



WHITE PAPER

The New Imperative for Critical Communications

Modernizing the Voice Core Where Failure Isn't an Option

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Executive Summary

The enterprise communications landscape is at a pivotal juncture. For over a decade, the industry has pursued a "one-size-fits-all" model of Unified Communications (UC), consolidating voice, video, and messaging onto single platforms. However, this "one-size-fits-all" strategy with emphasis on cloud-native collaboration tools serves the needs of many knowledge workers but falls short delivering the requirements for voice-critical and mission-critical sectors.

In environments where a communications failure is not an inconvenience but a catastrophic event—such as public safety, healthcare, finance, and critical infrastructure—the primary need is for an uncompromisingly reliable, secure, and resilient voice platform. This is what's needed when lives, financial stability, and national security are at stake.

The Avaya Nexus™ platform is an architectural evolution engineered to address this gap. It provides a modernized, hardened, and highly available voice core designed for voice-critical and mission-critical environments. Avaya Nexus™ enables organizations to adopt a "best-of-both-worlds" strategy: coupling a secure, enterprise-controlled voice foundation with the flexible integration of collaboration tools their users demand. This paper discusses the market forces driving the need for mission-critical voice communications, the architectural benefits of the Avaya Nexus™ platform, and its applications across key industries.



Avaya Nexus™ is not a replacement for Avaya Aura® but its strategic modernization. It allows organizations to evolve their trusted foundation into a future-proof architecture.

Rise of Reliability Gap

The prevailing industry narrative has championed the migration of all communications to multi-tenant public cloud UCaaS platforms. While all-in-one platforms excel at collaboration, without Quality of Service configuration, their architecture typically gives voice traffic the same priority as any other traffic on the network, such as file downloads or video streaming.

This creates a critical challenge:

- **The Failure of ‘Good Enough’:** For environments where every second counts—such as an emergency dispatch center, a hospital's critical alert system, or a financial trading floor, among others— this level of risk is unacceptable. For these businesses, the financially-backed guarantees of service level agreements offered by public cloud providers still permits potential downtime, and are simply not 'good enough' to meet the organization's requirements.
- **The Bifurcation of the Market:** As a result, the market has split. Organizations are decoupling their general collaboration layer from their core operational voice infrastructure. They are adopting best-of-breed tools for office workers while seeking a hardened, dedicated solution for their mission-critical cores.

This bifurcation signals the end of the ‘one cloud fits all’ era and highlights the growing imperative for a specialized, resilient communications layer.

The Benefits of Avaya Nexus™ Architecture

Avaya Nexus™ is not a replacement for Avaya Aura® but its strategic modernization. It allows organizations to evolve their trusted foundation into a future-proof architecture. For non-Avaya customers, it offers a best-of-breed, hardened voice core that can be integrated with any collaboration suite. The architecture is built on modern principles to deliver uncompromising performance.

- **Cloud-Native:** Avaya Nexus™ breaks applications into discrete components that run in isolated containers. This design improves resilience, as the failure of a single service does not impact the entire system. It also simplifies updates and enables dynamic scaling of individual components based on real-time demand.
- **Deployment Flexibility (‘Cloud-Smart’):** Avaya Nexus™ is infrastructure-agnostic. It can be deployed on-premise via hyperscaler or in a dedicated cloud. This flexibility is critical for regulated entities that must meet strict data residency, security, and operational requirements that public multi-tenant UCaaS solutions cannot accommodate.



The demand for the Avaya Nexus™ platform is driven by tangible, high-stakes requirements across a range of verticals. Its architecture is explicitly designed to support workflows where failure has severe consequences.

- **Enhanced Resilience and Scalability:** Avaya Nexus™ introduces carrier-grade components to handle extreme performance needs.
- **Next-Gen Session Services:** A high-performance SIP server takes over core routing, providing immense scalability to handle massive surges in traffic, such as during a public emergency.
- **Dual-AZ High Availability:** The architecture can be distributed across physically separate data centers (Availability Zones). In the event of a complete zone outage, the remaining zones seamlessly maintain call processing without interruption.
- **Fortified and Centralized Security:** The Avaya Nexus™ platform is engineered for the ‘Zero Trust’ era.
- **Identity & Access Management:** Avaya Nexus™ provides modern identity and access management, centralizing authentication and strengthening security with features like Single Sign On support and LDAP federation. It simplifies the management of security certificates across thousands of devices, reducing a common cause of outages.

This modern architecture allows organizations to modernize on their own terms, delivering the agility of the cloud with the control required for mission-critical voice operations.

Mission-Critical Industries

The demand for the Avaya Nexus™ platform is driven by tangible, high-stakes requirements across a range of verticals. Its architecture is explicitly designed to support workflows where failure has severe consequences.

Government and Public Sector: In command-and-control centers, 911 dispatch, and disaster response coordination, unwavering communication is a matter of public safety and national security. Avaya Nexus™ provides the necessary resilience and supports stringent requirements like JITC certification and dedicated cloud deployments for secure facilities.

Healthcare: A dropped call or delayed page can have life-or-death consequences. Avaya Nexus™ provides lifesaving reliability for ‘Code Blue’ alerts, emergency triage lines, and integrations with mobile medical carts and nurse call systems, all while helping to maintain HIPAA compliance.

Financial Services: For high-frequency trading floors and inter-bank settlements, instantaneous, high-fidelity communication is essential to prevent massive financial liability. Avaya Nexus™ delivers the instantaneous call setup and integrates with ‘always-on’ recording systems required to meet regulatory mandates.

Industrial and Utilities: In environments like nuclear power plant control rooms, power grid management centers, and factory floors, communications are vital for infrastructure protection and worker safety.

Organizations can retain their preferred cloud collaboration suite for knowledge workers while underpinning their critical operations with a dedicated, hardened, and globally trusted voice platform.

The Path Forward: A Modernization Strategy for All

The communications landscape is evolving, but the need for reliable, secure, scalable, and resilient voice has never been more critical.

- **For Existing Avaya Aura® Customers:** Avaya Nexus™ represents an evolution, not a forced ‘rip and replace’ migration. It offers a deliberate path to modernize the core infrastructure while preserving significant investments in endpoints and gateways. Customers can enhance reliability and security while gaining a foundation for next-generation AI-powered services, among others.
- **For Non-Avaya Customers:** Avaya Nexus™ provides the opportunity to build a ‘best-of-both-worlds’ communications strategy. Organizations can retain their preferred cloud collaboration suite for knowledge workers while underpinning their critical operations with a dedicated, hardened, and globally trusted voice platform.

While general-purpose UC has become a commodity, mission-critical voice communication remains an essential, high-value function. The Avaya Nexus™ platform delivers the control, security, and high performance required to secure the future of the world's most critical conversations.

About Avaya

Avaya Infinity® and Avaya Nexus™ together form the backbone of Avaya’s next-generation communications strategy—Avaya Infinity® delivers a unified, cloud-native orchestration platform that connects digital, voice, and AI channels across hybrid environments, while Avaya Nexus™ powers the mission-critical voice layer with unmatched precision, resiliency, and compliance. Together, they offer a scalable, future-ready solution for enterprises that demand both innovation and reliability. Learn more at www.avaya.com.

