



WHITE PAPER

Modernizing Mission-Critical Communications with Avaya Nexus™

An Architectural Overview for Avaya Aura® Environments

Table of Contents

1. The Evolving Communications Landscape: The Rise of Mission-Critical Voice	1
2. Introduction to Avaya Nexus™	2
3. Core Principles of Avaya's Modern Architecture	2
4. A Deep Dive into the Architecture	2
5. Avaya Nexus™ Modern Architecture: Built on Next-Generation Principles	3
6. The Modernization Path for Avaya Aura® Customers	3
7. Key Takeaways and Future Outlook	4

1. The Evolving Communications Landscape: The Rise of Mission-Critical Voice

For decades, the enterprise communications landscape has been defined by the pursuit of Unified Communications (UC)—integrated platforms combining voice, video, messaging, and collaboration. While this model has served many organizations well, the market is undergoing a fundamental shift. The rise of cloud-native collaboration tools has de-coupled collaboration from the core voice infrastructure, a trend confirmed by market analysis and customer feedback indicating a preference for best-of-breed solutions.

For many organizations, this is a welcome evolution. But for a distinct and vital segment of the market, this shift presents a challenge. In environments where a communications failure is not an inconvenience but a catastrophic event—such as in government, public safety, healthcare, and finance—the primary need is not for unified collaboration, but for uncompromising, reliable, secure, and resilient voice. These sectors require solutions with survivability, data residency, stringent security, and full compliance, which are often at odds with the architecture of public cloud collaboration suites.

This is the domain of mission-critical communications. Standard UC platforms, often designed for general-purpose office collaboration, may not provide the stringent security, architectural resilience, and operational control required for these high-stakes environments. The goal for these customers is to achieve zero downtime per year.

The Avaya Nexus™ platform is a dedicated, mission-critical voice solution that provides a modernized, resilient, and hardened enterprise-controlled voice core. This offers a definitive "best-of-both-worlds" strategy; Avaya Nexus™ delivers robust, high-quality voice while enabling seamless integration with collaboration platforms.



The development of the Avaya Nexus™ platform is a key strategic initiative. Avaya Nexus™ is not a replacement for Avaya Aura®; it is the modernization path for it. It allows organizations to evolve their trusted Aura foundation into a future-proof architecture that delivers enhanced control, security, and resilience.

2. Introduction to Avaya Nexus™

Avaya Nexus™ is an architectural evolution designed to deliver next-generation voice services for organizations that cannot afford downtime. It provides a secure, highly available, and scalable foundation for real-time voice, engineered for the most demanding operational environments. Its use cases include:

- **Critical Healthcare Environments:** Providing life-saving reliability for hospitals and emergency services.
- **Banking and Finance:** Delivering the instantaneous, high-fidelity communications required for financial markets.
- **Industrial Operations / Manufacturing:** Maintaining continuous communication for plant-wide control systems, robotics, and emergency response in large-scale facilities.
- **Utilities and Energy:** Ensuring uninterrupted communication for grid management, field operations, and emergency customer response during power outages or critical events.
- **Command and Control Centers:** Ensuring unwavering communications for public safety, military, and government operations.
- **Secure Government Facilities:** Meeting stringent security and compliance mandates for federal and defense agencies.

3. Core Principles of Avaya's Modern Architecture

The platform is built on a set of modern, proven common architectural principles, as exemplified in Avaya's CX solution, Avaya Infinity®. These principles are foundational to creating agile, resilient, and scalable solutions. Understanding them provides context for the strategic design of Avaya Nexus™. This modern approach is:

- **Cloud-Native:** Applications are broken down into discrete components and run in containers. This improves resilience, simplifies updates, and enables dynamic scaling.
- **Cloud and On-Prem:** The architecture is designed for deployment flexibility, allowing them to run on-prem via hyperscalers or in a dedicated cloud, providing a 'cloud-smart' path for every organization. This is a recognized demand from regulated customers who require on-prem deployments to meet data residency and security obligations.
- **Integration Ready:** Fostering a more connected and extensible ecosystem, the platform enables streamlined flow-through administration and supports standard integrations for essential systems like voicemail and presence.

These principles are at the heart of the Avaya Nexus™ design. They represent the foundation for today's enterprise communications architecture, built for the requirements of tomorrow.

4. A Deep Dive into the Architecture

For an IT leader managing an Avaya Aura® environment, understanding the architectural enhancements introduced with Avaya Nexus™ is key. The platform modernizes the Avaya Aura core by replacing and enhancing specific components while strategically retaining others to ensure a smooth evolution.



Avaya Nexus™ is designed as an evolution for Avaya Aura®, preserving key elements. Avaya Aura® Communication Manager (CM), Avaya Enablement Services, and Avaya Session Border Controller remain integral to the solution.

The architecture for Avaya Nexus™ includes key elements:

- **Cloud-first Foundation:** Avaya Nexus™ is anchored in a cloud-first foundation for monitoring, platform services and analytics that offer insight and management. The platform can be delivered as a private instance SaaS, ensuring a dedicated and segregated environment, meeting strict compliance and security needs.
- **Next-Gen Session Services:** A carrier-grade, high-performance SIP server that takes over core SIP routing. This provides immense scalability and routing flexibility. Dual-AZ (Availability Zone) deployment architecture ensures continuous call reception even during partial failures or complete AZ outages.
- **Identity & Access Management:** Provides modern identity and access management, centralizing authentication and strengthening security through features like Single Sign On support and LDAP user federation.

Avaya Nexus™ is designed as an evolution for Avaya Aura®, preserving key elements. Avaya Aura® Communication Manager (CM), Avaya Enablement Services, and Avaya Session Border Controller remain integral to the solution. Their roles are adapted to operate within this modernized framework, including for CM synchronization. This approach minimizes disruption to end-users and administrators while fundamentally upgrading the underlying infrastructure.

5. Avaya Nexus™ Modern Architecture: Built on Next-Generation Principles

The Avaya Nexus™ platform's power lies in how it applies modern architectural principles to deliver mission-critical reliability. Its architecture is fundamentally more resilient, scalable, and secure.

Leveraging modern cloud architecture by breaking down specific applications into discrete components running in containers, the platform ensures that services are isolated and can be managed independently. If a single service encounters an issue, it doesn't bring down the entire system. This approach allows for targeted updates and dynamic scaling of individual components based on real-time demand.

The cloud-native framework gives organizations complete control over their deployment strategy. Avaya Nexus™ can be deployed on-prem via hyperscalers or in dedicated cloud, providing a path to modernization without forcing a move to the typical UCaaS multi-tenant public cloud. This 'modernization with control' is a critical advantage for organizations with strict data sovereignty and security requirements.

6. The Modernization Path for Avaya Aura® Customers

For existing Avaya Aura® customers, Avaya Nexus™ represents an evolution. It is a deliberate strategy to bring the benefits of a modern, cloud-native architecture to the trusted communications platform, Avaya Aura®. This path offers several compelling advantages:

- **Preserve Key Investments:** Continue to use your existing Avaya endpoints and gateways. The Avaya Nexus™ platform modernizes the core without requiring a costly and disruptive 'rip and replace' of your entire ecosystem.

- **Next-generation Reliability and Security:** Resilience across hyperscaler environments is achieved through Dual-Availability Zone architecture. Hardened cloud perimeter and modern identity and access controls hardens the security posture of the voice infrastructure.
- **Future-Proof:** Avaya Nexus™ serves as the foundation for integrating next-gen capabilities and advanced services, including AI-powered applications bringing new value to your mission-critical workflows.

Avaya Nexus™ and Avaya Infinity® are built on a common architecture creating a tightly integrated ecosystem that protects against technological obsolescence. This architecture ensures that innovations—whether in scalability, certifications, or third-party integrations—are mutually beneficial, maximizing the value and longevity of your Avaya solutions.

This strategic alignment delivers a future-proof platform with the following concrete advantages for your mission-critical voice infrastructure:

1. **Hyperscale Resilience & Economics:** Your mission-critical voice solution — Avaya Nexus™ — gains superior resilience and cost efficiency by leveraging hyperscale cloud technology, ensuring maximum uptime and optimized operational costs.
2. **Streamlined Operational Efficiency:** A fully automated and streamlined deployment and management model reduces complexity, accelerating time-to-service and lowering your total cost of ownership.
3. **Industry Standard Integrations:** Native interfaces enable standardized application integrations with essential systems like voicemail, recording, and presence.

4. **Deployment Flexibility:** This foundation ensures all your critical enterprise voice requirements are met, providing you with flexible deployment options (including dedicated cloud and on-prem via hyperscalers) and full compliance with stringent regulatory and certification mandates.

The architecture ensures that while Avaya Nexus™ delivers deterministic performance for voice — what Avaya is known for — it is simultaneously future-proofed, leveraging the agility, openness, and cloud-native benefits of Avaya Infinity®.

- **Maintain Operational Control:** Modernize your infrastructure on your own terms and timeline, whether on-prem or cloud, without sacrificing the control you need for mission-critical operations. The Health Status Dashboard provides organizations with greater visibility into immediate platform health.

7. Key Takeaways and Future Outlook

The communications landscape is evolving, but the need for reliable, secure, and resilient voice has never been more critical. The Avaya Nexus™ platform is the definitive modernization path for Avaya Aura® customers who operate in these demanding environments.

By embracing a modern, cloud-native architecture aligned with Avaya's core strategic direction, Avaya Nexus™ delivers the best of all worlds: the proven reliability of Avaya Aura®, the resilience and scalability of a containerized microservices platform, and the flexibility to integrate with the broader collaboration ecosystem. For organizations where communications are truly mission-critical, Avaya Nexus™ provides the control, security, and performance to lead the future.

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.

