



Solution Overview

Empirix System Architecture

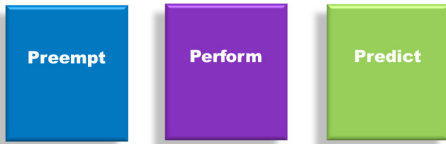
Preempt. Perform. Predict.

A unique architecture for transforming and managing communications, experience and profitability

- Intelligently enrich the customer experience
- Transform service quality assurance and support operations
- Realize the full value of technology investments
- Create new opportunities to profit
- Tightly control costs

The Empirix Advantage

No other company offers the visibility Empirix provides into customer experience and application performance in today's complex mobile, IP, contact center, unified communications and service provider environments. We help companies mitigate the cost of unexpected technology failures and realize the full value of their technology investments with an a unique, three-pronged approach to service quality assurance and technology lifecycle management:



Preempt: Detecting issues before they cost you customers and revenue is critical. With proactive monitoring and multi-dimensional analysis, companies can be alerted when conditions begin to deteriorate.

Perform: Keeping networks and applications operating at peak performance is essential for ensuring quality and providing a great experience. With end-to-end insight across complex environments, performance monitoring and real-time dashboards, Empirix enables companies to quickly discover and diagnose issues for higher availability and tightly controlled costs.

Predict: Today's networks carry a tremendous amount of customer, application and operational data. Em-

pirix data collection, correlation and analysis solutions transform all that information into actionable intelligence for smarter decision making across the organization.

Empirix for Service Providers: From the Control Room to the Board Room

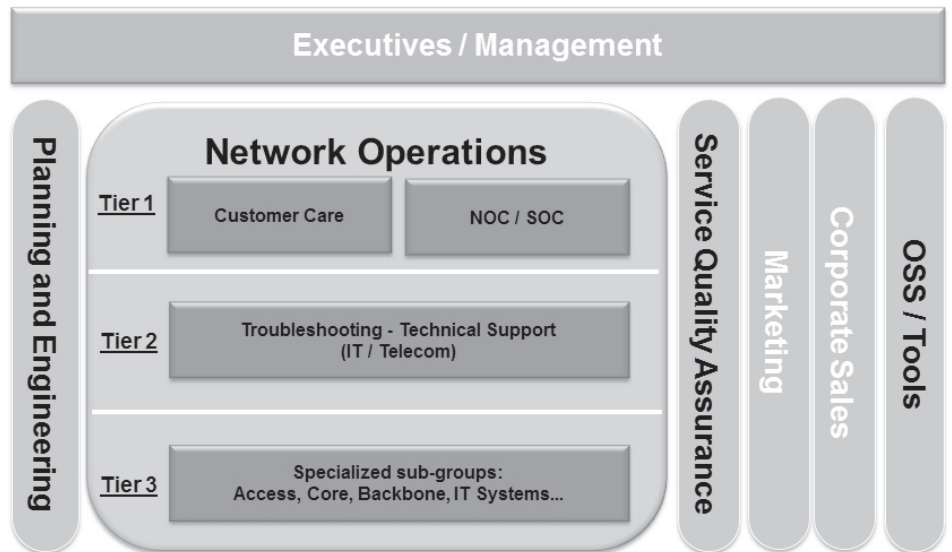
For mobile and fixed line operators alike, Empirix offers benefits that resound throughout the organization. To start, end-to-end visibility and multi-service analysis enable operators to quickly pinpoint issues for rapid troubleshooting and faster Mean Time to Repair. By providing a greater understanding of how customers are experiencing specific applications, Empirix provides the information planning departments need to pinpoint infrastructure issues and strategically place investments. With an advanced analysis of device preferences, bandwidth utilization and customer behaviors, marketing department can better craft new pricing models and campaigns.

More importantly, Empirix also provides the intelligence that will reveal the important trends and new business models innovative operators can leverage to gain an ongoing competitive advantage.

Empirix for the Enterprise and Contact Center

Forward-thinking companies are leveraging Empirix's holistic approach to experience and quality assurance to:

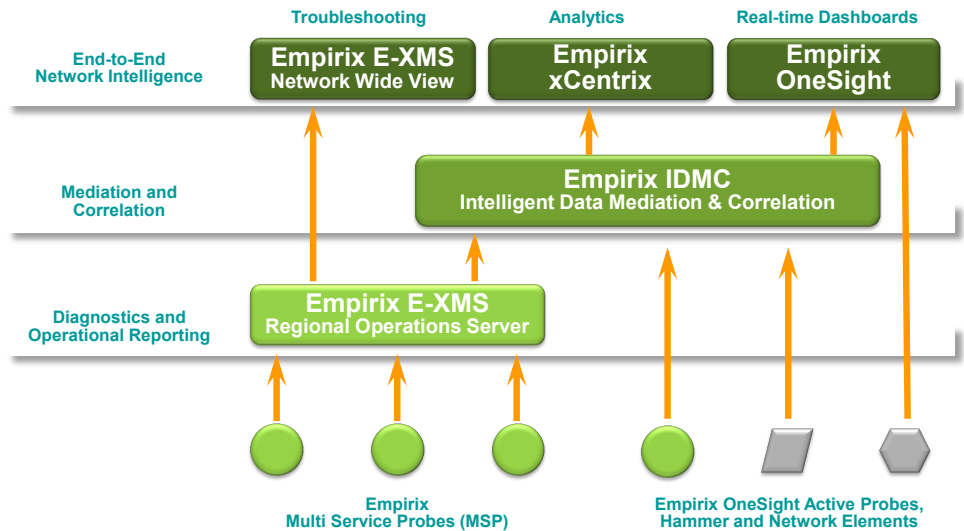
- Ensure a great customer experience, regardless of contact method or application utilized
- Keep projects on-time and on-budget
- Improve support operations and tightly control costs with end-to-end visibility
- Reduce the cost of unexpected technology failures
- Ensure voice and video quality for important business communications
- Leverage technology for an enduring competitive advantage



Empirix ESA

Empirix products are fully modular and united by the underlying the Empirix System Architecture (ESA). Each component communicates with others through defined interfaces. The features and performance of individual components can be customized and enhanced without losing compatibility with the other layers of ESA. Such modularity allows customers to split functionality and create hardware configurations that optimize investment. ESA is a highly scalable solution capable of evolving as customers expand capacity, add new applications and implement new technologies.

The flexible, scalable nature of ESA ensures maximum ROI. The Empirix solution set includes:



Empirix MSP: Passive Data Collection and Network Interfaces

The Empirix MSP products follow each communication session from end-to-end to passively capture all relevant application and network data for voice, video and data services simultaneously. They interface with both circuit and packet switched networks and correlate data from the user and control planes. The content of each data record depends on the network protocol. For example, user plane information from VoIP networks will contain media quality information such as MOS, jitter, packet loss and more, while the Mobile Broadband software module generates Application Service Detail Records that track each subscriber data session.

All Empirix MSP products share a common architecture across multiple hardware platforms. Empirix probes manage legacy, IP, LTE and more in a single solution, requiring only software licenses to add more protocols, services or capabilities. In this way, the Empirix data collection framework easily evolves as companies upgrade network capabilities, add new applications or include new services.

Empirix Hammer Probes: Preemptive Diagnostics

To actively collect data in live networks, Empirix Hammer Probes replicate user behaviors by registering as a user device and sending real IP traffic or voice calls through the network to any other Empirix probe in the worldwide network with no limitations. They can proactively verify application performance, measure real-time voice and video quality, test interoperability and more. This data can be used by Empirix OneSight, Empirix E-XMS or Empirix xCentrix to identify degrading conditions in complex environments and predict issues before they affect customers.

Empirix E-XMS Active: Proactive Monitoring of Live Networks

Empirix offers a unique solution for assessing customer experience in live networks. Empirix E-XMS Active uses Empirix Hammer Probes to inject a known test signal into the network via specified paths and then measure the results. In this way, operators can verify handovers, assess voice and video quality and evaluate how customers are experiencing different applications. Empirix E-XMS lets operators identify issues – and correct them – before they can impact customers.

Empirix E-XMS ROS: Probe Management and Aggregation

The regional operating servers control a specified number of Empirix probes – collecting, aggregating and correlating information at the regional level. The data can be viewed at this level and also fed to the Empirix IDMC data mediation and correlation layer.

Empirix IDMC: Data Correlation and Mediation

Empirix IDMC provides critical data mediation and correlation functions for Empirix solutions. It correlates information from all Empirix probes to provide end-to-end visibility into customer experience and application performance. It also acts as a universal data collector, capable of enriching that data with dimensions and metrics from external sources, such as CRM systems, OSS and order entry solutions. The included Key Metrics Engine allows users to create standard and multi-dimensional key performance indicators (KPIs) for their business goals. Empirix IDMC also contains an alarm management module that companies can use to assign thresholds for those key metrics and forward alerts to Empirix OneSight or an third-party fault manager when those thresholds are crossed.

Empirix IDMC results provide rapid data manipulation, multi-dimensional trend analysis and drill down capabilities for Empirix OneSight real-time dashboards, Empirix E-XMS service assurance monitoring and Empirix xCentrix analytics platform. Users can also format the data to be exported for use by OSS, billing, CRM and other systems.

Empirix E-XMS: End-to-End Troubleshooting and Diagnostic

Designed for forward-thinking service providers, Empirix E-XMS is the ultimate service quality assurance solution. It provides end-to-end visibility into customer experience, application performance and service quality across the entire network, regardless of protocol or service delivery method. It includes a web-based graphical user interface designed specifically for troubleshooting, enabling service providers to quickly locate, drill into and diagnose issues in today's complex, multi-service environments. It provides extensive alarm and alerting capabilities to help operators quickly respond to service-impacting issues. By speeding Mean Time to Repair, Empirix helps service providers improve customer experience and tightly control costs.

Empirix OneSight: Real-time Dashboards

Empirix OneSight provides real-time insight into customer experience, application performance and infrastructure health in today's complex environments. By monitoring the entire environment end-to-end with both active and passive techniques, Empirix OneSight dashboards ensure that companies are notified of issues that otherwise have been lost in the noise or relegated to other parts of the organization with limited visibility or different responsibilities. Through its single interface, Empirix OneSight enables rapid problem identification whether issues are related to service quality, infrastructure or applications. Personnel across the organization will see slowdowns and outages in real time. Empirix OneSight also lets users develop accurate indicators for proactively identifying issues before they become customer impacting events.

Empirix xCentrix: Network Analytics

The Empirix xCentrix analytics platform provides companies with actionable information to make smarter decisions across their organization. It takes the fully correlated data from Empirix IDMC and loads it into a powerful database users can explore to design reports or dashboards for their individual requirements. Empirix xCentrix offers an elegant web-based interface for drilling into micro events or layering multiple data points and KPIs to reveal hidden trends. There is no need to wait for queries results; Empirix xCentrix delivers its findings instantaneously. Additionally, there are a variety of pre-defined packages available for Mobile Broadband, SS7, VoIP and media analysis.

More than just a technical analysis of network issues, Empirix xCentrix transforms a vast array of customer, application and operational information into knowledge companies can use to strategically enrich customer experience, create new business models, accurately pinpoint infrastructure investments, develop targeted marketing campaigns and more. The information is reported or graphically presented in a way that is meaningful for technical and business users alike.

For a complete list of offices worldwide, or to find an authorized distributor in your area, please visit: www.empirix.com/contactus.

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