

Upgrading: The Customer Value of Avaya Aura[®] Communication Manager 6.X



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Introduction

Avaya is the global market leader in enterprise communications solutions, achieving #1 market share in Unified Communications¹, Contact Centers², Interactive Voice Response³, Messaging⁴, Audio Conferencing⁵, and Fixed Mobile Convergence⁶. This is echoed by Gartner, who position Avaya as a leader in their Unified Communications, Corporate Telephony and Contact Center Magic Quadrants⁷. Avaya's "people first" approach means individuals, not technology, define the collaboration experience. Our singular focus on creating the most collaborative, barrier-free business environments helps our customers drive faster business results.

Avaya Aura® is the key enabling architecture that creates this barrier-free business environment and is the flagship communications solution for next generation, people-centric collaboration. Avaya Aura is based on a revolutionary Session Initiation Protocol (SIP) architecture that makes it possible to unify media, networks, devices, applications and presence across a common infrastructure.

Avaya Aura® Communication Manager is a fundamental component of this architecture and is the open, highly-reliable and extensible IP Telephony foundation on which Avaya delivers Unified Communications solutions and collaborative applications to enterprises around the globe. Communication Manager offers rich voice and video capabilities and provides a resilient, distributed network of gateways and analog, digital and IP-based communication devices. In addition, it boasts robust communications features, high reliability and scalability, and multi-protocol support. It includes advanced mobility features, built-in conference calling and contact center applications, and E911 capabilities. Communication Manager effectively scales from fewer than 100 users to as many as 36,000 users on a single system and to over one million users on a single network.

There is no better testament to Avaya's capabilities than a review of our customers who include:

- The Global Top 10 Hotel Groups
- The Global Top 20 Airlines
- Every Fortune 100 Manufacturing Company
- 70% of the world's largest Banks
- More than 5,500 Healthcare Institutions
- More than 5,000 Educational Institutions
- Over 16,000 Retail sites
- Government Agencies in over 25 countries

Avaya's focus on outcome-driven innovation drives our customers' business results by delivering forward-thinking and highly relevant

¹ Worldwide: Dell'Oro Group, Enterprise Telephony Report, 4Q10, February, 2011

² Worldwide: Gartner, Inc, Market Share, Contact Centers Worldwide, 2010, D. Kraus, April, 2011

³ Worldwide: Canalys, Worldwide Contact Centre Market and Forecasts, August, 2010

⁴ Worldwide, U.S., Canada, APAC, CALA: T3i Group, InfoTrack for Converged Applications, Full Year 2010,

⁵ Worldwide: MZA, Ltd., The Unified Communications Applications Market, World Edition, June, 2010

⁶ Worldwide: Frost & Sullivan, World Enterprise Premises-Based FMC So "Watchlist: Continuing

⁷ Gartner, Inc., Magic Quadrant for Unified Communications, B. Elliot, S. Blood, July 28, 2010.

Gartner Magic Quadrant for Contact Center Infrastructure, Worldwide, Drew Kraus et al,

February, 2010. Gartner, Inc., Magic Quadrant for Corporate Telephony,

S. Blood, J. Lassman, G. Johnson, August 3, 2010.

collaboration solutions that support competitive agility, better decisions and faster business results. The innovations created in the latest releases of Communication Manager typify this outcome-driven innovation and are the subject of this whitepaper.

The Value of Upgrading

Because they are highly satisfied with features and functionality of their existing Avaya solutions, some companies fail to take advantage of benefits enabled by the latest releases of Communication Manager software, such as the opportunity to create new business value from existing investments.

Release 6.0, 6.0.1 and 6.2 provide new customer-requested enhancements and significantly grow the scale and flexibility of Communication Manager. While many new capabilities have been added in these releases, businesses often find that a single new feature or application can deliver the results required to support their business case for the upgrade investment.

In a business climate characterized by globalization, volatile markets and distributed workforces, collaboration has become an increasingly critical element of competitive success and one of the most important benefits of upgrading. Although automation can streamline repeatable and predictable business processes, by 2015, 40 percent of many organizations' work will be "non-routine," up from 25 percent in 2010. Non-routine work requires more collaboration as knowledge workers (internal employees, external partners, customers) work together to bring new products and services to market and to solve challenges that arise along the way⁸.

Additionally, an increasingly scattered and mobile workforce is driving enterprises to seek more efficient ways for their mobile workers to share information and make better, real-time decisions. Ninety percent of employees already spend at least some time working off-site⁹ and their numbers are expected to reach 1.2 billion by 2013 — a figure representing one-third of the world's workforce.¹⁰

These realities have permeated the business world and enterprise leaders are excited about the potential benefits of collaboration technologies. Research¹⁰ shows that:

- More than 80 percent of executives believe enterprise wide collaboration is key to success.
- Thirty percent feel that communications and collaboration tools have made it easier to work with others over the past five years.
- Seventy-five percent of companies plan to increase the use of communications and collaboration tools in the next 12 months.

Video, in particular, has emerged as a key enabling collaborative technology. According to an Aberdeen Group study published in March 2011, "in the past two years, video-conferencing and video-driven collaboration have quickly transformed from niche and specialized applications to mainstream tools used throughout the enterprise."¹¹

Yet challenges remain. The complexity of today's heterogeneous IT environments and networks can hinder timely, cost-effective implementation of collaboration tools and applications that are designed to improve productivity,

cut costs, and streamline business processes.

This is where Avaya can help. By including Avaya Aura® Session Manager in their upgrade to Communication Manager 6.X, customers can create a core environment that simplifies and expands their opportunity to leverage collaborative applications.

Session Manager provides a SIP-based core communication architecture that builds on a customer's existing equipment and applications. In addition to connecting gateways, service providers, SIP-enabled adjuncts, and SIP and non-SIP telephones, Session Manager connects Avaya Aura Communication Manager as a SIP-only feature server or SIP and non-SIP (Evolution) server. It can also connect to 3rd party PBXs and small key PBX systems within branch offices.

Specifically, Session Manager:

- Normalizes disparate networks and routes SIP sessions across the network
- Integrates with third-party equipment and endpoints
- Offers centralized management, including user profiles, through System Manager
- Supports SIP survivable branches
- Enables 3rd party E911 emergency call service for up to 100,000 users.
- Supports direct SIP connectivity with Presence Services and makes Avaya one-X® Communicator, Avaya Flare® Experience, and 9600-series phones presence enabled devices.
- Serves as the master control point for Avaya and Polycom video domains.

⁸ "Watchlist: Continuing Changes in the Nature of Work, 2010-2020," Gartner, August 2010, <http://www.gartner.com/it/page.jsp?id=1416513>

⁹ "How We Work: Communications Trends of Business Professionals," Plantronics, June 2010.

¹⁰ "Global Survey of Collaboration in the Enterprise," Kelton Research on behalf of Avana, February 2010.

¹¹ From Niche to Mainstream: The Evolution of Video Collaboration. Aberdeen Group, March 2011.

- Provides the ability (in conjunction with Communication Manager and Avaya SIP endpoints) to search contacts in the enterprise-wide user database for calling, instant messaging, and presence.
- Maintains common user profiles for each user than can be accessed anywhere in the enterprise. Users moving to SIP-based devices retain their applications and phone number as they travel and reconnect their devices anywhere on the enterprise network.

From an applications perspective Session Manager enables enterprises to add the following benefits specific to their existing collaborative applications:

- Load balancing – Session Manager can balance the call load across multi-server applications like Voice Portal and Modular Messaging to provide highly scalable, flexible, extensible solutions that can remain optimized by adding servers to accommodate increased capacity requirements.
- Fault tolerance – Session Manager can route calls around a failed server. For example, in the event of a Modular Messaging server failure, Session Manager will route the next request for voicemail service to the surviving servers, placing the failed server back in service automatically when it is replaced or heals.
- Authentication – Session Manager authenticates users before allowing them to access applications. By forcing users to present their credentials to the Session Manager core, Session Manager protects individual applications and simplifies access for authorized users.
- Security – Session Manager provides:
 - additional security to applications by preventing direct user access

- denial of service protection to applications
- deep packet inspection and a SIP firewall to isolate applications from threats by malicious users and devices

- Call Admission Control – Session Manager enables administrators to prevent applications and users from requesting and using excessive bandwidth, particularly when connecting to branches, campuses, and worldwide locations.
- Video and Voice Convergence – Session Manager can monitor and control the resources required by voice and video calls so that they remain optimized for business requirements while allowing them to share a common network.
- Network Fault Avoidance – Session Manager routes both Video and Voice communications around faulty network components and links to create resiliency and maximize up time.
- Cost Avoidance – Session Manger routes access to applications like voicemail and conferencing to utilize the customer network and avoid toll charges.
- Monitoring – Session Manager gives the IT organization tight control over the use of applications by providing real time data on resource utilization and alarms when resources are in high demand. It also provides historical data so that network resources can be monitored and optimized based on business requirements.
- Trouble Shooting – Session Manager provides centralized tools that monitor and report on:
 - message traffic and contents
 - network bottlenecks (as illustrated in ladder diagrams) to show how multiple applications are collaborating

- faulty applications
- application quality issues like voice and video artifacts or noise

Ensuring that Avaya’s collaborative applications become an integrated part of the customer’s overall communications solution, these capabilities differentiate Avaya from competitors who can, for example, provide video solutions but must implement such applications as stand-alone adjuncts to a customer’s network instead of the integrated extensions of existing investments that Avaya provides.

In addition to benefits associated with collaborative applications, Session Manager can provide the following immediate cost savings in an enterprise network:

- Centralized routing and dial plan management across Avaya and 3rd party PBXs
- Policy-based routing
- Tail end hop off (TEHO)
- Centralized SIP trunking
- Support for Centralized applications
- Support for Sequenced applications

Finally, customers should note that an upgrade of Communication Manager also includes entitlement to the latest versions of Avaya Aura® Presence Services and Avaya Aura® System Manager. Presence Services 6.1 includes integration with Microsoft OCS and IBM Lotus Sametime and System Manager continues to expand its capabilities including improved navigation, security and scalability to support very large enterprise networks.

The New Capabilities of Avaya Aura 6.2 including Communication Manager 6.2

Avaya Aura® Communication Manager 6.2

Cisco Endpoint Support

Customers can now use their existing Cisco endpoints with the 6.2 release of Session Manager and Communication Manager. No special administration for Cisco phones is required as Session Manager detects the Cisco phones and applies the adaptations automatically.

New SIP Endpoint Features

Avaya Aura 6.2 includes the addition of a number of features on SIP handsets that are currently available on the H.323 Handsets. These include Enhanced Call Forwarding, Enhanced Call Pickup Alerting, Team Button, Group Paging, and Automatic Dial Button Programming.

SIP Capacity Increases

Avaya Aura Communication Manager 6.2 deployed as a Feature Server can now support up to 36,000 SIP Endpoints and up to 24,000 SIP Trunks. Please note - configurations that approach maximum capacities should always be engineered with the assistance of Avaya Engineering and that these capacities are not generally applicable to Call Center solutions.

Advanced Trunking Flexibility and Features

Communication Manager now provides complete DTMF transparency. This capability is critical for solutions that extend different media types, such as SIP and H.323, across multiple applications in the course of one call. This helps ensure a reliable Dual-tone

multi-frequency signaling (DTMF) functionality for applications such as Avaya Modular Messaging, Meeting Exchange, Voice Portal or other customer provided trunk applications.

Avaya Aura Contact Center Call Information Enhancements

Communication Manager in support of Avaya Aura Contact Center (AACC) will provide more context for the state of the call via SIP. Call states such as Hold, Transfer or Conference will be provided to AACC enhancing its capabilities for call routing.

Avaya Aura® Session Manager 6.2

Unscreened Automatic number identification (ANI)

Avaya Aura Session Manager will allow any enterprise user to make outgoing calls using any SIP service provider; even if the call is originated from a Direct inward dialing (DID) not provided by the service provider. This capability allows users to maximize the utilization of their trunks when using more than one service provider.

Multiple Emergency Numbers

Session Manager 6.2 allows up to 10 emergency numbers to be administered per location. This allows compatibility with countries with more than one emergency number and the integration of the Euro-wide 112 number to be employed along with specific country numbers, and provides adaptation for local regulations.

Advanced Session Initiation Protocol (SIP) Application Sequencing

Session Manager now supports sequenced application filtering based on media type. Applications are sequenced based on the type of media requested and any combination of text, voice or video

can be selected for each application in a sequence. Media application sequencing greatly reduces the message traffic needed for sequencing (especially video and text applications), and simplifies application development.

H.323 and SIP DTMF Interoperability

Some H.323 (which defines the protocols to provide audio-visual communication sessions on any packet network) and SIP gateways use the non standard "SIP INFO" method to transmit DTMF digits to/from SIP networks. Avaya Aura 6.2 Communication Manager, Experience Portal, Meeting Exchange, Avaya Aura Conferencing, and Avaya Aura Messaging now support the use of the SIP INFO method to allow H.323 network equipment to use common voicemail, Interactive Voice Response (IVR), and end-end DTMF operations.

SIP Connection Preservation

The Avaya Aura SIP solution in release 6.2 can fully reconstruct stable calls that involve SIP trunks or SIP stations connected to endpoints on H.248 media gateways when the Avaya Communication Manager fails over to an administered survivable core or survivable remote or vice versa. This matches the existing 6.0 capability for non-SIP endpoints. Note that survivable SIP trunking is not yet available on the Survivable Remote configurations, but plans are being developed for this feature to be delivered in the near future.

SIP Call Preservation

SIP Call Preservation builds on the connection preservation capability to provide the fault tolerant behavior coveted in critical network and contact center environments. For contact centers using Avaya Experience Portal, Interactive Customer Response (ICR), or Communications Manager, calls queued for an agent before a failure

will remain queued and will be offered to agents regardless of a Session Manager or network failure. Access to features like hold / un-hold, transfer, and conference are also supported. The Audiocodes Mediant Gateway 3000 from Avaya, Release 2.0, provides support for this Call Preservation capability.

The New Capabilities of Avaya Aura 6.1 including Communication Manager 6.0.1

Avaya Aura® Communication Manager 6.0.1

- Call Detail Record (CDR) Time Zone enhancements that expand the records from Communication Manager branches in different locations to include local time stamps. This permits easier identification of national and international prefixes on the CDR output.
- SIP Trunk Load Balancing enhancements that allow optional administration of multiple signaling groups for a single trunk group on a round-robin basis. Depending on trunk set up, this enables some customers to connect directly to SIP applications such as SIP-integrated Modular Messaging.
- New SIP Features include team button, enhanced call forward, and call pickup alerting.
- Support for passing SIP 3xx Messages that permit SIP phones to access more application features in Meeting Exchange and Presence Services both now and in the near future.
- Attendant Camp-on Busy. When an attendant extends calls to a multi-appearance phone that is busy on a call but has at least one idle call appearance, the extended call can be configured to always

return to the attendant (if no one answers) and the attendant recall timer expires whether or not a coverage path is administered.

- Where traditional synchronization is not available, provides Clock Synchronization over IP for G450 and G430 Branch Gateways.
- Deluxe paging support for branch gateways enabling use of the deluxe paging feature with analog media modules (MM711 and MM714) and port networks (TN747 and TN797).

Avaya Aura® Session Manager 6.1

- Converged Call Admission Control allows the system administrator to set bandwidth allocations between voice and multimedia traffic with an option for voice to pull bandwidth from unused video allocations when network conditions require. Session Manager can also automatically “downspeed” video calls to the bandwidth available, allowing video calls to complete at lower bandwidths. In such scenarios, other less-capable systems might block or force all existing video and voice calls to degrade.
- SIP Scale and Performance. Session Manager (and Avaya Aura® System Manager) can support up to 10 Session Managers and 100,000 SIP users. Session Manager core servers can process up to 300,000 BHCC, an effective doubling of performance over Session Manager 5.2.1.
- SIP E911. SIP endpoints can report their exact location (down to the exact IP phone jack) for emergency calling. Integration with RedSky E911 Manager™ provides automatic updating of the PSAP public database and the ability to report detailed, desk-level locations for SIP terminals even when SIP terminals or users move locations without administrator intervention.

- Adaptation Module Enhancements support the use of multiple service provider SIP trunking by allowing programmable replacement of the “From” and “To” headers with all the Session Manager adaptation modules to meet strict SIP entity and service provider requirements.

This enables customers to participate in alternate and least cost routing between multiple service providers, supporting the goal of lower total cost of ownership of the Avaya Aura core.

- Enhanced Avaya Communication Server 1000 Integration that allows the Session Manager SIP Adaptation Module to support an increased number of Communication Server 1000 features that interoperate with other SIP entities connected to the Avaya Aura core. These include basic call (incoming/outgoing), hold and un-hold, calling and called name and number display, connected name and number display including when redirected to coverage, call forwarding, call pickup, etc., centralized messaging with Avaya Aura Messaging including MWI, call forward (all, don't answer, busy), transfer, ad hoc conferencing and many others.
- Session Manager can replace the legacy Communication Server 1000 Network Routing Service (NRS) capabilities of the SIP Proxy Server (SPS) and the Network Connect Server (NCS). A Routing Data Conversion Tool (RDCT) is provided to migrate NRS provisioning data into the Avaya Aura System Manager and is implemented as a web-based tool for easy access.
- Session Manager Security Certificates. Session Manager now allows individual, unique, customer-provided security certificates for each Session Manager. In addition, Session Manager has moved to RHEL 5.5

with its increased security capabilities.

Avaya Aura® System Manager 6.1

- System Manager 6.1 introduces the use of tab based page layout to many of the commonly used interfaces providing logical grouping of functions under tabs so that they can be easily located. In addition, administration performance for Communication Manager and Session Manager on System Manager has been increased and many operations that used to take several seconds are faster with visibly improved response times.
- System Manager 6.1 can now receive standard SNMPv2c and SNMPv3 informs (traps).
- Bulk Export enhancements that allow System Manager to export Session Manager communication profiles, enabling easy administration of large systems using ProVision and other tools.
- System Manager now supports Bi-Directional LDAP Integration with the following Lightweight Directory Access Protocol (LDAP) directories: Active Directory 2003/2008, OpenLDAP 2.4.21, IBM Domino 7.0, Novell eDirectory 8.8, and SunOne Directory/Java System Directory 6.3.
- System Manager enhancements expand Communication Manager endpoint operational and troubleshooting functions to include operational functions like busyout station, release station, and test station and troubleshooting functions like list trace station, list usage extension and status station.
- System Manager 6.1 supports a global search and replaces capability. This enables administrators to make button assignment and station type changes across multiple Communication Managers.

- System Manager 6.1 enables the management of additional Communication Manager objects. This includes, but not limited to, the following:
 - Abbreviated dialing
 - Authorization codes
 - Best Services Routing
 - Call Center Elite Agent data
 - Coverage remote
 - Holiday Table
 - Trunk group
 - X-mobile configuration

New Capabilities of Avaya Aura® 6.0 including Communication Manager 6.0

Avaya Aura® Communication Manager 6.0

- Communication Manager can now be configured as an Evolution Server which allows it to support a mixture of SIP and non-SIP terminals (DCP, Analog, H.323). This also allows Avaya Aura Application Enablement Services server connection and control of both SIP and non-SIP terminals and support for implicit application sequencing.
- Communication Manager and Session Manager are now available in the Survivable remote configurations – either Evolution Server or Feature Server.
- Communication Manager 6.0 adds a host of new capabilities to SIP 96XX and one-X® Communicator endpoints: Call Pickup Alerting, one-X® Portal SIP Integration, one-X® Mobile SIP Integration, internal calling party number block, call park/un-park button, SIP stations in hunt groups, third-party message waiting indication and transfer to voicemail.

- The maximum number of SIP trunks allowed on a single Communication Manager has been expanded from 7,000 to 24,000 for Communication Manager where up to 12,000 trunks may be in use simultaneously. In the Feature Server configuration 24,000 trunks are configurable, and 24,000 SIP trunks may also be used simultaneously.
- Communication Manager 6.0 supports up to 18,000 IP endpoints consisting of any mix of H.323 or SIP stations. Up to 10,000 agents are supported in a single instance of Communication Manager as well.
- Support for IPv6.
- Communication Manager and Session Manager support the IEEE 802.1AX link aggregation standard for connecting to the L2 IP network. Also referred to as “NIC Bonding”, Link Aggregation allows two physical Ethernet NICs on Avaya Common Servers, and Avaya S8800-series servers, to be used for link redundancy to the customer network.
- Communication Manager 6.0 supports use of the G.711 codec for clarity and sharpness when playing music on hold to internal or external callers. Even though normal connections may be administered to use G.729 or other lower quality codecs for bandwidth resource conservation, Communication Manager automatically uses the clearer G.711 codec when music is played for callers on hold. Once hold is released, Communication Manager returns automatically to the lower quality codec.
- Expanded capacity for paging allows customers to administer up to 127 paging group members. The increase from 32 to 127 paging group members has no impact on call flow and call.

About Avaya

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, data solutions and related services to companies of all sizes around the world. For more information please visit www.avaya.com.

Avaya Aura® Session Manager 6.0

- Session Manager and handsets support RFC 5626 for multiple simultaneous registrations and branch survivability.
- Support for Secure Real Time Transport Protocol (SRTP) which allows customers to provide their own Public Key Infrastructure (PKI) certificates instead of using the Avaya certificates for those who want total internal control of their security.

Avaya Aura® System Manager 6.0

- System Manager 6.0 simplifies administration of user communication address by combining the two step input process of System Manager 5.2 (e.g. type and sub type) into a single input process. System Manager 6.0 uses Communication Address as the customer input and will automatically set the type and sub type based on the chosen communication address.

Avaya Upgrade Advantage

To support customer requirements to remain on the most current releases of software, Avaya offers Upgrade Advantage. Saving businesses from 30-to-50% on major communication software upgrades, Upgrade Advantage is an economical way to keep your communications infrastructure up to date. Available on a subscription basis, you simply download the latest software releases or opt to receive them on disk. Protecting your communications systems investment, Upgrade Advantage helps you remain competitive while

reducing risk, lowering costs, and eliminating the need to ask for additional budget to upgrade your systems.

Conclusion

Avaya Aura® continues to lead the global market based on solution innovations that drive hard dollar returns to our customers. The capabilities and benefits of Avaya Aura 6.0. 6.0.1, and 6.2, including the benefits of Session Manager, create opportunities for existing customers to add substantial new values to their current investments.

To learn more about how Avaya Aura can bring substantial benefits of business collaboration to your business, speak to an Avaya representative or Avaya partner, or conduct your own Return on Investment (ROI) analysis using the Avaya Product Calculator at:

<http://www.avaya.com/calculator-platform/calculator.aspx>