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Magic Quadrant for Softswitch Architecture

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The softswitch architecture market is mature, which limits vendors' scope for differentiation. At the same time, mergers and acquisitions continue to shrink the number of suppliers that communications service providers can choose from. This report assesses 12 vendors to help CSPs make that choice.

WHAT YOU NEED TO KNOW

Communications service providers (CSPs) face significant competitive pressure and the challenge of differentiating themselves with enhanced services that reduce churn, while also cutting costs. In the right circumstances, network transformation, especially in the session control and service layer, can enable CSPs to offer such services in blended "life style" bundles, incorporating location-based and personalized services across different media and devices.

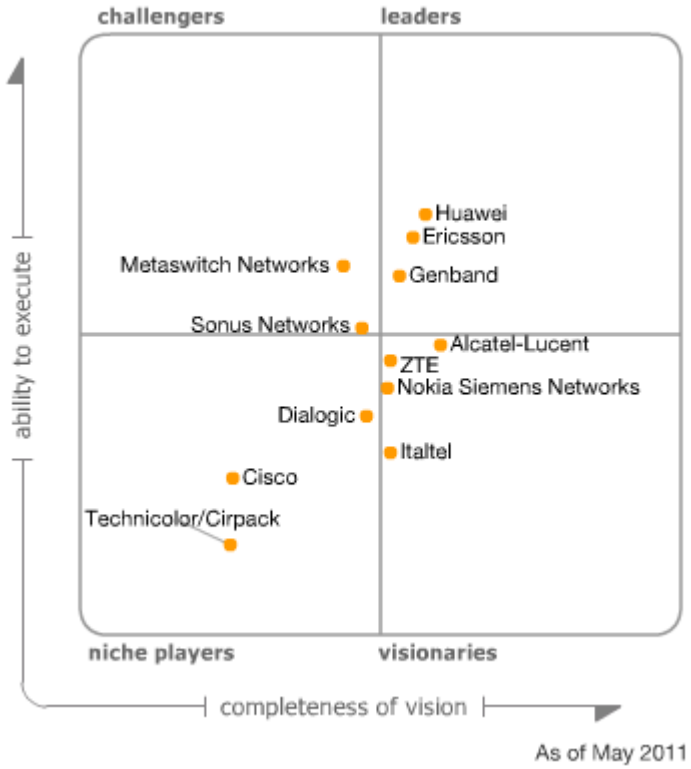
An important step toward this transformation is to reduce operational expenditure (opex) by improving operational efficiency and streamlining network performance. This will enable CSPs to focus on the services, the application environment and the underlying network resources required to optimize delivery of new services.

Across the globe, CSPs have been implementing Internet Protocol (IP) Multimedia Subsystem (IMS) technology as a core part of a network and service transformation road map that marries implementation of IMS to development of a service delivery platform (SDP) architecture based on service-oriented architecture. Their main aims with IMS are to support interoperability, quality of service (QoS), quality of experience (QoE), accurate billing and integration of new services. QoS and accurate billing support are important mainly because today's networks are based primarily on packet-switched IP protocols that support only "best effort" services. Most fixed and all mobile, voice and SMS networks are still circuit-switched, and mobile data networks lack QoS control features. Therefore, most voice-over-IP (VoIP) applications cannot provide QoS guarantees to end users. Nor can they guarantee accurate billing for network providers. Hence an important objective of the IMS standard is to create an architecture for deploying IP voice applications that offer both QoS and accurate billing.

CSPs' top priorities are to reduce capital expenditure (capex) and opex, increase revenue, improve the end-user experience, and meet the growing need to support IP-based services. With these aims comes a recognition of the risk associated with keeping time division multiplexing (TDM) equipment for much longer. As there is also a need to reduce energy costs for fixed and mobile switching centers and local exchanges, CSPs have started to test and compare the usage-based power consumption of servers, softswitch platforms and gateways. With increasing subscriber traffic, Advanced Telecommunications Computing Architecture (ATCA)-based switching solutions that offer increased flexibility, and server board interfaces that deliver increased performance at linear power consumption, are reducing CSPs' exposure to energy costs, including the amount of cooling required at facilities, and their technology footprints. Together with industry partners and research institutes, vendors such as Alcatel-Lucent (with Bell Labs), Italtel (with Cisco) and Nokia Siemens Networks (with Opera) are investing in the innovation of energy-efficient technology. For carrier customers this has an immediate impact on the technological and business justification for buying. It also improves the vendors' market positioning and branding as companies that focus on the strategic issues ahead.

Investment by CSPs has shifted from softswitches, media gateways and signaling gateways to session border controllers (SBCs), voice application servers, and solutions relating to the Diameter protocol, policy and session management, and deep packet inspection (DPI) using IMS — all of which are tied to Long Term Evolution (LTE) technology and the expected increase in traffic that will also drive these market segments. SBCs are being deployed essentially to bypass the TDM network, and this in turn reduces the need to deploy media gateways, so the media gateway controller (a softswitch) will, in time, have nothing to control, particularly as service and control logic move away from the switch. Remaining growth in the softswitch segment derives mainly from the shift from fixed softswitches to mobile softswitches.

Figure 1. Magic Quadrant for Softswitch Architecture



Source: Gartner (May 2011)

Market Overview

A Slow but Steady Transition From TDM to IMS

CSPs continue to alter their networks as they move to decommission legacy infrastructure, develop new technology and serve customers more effectively. They have been investing in next-generation equipment and architectures for over a decade in order to introduce VoIP technology and run networks more efficiently.

The need for differentiation and new revenue streams has led to the development of new applications for which the use of softswitch architecture alone is not the best approach. This has increased the requirement for CSPs to invest in next-generation equipment. Most large CSPs are switching to IMS architecture.

IMS is a standardized, open architecture, based on the Session Initiation Protocol (SIP). It defines how applications and services are delivered to customers, regardless of access network (including the public switched telephone network [PSTN]). The technology separates session control from the actual applications for maximum flexibility, and it standardizes the signaling and control layer, together with network-based and Web-enabled applications and services. It helps CSPs build a strategy based on the convergence of platforms, technological solutions and

services, as well as of end-user devices and terminals, including handsets and client premises equipment.

IMS and LTE

Migrations are never completed quickly, and the measures adopted so far to remedy the immediate problems caused by an increase in data and multimedia traffic essentially amount to sticking plasters. In time, longer-lasting solutions will be needed, but CSPs could maintain their present approach for years before rolling out new services, for which much higher capacity is needed, only in select areas and on differing parts of the network.

LTE is still in the early phase of adoption — as of January 2011 there had been only 17 launches of commercial LTE networks worldwide. To help CSPs switch to LTE, the Third Generation Partnership Project (3GPP) standards body has approved IMS as the official framework for handling voice over LTE (VoLTE). As a result, LTE networks will need appropriate IMS infrastructure — including softswitches — to control, ensure QoS and charge correctly for voice services. We expect, however, that most CSPs launching LTE will focus on data services for the first couple of years.

IMS architecture also allows CSPs to integrate services efficiently, so they can be bundled to meet the needs of end users. It eliminates the need for the traditional "stovepipe" approach in which all features are included in single applications that do not integrate easily with others. IMS makes it possible to draw on presence, location-based, push-to-talk and other services for new applications.

The value of IMS as a complementary architecture to LTE lies in delivering basic voice services alongside complex converged or combinational applications. As a next-generation signaling and application delivery architecture, IMS provides the ability to offer blended services over a single control plane. Marketing for IMS focuses exclusively on next-generation applications and blended services such as presence, location, push-to-talk and gaming, together with multimedia video streaming and voice telephony. The VoLTE initiative of the Global System for Mobile Communications Association (GSMA) aims to devise a standard to enable mobile operators to provide traditional circuit-switched services, voice telephony and SMS using an LTE access network and a traditional GSM and Universal Mobile Telecommunications System (UMTS) core.

Green IT

As noted earlier, CSPs' top priorities include reducing capex and opex, increasing revenue and improving the end-user experience.

To reduce energy costs for fixed and mobile switching centers and local exchanges, CSPs have started to test and compare the usage-based power consumption of servers, softswitch platforms and gateways. As subscriber traffic increases, more flexible ATCA-based switching solutions, together with server board interfaces that deliver increased performance at a constant level of power consumption, are reducing CSPs' energy costs, including the amount of cooling required for facilities, and technology footprints.

Software is a key enabler of cloud-based services, and the model whereby CSPs offer software as a service (SaaS) will minimize their need for hardware. As a result, they will also be able innovate more easily, run networks more efficiently, launch new services and, in the long run, create new revenue streams.

Less hardware means fewer truck rolls, less use of petrochemical resources — and therefore less pollution.

For years, CSPs have been reducing opex by running more robust services on lower-cost platforms in parallel with legacy systems. However, the trend now is toward newer, more cost-effective solutions and self-care (whereby CSPs manage networks entirely on their own, including, for example, software loads).

Vendors with a strong "sustainability" pitch, and those that offer both ATCA and blade server approaches, should leverage their messaging around reductions in power consumption and software-based solutions linking them to cloud-based architectures.

Market Trends

Mobile Devices and Mobile Traffic Growth

Use of mobile data services, from third-generation (3G) USB modems and smartphones, has risen substantially during the past few years. This is a development that requires CSPs to make decisions about their investment in infrastructure — the rise in mobile data traffic may distress the signaling network and require changes to cope with the increasing number of devices in use.

Along with the boom in the amount of data traffic, the complexity of traffic has increased dramatically. Apple's App Store now offers approximately 300,000 applications, up from 800 in 2008. Data traffic is now more complicated, compared with simple voice or plain SMS traffic on TDM networks, because sessions can be of any type — multimedia, voice or SMS, for example. Additionally, given the increased number of mobile services and applications expected during the next few years, including mobile video, social networking, commerce and location-based services, we expect complicated traffic environments for mobile communications as IMS becomes more widely deployed.

CSPs must recognize that their technical abilities to shape traffic based on subscriber behavior patterns need to be paired with skilled marketing and good customer relations. Customers and regulators need to be educated about how CSPs plan to avoid violations of net-neutrality and privacy principles. Clear marketing and terms and conditions can go a long way to preventing problems here, but CSPs must still be careful not to block content or actively degrade network performance for particular services, and they must maintain subscribers' privacy.

Vendors that focus on mobile operators and their needs for service differentiation and network optimization are well-placed to help CSPs in their transition to LTE. Ericsson and Huawei are particularly strong in this respect, while Nokia Siemens Networks and Alcatel-Lucent are working to succeed in these markets. However, to execute on its vision for technological requirements, Nokia Siemens Networks must improve its financial position, link its technological innovation to professional services, and increase its marketing in relation to the shift from hardware to software.

RCS, IMS, LTE and the Threat From Over-the-Top Providers

The Rich Communication Suite (RCS) Initiative continues to develop with respect to broadband access, content sharing, enhancements to sharing and presence, and geolocation information. However, it has still not "gone live." If RCS continues to be delayed, CSPs and over-the-top (OTT) providers may develop their own applications in search of differentiation. Indeed, an RCS-like service has already been launched in South Korea, and aggressive moves against RCS from OTT players, such as Google, have accelerated.

RCS services bring together a number of different functions in a single place on a consumer device. The Apple iPhone's address book is an early example of part of the RCS's intelligent address book functionality. It has been followed by Android-based phones that enable the user to start an e-mail, see an address in Google maps, and click on any telephone number to make a

call or send a text message — features not currently part of RCS. Future releases of RCS are likely to include functions that let customers initiate more types of communication session from the address book (chat, instant messaging, e-mail and text or voice, as well as file and video sharing), see the "presence" state and status updates of contacts, view any content their contacts choose to expose, and see aggregate information within their address book about what contacts have been doing across multiple social networks.

The GSMA's RCS Initiative aims to produce specifications for use by vendors, handset manufacturers and network operators. These specifications will cover the core features and implementation guidelines for interoperability across operators in any given geography, for features such as presence and video calling, regardless of the client device or network architecture used.

RCS services use IMS to handle underlying network features, such as authentication and charging for services. RCS defines the key interoperability requirements between IMS features, including presence, location-based services, and personalized connections between network and users. IMS has been hyped for the past five years but has only recently been found useful, thanks to RCS. IMS will serve as a complementary architecture for LTE networks.

To date, over 100 CSPs, vendors, handset manufacturers and software developers have participated in the RCS Initiative. They have been developing applications and services that are extensions of SMS — for example, mobile video sharing — as well as deep packet inspection (DPI) and subscriber data management (SDM) solutions that can use gathered data for mobile advertising. SBC vendors such as Acme Packet and Genband have been developing solutions involving DPI to protect and authenticate network traffic. Vendors such as Ericsson, Alcatel-Lucent, Nokia Siemens Networks and Huawei are developing SDM solutions to identify subscriber behavior and help CSPs turn collected data into revenue-generating opportunities. As subscriber adoption of RCS-type services gains momentum, CSPs could benefit from their collected data and work toward offering more advanced services.

The RCS Initiative's objective is to provide a range of services, and it is acting as a catalyst for the rise of LTE, in which IMS is the long-term solution for enabling multimedia communications (as end-to-end IP-based services). After introducing RCS, CSPs can expect to deploy IMS infrastructure over 3G data access equipment within their wireless networks, which will enable an easy migration to LTE. Currently, LTE is a "data play" — most CSPs are migrating to LTE but will continue to run their voice services on existing 2G or 3G networks. IMS, however, can be used as a complementary architecture to provide voice services.

Benefits that will encourage trials and deployments of RCS by CSPs include the ability for users to see the status of friends. This could trigger communication sessions that would not otherwise occur. It may also encourage them to use what are currently somewhat niche functions, such as video telephony. Thanks to the many functions available, consumers will likely increase their general use of mobile data and voice services, and thereby increase CSPs' average revenue per unit and perhaps "subscriber stickiness." Enterprise users may find even more benefits from using RCS services. Therefore vendors, while participating in the RCS Initiative, are developing packaged software suites around RCS services and capabilities.

Vendor Environment

Consolidation Continues

Over the years, the number of competitors in this market has shrunk due to mergers and acquisitions, vendors ceasing operations and, from the perspective of Gartner's Magic Quadrants, vendors not meeting the inclusion criteria.

On 28 May 2010, Nortel completed the sale of its Carrier VoIP and Application Solutions (CVAS) business to Genband. As a result, Genband now owns softswitch products that focus on VoIP in wireline environments and media gateway products that focus on both wireline and wireless environments. We will assess Genband's progress in incorporating the CVAS portfolio, and its marketing and associated sales and aftermarket capabilities, later in 2011.

In addition, Genband has acquired Cedar Point Communications, a vendor best known in the cable operator environment.

Nortel also sold its mobile softswitch product to Ericsson, along with its GSM business.

In 2010, Veraz Networks, a softswitch and media gateway vendor, was acquired by Dialogic, a vendor that had focused on multimedia server software for video, voice, conferencing and fax services.

Vendor Positioning

With the economy still recovering, few vendors increased their revenue and market share in the softswitch and media gateway market in 2010. However, they kept their focus, pursued their road maps and strove to execute on their vision. Changes to product strategies, technological milestones, road maps, migration plans, and customer and industry "mind share" mean that their positions for Completeness of Vision and Ability to Execute have improved.

Vendors that focused on mobile softswitches, particularly in emerging markets, executed well, especially when combining technology and managed services. Vendors with upgradable mobile infrastructure, the ability to help with migration paths to LTE, strong IMS portfolios with proven track records, and the voice technology that goes with LTE buildouts, were at a competitive advantage. Ericsson and Huawei maintain leadership positions in this Magic Quadrant partly on this basis and partly thanks to improved financial positions. Genband has joined Ericsson and Huawei in the Leaders quadrant. Although Genband's financial performance is not as strong as the other Leaders, Genband has extended its geographical coverage and executed well on its road maps for the products acquired from Nortel. It also has a well-received end-to-end product portfolio.

Vendors that focused on their core competency, chose complementary paths to innovation — by, for example, catering to cable and alternative carriers — and developed strategic partnerships and reseller agreements, maintained their positions by executing on their vision. Their success was partly due to the realization that CSPs are delaying comprehensive PSTN replacement projects and instead focusing on targeted voice network modifications that include LTE and some IMS-based service enablers. Gartner's research indicates that deployment of mobile softswitches will continue to grow, based on footprint extensions. Mobile softswitch deployments will continue to soar, especially for CSPs building mobile infrastructure in emerging markets according to GSM/3G/High-Speed Packet Access (HSPA) road maps or with WiMAX 802.16e-2005 in mind. Vendors that successfully support mobile network rollouts also offer their customers the ability to integrate and manage mobile networks efficiently. (We measure these vendors by their ability to meet CSP requirements specific to emerging markets or a particular subscriber or business segment.) Such vendors include Metaswitch Networks and Sonus Networks.

Vendors without a strong position in mobile softswitching but with a solid understanding of their customer needs, as well as a solid technology innovation base for converged networks, have good vision. These vendors also combine their technology with capabilities in managed services, consulting, cloud strategies and hypervisor-based virtualization. They include Alcatel-Lucent, Italtel, Nokia Siemens Networks and ZTE.

CSPs continue to invest in multivendor solutions, but the number of global vendors has fallen. In turn, the ecosystems built by vendors have created more flexibility and more options. The general approach to system integration and network design is to use one main vendor and to cherry pick best-of-breed solutions.

Market Definition/Description

The softswitch architecture market comprises softswitch/call control technology and VoIP media gateways. We expect that, for the next 12 to 18 months, most growth in this market will stem from deployments in the mobile environment, and from fixed and converged CSPs in emerging markets. Deployments of VoIP services delivered via IMS using the Call Session Control Function (CSCF) have been increasing, and we expect CSCF to be deployed more widely through 2015. CSCF deployments are likely to exceed IMS-capable deployments in 2012 (see "Forecast: Carrier Network Infrastructure, Worldwide, 2007-2015, 1Q11 Update").

In softswitch architecture the underlying hardware is decoupled from call control, subscriber logic and service creation. A softswitch accesses, enables and applies applications according to predetermined profiles for individual subscribers. An application programming interface forms the link between the call control layer and the application layer, and may be supported by an SDP architecture. Application servers and solutions focused on next-generation SDPs are not considered in this Magic Quadrant, so vendors of these products — such as BroadSoft, Accenture, Wipro, Oracle and HP — do not appear in it.

Inclusion and Exclusion Criteria

To appear in this Magic Quadrant, vendors of softswitch architecture had to have at least six reference customers in 2010 and to have generated at least $40 million in revenue from this market in the same year.

Added

Genband and Dialogic.

Dropped

Cedar Point Communications and Nortel have been dropped due to their acquisition by Genband.

Veraz Networks has been dropped due to its acquisition by Dialogic.

Evaluation Criteria

Ability to Execute

Product/Service. This refers to core goods and services offered by technology providers that compete in the defined market. It includes current product and service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements and partnerships. Specifically, it includes the development of ecosystems to support specific CSP requirements, such as IP Centrex, as well as system integration and distribution, and after-sales support in different regions (where applicable). Support for third-party, non- SIP-based applications is critical, as are subscriber databases, profile servers and home subscriber servers. We also evaluate the consistent delivery of QoS, QoE and policy-based functions. Also important is the availability of comprehensive system integration services.

Overall Viability (Business Unit, Financial, Strategy and Organization). Viability includes an assessment of the overall organization's financial health, the financial and practical success of

the business unit, and the likelihood that the business unit will continue to invest in the product, offer the product, and advance the state of the art within the organization's portfolio of products. Included is an assessment of financial prudence and the value of the acquisition of companies delivering, for example, applications or SBCs.

Marketing Execution. The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and the business, increase awareness of the products, and establish a positive identification with the products, brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional, thought leadership, word-of-mouth and sales activities. Also, the availability of case studies and the support of carrier customers improves a vendor's messages for the Class 4 or Class 5 switching market. Since the softswitch architecture market is diverse in terms of topology and affiliated migration to session control in IMS, we consider the different market shares and mind shares based on equipment deployments, as well as regional credibility among CSPs.

Operations. The organization's ability to meet its goals and commitments. Factors include the quality of the organizational structure and the frequency of reorganization, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis. We also consider the transparency of synergies between marketing, services and R&D departments.

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product/Service	standard
Overall Viability (Business Unit, Financial, Strategy, Organization)	high
Sales Execution/Pricing	no rating
Market Responsiveness and Track Record	no rating
Marketing Execution	standard
Customer Experience	no rating
Operations	standard

Source: Gartner (May 2011)

Completeness of Vision

Market Understanding. A technology provider's ability to understand buyers' needs and to translate that understanding into products and services. Vendors with the most vision listen to and understand buyers' wants and needs, and can shape or enhance them with their vision. This criterion covers:

- Understanding of CSPs' requirements for network convergence from TDM to IP, or voice over broadband and true VoIP.
- Mobile softswitch deployments from Release 4 onward in mobile capacity extension and network rollouts.
- The balance between short-term switch-based enhancements and full PSTN replacements to overcome capex constraints due to the economic downturn.

- Offers of professional consulting as well as systems and solutions integration to support complex technology migration to IP and SIP.
- Activities in standards bodies and various initiatives such as "plugfests" and the RCS Initiative.
- For vendors with wireless and wireline softswitching portfolios, targeting of IMS in their road maps.

Marketing Strategy. A clear, differentiated set of messages consistently communicated throughout the organization and externalized through a website, advertising, customer programs, case studies and positioning statements. This criterion includes participation in industry education through webcasts and conference presentations. Also considered is participation in service and application development activities in the industry, and leadership of those efforts.

Offering (Product) Strategy. A technology provider's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature set as they map to current and future requirements. This criterion covers:

- Physical footprint and network management features.
- IMS and next-generation SIP capabilities and migration, where appropriate.
- Partnerships and ecosystems.
- Configurations to meet regional or country requirements — for example, interfaces, power consumption, heating, air-conditioning, regulatory compliance and equipment measurements.
- Support for product road maps for IMS session control, and application enablers for third-party and Web interfaces.
- Support for 3GPP/3GPP2 and Telecoms and Internet converged Services and Protocols for Advanced Networking (TISPAN) releases, as well as Data-Over-Cable Service Interface Specification (DOCSIS) 3.0.
- Support for professional services, such as consulting and system integration.
- Support for legacy migration.
- Ease of upgrading to IMS.
- Energy-efficiency and compliance with local recycling and materials mandates.
- Ability to offer software delivery models that meet customers' needs and eliminate "pain points" — for example, SaaS.

Innovation. Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes. This criterion includes:

- The ability to commit to the special needs of individual CSPs' network rollouts, where economically feasible.
- Achievement of milestones in product development and compliance with the company's own road maps.
- A migration path for existing softswitch technology, to include new interfaces such as SIP and IMS control functions.

- Support for emerging applications in conjunction with fixed-mobile convergence and IMS.
- Support for test labs and test profiles.
- A road map and support for ATCA, as opposed to an approach based on proprietary servers.
- Support for ecosystem partners via interfaces and interoperability.
- Ability to offer software delivery models that meet customers' needs and eliminate pain points — for example, SaaS.
- Demonstration of appropriate budget for R&D planning.

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	Weighting
Market Understanding	low
Marketing Strategy	standard
Sales Strategy	no rating
Offering (Product) Strategy	standard
Business Model	no rating
Vertical/Industry Strategy	no rating
Innovation	high
Geographic Strategy	no rating

Source: Gartner (May 2011)

Leaders

Leaders are high-viability vendors with a broad portfolio, significant market share, broad geographic coverage, a clear vision for how CSPs' needs will evolve, and a proven track record of delivering products. Their product portfolios are well-positioned and they are likely to continue to deliver leading products. Leaders do not necessarily offer the best solution for every customer requirement, however, and not all their products may be best of breed. Overall, though, they provide solutions that offer relatively low risk and high quality.

The vendors in this quadrant, in alphabetical order, are Ericsson, Genband and Huawei.

Challengers

Challengers are vendors with strong market capabilities and good solutions for specific markets. They perform well in terms of specific voice-over-broadband or regional requirements. However, they may lack vision for end-to-end VoIP network deployment (including voice service offerings for enterprise, small and midsize business, and residential markets), and for pricing, support and network migration.

The vendors in this quadrant, in alphabetical order, are Metaswitch Networks and Sonus Networks.

Visionaries

Visionaries demonstrate a clear understanding of the VoIP market. They provide softswitch solutions in conjunction with media gateways, and professional services and network outsourcing capabilities. They have clear technology and market road maps, and they align their R&D budgets to the needs of their target markets. However, they either lack the ability to influence a large portion of the market, having not yet expanded their sales and support capabilities worldwide, or do not yet have the funding to execute with the same capabilities as the Leaders.

The vendors in this quadrant, in alphabetical order, are Alcatel-Lucent, Italtel, Nokia Siemens Networks and ZTE.

Niche Players

Niche Players offer products that focus on a particular segment of the market or on a subset of functionality. Customers aligned with the focus of a Niche Player may find its offerings to be "best of breed" or at least a "good fit."

The vendors in this quadrant, in alphabetical order, are Cisco, Dialogic and Technicolor/Cirpack.

Vendor Strengths and Cautions

Alcatel-Lucent

Strengths

- Alcatel-Lucent has a comprehensive portfolio of IMS products that can be positioned for softswitch and media gateway opportunities. The company has adopted an "IMS first" strategy, so that CSPs can move beyond voice to blended applications. Its softswitch and media gateway product line has been consolidated into a single unit, largely developed on standardized ATCA platforms, that can be flexibly deployed and reconfigured upon changes to the network architecture.
- As of 4Q10, Alcatel-Lucent had announced 70 IMS wins, 17 of these in 2010, including deals with China Telecom, China Unicom, China Mobile and VNT/VNPT. Alcatel-Lucent has secured one deal for commercial deployment of its VoLTE technology, and has several ongoing VoLTE trials. It held the first demonstration of VoLTE using an LTE handset at the Mobile World Congress in 2010. In addition, Alcatel-Lucent demonstrated LTE-enabled video communications services with Verizon Wireless at CES 2011. Mobile operator Vodafone Qatar has selected Alcatel-Lucent to deliver a fully converged network.
- Alcatel-Lucent has revamped its efforts to penetrate the growing mobile services market by updating its packet core solution, which uses the company's softswitch technology, and it has been selected for some high-profile reference cases, such as Verizon Wireless's LTE network. Also, Alcatel-Lucent has incorporated into its marketing messages the High Leverage Network and Application Enablement initiatives, of which IMS is a key component.
- Alcatel-Lucent's Bell Labs has announced an initiative relating to environmental issues. Green Touch comes at a time when vendors need to innovate, with environmental design in mind, in order to obtain technology with quicker time-to-market (due to faster prototype- and product-manufacturing cycles).

- Alcatel-Lucent has embedded security solutions in the network core by adding a SIP firewall in a media gateway, employing Center for Internet Security (CIS) benchmark testing used to certify MySQL interfaces, and introducing other security features to the softswitch.

Cautions

- Alcatel-Lucent's financial health remains a concern as the merged company has failed to be consistently profitable. It has, however, maintained its market share position worldwide and increased its market share in Asia/Pacific.
- Despite expanding its footprint among mobile service providers, Alcatel-Lucent still trails some of its toughest competitors (such as Ericsson and Huawei) in the high-growth mobile space. However, as Alcatel-Lucent has gained traction with LTE deals, it could leverage its strength with IMS for LTE — VoLTE being a key driver of IMS adoption — and therefore also improve its performance in the general softswitch sector.

Cisco

Strengths

- Cisco's integrated approach — with session border control to be included in its PGW 2200 Softswitch, and integrated voice application server and media gateway functionality in its BTS 10200 Softswitch — is favored for smaller carrier deployments in targeted areas, and has proved more successful with cable providers.
- The PGW 2200 Softswitch has been deployed with several customer-requested features to support homologation requests, lawful interception and support for innovative TDM-to-VoIP migration strategies.
- Cisco's intelligent media gateway supports multiple protocols, including SIP, H.323 and Media Gateway Control Protocol (MGCP), as well as multiple applications, such as SIP trunking, call center interactive voice response applications, voice-over-broadband termination, international VoIP termination, SBC functionality and hosted IP telephony. It generally suits VoIP operators with distributed networks supporting many points of presence, as it enables capacity to be scaled as subscriber numbers increase. It can also function as an SBC.
- The integrated SBC functionality of Cisco's Unified Border Element (UBE) software can be coupled with the media gateway's capabilities to provide support for PSTN and IP trunking, enabling CSPs to switch from providing TDM to SIP trunking services. It also supports interworking between H.323 and SIP networks, as well as in-box transcoding capabilities.

Cautions

- Cisco lacks global presence for softswitches and media gateways, and has been reducing its focus on this space. It is mainly present in the cable market.
- Cisco is in good financial health, but has not focused on acquisitions that complement its softswitch portfolio. Nor has it invested in significant R&D for softswitch products.
- Cisco has not signed any major deal for softswitch or media gateway technologies in the past two years.

- Cisco lacks an IMS "story" for carrier environments. Rather, it is investing in areas that are more enterprise-focused, with unified communications as a service.

Dialogic

Dialogic completed its acquisition of Veraz Networks in October 2010. Veraz appeared in the Challengers quadrant last year, but in the present version we place Dialogic in the Niche Players quadrant, partly because of a lack of information about its product road map and partly because it needs to demonstrate significant proofs in terms of customer wins, geographic footprint, and increased revenue in this market segment as a combined company.

Strengths

- Dialogic is widening its footprint in the market. It is focusing on international Tier 2 and Tier 3 carriers in both mature and emerging markets.
- Dialogic is broadening its ecosystem and gaining new contracts. For example, it has a partnership with LS Cable of South Korea to develop quadruple-play service solutions for CSPs in emerging markets, and a deal with Global Crossing in Latin America. It has also completed interoperability testing with BroadSoft for its Integrated Media Gateway product, which extends its business VoIP capabilities. Dialogic will continue to use its relationship with BroadSoft to extend its reach to Central and Latin America, Asia/Pacific, and Europe, the Middle East and Africa (EMEA).
- The merger has brought complementary technologies together. Dialogic's heritage of enabling applications for voice and video complements Veraz's voice and data session control, security and transport technologies, and the combination promises to maximize the multimedia capabilities of 3G and 4G networks. Work continues to integrate elements of Dialogic's gateway family with Veraz's switching solutions.
- The company has launched a new family of products, called BorderNet, that includes SBCs. There are also new products, including mobile backhaul bandwidth optimizers, in its I-Gate product line.

Cautions

- Dialogic needs to improve its messaging and emphasize its capabilities in cloud computing and SBC technology. It must also increase awareness of its involvement in standards bodies, plugfests and interoperability testing.
- The company lacks presence in high-growth mobile markets and in Class 5 replacement opportunities, though it is working determinedly to extend its relationship with BroadSoft. As part of its strategy for Class 5 technology in 2011, Dialogic will focus on gateway, SBC and associated Class 4 requirements, and work with BroadSoft for Class 5 applications.
- Dialogic lacks a mobile strategy and an end-to-end IMS offering. It has not secured IMS core contracts and lacks visibility in Tier 1 carrier environments. It is, however, working to change this through planned announcements relating to the IMS core and mobile backhaul in 2011.

Ericsson

Strengths

- Ericsson's acquisition of Nortel's GSM business included a mobile softswitch product. With this it has increased its penetration of North America.
- Ericsson has a large and strong professional services organization for telecom networks, with a global reach.
- Ericsson's strategy is based on establishing strong local competence as close to its customers as possible.
- Ericsson has the largest mobile switching center (MSC) server pooling and the first native-IP 10-Gigabit Ethernet mobile media gateway to enter full commercial service. A new software release for its MSC-S Blade Cluster offering enabled Ericsson's first commercial multimedia telephony service that adheres to TISPAN specifications.

Cautions

- Ericsson is active in softswitch and IMS standards bodies such as the 3GPP and TISPAN, and very active in the Internet Engineering Task Force (IETF) and other relevant bodies. However, it has been less active in the RCS Initiative, which is gaining prevalence.
- Ericsson may face a long-term challenge as its strongest competitor, Huawei, gains scale, market share and mind share in the carrier infrastructure space, especially in EMEA and emerging markets. Ericsson will find it harder to maintain mind share and market share if the security concerns about Huawei in the U.S. are allayed.

Genband

Strengths

- Following its acquisitions of Nortel's CVAS business and Cedar Point Communications, Genband has a complex and competitive switching portfolio, including a wireline softswitch. Genband has partnerships with Alcatel-Lucent (via Spatial Wireless) and with Kapsch for its mobile softswitch, which works with its G9 Converged Media Gateway.
- The acquisition of Cedar Point Communications gives Genband a solid presence in the cable market, and balances its capabilities in that it is no longer just a supplier for telcos.
- Genband has announced a new software platform, GENiUS, which will be hosted by an ATCA platform to provide the C20 and CS15 software products. In future, all product development will be based on the GENiUS platform.
- The company has expanded its professional services business and claims that this now represents 30% to 35% of its total revenue.

Cautions

- Within a year of acquiring Nortel's CVAS portfolio, Genband acquired Cedar Point. Although we believe this to be a strategic move that will increase the company's penetration of the cable market, Genband might be perceived as not having managed its venture-capital dollars wisely by making this second acquisition before it had fully assimilated the first.

- Genband did not acquire mobile softswitch equipment as part of the Nortel acquisition, as this equipment was included in the sale of Nortel's North American GSM mobile business to Ericsson in EMEA and Kapsch in Taiwan. Acquiring Nortel's mobile softswitch equipment would have been more beneficial to Genband, as this would have helped it win business from mobile carriers and in more diverse geographical areas. However, Genband does now partner with Kapsch for its mobile softswitch, which works with the G9 Converged Media Gateway.
- Genband must show that it can execute and influence at a level appropriate to its new position in the market. It also needs to demonstrate significant proof of this by winning new customers in the softswitch market, not just by selling extra capacity or ports to existing Nortel customers.
- Genband lacks the visibility among CSP customers to be a managed service provider for networks or IT, compared with Ericsson, Nokia Siemens Networks and Alcatel-Lucent.

Huawei

Strengths

- Huawei achieved healthy growth overall in 2010, and became the second-largest supplier of CSP infrastructure. In the core network segment, it has been the largest supplier of softswitch and media gateways for four years in a row. The company has gained strong mind share and market positioning for the control layer of the core, especially in emerging markets, and has maintained its installed base.
- In 2010, Huawei announced the SingleCORE solution, which, it claims, supports all media and services with one control platform and differentiated blade components and software modules. This solution will protect most of the investments made by CSPs when migrating. For example, mobile softswitches can support the media gateway control function (MGCF), and MGCF interworking with IMS, with only a software upgrade; similarly, mobile softswitches can migrate to IMS with only a software update. Just over a year after the announcement, Huawei has already implemented the solution for, among others, China Telecom, Vodafone Italy, Netcom, Millicom, Telecom Argentina, M1 and MTN.
- Huawei has made substantial efforts not only to reduce the energy consumption of softswitch technology, but also to reduce embedded energy use through more efficient transportation and logistics, analysis of resources and raw materials, and changes to packaging.
- Huawei's efforts to establish and run Joint Innovation Centers with CSPs including Deutsche Telekom, Orange, Vodafone and Telefonica enhance its client relationships and understanding of CSPs' needs.

Cautions

- Huawei's voice switch and control revenue fell slightly in 2010 and showed regional imbalances. The company still has limited presence in North America, the region that represents about 25% of the global market's revenue. Huawei needs more momentum in mature markets, which would demonstrate its capabilities in more advanced network environments.

- Huawei's core network products should further leverage its software and services product lines in order to deliver an integrated migration solution for CSPs and show itself to be a strategic partner for them.

Italtel

Strengths

- Italtel has a strong innovation road map toward open platform and computing technology for virtualization and energy efficiency. This includes a cloud topology for control layer architecture.
- Italtel has engaged with customers regarding their concerns about IP network security and privacy issues with next-generation core topologies. Results from this engagement include the development of a security gateway for the network-to-network interface.
- Italtel has been working on versatile multipath migration scenarios for voice and multimedia to open up networks running on VMware and ATCA platforms for efficient and remote upgrade capabilities.
- Italtel is diversifying its client base by attracting customers in the public sector and utilities sector that want to control networks in "smart" cities. It offers IP-based voice service management for business, government and residential users.
- Italtel is extending its system integration and managed services capabilities.

Cautions

- In 2010, Italtel grew its business with existing accounts, but it is attracting new accounts only very slowly in its home region, EMEA.
- Italtel has a very strong mind share in Italy, but it needs to concentrate more on marketing and PR to increase its mind share worldwide, beyond its established base of international customers.

Metaswitch Networks

Strengths

- Metaswitch continues to add new business and consumer features to its softswitch and application server products, while delivering solutions that enable deployment of scalable SIP infrastructures and provide a migration path to next-generation networks and IMS.
- The company uses Web portal education programs to broadcast targeted information about its solutions and those of partners. Two examples are the "Built on Metaswitch" and "Carrier Evolution" portals that complement campaigns such as "Upwardly Mobile," "Make Your Network Work for You" and "Bring Your Own Wireless."
- Metaswitch continues to build on its ecosystem and is creating programs that encourage interoperability. In 2010, it launched the Mosaic Partner Program, expanding its framework that enables solution providers to certify their products with Metaswitch. To date, the Mosaic Partner Program has over 100 participating vendors and includes over 250 solutions. This indicates that Metaswitch prides itself on strong partner relationships and third-party interoperability.

- Metaswitch has made two major software releases across its Call Feature Server, Enhanced Application Server, Media Gateway and Integrated Softswitch product lines. These include over 200 enhancements geared toward small and midsize businesses and fixed-mobile convergence deployments, including a wide range of new services for attached SIP PBXs. Other key new features enable carriers to give control to wholesalers, extend service assurance and activate call virtualization tools.

- The company has fully absorbed and integrated its first acquisition, AppTrigger, with its Service Broker platform, enabling legacy, intelligent network, IP and next-generation IMS applications to connect and interwork with evolving networks.

Cautions

- Although Metaswitch has secured contracts with large CSPs such as BT, Sprint and O2, these companies have yet to choose it as a system integrator or main vendor. Also, Metaswitch does not yet have mind share or market share in the mobile carrier space. However, its relationships with vendors such as CounterPath with respect to mobile clients, its recent launch of mobile app Thrutu, its acquisition of Colibria, and its latest campaigns signal a focus on the mobile space.

- Metaswitch has limited penetration of international markets — it needs to increase its presence and relationships outside the U.S, but may struggle to do so against larger, stronger competitors. However, Metaswitch has recently added development and sales resources to focus on global expansion, and 40 new international carriers as customers as a result of the acquisitions of AppTrigger and Colibria.

Nokia Siemens Networks

Strengths

- The company's innovation road map includes open platforms as well as energy efficiency and sustainability.

- Nokia Siemens Networks is successful in providing comprehensive end-to-end design, implementation and managed services, as well as advice on migration scenarios for fixed and mobile control layers.

- To identify and support business opportunities, Nokia Siemens Networks has developed the Carrier IP Migration Index (CIMIX) to identify business opportunities for itself and its ecosystem.

- From the outset, the company has consistently delivered on RCS and end-to-end voice initiatives.

- Nokia Siemens Networks has penetrated growth markets well, especially with new IMS contracts.

Cautions

- Although Nokia Siemens Networks is striving to improve its overall value proposition ("Smart, Holistic, Proven"), the positioning of its business case for fixed and mobile control layer migration remains weak. The company still tends to consider network migration from the perspective of technology and engineering.

- With the rise of Huawei and ZTE, Nokia Siemens Networks is struggling to strike a balance between attracting customers to its value proposition of end-to-end delivery of

network migration (including application and service innovation) and meeting the requirements that customers themselves specify.

Sonus Networks

Strengths

- Sonus has announced a stand-alone SBC and has been developing solutions for voice security and prevention of telephony denial of service. Its voice security solution, VoiceSentry, is designed to protect enterprise call centers and overall voice networks against machine-generated attacks. It uses the CAPTCHA technology widely used on the Internet to identify whether a human or a machine is behind a request.
- The company has reorganized its product portfolio and is investing aggressively in R&D to expand its portfolio to include security solutions and a broader set of management tools and portals, so that it can enter new markets.
- To increase its visibility in international markets, Sonus has opened a 77,000-square-foot facility in Bangalore, India, in which 7,000 square feet of space are dedicated to lab activities.

Cautions

- Sonus needs to improve its marketing messages, especially for new products such as VoiceSentry and the SBC. It also lacks messages and solutions for cloud services, mobility and policy awareness.
- Although Sonus supports IMS architecture, it has been unable to secure IMS contracts for system integration, or to win a deal as a customer's main supplier of IMS technology.
- The company's operations have been relatively unstable, as reflected in its closure of offices in Ottawa, Canada. It announced a new CEO in October 2010 and, more recently, a new COO and a new head of sales.

Technicolor/Cirpack

Strengths

- The Techniciolor/Cirpack product line is part of a VoIP business unit that designs, develops, produces and sells softswitches, media gateways, SBCs, media proxy servers, IMS core network equipment and application servers. This business unit is itself part of a Digital Delivery Group that develops and sells Internet Protocol television (IPTV) service platforms, set-top boxes, home gateways and connected devices such as Wi-Fi-enabled tablets.
- Technicolor is involved in annual ETSI IMS Plugtests and in the TISPAN working group in charge of IMS specifications. It also participates in local standards bodies' working groups on IP interconnection specifications.
- Technicolor/Cirpack does business with all types of CSP, but is particularly strong in the alternative carrier space, which includes virtual network operators and enablers, and satellite and utility firms.

Cautions

- The company lacks marketing messages, large customer announcements and innovation around the Cirpack brand.
- Cirpack has become lost in the Technicolor brand, as Technicolor's focus is generally on digital media and television.

ZTE

We have moved ZTE from the Leaders to the Visionaries quadrant as its softswitch revenue in 2010 was flat. Four-fifths of its softswitch revenue came from emerging markets, including Asia/Pacific and the Middle East and Africa.

Strengths

- ZTE is keenly aware of the importance of the trend toward mobile broadband. Its IMS core solution addresses CSPs' demand for unified control of multiple access technologies, and consumers' demand for a continuous and consistent service experience from different access devices. ZTE has also reacted to the new cloud trend among CSPs — it has IMS cloud core technology on its road map.
- In 2010, the company launched the ZTE Voice and Video over Any-access (zVOA) solution to enable operators to deploy a unified control network for voice, video and multimedia services over any existing mobile and fixed access network infrastructure. This solution embeds virtualization and cloud computing technologies in ZTE's ETCA platform. It can support circuit-switched and IMS interfaces and integrated standard softswitch and IMS functions.
- Besides separate core offerings, the company has developed the ZTE Multimedia Integrated Life Experience (zMILE), which integrates IMS core network technology, an RCS application platform and an IMS-RCS soft client (based on the Android operating system).This integrated solution enables CSPs to offer multimedia and streaming services through multiple access technologies to IMS-RCS clients using the IMS core.

Cautions

- Although ZTE has been investing in its European business since 2009, this did little to increase its softswitch revenue in 2010. The European market still has concerns about ZTE's understanding of the particular network and business requirements of CSPs in Europe, since ZTE is considered a vendor that focuses on emerging markets.
- Besides advertising its technology and R&D strength, ZTE must get better at communicating its vision to the industry.

RECOMMENDED READING

Some documents may not be available as part of your current Gartner subscription.

"Magic Quadrant for Softswitch Architecture" (2010 edition)

"Magic Quadrants and MarketScopes: How Gartner Evaluates Vendors Within a Market"

"Market Share: Carrier Network Infrastructure, Worldwide, 2010"

"Market Share Analysis: Carrier Network Infrastructure, Worldwide, 2010"

"Forecast: Carrier Network Infrastructure, Worldwide, 2007-2015, 1Q11 Update"

"Forecast Analysis: Carrier Network Infrastructure, Worldwide, 2007-2015, 1Q11 Update"

"Dataquest Insight: Strategic Options for Positioning Green IT in 2010"

Acronym Key and Glossary Terms

2G	second generation
3G	third generation
4G	fourth generation
3GPP	Third Generation Partnership Project
ATCA	Advanced Telecommunications Computing Architecture
CIMIX	Carrier IP Migration Index (Nokia Siemens Networks)
CIS	Center for Internet Security
CSCF	Call Session Control Function
CSP	communications service provider
CVAS	Carrier VoIP and Application Solutions (Nortel)
DOCSIS	Data-Over-Cable Service Interface Specification
DPI	deep packet inspection
EMEA	Europe, the Middle East and Africa
FMC	fixed-mobile convergence
GSMA	Global System for Mobile Communications Association
HSPA	High-Speed Packet Access
IETF	Internet Engineering Task Force
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IPTV	Internet Protocol television
LTE	Long Term Evolution
MGCF	media gateway control function
MGCP	Media Gateway Control Protocol
MSC	mobile switching center
MSO	multiple service operator
NGN	next-generation network
OTT	over the top

PSTN	public switched telephone network
QoE	quality of experience
QoS	quality of service
R&D	research and development
RCS	Rich Communication Suite
SaaS	software as a service
SBC	session border controller
SDM	subscriber data management
SDP	service delivery platform
SIP	Session Initiation Protocol
SMS	Short Message Service
TDM	time division multiplexing
TISPAN	Telecoms and Internet converged Services and Protocols for Advanced Networking
UBE	Unified Border Element (Cisco)
UMTS	Universal Mobile Telecommunications System
VoIP	voice over Internet Protocol
VoLTE	voice over LTE
zMILE	ZTE Multimedia Integrated Life Experience
zVOA	ZTE Voice and Video over Any-access

Vendors Added or Dropped

We review and adjust our inclusion criteria for Magic Quadrants and MarketScopes as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant or MarketScope may change over time. A vendor appearing in a Magic Quadrant or MarketScope one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. This may be a reflection of a change in the market and, therefore, changed evaluation criteria, or a change of focus by a vendor.

Evaluation Criteria Definitions

Ability to Execute

Product/Service: Core goods and services offered by the vendor that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets, skills, etc., whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability (Business Unit, Financial, Strategy, Organization): Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood of the individual business unit to continue investing in the product, to continue offering the product and to advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all pre-sales activities and the structure that supports them. This includes deal management, pricing and negotiation, pre-sales support and the overall effectiveness of the sales channel.

Market Responsiveness and Track Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message in order to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional, thought leadership, word-of-mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements, etc.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling product that uses the appropriate network of direct and indirect sales, marketing, service and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature set as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including verticals.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

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