Starent Networks, Corp.
Form 10-K
February 27, 2009
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2008

or

¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File Number: 001-33511

STARENT NETWORKS, CORP.

(Exact name of registrant as specified in its charter)

Delaware	**04-3527533**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

30 International Place

Tewksbury, MA 01876

(Address of principal executive offices) (zip code)

(978) 851-1100

(Registrant s telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Exchange Act:

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, $0.001 par value per share	The Nasdaq Global Market

Securities registered pursuant to Section 12(g) of the Exchange Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ¨ No x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes ¨ No x

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x No ¨

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ¨	Accelerated filer x	Non-accelerated filer ¨ (Do not check if a smaller reporting company)	Smaller reporting company ¨

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ¨ No x

The aggregate market value of the registrant s common stock held by non-affiliates of the registrant (without admitting that any person whose shares are not included in such calculation is an affiliate) based on the last reported sale price of the common stock on June 30, 2008 (the last trading day of the registrant s second fiscal quarter of 2008) was $492.4 million.

As of February 23, 2009, there were 70,295,099 shares of the registrant s $0.001 par value per share common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The registrant intends to file a definitive Proxy Statement pursuant to Regulation 14A within 120 days of the end of the fiscal year ended December 31, 2008. Portions of such Proxy Statement are incorporated by reference into Part III of this Annual Report on Form 10-K.

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STARENT NETWORKS, CORP.

YEAR ENDED DECEMBER 31, 2008

ANNUAL REPORT

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K, including the information incorporated by reference herein, contains, in addition to historical information, forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. These forward-looking statements are based on our current expectations, assumptions, estimates and projections regarding our business and industry, and we do not undertake an obligation to update our forward-looking statements to reflect future events or circumstances. We may, in some cases, use words such as project, believe, anticipate, plan, expect, estimate, intend, continue, should, would, could, potentially, will, may or similar words and expressions that convey uncertainty of future events or outcomes to identify these forward-looking statements. Forward-looking statements in this Annual Report on Form 10-K may include statements about:

our ability to attract and retain customers;

our financial performance;

our development activities;

the advantages of our technology as compared to that of others;

our ability to establish and maintain intellectual property rights;

our ability to retain and hire necessary employees and appropriately staff our operations;

our ability to manage growth, both in the United States and internationally;

the spending of our proceeds from public offerings of our common stock; and

our cash needs.

The outcome of the events described in these forward-looking statements is subject to known and unknown risks, uncertainties and other factors, including the factors set forth in Item 1A Risk Factors in this Annual Report on Form 10-K, that could cause actual results to differ materially from the results anticipated by these forward-looking statements. You should read these factors and the risks described in other documents that we file from time to time with the Securities and Exchange Commission, or SEC, in conjunction with the audited consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K.

References to Starent Networks, Corp. , registrant , we , us , our and similar pronouns refer to Starent Networks, Corp. and its consolidated subsidiaries.

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PART I

Item 1. Business

Overview

Starent Networks is a leading provider of infrastructure hardware and software products and services that enable mobile operators to deliver multimedia services to their subscribers. We have created hardware and software products that provide core network functions and services, including access from a wide range of radio networks to the operator s packet core network. Our products and services also provide management of subscriber sessions moving between networks and application of billing and other session policies. Our products and services provide high performance and system intelligence by combining significant computing power, memory and traffic handling capabilities with a flexible, high availability operating system and other proprietary software. Our products integrate multiple network functions and services needed for the delivery of advanced multimedia services, such as video, Internet access, voice-over-IP, e-mail, mobile TV, photo sharing and gaming.

Consumers and professionals are increasingly using mobile phones and other multimedia handheld devices to stay connected to each other, to access the Internet, to utilize business applications and for entertainment. At the same time, mobile operators are experiencing declining profits from voice services and increasing competitive pressures. To address these changes, mobile operators are deploying or planning to deploy next-generation wireless networks, such as third generation and fourth generation, or 3G/4G, networks, that are capable of delivering high quality, mobile multimedia services to subscribers. In deploying these new networks, mobile operators are seeking packet core network products and services that can deliver higher performance and functionality than has been available from products repurposed from wireline applications.

We have developed our multimedia core network hardware platforms, the ST16 and the ST40, and our proprietary software specifically to address the needs of packet-based mobile networks. Our products are designed to provide mobile operators with new revenue opportunities while also reducing their costs. Our products possess a high degree of system intelligence that allows a mobile operator to understand the details of each subscriber session, enabling individual subscriber management and network traffic flow control. Our products also offer high performance capabilities, such as high capacity, significant data processing rates and high transaction rates, which increase the efficiency of the network and enhance the mobile subscriber s experience. To increase reliability, our platforms employ hardware redundancy and high-availability software techniques. By integrating several network functions into a single element, we allow mobile operators to simplify their networks. We designed our products to be access independent so they can function across a range of 2.5G, 3G and 4G mobile and wireless radio access networks.

We sell our hardware and software products to leading mobile operators around the world both directly and through OEMs, system integrators and distributors. We were founded in 2000 and our products were first used commercially by a mobile operator in the first quarter of 2003. Since 2003, our products have been deployed by over 85 mobile operators in 35 countries.

Our principal executive offices are located at 30 International Place, Tewksbury, MA 01876. Our telephone number is (978) 851-1100.

Industry Background

Mobile operators today are experiencing some of the most dramatic changes to their business models since the advent of mobile communications. These changes are the result of increased competition among mobile operators, the decline in average revenue per subscriber from voice communications and the rapid increase in mobile subscriber demand for a wide range of multimedia services. To address each of these trends, mobile operators are increasing the data services provided through their networks. For example, for 2008 Verizon Wireless reported that total data revenues of $10.7 billion were up 44% over 2007, and in the fourth quarter data revenues represented 26.8% of all service revenues.

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Several factors are accelerating the growth of data-rich multimedia traffic on mobile wireless networks. The number of mobile subscribers worldwide continues to grow as established markets experience increases in subscriber penetration and developing countries adopt mobile communications more rapidly. For example, according to Wireless Intelligence, an independent research firm, the number of worldwide mobile connections is expected to grow 48% from 3.9 billion in 2008 to 5.9 billion in 2012. Another factor is our increasingly mobile and interconnected society in which information is accessible and communications are available at any time regardless of location. Moreover, as individuals and enterprises become accustomed to increased access to multimedia services on the Internet, including video, music downloads, multimedia messaging and continuous information and news, there is an increasing desire to have mobile access to these services. Also contributing to the growth in traffic is the proliferation of mobile devices designed for multimedia services, such as the Apple iPhone, Blackberry Storm, Google phone, and many other smart phones, personal digital assistants, laptop computers and other handheld devices.

The Evolution of Mobile Voice and Data Networks

Over the years, mobile operators have aggressively upgraded their networks in response to the demands created by the growth in voice and multimedia services. In particular, mobile operators made significant investments in upgrading from 2G to 3G radio access technologies that can provide greater bandwidth needed to increase voice capacity and deliver high bandwidth data services. Current forecasts, however, indicate that, the tightening financial market is impacting capital expenditures, but not the multimedia core network. According to Infonetics, while total infrastructure spending is expected to decline from $46.3 billion in 2008 to $43.1 billion in 2011, packet core spending is forecasted to steadily grow through these years. This increase in spending is primarily driven by the replacement of older packet core network elements and capacity expansion triggered by strong mobile broadband traffic growth.

The two principal radio access interfaces in use today are Code Division Multiple Access, or CDMA, which is used primarily in the United States and Asia, and Global System for Mobile Communications/Universal Mobile Telecommunications System, or GSM/UMTS, which is used in most markets around the world. CDMA mobile operators are currently upgrading to CDMA2000 1X, 1xEV-DO Rev. 0 and 1xEV-DO Rev. A, while GSM/UMTS operators are migrating to High Speed Packet Access, or HSPA. Additionally, many operators are exploring, planning to deploy or even beginning to deploy more advanced fourth generation, or 4G, access technologies, such as Mobile WiMax and Long Term Evolution/System Architecture Evolution, or LTE/SAE.

In addition to upgrading the radio access portion of their networks, mobile operators are deploying packet-based technology to supplement or replace circuit-based technology. Traditional circuit networks, which were developed for voice communications, establish a dedicated circuit for each call. Circuit networks are relatively inefficient and do not allow for high-bandwidth multimedia services. Packet networks split traffic into multiple pieces of data, or packets, that are routed over an Internet Protocol, or IP, network, eliminating the need to establish a dedicated circuit for each call or session. The use of a packet core network increases network efficiency and lowers operating costs, while enabling an operator to deliver multimedia services. As more multimedia services are deployed, more traffic will flow over the packet network. Over time, we expect mobile operators will convert entirely to packet networks not only for data services but also for voice communications.

As mobile operators implement more multimedia services on their packet networks, they are looking to further standardize the delivery of these services. New core network architecture standards are being developed, such as IP Multimedia Subsystem, or IMS. These standards will also be implemented by wireline operators. The implementation of these new delivery architecture standards by both mobile and wireline operators will provide an opportunity for fixed-mobile convergence, which is the ability of a subscriber to have a uniform service experience as they move between a mobile network, such as a 3G network, and a wireline or a fixed wireless network, such as WiFi. With the convergence of mobile and wireline networks, telecommunications operators will be able to provide services to users irrespective of their location, access technology and communications device.

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The Need for Intelligent and Robust Network Products and Services

As mobile networks transition to next-generation access technologies and become increasingly packet-based, many mobile operators want their networks to be intelligent. An intelligent network provides mobile operators with the ability to inspect data packets from individual transactions in detail. This deep packet inspection allows the mobile operator to shape each subscriber session using quality of service, bandwidth allocation and traffic flow control. This ability to actively manage network traffic flows allows mobile operators to deliver a consistent experience as subscribers roam through a mobile network or move across different types of networks. In order to deploy reliable and intelligent mobile networks that provide a high quality subscriber experience and are able to handle increasing amounts of network traffic, operators require infrastructure products and services that:

Identify and manage individual communications sessions. The network needs to be able to identify, manage and manipulate each subscriber session by applying policy and charging decisions based on the mobile operator s business model or subscriber policies.

Handle significant traffic. As multimedia services dramatically increase the volume of network traffic, networks must be capable of handling this traffic without diminishing the subscriber experience. This capability will require significant computing power and data processing rates.

Simplify the network. As mobile operators provide an increasing number of services and capabilities, they will need to simplify their networks so they can limit the deployment of costly new equipment each time a new service or capability is added.

Deliver quality of service, reliability and availability. As mobile subscribers pay a premium for advanced multimedia services, they will demand that these advanced services be high quality, reliable and available whenever the subscriber wants to access them.

Support multiple radio access technologies and subscriber management. As mobile networks evolve to include different access technologies, mobile operators need the ability to provide the same services regardless of access mode and to apply common subscriber management tools, such as billing and subscriber authentication, across multiple access networks.

Are easy to upgrade. As networks continue to evolve rapidly, operators must be able to easily and cost effectively integrate new access technologies and services with their existing networks and increase capacity.

Historically, mobile operators deploying packet networks have been required to retrofit network infrastructure hardware and software originally designed for wireline networks. These products have included repurposed network switches, routers and off-the-shelf enterprise servers, none of which are able to sufficiently satisfy the needs of mobile operators to deliver efficient and reliable multimedia services.

While routers and network switches are capable of forwarding packets of information, they lack the integrated processing power, memory and software needed to examine individual packets and apply defined business policies and subscriber services to them. To overcome these shortcomings, mobile operators typically connect the repurposed switches and routers with numerous enterprise servers in order to provide services such as deep packet inspection, virtual private networks and firewalls. These multi-element configurations require network traffic to make multiple hops through different networks and equipment for the additional services. This can cause network traffic delays and limit subscriber and network visibility. These delays result in slower transmission speeds, a lower quality experience for the subscriber and potentially lower service use. These delays also have a negative impact on real-time services, such as voice and streaming video.

These multi-element configurations can increase network complexity, resulting in a product that is difficult and expensive to scale and often costly to operate. This complexity makes the deployment of new network functions and the addition of new subscriber services time-consuming and expensive because it often requires a new configuration. Additionally, the need for redundancy to improve service reliability further increases both the

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complexity and the cost of these multi-element configurations. Even with additional redundancy, the complexity of these systems creates multiple potential points of failure, and engineering a multi-element product that can handle the large volumes of traffic on a typical mobile operator s network can be difficult.

Our Solutions

We have introduced new, purpose-built network infrastructure products comprised of both high-performance hardware and software that address the specific challenges faced by mobile operators in offering multimedia services. Our products fulfill a number of network functions that enable carriers to deliver multimedia services across a range of network architectures. Unlike repurposed multi-element configurations, our integrated products and services were designed specifically to provide the high capacity, data processing rates, computer processing capability and software required to meet the needs of mobile operators in offering packet-based multimedia services.

Our hardware and software products and services provide six key, integrated capabilities that create enhanced revenue opportunities and facilitate reduced costs for mobile operators:

Intelligence to shape the subscriber experience. Our products system intelligence allows mobile operators to manage each subscriber session, which is critical for creating, delivering and charging for differentiated services, while enhancing the subscriber experience. Our products combine custom software with significant processing power and memory to conduct a detailed inspection of each subscriber session and to associate that session with a subscriber need, operator service requirement or operator business policy.

High performance. Our products improve the performance of a mobile operator s network by enhancing the network s capabilities and efficiencies. Our products are able to handle increasing amounts of network traffic to support a large number of subscribers on one platform. They also provide high bandwidth and data processing rates for improved traffic capacity and flow, which increases network efficiency and performance. In addition, the high call transaction rates provided by our products enhance scalability, reduce unwanted delays in network traffic and allow the subscriber to have quick access to network services.

Simple and flexible network architecture. Our products allow mobile operators to integrate a number of network functions and enhanced services into a single hardware platform. In addition to providing network functions such as access, management of subscriber sessions moving between networks and application of billing and other session policies, our platforms are capable of integrating advanced services, such as enhanced charging and billing, firewall protection, security and content filtering. We refer to these services as in-line services. Traditionally such services would be deployed out of line from the session stream in a server farm elsewhere in the network. By integrating both network functions and in-line services, mobile operators can simplify the design of their networks, more rapidly deploy services and improve the flow of network traffic, while also reducing costs.

Reliability and redundancy. Our system architecture provides a high level of resiliency and protects the subscriber s experience. All of our platforms system resources, including those used for redundancy, can be shared. Our platforms employ hardware redundancy as well as high-availability software techniques, such as session recovery, fault containment and state replication, to maximize network uptime, maintain subscriber sessions and retain billing information. The self-healing attributes of our software architecture protect the system by anticipating failures and creating mirror processes. Also, our products allow mobile operators to implement geographic redundancy.

Support multiple radio access technologies. Our products are capable of supporting multiple radio access technologies, including CDMA, GSM/UMTS and WiMax. This capability allows mobile operators to deliver a uniform service experience to subscribers from a single platform, simplifying the network and limiting operator costs.

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Well positioned for future technology upgrades. While designed for use in today s mobile networks, our products are also readily upgradeable to respond to evolving mobile operator environments or requirements, such as IMS. Our platforms can typically provide new network functions or enhanced services through a software upgrade. This simplifies service deployment and network operations, while reducing potentially costly upgrades resulting from the investment in new network elements each time a new technology is introduced.

Our Strategy

Our objective is to strengthen our leadership in the mobile network infrastructure market by enabling mobile operators to enhance the subscribers experience, playing a key role in the migration to an all-packet core network and providing products and services that offer new and increased revenue opportunities for mobile operators. Principal elements of our strategy include the following:

Extend our technological leadership. We believe we have market leading products and services today, and we will continue to invest in research and development to maintain our leadership position through the introduction of new products and enhancements to existing products. We are focusing our research and development efforts on improvements to capacity, data processing rates and service flexibility, as well as capabilities to add new network functions and enhanced services. We will also use new technologies, such as advanced processing chips, as they become available to increase the performance, capacity and functionality of our products.

Increase market penetration. Mobile operators continue to increase network coverage and capacity, as well as their service offerings. These changes offer new and expanded sales opportunities both to our existing customers and to potential new customers. Given the earlier transition to high-bandwidth networks by CDMA2000 mobile operators, we have achieved our highest number of deployments in this market. Recently, more GSM/UMTS operators have transitioned or upgraded to high speed data networks which have resulted in additional deployments of our products in these networks. However, significantly more operators worldwide currently utilize GSM/UMTS than CDMA technologies. We believe a significant opportunity for growth is from sales to the GSM/UMTS operators as they continue to transition to high-bandwidth networks, such as HSPA. We intend to increase our penetration of both CDMA and GSM/UMTS operators.

Expand into evolving markets. To maintain our leadership in the mobile infrastructure market, we plan to address new radio access network architectures and technologies, such as Mobile WiMax, Femtocell, LTE/SAE and IMS. Because one of the key features of our platforms is access independence the flexibility and power to deploy a single hardware platform across multiple access architectures and technologies we will continue to invest in preserving our products ability to support new technologies. Additionally, we will continue to participate in industry standards development organizations to contribute to the development of new network standards and architectures.

Increase the number of features. We plan to continue to develop new features based on specific customer requests and anticipated market needs. We generally charge our customers for additional standard and custom features.

Expand our sales channels. We have developed direct relationships with many leading mobile operators, including those serviced by our OEMs, system integrators and distributors. We intend to continue to expand these relationships and pursue new mobile operator relationships to sell our products. At the same time, our OEM, system integrator and distributor relationships have allowed us to reach a broad mobile operator market. We intend to continue to pursue new OEM, system integrator and distributor relationships and to expand our direct sales force.

Continue to offer a high level of support. We believe that one critical factor of our success has been our willingness to respond to specific customer requirements and offer a rapid and thorough resolution

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of mobile operator issues. We focus exclusively on the mobile multimedia core network and, as a result, are able to provide focused support and technical expertise. We intend to continue to offer a high level of support to our customers.

Our Products

Our products consist of the ST16 and ST40 hardware platforms, proprietary software that allows the ST16 and ST40 to be configured for specific network functions, software that enables operators to provide in-line services and the Starent Web EMS, a web-based element management system that allows a mobile operator to monitor and operate the ST16 and ST40 through a graphical user interface.

ST16 and ST40 Multimedia Core Platforms

The ST16 has been deployed since 2003 and the ST40 has been deployed since 2007. The ST16 and ST40 are robust hardware platforms that combine high capacity, availability and performance with subscriber and network intelligence. The ST16 and ST40 are radio access-independent and can be deployed in multiple mobile network environments, including CDMA2000 1X, 1xEV-DO Rev. 0 and Rev. A, GPRS, UMTS, HSPA and Mobile WiMax networks. The ST16 and ST40 are capable of providing multiple network functions and in-line services.

The ST16 and ST40 each consists of a chassis, application or processing cards and line cards. The application or processing cards provide system management and process all network functions and services. The line cards provide the physical connection to the network.

The ST16 platform is well suited to meet the needs of most multimedia networks. The ST40 platform offers increased performance capabilities and capacity required by mobile operators for high demand, high capacity, multimedia networks.

Network Functions

The ST16 and ST40 can be configured with software packages to provide each of, or a combination of, the following network functions:

GGSN. The Gateway GPRS Support Node, or GGSN, is the network element on a GSM/GPRS or UMTS/HSPA packet core network that performs multimedia session establishment and termination, accounting and traffic routing.

Home Agent. The Home Agent is the network element on the subscriber s home network that effectively allows the subscriber to be reachable at its home address even when the subscriber is not attached to its home network. The Home Agent enables multimedia service mobility between multiple networks.

PDSN/FA. The Packet Data Serving Node/Foreign Agent, or PDSN/FA, is the network element on a CDMA2000 packet core network that performs multimedia session establishment and termination, accounting and traffic routing. When enabled, PDSN/FA can also provide re-direction to the subscriber s home network through communications with the Home Agent.

Starent Session Control Manager. The Starent Session Control Manager is an integrated network element that enables multimedia services such as voice-over-IP and IP television. The Starent Session Control Manager integrates a Session Initiation Protocol Proxy/Registrar, Call Session Control Functionality and Policy Agent to perform voice-over-IP routing, translation and mobility, admission control, authentication and registration.

ASN Gateway. The Access Service Network, or ASN, Gateway, is the network element in a Mobile WiMax packet data network that performs multimedia session establishment and termination, authentication, accounting and traffic or services routing between radio access and packet core network.

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Additional Functionality Configuration for ST40. Our ST40 platform offers the following additional functionality:

SGSN. The Serving GPRS Support Node, or SGSN, is the network element that will track the location of mobile devices on a GPRS or UMTS network and route packet traffic to that location.

PDIF and PDG. The Packet Data Interworking Function, or PDIF, and the Packet Data Gateway, or PDG, are network elements on CDMA2000 and UMTS packet core networks, respectively, that will perform multimedia session establishment and termination, accounting, secure tunneling and traffic routing from a WiFi network.

IPSG. The Internet Protocol Services Gateway, or IPSG, is the network element that will be capable of implementing services, such as enhanced charging and billing, intelligent traffic control or content filtering, in the packet core network behind a PDSN, GGSN, ASN Gateway or other elements.

Femto Network Gateway. We have announced the Femto Network Gateway, which offers additional functionality for our ST40 platform. A Femto network is comprised of a small base station, called a femtocell , which is installed in a customer s home and connects to a high-speed internet connection to improve wireless coverage of mobile devices, and a Femto Network Gateway. The Femto Network Gateway is an element in a Femto network that terminates IPsec/IKEv2 tunnels from Femtocells, which carries both authentication information and user data, and aggregates traffic from multiple Femtocells into the mobile operator s core network using standard interfaces.

Each of the ST16 and the ST40 is able to support one or more of these functions as required by the mobile operator in a single piece of equipment by enabling appropriate software features. As a result, the ST16 and the ST40 provide converged, universal services to multiple access technologies, which can be more cost effective and easier to manage than the deployment of many single-purpose access gateways.

In-line Services

The ST16 s and ST40 s processing power and abundant memory are designed to enable mobile operators to integrate multiple in-line service capabilities into the core network. In-line services that we currently offer or plan to offer in the future include enhanced charging and billing, intelligent traffic control, application detection and control, stateful firewall and content filtering. Mobile operators can deploy in-line services along with required core network functions such as a PDSN, GGSN, Home Agent or ASN Gateway. Deploying these service functions in-line with the core network can provide more efficient network traffic flows and a more secure and satisfying subscriber experience. Additionally, in-line services allow a mobile operator more flexibility and greater simplicity in designing their networks because they have fewer network elements, such as servers, load balancers, firewalls and routers to deploy and support. This can lead to a higher degree of network optimization, lower operating costs and a higher level of service assurance.

Starent Web EMS

The Starent Web Element Management System, or EMS, is a centralized service and network element management product that controls the ST16 and ST40. Starent Web EMS is a multi-service element manager, which provides fault, configuration, accounting, performance and security functions through a graphical user interface. Starent Web EMS enables mobile operators to monitor, manage and control the performance of the ST16 and ST40, as well as integrate and interoperate with other components and network management systems. The Starent Web EMS also provides a variety of performance and operation records based on mobile operator defined parameters.

Our Technology

We have spent over eight years developing and constantly improving our technology and products. This development includes our custom hardware platforms, our operating system, each network function we support,

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in-line service capabilities, our element management system and many customer-required features. Our technology integrates system intelligence, service flexibility, high availability and high-performance within products that can distribute all service tasks across the entire platform. In addition, as we have deployed our products with many of the world s largest mobile operators, we have been tasked to address operator specific requirements. These requirements, such as geographic redundancy and custom accounting and protocol development, have required significant development.

Platform Architecture

Each of the ST16 s and ST40 s uses a distributed architecture that allows it to allocate tasks or system actions across the entire platform. This distributed architecture provides for simplicity, ability to handle increasing amounts of network traffic and improved reliability, manageability and performance over alternative bladed architectures. A bladed architecture, where each processing card, or blade, has a distinct functionality, requires the addition of new blades for new services and each service would require a unique blade for redundancy. We believe the distributed architecture of our products enables more efficient hardware usage with enhanced performance characteristics. Additionally, the application of billing and other session policies control and packet forwarding paths are separated on different processing resources. This separation of processes improves the ability to handle increasing amounts of network traffic and traffic flow efficiencies while diminishing latency, or delay, within the session, and ensuring faster session setup and handoff. As a result, mobile operators can deploy more efficient mobile networks that can handle a greater number of concurrent sessions with less hardware.

System Intelligence

Our products and services provide mobile operators with the ability to inspect data packets from individual transactions in great detail. This deep packet inspection allows the ST16 and the ST40 to intelligently shape each subscriber session using quality of service, bandwidth allocation and traffic flow control, which in turn allows mobile operators to actively manage network traffic flows to improve the subscriber s experience.

The ST16 and ST40 also offer service steering, which allows mobile operators to efficiently steer or route each session through appropriate services based on key policies for that particular session or subscriber.

The ST16 s and ST40 s system intelligence provides mobile operators with the following key capabilities:

- increased information granularity and flexibility for billing, network planning and usage trend analysis;
- information sharing with external application servers that perform value-added processing;
- use of subscriber-specific attributes to launch unique applications on a per-subscriber basis;
- extension of management of session information as subscribers move between networks to applications that are not mobility aware; and
- enabling policy, charging and Quality of Service and similar features.

Service Assurance

The ST16 and ST40 employ hardware redundancy as well as high-availability software techniques, such as session recovery, fault containment, and state replication, to maximize network uptime, maintain the subscriber session and retain billing information. In addition to the high-availability software techniques, the following service availability features are included with the ST16 and ST40:

- task checkpoint and migration;

M:N or 1:1 redundancy for all hardware elements;

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geographic redundancy;

on-line software upgrades; and

dynamic hardware removal and additions while the product is operating, or hot swapability.

Multi-access Technologies

The use of multiple radio access technologies by mobile operators should be invisible to the subscriber. This seamless mobility between different access technologies enables mobile services to be maintained as the subscriber moves from one access technology to another. For example, as a subscriber using their mobile device on a 3G network enters an airport, they can be seamlessly connected to a higher-bandwidth WiFi network, if available. The architecture of our platforms is designed to support multiple radio access networks, and is capable of doing so in a single platform.

Starent Operating System

Our operating system software is based on a Linux software kernel, which provides a robust, proven software environment offering design flexibility. We have implemented significant customization and other elements to the Linux software kernel to design the operating system for high availability, service flexibility and high-performance.

Our operating system has the following key features:

Scalable control and data operations. System resources can be allocated separately for application of billing and other session policies and packet forwarding paths. For example, resources could be dedicated to performing routing or security control functions while other resources are dedicated to processing subscriber session traffic. As network or service requirements grow and call models change, hardware resources can be easily added to provide more processing power. This method of being able to handle increased network traffic, known as scalability, simplifies service deployment and network expansion.

Fault containment. The system isolates faults at a low level. In addition, processing tasks are distributed, so if an unrecoverable software fault occurs the entire processing capabilities for that task are not lost. Subscriber session processes can be sub-grouped into collections of sessions, so that if a problem is encountered in one sub-group, subscribers in another sub-group will not be affected by that problem.

Self healing. The self-healing attributes of the software architecture protects the system by anticipating failures and creating mirror processes locally or across resource card boundaries to continue the operation with little or no disruption of service. This architecture allows the system to perform at a high level of resiliency and protect subscriber data sessions while also ensuring accounting data integrity for the mobile operator.

Process distribution. All system tasks or processes can be distributed across the platform processing cards to fit the needs of the network model or specific processing requirements. Because tasks or processes are not required to be assigned to a specific card, system scalability and redundancy is significantly simplified.

Leverages third party software components. The use of the Linux operating system kernel enables the reuse of many well-tested, stable, core software elements such as protocol stacks, management services and application programs.

Supports dynamic hardware removal/additions. By migrating tasks from one resource card to another using software controls, application cards can be removed or replaced while our product is operating, or hot swapped, to dynamically add capacity or perform maintenance operations without service interruption.

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Multiple context support. The system can be fully virtualized to support multiple logical instances of each service. This eliminates the possibility of any one domain disrupting operations for all subscribers in the event of a failure.

Customer Support and Services

We provide wide-ranging and highly interactive support through our system engineering organization, including pre-sales consultation, network testing and trialing, network design, installation, third party product integration, operation, post-sales maintenance and training. Our support organization provides 24x7 operational support. This support team consists of resources located throughout the world which provide our customers timely access to our support technicians and engineers.

We provide our customers with a variety of training courses on the deployment, operation and maintenance of our products. Training is performed in our Technical Education Center located in Tewksbury, Massachusetts or at the customer s location. These courses generally range from two to five days and cover a variety of topics from product overview and installation through configuration and maintenance.

Sales and Marketing

We market and sell our products to mobile operators through our direct sales organization and indirectly through our OEMs, system integrators and distributors. In 2008, 90% of our revenues were from direct sales and 10% were from sales through OEMs, system integrators and distributors. In 2007, 69% of our revenues were from direct sales and 31% were from sales through OEMs, system integrators and distributors. In 2006, 50% of our revenues were from direct sales and 50% were from sales through OEMs, system integrators and distributors.

Direct Sales

Our direct sales organization focuses on selling to leading mobile operators throughout the world. We have sales personnel in a number of markets throughout the world, including the United States, Australia, Brazil, Canada, China, France, Germany, India, Japan, Korea, Mexico, Spain and the United Kingdom.

OEM, System Integrator and Distributor Relationships

We have developed relationships with a number of OEMs, system integrators and distributors, including Alcatel-Lucent, Motorola, Nortel Networks, Samsung Electronics and ITOCHU Techno-Solutions Corporation, also known as CTC. In some cases, these relationships have allowed us to reach a broader mobile operator market than was possible through our direct sales efforts. We believe that OEMs benefit from these relationships by leveraging our research and development expertise, reducing the time-to-market for new products and realizing incremental revenues from the sale of complementary hardware, software and services resulting from the incorporation of our technology into their product offerings. The system integrators and distributors with whom we have relationships specialize in building integrated products for mobile operators by putting together components from different vendors. Typically, when an OEM, system integrator or distributor services a large mobile operator, we also maintain a direct relationship with the operator, which facilitates offering our customer support and services program.

Marketing and Product Management

Our marketing and product management organizations focus on defining our product requirements, educating our mobile operator customers and our OEMs, system integrators and distributors, media and analysts on our technology, building brand awareness and supporting the efforts of the sales organization. We market our products through industry events, public relations efforts, collateral materials and on our Internet site. We participate in industry events, including management presentations on the topics of broadband mobile wireless network technologies and the efficient delivery of multimedia services. We believe the combination of these efforts creates awareness of us and our products and technologies.

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Customers

Our primary customers are mobile operators located throughout the world that are deploying or seeking to deploy packet-based multimedia services over next generation networks. We also sell our products to OEMs and system integrators.

Over 85 mobile operators in more than 35 countries, including leading mobile operators using the CDMA, GSM/UMTS and WiMax radio access technology, have deployed our products.

In each of years ended December 31, 2008, 2007 and 2006, we derived more than 90% of our revenues from our top five customers. In 2008, we had two customers, Sprint/Nextel and Verizon Wireless, that each represented more than 10% of our revenues. In 2007, we had three customers, CTC, Sprint/Nextel and Verizon Wireless, that each represented more than 10% of our revenues. In 2006, Nortel Networks and Verizon Wireless each represented more than 10% of our revenues. We terminated our OEM relationships with Nortel Networks in December 2006 and March 2007. In May 2008, we entered into a distribution agreement with Nortel Networks.

Information with respect to the percentage of our revenues based on customers geographical locations is set forth below:

	Year Ended December 31,		
	2008	2007	2006
United States and Canada	91%	76%	87%
Japan	5	13	4
Korea	3	9	1
Rest of world	1	2	8
Total	100%	100%	100%

Information with respect to our long-lived assets by geographic location is set forth below:

	At December 31,	
	2008	2007
United States	$ 21,059	$ 15,614
India	7,857	4,676
Rest of world	716	162
Total	$ 29,632	$ 20,452

Research and Development

Our technology requires continued investment to maintain our leadership position. Accordingly, we believe that a strong research and development program is critical to our business. Our research and development organization focuses on designing, developing and enhancing our products as well as the technology underlying our products, investigating new technologies, performing testing and quality assurance activities and integrating our products with third-party products, if necessary.

As of December 31, 2008, we had 95 research and development personnel in the United States and 354 research and development personnel in India. Our research and development organization has extensive industry experience that provides us with the core competencies required to deliver products suitable for global mobile operator networks. Our employees expertise includes:

- carrier-class equipment design and manufacturing;

IP networking;

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- mobile networking;
- voice and multimedia services;
- element management; and
- wireless access.

We have made substantial investments in product and technology development since we were founded in 2000. Research and development expenses totaled $51.6 million in 2008, $38.9 million in 2007 and $26.0 million in 2006.

Manufacturing

We outsource the manufacturing of our ST16 and ST40 products to Plexus Corp., a global provider of subcontracting services. Plexus fulfills our manufacturing requirements in Boise, Idaho, and has other locations across the United States at which our requirements also may be fulfilled. Once products are manufactured, they are sent to our headquarters in Tewksbury, Massachusetts, where we perform final assembly and quality control testing to ensure reliability. We believe that outsourcing our manufacturing enables us to conserve working capital, better adjust to fluctuations in demand and provide for timely delivery to our customers.

Although there are multiple sources for most of the component parts of our products, some components are sourced from single or, in some cases, limited sources. For example, Plexus purchases through electronics distributors various types of central processors, network processors, switch fabrics, oscillators and memory devices from various component manufacturers, including Broadcom Corporation, Intel Corporation and Vitesse Semiconductor Corporation, which are presently Plexus sole sources for these particular components. We typically do not have a written agreement with any of these component manufacturers to guarantee the supply of the key components used in our products, and we do not require Plexus to have a written agreement with these component manufacturers. We regularly monitor the supply of the component parts and the availability of alternative sources. We provide forecasts to Plexus so that it can source the key components in advance of their anticipated use, with the objective of maintaining an adequate supply of these key components for use in the manufacture of our products. In addition, we maintain a small inventory of key components that we believe are most critical to the manufacturing process.

Competition

The market for mobile network infrastructure products is highly competitive and rapidly evolving. The market is subject to changing technology trends, shifting customer needs and expectations and frequent introduction of new products. With the growth and adoption of mobile multimedia services, we expect competition to continue and intensify for all our products and in all our target markets.

We believe there are a number of important factors to compete effectively in our market, including:

- products and services that are highly reliable and provide high performance;
- scalability and service integration capabilities;