The Profitable Approach to Value-added IP Services

Executive Summary

In the recent past, service providers could operate a lucrative business based on network access alone. Customers eagerly subscribed to basic Internet access and plain old telephone service (POTS). Users were content; service providers were profitable. But users now demand much more, and service providers are struggling to figure out how to meet today's market needs profitably.

Some Internet service providers (ISPs) and competitive local exchange carriers (CLECs) have tried raw bandwidth as a market differentiator. In effect, they supercharged basic access services with ISDN, digital subscriber line (DSL), T1/E1 or other broadband technologies, only to discover that speed alone is not the path to profitability. Others, particularly the so-called dot-coms, tried new and untested business models based on advertising or other sources of revenue, believing that more "eyeballs" or greater "stickiness" were the secrets to success. The stock market proved them wrong, too.

So if "faster," "more" and "longer" are not the answers, what is? The name of the game today is value-add. According to industry analyst firm Probe Research: "Bandwidth has become commoditized, and continued trends in technology will ensure that it stays that way. Unless retail service providers offer tiered, value-added services, they cannot hope to be profitable."

For quite some time now, CLECs have known that value-add is the secret to success in voice and data access services. More recently, ISPs have introduced an Internet-oriented set of managed services. So users currently have a fairly wide assortment of value-added services, including virtual private networks (VPNs), Web and data center hosting, managed firewall and other security provisions, voice-over-IP (VoIP), Quality of Service (QoS) and service level agreement (SLA) options, and more. The advent of the newest player, the application service provider (ASP), has raised value-added capabilities all the way to the application layer.

But the tidal wave of new value-added services hit the industry before service providers learned to navigate successfully in these uncharted waters. Which is why EmergeCore published this document: to help you explore the value-added services opportunity, to understand the challenges involved and to learn about the "pay as you grow" approach to a profitable managed services offering.

For a variety of reasons outlined in the following sections, the IP service switch (IPSS) has emerged as the strategic platform for deploying managed, value-added services. But there are significant differences among IPSS designs. Most are proprietary behemoths that force service providers to get their feet wet head first in the vast ocean of value-added services. And over time, these first generation IPSS systems are destined to become boxes that box you in and restrict your long-term profitability.

The ideal IPSS, available in second generation solutions, is an open and extensible IP service platform that permits a "pay as you grow" approach to managed services. Being open allows service providers to choose from the plethora of best-in-class applications available today, and migrate to new and improved applications as these become available. Being extensible means starting small and planning big to get the most from the lucrative managed service opportunity. And what an enormous opportunity it is.

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Opportunities Abound

Enterprise organizations of all sizes and from all sectors are turning to managed services as an alternative to going it alone in-house. The primary reason for this paradigm shift in thinking is the profound difficulty Information Technology (IT) departments now have recruiting, training and retaining knowledgeable staff members. This is especially true given the need to maintain legacy applications while supporting new initiatives-all in the face of stagnant or shrinking budgets.

Managed services afford three compelling advantages for the typical enterprise. The first is a superior solution. With their state-of-the-art environments, service providers are in a much better position to attract and retain top-notch talent. Competitive pressures encourage service providers to offer industry-leading solutions-the kind today's best engineers prefer. The second advantage is lower overall costs that derive from a service provider's economies of scale. By spreading costs across numerous customers, service providers can maintain profitability and still deliver a better, more economical solution. Putting it another way: most enterprise organizations simply cannot implement world-class infrastructure on a business-class budget. The third and final advantage is accelerated time-to-market. Without a learning curve to climb, the enterprise is able to get up and running faster by employing a managed service. Better, cheaper, faster. Managed, value-added services are just what the enterprise needs.

This shift in thinking by enterprise organizations around the globe spells opportunity for service providers. Any service provider, regardless of its current business model, stands to benefit by augmenting its basic, commodity offerings with value-added services. For Internet service providers (ISPs) and application service providers (APSs), value-added IP is now strategic-driven by a need for profitable, competitive differentiation. Competitive local exchange carriers-CLECs, data-oriented DLECs and building-focused BLECs-all especially need value-added versatility for both voice and data to compete profitably with the entrenched, incumbent ILECs.

The benefits of value-add for both SPs and LECs are also three-fold: increased revenue from new, high-margin services; reduced churn from current satisfied customers, who are given no reason to look elsewhere; and more new customers, who have grown weary of in-house solutions or have reached a "dead end" with their current service provider.

The value-added managed service opportunity spans the spectrum of possibilities-from basic VPN, managed firewall and Web content filtering services to advanced service aggregation, load balancing and Web caching applications. (See the sidebar on "The Value-added Managed Service Opportunity" for a list of just some of the possibilities.)

The win/win nature of value-added managed services promises to make for a huge market. According to International Data

The potential for value-add with managed services is limited only by the imagination. Here is a list of just a few of the possibilities:

- Address Management
- Anti-virus Scanning
- Bandwidth Management
- Billing & Accounting
- Content Delivery
- Content Filtering
- Customer Relationship Management
- Denial of Service Defense
- Distributed Data Centers
- DNS Server
- e-Commerce (B2B/B2C)
- E-mail & Mail List Servers
- Enterprise Resource Planning
- File/FTP Server
- Intranets and Extranets
- Intrusion Detection
- IPSec Packet Encryption & Authentication
- License Management & Metering
- Load Balancing
- Managed Firewall
- Media Gateways & Soft Switches
- Network Hosted Applications
- Newsgroup Server
- PKI Certificate Authority
- Print Server
- Quality of Service (QoS)
- Service Aggregation & Concentration
- Service Level Agreement
- Service Provisioning & Management
- SQL Database Server
- Streaming Media Server
- Traffic Grooming & Conditioning
- Tunneling (IP-in-IP or non-IP)
- Virtual Private Networks
- Virtual Routers
- Voice over IP (VoIP)
- Web Caching
- Web Server

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Corporation (IDC), the IP services market is projected to generate revenue opportunities for service providers of $23 billion in 2001 and reach a whopping $70 billion by 2004. These numbers represent a compound annual growth rate of nearly 60%-far better than the growth expected for commodity bandwidth.

Navigating the Uncharted Waters

The "core" of public IP networks remains relatively "dumb" for a very good reason: throughput. In other words, the IP backbones that serve individual service providers and, in the aggregate, constitute the worldwide Internet, continue to be designed almost exclusively for speed. And this makes total sense considering the rampant growth in IP traffic. True, some service providers are enhancing their backbones with traffic prioritization schemes, such as Differential Services (DiffServ), Class-Based Queuing (CBQ) and Multi-Protocol Label Switching (MPLS). But the worldwide Internet remains a "best effort" network with limited end-to-end management.

The implication of a dumb, fast core for value-added services is clear: the edge is where the action is. In fact, the edge is the perfect place to add intelligence for provisioning managed services. The edge is where access services are aggregated, where VPNs and other security provisions are layered, where Web and other application servers are located, where caches are deployed, and so on.

For this reason, the industry has rallied around the IP Service Switch (IPSS) as the optimal managed services solution. The IPSS lets service providers add new and enhanced services quickly and cost-effectively by leveraging economies of scale. By integrating and consolidating a variety of functions on a common chassis, the IPSS allows service providers to lower the total cost of ownership. And because a single service can be replicated for hundreds or thousands of subscribers, the IPSS maximizes the revenue potential and profitability. The IPSS also lets service providers provision and control managed services at the policy level on a customer-by-customer basis without a truck roll. For this reason, service providers can offer managed services with a "try before you buy" approach to up-sell existing customers.

The inevitability of IP service switch market domination was revealed in a Synergy Research Group (SRG) study that forecasts IPSS sales to grow at 70% annually-just slightly ahead of the growth rate in service provider revenue from managed services.

But there is a problem with the IP service switch: first generation solutions require service providers to dive into the ocean of value-added services head first! All initial IPSS products are "carrier-class" in their features, as well as in their size. This approach requires service providers to commit to a huge initial investment. Another problem with these behemoths is that they are quite unsuitable for small- and medium-sized points of presence (POPs) and mult-tenant unit (MTU) deployments-so-called "Decentral Offices." Finally, all first generation products have proprietary architectures and applications, which limit their flexibility and utility. When you select an IPSS vendor, you lock yourself into their available services, product roadmap and upgrade path.

Next-generation Open IP Service Switches

What the industry needs is an open and extensible IP service platform, and next-generation products are now making their debut with just such a design. The "open" aspect of the approach means a solution that employs standard hardware, software and management tools. Open in this context means that you can take off-the-shelf 3rd-party applications written for open-source operating systems (such as Linux and FreeBSD) and run these services on an IPSS without modification. Some vendors advertise the open nature of their products but in reality only provide APIs to allow developers to write applications on their proprietary architecture. A truly open IPSS provides a breadth of choices and options previously unavailable to service providers.

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Only a truly open IPSS provides the greatest possible potential for revenue-generation from value-added best-in-class applications. The "extensible" aspect of these products means sufficient storage and throughput capacity to handle today's needs, with a growth path to virtually unlimited performance levels. The result is a clear and navigable route across uncharted waters to new features and capabilities. Finally, the concept of a genuine "platform" facilitates full customization capabilities that derive from the open, extensible nature of the design. The result is a truly enduring and strategic architecture that will serve providers and their subscribers alike well into the future.

The next-generation of open and extensible IP service switch platforms offers four distinct advantages: versatility, scalability, reliability and affordability. Versatility is important because the market conditions for managed services are certain to change, perhaps significantly over the coming years. And to be responsive, service providers will need the ability to custom-configure both the hardware and the software. Service providers also need a choice of flexible deployment options-all at the strategic edge of the network-from the POP, central office or data center as a "broadband aggregator" to the customer premises and MTU facilities as "Decentral Offices." Scalability is important because this market is expected to explode. The extensible nature of next-generation IP service platforms makes them quite scalable, which allows service providers to add new customers and/or new, more sophisticated services without adversely impacting on performance or encountering "forklift" upgrades. The ideal solution would afford virtually unlimited expansion potential-via increased capacity or load-sharing configurations, for example-to keep pace with growing demand.

The need for reliability is clear by the very nature of managed services. Enterprise organizations depend on the service provider to deliver. And next-generation IP service platforms are capable of delivering the very same carrier-class dependability as their first-generation counterparts-but on a potentially lower scale, where desired, and at a tiny fraction of the price. Their open and extensible design lets service providers employ best-in-class load-balancing software and deploy fully meshed configurations to minimize service outages.

Finally, the affordability advantage of open and extensible IP service platforms will become vitally important as competition heats up in this nascent marketplace. The profit-minded service provider has a perennial goal to achieve the lowest possible total cost of ownership (TCO). Low TCO begins with the initial investment, which should be available at a variety of price/performance points and fully optimized for IP to leverage the existing infrastructure investment. Low TCO continues through the life cycle of the service offering, which will need to be expanded and enhanced to keep one step ahead of growth and changing market demands. The ability to utilize off-the-shelf applications helps keep both initial and on-going costs at a minimum. Finally, the ideal solution will offer intuitive and advanced management capabilities to minimize training, provisioning and operating costs.

The EmergeCore "Pay as You Grow" Approach

EmergeCore recognized that the only way to fulfill the promise of the value-added service opportunity was to eliminate the limitations inherent in first generation IP service switches. So EmergeCore endeavored to advance the state-of-the-art by adopting the design objectives and benefit goals outlined above. The result is an innovative next generation solution: the industry's first open and extensible IP service platform that can be deployed and provisioned in a profitable pay-as-you-grow manner.

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The open, standards-based nature of the design combined with its power and virtually unlimited expansion potential gave rise to the product's name: Reactor™. Reactor is a Layer 2-4 switch with a powerful and open application server at its core. Value-added applications that run on the server control the non-blocking switch. By using the Linux and FreeBSD operating system, Reactor can take advantage of a wealth of off-the-shelf applications and readily-available software engineering talent. For this reason, any company-service providers, network equipment

vendors, value-added resellers, network integrators and even enterprise organizations-can take full advantage of the design by adding best-in-class or custom applications. (Refer back to the sidebar titled "The Value-added Managed Service Opportunity" for a list of some possible applications.)

The Reactor design delivers the versatility, scalability, reliability and affordability needed to achieve a practical pay-as-you-grow approach to managed, value-added services.

Remarkable Versatility

Reactor offers just what the name implies: pure power for value-added services. The product ships with some basic applications already installed, and is certified to operate with other popular solutions, giving service providers complete freedom to customize their value-added managed services offerings.
Reactor's IP service switching is based on EmergeCore's innovative FusionPort technology that associates individual ports, networks, or users with individual value-added services. The ability to provision any value-added service on a port-by-port or customer-by-customer basis makes the platform remarkably versatile in a managed services environment.

The services in the Reactor IP service switch operate from the integral server, which utilizes the Linux operating system atop Intel Pentium processors for compatibility with a smorgasbord of applications. Linux was chosen for its popularity in the Internet community. Already there are over 4000 applications available in the public domain or commercially, and Linux is expected to be the dominant operating system on the Internet by 2003, according to the International Data Corporation.

The versatility of the platform goes well beyond applications software to include a wide range of hardware configurations. Depending on the needs of the application, designers can configure Reactor with a variety of different network interfaces and storage options. The networking acronyms available cook up a veritable vegetable soup of possibilities: LAN, WAN, SAN and NAS for IP, Frame Relay, ATM or TDM needs using PCI, PCMCIA, USB or SCSI technologies.

Mix and match as you see fit now-and reconfigure later. The Reactor can meet all of your service offering needs. And Reactor systems can be deployed wherever and however they are needed-in POPs, "Decentral Offices" in MTUs, or as customer premises equipment-either to supplement the existing infrastructure with enhanced capabilities or to add complementary applications.

Virtually Unlimited Scalability

The real power of the Reactor product derives from its ability to scale almost infinitely-from a single and affordable entry-level system to a resilient mesh of carrier-class proportions. Entry-level systems are affordable enough to be deployed profitably even in the smallest POP or customer premises. The larger configurations are cost-effective enough to deliver mission-critical, high-margin performance in a major metropolitan POP or data center. And in between are a number of price/performance levels to match just about any need-affordably and cost-effectively.

The result of Reactor's extensible design is a linear and granular scalability that permits a "pay as you grow" approach to offering value-added managed services. The EmergeCore model gives service providers virtually unlimited scalability to accommodate growth in both services and customers. So you can start small and plan big-and be profitable at every point along the way!

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Mission-critical Reliability

Reactor, especially when deployed in a fully meshed topology, delivers remarkable reliability and resiliency. Automatic routing failover keeps the mesh fabric in continuous operation. Redundant power supplies are available on certain models to eliminate this potential source of failure. And when needed, clustering and load-balancing software is readily available as Linux applications.

Reactor's powerful yet intuitive monitoring and management capabilities also contribute substantially to maximizing application availability. EmergeCore's element management system, CoreVista™, offers centralized control from a browser-based graphical user interface. EmergeCore's open architecture extends into the management arena with a SQL database. Finally, a powerful Command Line Interface (CLI) is offered for configuration and troubleshooting activities in the field.

Unprecedented Affordability

EmergeCore believes that something is only affordable if it pays for itself-and the sooner the better! So the Reactor product line was designed to extract the greatest possible value from and the maximum return on your investment.

On the revenue side of the equation is Reactor's ability to generate high margin income through support of a wide variety of best-in-class Linux-based applications, all of which can be deployed rapidly and on-demand. The standard Reactor software includes a wealth of basic applications to help get service providers off to a profitable start. FusionPort technology lets service providers allocate and reallocate all IP services dynamically on a port-by-port or customer-by-customer basis.

On the cost side of the equation is the integration of switch and server functionality that allows Reactor to replace an entire rack of space-consuming, fully depreciated or technologically obsolete equipment. Or Reactor, with its versatile and extensible design, can be deployed to supplement current systems and services to preserve, in full, your investment in existing infrastructure. The integration and consolidation also serve to minimize your TCO with scalable price/performance combined with ease of installation, operation and management. For example, rack-mount installation takes only minutes and consumes precious little space-only 1U or 3U per system.

EmergeCore's bottom line is this: pay as you grow profitability with the industry's premiere open and extensible IP services platform that delivers the versatility, scalability, reliability and affordability needed in the rapidly-changed managed services business.

Getting Started

By minimizing the risks and maximizing the rewards of offering managed, value-added services, EmergeCore's Reactor lets you get started on the passage to profitability with complete confidence. In other words: Reactor's open and extensible design makes it the one box that won't box you in!

In summary, the Reactor delivers three primary advantages for service providers planning a managed services offering:

- Value based on Reactor's price/performance leadership and low total cost of ownership. Reactor's affordable entry-level pricing delivers high non-blocking throughput from the outset, and a pay as you grow expansion potential as your managed services offering evolves.
- An immediate return on your investment. The built-in feature set facilitates rapid deployment, while the open architecture makes customization a quick, easy and inexpensive process.
- Profitability derived from the combination of revenue-generating value, low TCO and rapid ROI. Profit potential makes Reactor the sure choice when it comes to managed services.

Contact EmergeCore at (866)4EMERGE or visit our Website at www.emergecore.com to learn more about how you can benefit from EmergeCore's pay as you grow approach to competitive and profitable value-added services.

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