

PathNavigator™

A Call Processing Server Defined

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Polycom Accelerated Communications Architecture

Before beginning the discussion on PathNavigator™ let us first discuss the breadth of the Polycom Accelerated Communications Architecture. PathNavigator is an integral component of this and best understood in context to the whole solution offered by Polycom. The Polycom Accelerated Communications Architecture is the underlying management, networking infrastructure, and terminal hardware that enables the full breadth and maximization of the Polycom Office, the suite of multimedia communication applications from Polycom. It is a complementary architecture to the networking services provided by the likes of Cisco®, Microsoft®, Nortel Networks™, Lucent Technologies® and others. It can be thought of as a way to accelerate a network's ability to support multimedia communication protocols, return on investment, and the richest and easiest user experience. Simply plug it into your existing network. With the Polycom Accelerated Communications Architecture embedded application routing and deployment system, rolling out the Polycom Office is faster, simpler, uses fewer IT resources, and provides the greatest user benefit than ever before. Such integration is unparalleled in the marketplace today. Polycom is the only manufacturer that can offer a comprehensive end-to-end solution to the deployment of H.320 and H.323 communications applications. Other vendors in the marketplace must cobble together multiple management systems and components from different manufactures to deliver an end-to-end solution. The following is a brief summary of the acceleration benefits of the Polycom Accelerated Communications Architecture.

Network Acceleration

- Optimizes existing networks for the deployment and use of multimedia communications
- Works with your existing layer two and three IP networks
- Leverages existing PBX infrastructure
- Leverages existing LAN and WAN architectures
- Centralized management, with easy to use web based deployment and maintenance utilities
- Comprehensive application-based call routing
- Provides facilities to ensure that communication sessions start reliably, regardless of network or protocol type

Protocol Acceleration

- Creates an environment independent of communication protocols
- Creates an environment independent of network type
- Communication protocol transcoding
- Audio and video protocol transcoding

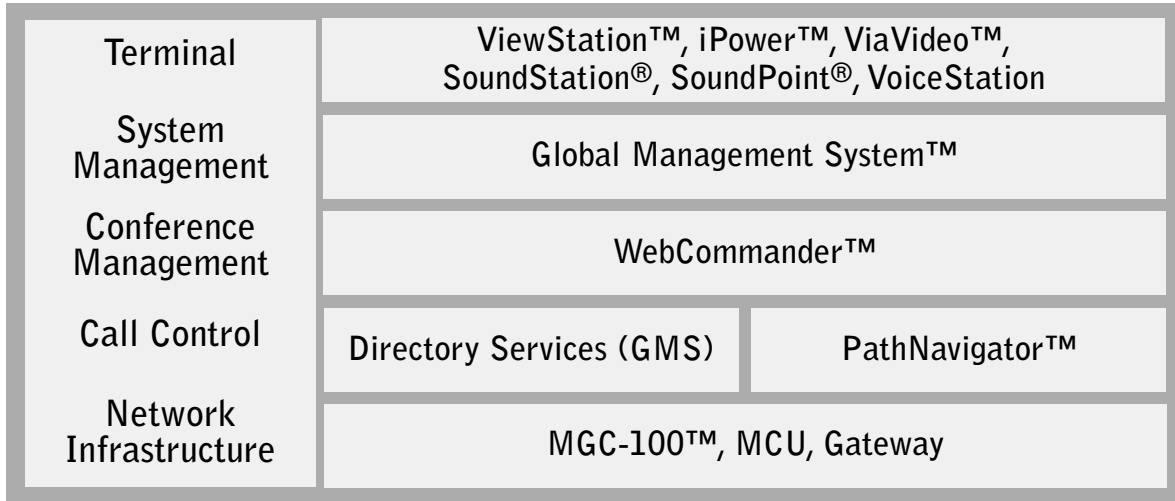
**Return on Investment (ROI)
Acceleration**

- Increased utilization by users and simplicity in scaling deployments, increases the likelihood of achieving an ROI on all network based technology investments; inclusive of terminals, multipoint control units, gateways, switches, PBX's, routers, firewalls, etc.
- Investment protection. Investments must be preserved for a long enough time to reap a full ROI.
- The Polycom Accelerated Communications Architecture will help to create a much higher level of utilization; optimizing previous infrastructure investments in networks built on Cisco, Microsoft, Nortel, Lucent, etc.
- Applications like Global Management System™ and PathNavigator reduce the overall workload required from support personnel enabling a greater number of communication sessions with fewer IT resources.

Application Acceleration

- Provides the richest and easiest to use user experience
- IPriority™ Quality of Experience facilities
 1. Network-based Quality of Service such as IP Precedence, with future plans for Differentiated (diffserv) and Integrated (Intserv/RSVP) services
 2. Application-based Quality of Service such as Dynamic Bandwidth Allocation and Diversity Based Concealment
 3. The Polycom PacketCommander Technology
- Scheduling interface via WebCommander
- Comprehensive suite of data collaboration products

Figure 1 Polycom Accelerated Communication Architecture



What is a Call Processing Server?

The Polycom PathNavigator is a Call Processing Server (CPS). A call processing server is a routing engine and management sub-system for multimedia communications. PathNavigator can be used stand alone or in conjunction with the Global Management System. Both Global Management System and PathNavigator provide complementary deployment and management tools. In order to best understand the CPS let us first review the history of call processing for multimedia. The development of the CPS has been an evolutionary process. Evolutionary in the sense that multimedia communication standards continually evolve. As new standards are ratified, manufacturers must develop products to meet the new requirements of these standards.

PathNavigator represents a third generation product for application routing and management. The following is a chronological review of that evolution and describes the methods for traditional routing and management systems for multimedia communications.

First generation: The International Telecommunications Union (ITU) H.320 standard for circuit-switched multimedia communications is routed by the Public Switched Telephone Network (PSTN). For Polycom terminals, the Global Management System added intelligent routing to this process since release 1.0. Intelligent routing facilities have made dialing as simple as selecting a user from the directory, and clicking the button to dial. Intelligent dialing in version 1.0 of Global Management System transparently adds the appropriate dialing prefix required to dial outside of the PBX, call different area codes, and even different country codes. Users simply select a name to call, and Global Management System handles the complexity of routing.

Second generation: The ITU H.323 standard for packet switched multimedia communications is routed by a gatekeeper. The management system was Global Management System version 2.0 and a third party gatekeeper until the release of PathNavigator. Although the combination of Global Management System and a third-party gatekeeper added significant benefit and simplicity to the user experience, Polycom was not satisfied. Polycom continued to invest in research and development to provide the easiest to use, most feature rich user experience.

Third generation: In today's mixed environments of both H.320 and H.323, PathNavigator can accomplish multimedia communications routing and deployment management. PathNavigator and Global Management System version 2.5 can be tightly coupled to provide a complete management and call processing solution to accelerate deployment, management, and user experience. This represents man-years of research and development by some of the best and brightest engineers in the industry of multimedia communications.

Now that you know why PathNavigator was developed, it is important to know the advanced capabilities of a call processing server over a gatekeeper. The gatekeeper itself is simply in charge of storing the names of registered users, resolving the addresses of callers, and basic network bandwidth control. A CPS is cognizant of much more information than traditional Gatekeepers.

A CPS is designed to greatly enhance the user experience as well as ease the burden of deployment and management for the IT department. The end user needs to only select a name from a global directory, dial an extension, dial a name, or enter '9' for an outside line.

Regardless of the method used to dial the call, the CPS will determine the best routing method based on available resources, network bandwidth limitations, and IT established policies. The 'best' method can be based on lowest cost or call quality (speed).

The CPS knows the entire network topology so that proper routing can be established for each call. Even the most complex video networks can be mapped inside the CPS. All the ISDN and E.164 numbers can be automatically assigned to the endpoints greatly simplifying the IT administrator's job.

Lastly, all the information related to the endpoints making calls and the network bandwidth is collected and made available to the network administrators.

As a Call Processing Server, PathNavigator contains an intelligent network routing engine and an embedded H.323 compliant gatekeeper module. Additionally PathNavigator leverages internal as well as external IP and H.320 address information from terminal records to provide services such as alternate routing, which enables network and protocol independent routing decisions for a communication session based on administrator policy. See Figure 2. Deployments of multimedia communications benefit from the integrated intelligent routing engine and deployment tools.

Figure 2. Intelligent Network Routing Engine

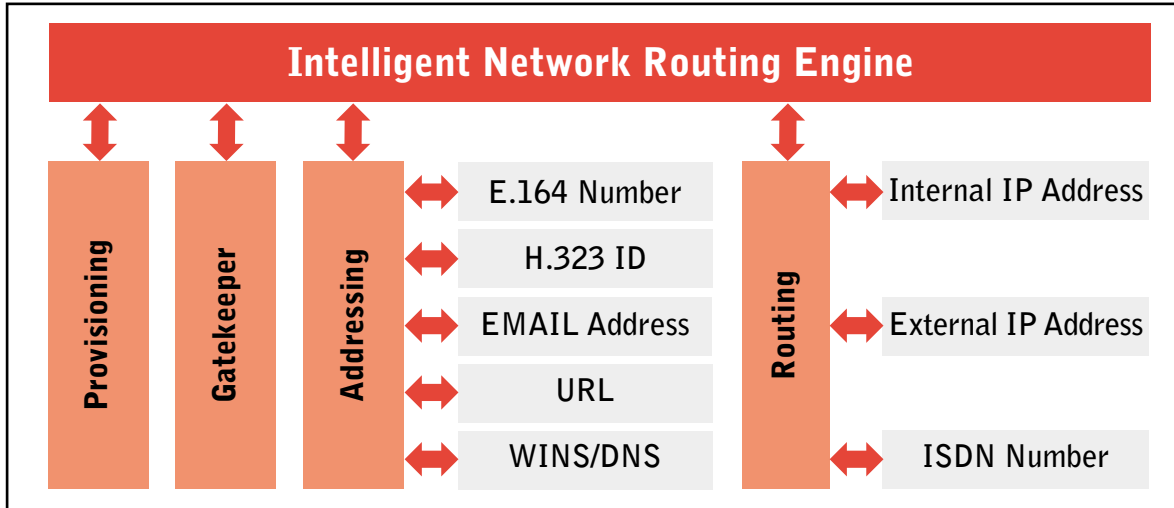


Table 1. below highlights the services derived from Global Management System , PathNavigator and standard H.323 Gatekeepers.

Table 1. Comparison of Global Management System, PathNavigator, and an H.323 Gatekeeper

| Services | Global Management System | PathNavigator | H.323 Gatekeeper |
|--|---------------------------------|----------------------|-------------------------|
| Intelligent H.320 routing | | X | |
| H.323 routing | | X | X |
| Directory based intelligent dialing (click to call) | X | | |
| Route calls between H.320 and H.323 | | X | X |
| Alternate routing (H.320 or H.323) | | X | |
| Least-cost routing (H.320 or H.323) | | X | X |
| Deployment tools | X | X | |
| Software update services | X | | |
| Network monitoring | X | | |
| Automatic *provisioning of Direct Inward Dial (DID) phone number | | X | |
| Automatic *provisioning of E.164 numbers | | X | |
| Integrates with Global Management System | NA | X | |
| H.323 Firewall proxy | NA | Works with proxies | Some work with proxies |
| Security for -Rogue H.323 call detection | | X | |
| Prefix-less dialing for gateways and MCU | X | X | |
| Adhoc H.323 multipoint from Polycom H.323 terminals with an Accord MCU | | X | |

*Provisioning is the ability of the management or call processing system to push configuration information out to terminals. This configuration information is input into the system only once by the network administrator, thus reducing the replication of effort associated with competing or mixed vendor offerings. This is used to accelerate and simplify the deployment of multimedia applications equating to overall cost savings in the deployment of multimedia applications, based on reduced IT man-hours.

The tight integration of application routing and management systems, available from one manufacturer, represents a leap in technology unrivaled in the market place today.

Additionally PathNavigator is architected to be both transport and protocol independent. As new communication standards like Session Initiation Protocol (SIP) and transport media evolve, so will PathNavigator. This represents a significant investment protection benefit to Polycom customers.

Why do I need PathNavigator?

The deployment of multimedia communication applications can encompass many communication protocols. Historic deployments of multimedia communication applications used only the H.320 protocol. If your deployment is based solely on H.320 and you are using Polycom terminals, then Global Management System would be an option, not PathNavigator. If your deployment is using either the H.323 communications protocol or a combination of H.320 and H.323, then PathNavigator is highly recommended. This recommendation also includes the pairing of both Global Management System and PathNavigator. PathNavigator is designed to provide the deployment tools and routing services to multi-protocol deployments. PathNavigator represents a new class of product by providing advanced H.320 routing services on top of services typically supplied by an H.323 gatekeeper. Based on the above, if your deployment is going to use H.323 and Polycom products than you need a PathNavigator. Moreover, if your deployment is going require the handling of both the H.320 and H.323 communication protocols, then you need a PathNavigator.

You need PathNavigator if you answer yes to any of the following:

1. Are you a user of Polycom H.323 technologies?
2. Do you have a need to supply your users with the easiest to use calling experience in mixed H.320/H.323 deployments?
3. Does the ability to create an ad-hoc H.323 multipoint conference from Polycom terminals interest your user community?
4. Do you believe that your deployment could benefit from an alternate call path to ensure calls happen when users desire them, regardless of transport and protocol?
5. Are you concerned about changing technologies and desire some assurances that your investment will be protected?
6. Do you have a need to keep the cost of deployment and ongoing management of multimedia communications down to a minimum?
7. Are you concerned about rogue deployments of terminals misappropriating your network resources?
8. Do you have a complex network layout with WAN and LAN connections having separate bandwidth limitations?
9. Are you looking for a single vendor to supply a complete and integrated multimedia communication solution?

Frequently Asked Questions

Q: Do I need both Global Management System and PathNavigator to deploy H.323 devices?

A: No, PathNavigator is all you need, unless you require any of the additional services listed in Table 1. Most deployments will find that both of them are equally beneficial to their enterprise.

Q: Is PathNavigator an IP PBX?

A: No, although PathNavigator can supply rudimentary H.323 audio call processing and supplementary services, it is not architected to be used as an audio IP PBX. Think of PathNavigator as an IP and ISDN Video PBX that complements both IP and Circuit switched PBXs.

Q: Does PathNavigator support Session Initiation Protocol (SIP) today?

A: No, however as SIP evolves to support video, so will PathNavigator.

Q: Does PathNavigator work with other vendor's H.323 terminals and gatekeepers?

A: Yes, PathNavigator is H.323 standards compliant

Q: Does PathNavigator replace the need for my Cisco MCM?

A: No, PathNavigator is designed to complement the MCM in an all Cisco network, however, MCM alone will only supply those services listed above under gatekeepers in Table 1. The MCM does supply both H.323 firewall (PIX) and Quality of Service proxy services to Path Navigator.

Terminology

Rogue H.323 call detection

gatekeeper to automatically detect an unauthorized user from gaining access to network resources.

Prefix-less dialing

require a dialing prefix to be manually inserted by a user into the dialed string of characters to properly route H.323 calls.

MCM

Manager is a combination H.323 Gatekeeper, Firewall and QoS proxy.

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October 17, 2001 Rev A