience, Hewlett Packard Enterprise brings the best to our consulting and product development. An active participation in TMF and ITIL, and other bodies, helps ensure our solutions are closely aligned with industry, so investments made today continue to pay off long into the future.

Hewlett Packard Enterprise offers a variety of financing and operating approaches, depending on your needs.

Bring innovation to your OSS to gain customer insight and improved user experience—by engaging HPE.

Learn more at
hpe.com/us/en/solutions/telecom-network-automation.html

Learn about HPE Pointnext
HPE Pointnext offers a proven way for navigating through your transformational journey.

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- **HPE Solution Implementation Services** offers a low-risk project lifecycle across design, development, customization, and network and system integration.

- **HPE Solutions Management Services** increases the operational efficiency of your existing solutions, including reactive, proactive, operational, and enhancement management services.

- **HPE Outsourcing** offers a variety of sourcing options—including IT and infrastructure outsourcing, application management, and business process outsourcing—designed to improve business agility while reducing your operational expenses.

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