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Market Definition

Since the VoIP movement began several years ago, the two incentives for shifting voice and multimedia traffic from circuit-based networks to packet-based networks have been CapEx and OpEx reductions and a potential increase in revenue through the introduction of new services. IP Centrex/Multimedia Application Servers are one of the primary vehicles service providers and carriers will use to achieve both those objectives, though considerably more attention has been focused on new services than transport-cost reduction over the past year or so. An IP Centrex/Multimedia Application Server, also known as a hosted PBX, is a software-based system that resides in a service provider's network and provides call control and line-side applications for the delivery of hosted telephony and multimedia services to enterprise and residential customers. When first proposed several years ago, IP Centrex application servers were eventually designed as a replacement for traditional Centrex services, with the major difference being that services would be delivered over a packet network instead of a TDM network. The number and sophistication of services delivered through IP Centrex/Multimedia Application Servers varies from one product offering to another. All platforms provide basic Class 5 features, such as call forwarding and call waiting, and most provide PBX-like functions that – as the name suggests – equal or exceed traditional Centrex offerings. In recent months, however, the bar has been raised for IP Centrex Application servers to go beyond traditional voice services and begin to deliver seamlessly what amounts to a new productivity environment incorporating multiple forms of communications, such as instant messaging (IM), voice, video, conferencing, and data collaboration. Though IP Centrex/Multimedia Application Servers support multiple communication protocols, such as XML, MGCP, and H.323, the prominent protocol for the platform is the session initiation protocol (SIP), which defines a Web-like mechanism for signaling between end devices and creating a sessions-oriented environment that enables the blending of various forms of communications. IP Centrex/Multimedia Application Servers typically reside on industry-standard hardware, such as servers from Sun Microsystems, IBM, and Compaq/HP.

Market Review

- **The Name Game:** IP Centrex is a moniker that some competitors are trying to escape, advocating the terms hosted PBX or Voice and Multimedia Application Server. The push for a name change that does not specify IP technology shows just how much the market has embraced packet telephony. It is also largely connected to the belief that IP Centrex/Multimedia Application Servers now significantly exceed the capabilities of traditional Centrex services. Equipment vendors and service providers want to make sure that potential enterprise customers, when comparing a CPE-based IP PBX with a hosted server, are not burdened by a bias that a hosted service cannot be as feature- and performance-rich as a CPE solution.
- **Cost Reductions vs. New Services:** When IP Centrex/Multimedia Application Servers emerged on the market, service providers were mainly interested in the hosted telephony model as a means of reducing costs by utilizing the less-expensive IP infrastructure to deliver voice services. IP Centrex was largely viewed as a replacement for traditional Centrex services. Service providers looked to preserve existing customers by offering roughly the same services and also passing along to customers some of the savings associated with using an IP infrastructure. Few if any service providers now talk about IP Centrex as simply a Centrex replacement device. Carriers now believe that they can compete with premise-based

gear and drum up new revenue by introducing services that increase the productivity of enterprise workers.

- **Conferencing, Collaboration, and Convergence:** IP Centrex/Multimedia Application Servers are at the heart of the movement by service providers to increase average revenue per user (ARPU) by offering a hosted service that gives enterprise workers essentially a new communications environment. Taking advantage of the intermingling of voice, video, messaging, and data, service providers are offering hosted telephony services that converge voice and data, elevating the interaction level between workers through conferencing and collaboration services. As a result, IP Centrex/Multimedia Application Server makers are in the process of either adding conferencing and collaboration capabilities to their platforms or securing partnerships with third-parties that provide those tools.

- **Critical New Protocols:** The two most influential forces shaping the IP Centrex/Multimedia Application Server market are SIP (session initiation protocol) and IMS (IP multimedia subsystem). The two acronyms are related in that the IMS framework, which describes the mobile world's roadmap for bringing multimedia services into the wireless realm, relies on SIP as both a signaling technology and a unifying communications channel between the various call control devices and application servers in the IMS model. Though IP Centrex/Multimedia Application Server makers have embraced SIP technology for some time now, few, if any, have spelled out their plans for conforming to the IMS framework, as it is being defined by the 3GPP.

- **Market Consolidation in the Future?:** IP Centrex Feature Servers are such an essential piece of any hosted telephony offering that all incumbent equipment vendors recognize the need to offer the technology in their VoIP product portfolios. While several softswitch makers, such as Siemens, Ericsson and Lucent, have chosen to partner with third-party IP Centrex/Multimedia Application Server makers, it is likely that deep-pocketed competitors would prefer to have a solution of their own. This could trigger a round of consolidation through acquisition, as softswitch makers buy up IP Centrex/Multimedia Application Server makers. It could also result in financial setbacks to independent players as former partners develop their own products. VocalData's acquisition by Tekelec, in other words, could turn out to be the first step toward market consolidation or the last purchase of a major independent player.

- **It is the Network, Stupid:** The success of Vonage, Skype and similar services that turn broadband pipes into telephony delivery networks has put fear into the hearts of facilities-based service providers. These services have demonstrated that the last mile can essentially be hijacked by outside businesses to provide value-added services, relegating the local carrier to the role of bit carrier or pipe provider. The good news for owners of the local loop is that as these end user services become more sophisticated and more dependent on things such as presence, outside service providers, who cannot control the QoS on the delivery pipe, will have an increasingly difficult time competing with the local service provider. As the performance of end user services become more and more dependent on the state of the delivery pipe, local carriers will be able to better compete with the Vonages of the world, or at least provide a piece of the value chain that allows it to be more than a transport provider.

Near-Term Market Drivers

- **Home Grown vs. Get Your Own:** IP Centrex/Multimedia Application Server makers differ in that some integrate services, such as voicemail, conferencing, and session border control, into their application servers, while others rely on partnerships with third-party vendors. Those that fall on the "integrate" side cite the ability to save costs for smaller service providers that will not need to purchase and integrate additional gear. Those that partner exclusively contend that most customers already have a supplier for these services and a homegrown solution is overhead.
- **George Jetson Calling on the Videophone:** IP Centrex/Multimedia Application Servers, through the addition of conferencing, collaboration, and presence technology, are taking on the ability to create a communication environment that comes close to resembling what was once found only in science fiction. These platforms already offer the ability to seamlessly jump from IM to a voice call or initiate a video conference at the click of a button. As voice activation technology improves, it will not be long before all enterprises have the same communications capabilities as Spacely Sprockets.
- **Another Type of Triple Play:** Service providers are essentially hedging their bets when it comes to offering hosted telephony services. Not wanting to miss any enterprise sale, most carriers give their corporate customers a choice of three telephony options. Listing these options in increasing order of ability to create revenue for service providers, they are reselling an IP PBX and essentially acting as the transport pipe, managing an IP PBX located at the customer premise or offering a hosted service in which the call control is located in the carrier's network. While this situation does not create anxiety for vendors that offer both CPE and hosted solutions, it makes life more difficult for those that make only hosted solutions and might profit more if service providers offered hosted services exclusively.
- **Teaming up with Circuit Switches or Softswitches:** Though most of the recent high profile hosted telephony deployments, such as BellSouth and SBC, include a softswitch, which is essentially providing media gateway control functions, the majority of IP Centrex/Multimedia Application Servers are deployed next to a Class 5 circuit switch. This type of deployment enables service providers to leverage previous investments in circuit switches, which can still be used to provide regulatory-related features, such as 911 and CALEA services.
- **The High Cost of IP End Devices:** Regardless of the benefits to enterprises connected with adopting an IP- telephony communications model, companies are hesitant to move to a hosted model (as well as move from TDM to an IP PBX) because of the high price of IP phones. Service providers routinely site the cost of purchasing new handsets as the biggest expense associated with the move to IP as well as the biggest inhibitor to the accelerated adoption of VoIP. While many businesses have installed phone adapters or IADs in order to utilize existing handsets, others have put off the migration to IP until the price of IP phones significantly declines.
- **Who is Minding the LAN?:** Another factor inhibiting the adoption of hosted telephony technology is that the transition to IP requires an enterprise's LAN to absorb the communications traffic that was once segregated to a separate network. This transition often introduces performance issues for the existing network, raising the question of where the boundary exists in terms of a service provider's responsibility to ensure the successful delivery of voice. In other words, is the service provider offering the hosted service responsible for the monitoring and maintenance of the network all the way to the desktop, or only up to the edge of the customer's network?
- **The Residential Surprise:** The popularity of Vonage- like services for consumers was an exception to the general principles of VoIP adoption in that it occurred before most vendors or industry pundits expected. Conventional wisdom held that VoIP services would be adopted first in the enterprise, where workers had a much more pressing need than residential users for the types of applications created through the integra-

tion of voice and data as well as the availability of a Web-interface for customizing voice services. IP Centrex/Multimedia Application Server vendors, however, have had to react quickly to the recent uptake in residential adoption of VoIP services.

Long-Term Market Drivers

- **CPE vs. Hosted Telephony:** Long before VoIP was even on their radar screens, enterprises have been debating the pros and cons of managing an in-house IT solution or outsourcing it to a third-party. Security and the ability to maintain direct control have always been the foundation of the argument from those advocating the CPE approach. Flexibility and the reduction in capital expenses are the most compelling points on the outsourcing side. It is the same old story with VoIP. The larger the enterprise, the less likely it is to trust its communications system to an outside party. As a result, most of the early traction by IP Centrex equipment makers has been through service providers catering to small- or medium-sized businesses. As outsourcing becomes an increasingly legitimate and safe alternative to in-house approaches and businesses continue to offload non-essential business processes to third- parties, hosted telephony solutions will find traction in more and more Fortune 500 enterprises.
- **The IMS Revolution is an Evolution:** While softswitch makers and IP Centrex/Multimedia Application Server makers are on a no-turning-back path toward adapting their products to fit into the IMS framework of the 3GPP, it will take at least the next couple of years for vendors to reach that destination. Not only do several technical hurdles need to be ironed out in the framework itself, it could take even longer for service providers to consolidate both wireline and wireless operations into the same business structure. Nevertheless, VoIP equipment vendors will spend the next several quarters figuring out migration paths to IMS for their wireline solutions.
- **The IP PBX vs. IP Centrex Battlefield:** While it is likely that the largest enterprises are likely to prefer CPE solutions in the immediate future, IP Centrex/Multimedia Application Servers (in the form of hosted services) will continue to compete with IP PBXs. Enterprise-located systems are always likely to hold a slight advantage in terms of features and capabilities, as innovation usually begins in a corporate setting before working its way on to the public network. The competitive back and forth is also likely to take a few twists, as makers of CPE solutions look to add multi-company partitioning capabilities and IP Centrex/Multimedia Application Server makers push their products into the enterprise, starting with universities and other businesses that operate their private networks as small service provider networks.
- **Maintaining Independence:** While independent IP Centrex/Multimedia Application Server makers currently offer some of the most innovative and reliable platforms available, the fate of these companies is not clear. A hosted PBX offering is a vital piece of any VoIP vendor's product portfolio. Major incumbent equipment makers that have not unveiled a homegrown solution, such as Siemens, Lucent, and Ericsson, have been content to partner with standalone vendors, particular Sylanro and BroadSoft. Ultimately, however, these vendors will either develop their own or purchase an IP Centrex solution. The route these incumbent vendors take will have a tremendous effect on the fortunes and futures of these independent companies.

POSITIONING

Offensive vs. Defensive Responses

Home Grown Vs. Get Your Own

Offensive • Makers of IP Centrex Application Servers integrating multi- services into the application server should emphasize the expense and complexity of third-party integration. Smaller service providers that require only modest scale in terms of voicemail and conferencing capabilities are shielded from these expenses and complexity by purchasing an integrated package.

Defensive • The vast majority of service providers already offer voicemail and conferencing services. It makes more sense to focus on compatibility with these incumbent systems than it does to provide technology that the service provider is not likely to require.

George Jetson Calling on the Videophone

Offensive • IP Centrex/Multimedia Application Server makers should continue to focus on the integration of collaboration and multimedia servers into their products. Vendors that deliver the most sophisticated communications environment, in terms of integrating multiple types of sessions, are better aligned with the immediate needs of enterprise customers, a qualification that will resonate with service providers.

Defensive • While it is accurate that hosted telephony services are moving toward delivering enterprises new ways to increase productivity through sophisticated communications tools, IP Centrex/Multimedia Application Server vendors that have yet to add presence and collaboration tools into their products are not going to be shut out of the market. While some innovative enterprises are looking for integrated communications packages, others are not ready for that level of integration. Many corporations are still struggling to come up with a policy on IM integration into the enterprise.

Another Type of Triple Play

Offensive • IP Centrex/Multimedia Application Server makers that offer a standalone system, such as BroadSoft, Sylanpro, and NetCentrex, should stress to potential customers the financial advantages of offering a full-blown hosted service, rather than managing, or simply reselling, a CPE device. A hosted environment in which service providers offer call control and application delivery from their networks, as well as providing the pipe, offers providers the most lucrative margins.

Defensive • IP Centrex/Multimedia Application Server makers that also offer premise-based equipment need to present their products as complementary, rather than competitive. These vendors, such as Cisco, Nortel, and Siemens, should focus on creating an overarching framework that eliminates any feature or functional differentiation between premise-based and hosted solutions, enabling service providers to accommodate the needs of all enterprises, whether they prefer to manage their own communications systems or outsource those services.

Teaming Up with Circuit Switches or Softswitches

Offensive • Standalone IP Centrex/Multimedia Application Server makers should demonstrate the ability to work in an environment that relies on a circuit switch for call control or a softswitch for call and media gateway control. This sort of call control agnosticism enables vendors to appeal to both service providers with legacy equipment and those that are building an infrastructure to deliver hosted telephony services from scratch.

Defensive • Though makers of IP Centrex/Multimedia Application Servers that also offer softswitches should pursue opportunities with service providers that want to augment existing circuit switch-based services, these vendors, such as Nortel and Alcatel, should also exploit the opportunity to sell additional equipment, such as softswitches.

The High Cost of IP End Devices

Offensive • As a rule of thumb, there is no such thing as too much interoperability. IP Centrex/Multimedia Application Server vendors that interoperate with a wide variety of IP end points and, similar to Tekelec (formerly VocalData), support a variety of access protocols in addition to SIP should stress to potential customers that the more end device options enterprises have the more likely they are to transition to a hosted IP telephony service.

Defensive • Vendors that offer limited support for IP phones, such as Nortel, which is addressing that shortcoming through a developers program, need to point out that most enterprises prefer to utilize existing handsets through adapters or IADs. Though support for a wide swath of IP phones is a long-term goal, the lack of this asset is currently not a serious liability.

Who is Minding the LAN?

Offensive • Incumbent vendors that offer professional services, such as Siemens, Lucent, and Nortel, provide a complement to their respective hosted telephony offerings. Enterprises that are moving to a hosted communications environment may have the need for assistance in managing the migration of voice traffic to their LANs.

Defensive • Most performance monitoring offered by standalone IP Centrex/Multimedia Application Server makers does not extend beyond the edge of the customer premise. A growing number of vendors in the management space, however, are now offering service providers and enterprises tools that enable them to monitor performance and troubleshoot connections extending from the end user's IP phone through the service providers networks. These management toolmakers are potential partners for application server makers.

The Residential Response

Offensive • Most IP Centrex/Multimedia Application Server makers have been successful in responding to the surprisingly early uptake in demand from residential users. Platforms that offer the flexibility to offer a la carte services, rather than rigidly packaged feature sets, are in the best shape to respond to the new market demand with a scaled down version of the application server.

Defensive • Despite the seemingly accelerated demand for hosted VoIP in the residential sector, IP Centrex/Multimedia Application Server makers will continue to focus on the enterprise segment of the market. The enterprise market should offer higher margins for the considerable future, as corporate works demand increasingly sophisticated services. For residential users, however, the focus is still more on cost than features.

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