Product information begins on page 2.

Lucent and Ascend have merged.

With the Lucent-Ascend merger, customers gain a broader and more powerful portfolio of next-generation data, voice, fax, and video services and products. To access up-to-the-minute information about our products, see page 2.

We also invite you to contact us with your questions directly at: info@ascend.com

Ascend

WHITE PAPER

Value-Added Intelligent Network Services

New opportunities for CLECs

Table of Contents

1. Executive Summary

The local switched services market is the next great competitive frontier in telecommunications. Competitive local exchange carriers (CLECs) are scrambling to get their slice of the near $100 billion pie. The challenges are intense, but the rewards are fantastic for those that can win the battle for customers and their local service dollars.

CLECs have gone from near obscurity to 4.1 million access lines in 1998 and are expected to grow to more than 20 million lines by 2001 – from total revenues just under $7 billion in 1998 to more than $26 billion in 2001. This growth will occur as a result of a select few convincing CLECs convincing investors and customers that they offer superior service to other local providers.

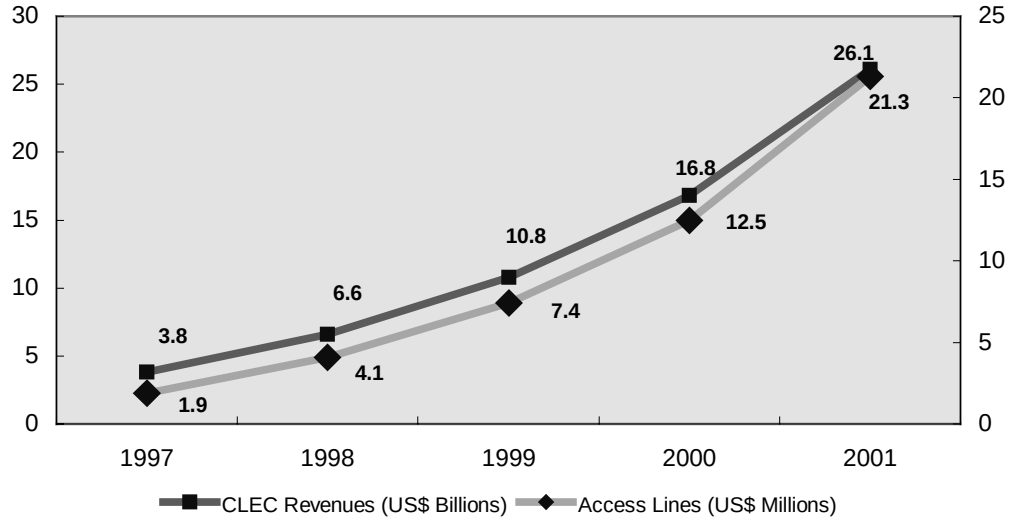


Figure 1 – CLEC Revenues and Access Lines (Source: The Yankee Group 1998)

CLECs will win investors and customers through a careful process of differentiation — the most effective combination of product bundles, customer experience, customer care and price will beat out other providers. Investors know that the best returns come from CLECs that deploy capital in areas that return cash fast – such as platforms that can be leveraged across multiple services and that utilize the operations and customer processes already in place.

New customers appreciate CLECs that can make the customer experience pleasant and trouble free. CLECs that design and implement processes around the latest in systems and technology reap the benefits of smooth installations and fast trouble resolution. Customers are drawn to the unique service bundles made possible through the deployment of multiservices platforms and to the speed with which changes are made to their various services.

Like CLECs, intelligent network (IN) technology has come a long way over the past several years. What was once the domain of only the very large incumbent local exchange carriers (ILECs) and interexchange carriers (IXCs) is now well within reach of the smallest CLECs. Through advances in IN technology, it is now possible for CLECs to offer services like virtual private network (VPN), advanced calling services (ACS) and caller name delivery (CNAME). Local number portability (LNP) can also be supported on the same platform.

As business customers become more sophisticated they become more demanding of their telecommunications providers. Voice and data services at lower prices are no longer enough to lure the best customers away from an

incumbent. A typical prospect may have a large corporate office complex, a call center, and work-from-home employees throughout the region. VPN and ACS services are designed to meet this prospect's needs and provide the leverage required for a CLEC to acquire them as a long-term customer.

Financial models show that a fast-growing CLEC serving 30,000 lines in 1999 will get a three-year return on investment and enjoy operating margins in excess of 75% after four years. Those are the kinds of numbers that banks and investors like to hear, and this analysis does not even attempt to quantify the acquisition and retention benefits that come about as a result of offering unique product bundles at competitive prices.

CLECs that once were forced to go to service bureaus can now afford to deploy their own in-house IN platforms and regain control of critical network functions. The benefits of ownership are clear. This white paper describes the profitable new business opportunities made possible by the latest in scalable, multiservices IN platforms.

2. CLECs – Going After Their Fair Share of the Local Market

According to the Yankee Group, the local switched services market was $98 billion in 1997. They also estimate that CLECs had already captured a 1.2 % share of that market. Yankee Group goes on to predict that CLEC local switched services revenues will grow to more than $11.4 billion by the year 2001. In fact, local switched services are expected to make up the largest portion of CLEC revenues within five years.

A market this large was bound to attract a lot of players and the CLEC field is very crowded. From small to very large, resellers to facilities based, the spectrum is full. According to a Yankee Group study, by the end of 1998, CLECs had installed more than 4.1 million access lines and more than 300 Class 5 central offices. Given the explosive growth of most CLECs, it would not be unusual to see those numbers grow by 70% or more. The Yankee Group projects that CLECs will have installed more than 21 million access lines by the end of 2001.

3. The Battle Is Joined

CLECs are competing on every front. As they battle to win customers from ILECs and other CLECs, they are also competing for capital from investors and financial institutions. CLECs must continually balance the factors that attract new customers with those that motivate investors to contribute capital.

With the passage of the Telecommunications Act of 1996 and the subsequent implementation of local number portability (LNP), local telecommunications customers finally have a choice in service providers. Before LNP, customers that wanted to switch to a CLEC had to change their telephone numbers. For obvious reasons, not many customers switched their local service. With LNP, customers can now switch to a CLEC and take their numbers with them. But LNP only opens the door for CLECs. Walking through that door is wrought with another set of challenges altogether.

ILECs are rolling out creative product bundles that include advanced services and attractive prices. They do this with the advent of full local competition in mind. CLECs that do not have the capability to offer the IN components in these product bundles (such as calling name service, voice messaging service, call waiting with caller ID, high-speed Internet access), will not get very far with the most advanced ILEC customers. The capability to offer these advanced services has become a “ticket to play” in the local switched services marketplace. The real challenge for CLECs will be to develop and introduce new services faster, better, and cheaper than the ILEC.

Like end users, Wall Street is looking for value from CLECs. In other words — positive cash flow. Network investments that were once amortized over 20 to 30 years in the Bell System, are now expected to generate positive cash flow in less than five years. As a result, CLECs are forced to use their investor capital opportunistically and only deploy facilities and equipment that will generate positive cash flow quickly. Investors have been kind to CLECs so far, but according to the Yankee Group, they expect to see CLECs producing income soon.

It can be said that the highest level of return can only come about through the assumption of a high level of risk. For CLECs and their investors, this means more facilities-based and less resale based service offerings. It is therefore imperative that CLECs deploy platforms and facilities that support multiple services and fit seamlessly into thier existing infrastructure. CLECs cannot afford to develop special processes and systems to accommodate every new network platform.

4. The Struggle for Differentiation

In a crowded field of competitors, those providers that successfully rise above the commodity clutter stand the best chance of flourishing. According to the Yankee Group, four factors determine whether a provider can differentiate itself effectively:

- Product bundles that respond to customers needs.
- Fair prices.
- Premier customer care.
- Complete ownership of the customer experience, with no critical element left to a third party.

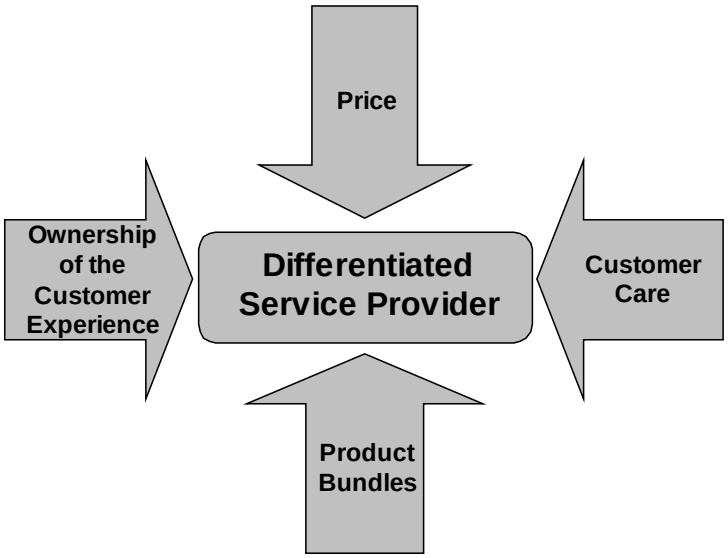


Figure 2 – Service Provider Differentiators (Source: The Yankee Group 1998)

CLECs were initially forced into the role of low-cost (price) provider versus the ILEC. This allowed them to secure a base market share and sustain their dedicated access line of business. However, as CLECs go after a much larger share of the local switched services market, other factors play a larger role in the prospects' decision to leave the ILEC. The issue for the CLECs is not whether they can be the lowest priced solution, but whether they can deliver services at a lower cost than the competition. Lower cost of goods translates to higher margins, improved cash flow, and more investor capital. Having the lowest costs also allows pricing flexibility on strategic accounts and room to adjust pricing in the event of an all out price war.

Delivering local switched services can be an extremely complex process. ILECs have been struggling to improve their operations and customer care processes for years, not to mention their operational support systems that were designed decades ago. Only bad things can happen when a CLEC relies too heavily on an ILEC for any element of the customer experience. Most providers have come to realize that the customer is best served by the CLEC owning every aspect of the customer's installation, repair, billing, customer care, and product experience.

A premier customer care unit can be the weapon that differentiates a new provider of local switched services. Customers generally remember how they were treated in times of trouble and are more likely to pass along bad experiences to others than good ones. A good customer care team can help limit those nightmarish customer anecdotes and even win the hearts and minds of customers through positive and hassle-free trouble resolution.

A whole can sometimes be greater than the sum of its parts. Research shows that the more services customers purchase from a provider, the less likely they are to switch to a competitor. This is why energy providers have attempted to offer non-energy services such as wireless services, satellite television, and central office detectors. Like the ILECs, energy providers are facing imminent competition and are trying to load up customers with product and service bundles. CLECs have to develop multiple product and service bundles to compete effectively. However, their ability to differentiate depends on their ability to innovate quickly and economically.

5. Opportunities in IN Enabled New Services

CLECs can use the latest in scalable intelligent network (IN) technology to add three new services to their local switched services product bundle. Virtual private network (VPN), advanced calling services (ACS) and calling name delivery (CNAME) can all be supported by a single IN platform. This section describes features and benefits of these three services.

Virtual Private Network Services

VPN services are best suited for businesses that need to connect a diverse set of locations on the same calling plan. The capabilities of Centrex and the PBX are stretched to the limit with the proliferation of telecommuters, business travelers, and other non-traditional office configurations. With VPN, essentially any business can implement a private numbering plan. Employees on the road, working from home, or at a branch office can use the VPN as if they were using a phone at the corporate office. The CLEC intelligent network manages the required integration with the PSTN.

In addition to number translation capabilities, businesses can take advantage of software-defined user profiles. This feature allows each customer to create and modify user profiles for each individual station on the VPN. For example, businesses can use user profiles to restrict international calling to certain employees or track phone usage by using account codes. Changing user profiles could not be easier. Users have a choice of accessing their profile information over the phone or through an intuitive graphical user interface. Depending on privileges established by the administrator, users can configure their speed dialing and call diversion setting at any time. Table 1 provides a detailed description of user profile options.

VPN can also save businesses time and money in the network by reducing the number of moves, adds, and changes. Because VPN takes control of each incoming call, it effectively allows a corporate network to have a nationally and internationally available DID number range to cover all stations on the VPN. Under non-VPN DID, each PBX typically has its own locally assigned DID range. The main advantage of a VPN-wide DID range is the geographic independence for VPN DID numbers. If a VPN user moves between offices, the DID number can stay the same. VPN-wide DID also permits flexible charging of DID calls to VPN.

Business travelers will appreciate the remote access capabilities of VPN. Remote access functionality allows VPN users to access their VPN features from any non-VPN phone. This feature requires caller validation prior to accessing VPN functions to prevent fraudulent use. The validation process identifies the VPN, and the VPN originating profile to be used for all subsequent calls. The VPN is identified by the number dialed to access the remote VPN access function (typically a free phone number), and the originating profile is associated with a user ID that forms part of the validation sequence. The originating profile can be shared with a user's VPN station originating profile (the phone on the user's desk).

Once validated, a user can to dial another VPN station using a virtual station address. If allowed in the originating profile, the user can also make off-net calls, thus providing a type of calling card function. VPN features fall into one of two categories: those processed based on the originating caller and those processed based on the terminating station or called party.

User Profile Option	Description
Allowed and barred lists	An allowed number list or a barred number list can be assigned to any originating profile. The list consists of a number of private numbering plan prefixes. Any dialed number for which the first digits match the prefix is disallowed or allowed depending on whether the list is a barred or allowed list respectively.
Divert on busy/no answer	A forward destination can be specified for incoming calls to a station that is busy or not answered after a number of seconds.
Off-net calling	For all originating station profiles, only calls to numbers within the VPN are allowed unless the off-net calling feature is enabled in that profile. Off-net calling is more a permission to allow an event rather than a specific function.
Account code	Dialed numbers can be prefixed by an account code which will be removed from the dialed number, but included in the billing information for the call.
Variable routing	For trunk and international calls, different routing algorithms can be specified based on the destination of the call and a setting in the originating profile.
PIN coded security override	For profiles where barred or allowed lists exist, or where the off-net calling feature is not enabled, a user can enter an ID and PIN to override one or both of these blocks on making the call.
Speed dialing	Each originating profile has a configurable number of speed dial numbers. The typical implementation of a speed dial number is a prefix identifying the number as a speed dial number followed by the speed dial index. For example, in a particular private numbering plan, 8 may be used as the speed dial prefix and therefore 800 could be the first speed dial number.
Call transfer	A forward destination can be specified for incoming calls to a station.

Table 1 – VPN User Profile Options (Source: Ascend Communications, Inc., 1999)

Finally, administrators appreciate the advances made in VPN management capabilities. Service providers determine the level of customer access to VPNs. Businesses that prefer more control can create and configure their own VPN profiles and routing between sites. Businesses that are not interested in such capabilities can be limited to allocating user IDs and PINs. Whether businesses are given full or partial access to their VPN configurations, a JAVA based Internet interface makes it easy to execute real -time configuration updates.

Advanced Calling Services (ACS)

As with VPN, deploying switch-based advanced calling services (ACS) such as enhanced toll free, local toll, and premium rate services (800/900) has not been affordable for small to mid-size service providers. CLECs that deploy scalable intelligent network platforms not only offer ACS services, but enjoy the profits that these services generate.

ACS capability CLECs can use to define a set of routing criteria that allows calls to be terminated to one or more destination directory numbers (DDN). The set of criteria that defines the routing of a call is referred to as a call plan. A simple call plan might route calls to an announcement during the weekends and a phone number during weekdays. Every call plan consists of several decision points or “feature nodes.” A select list of ACS call plan feature nodes is provided in Table 2.

IXCs have offered this type of call routing service for years. However, significant improvements have been made in the IN-based ACS service that make it much more appealing compared to the old switch-based service. For example, new service management capabilities now allow customers to create, change, and view their own call plans. Without the security features and centralization that come with IN, this type of customer access would be unthinkable.

ACS Feature Node	Description
Time of day	This node allows alternative call plan branches to be taken based on the current time of day.
Day of week	This node allows alternative call plan branches to be taken based on the current day of the week.
Day of year	This node allows alternative call plan branches to be taken based on the current day of the year.
Number dependent routing	Number-dependent routing nodes operate according to the details of the call made by the called party. This may be on the called party number (dialed number) or the calling party number (phone number that made the call).
Dialed number	The dialed number node allows a customer who has multiple 800/900 numbers assigned to manage these through a single call plan. The mapping of called party number to call plan through the customer number table allows multiple numbers to use the same call plan.
Calling party routing	The node allows a call plan to be branched based on the value of the calling party number of a call.
Geographic (calling region)	This node is an enhancement to the calling party node. It allows a call plan to be branched based on the geographic location of a calling party.
Proportional routing	With the proportional routing feature node has between 1 and *n* outputs, calls are routed based on the number of calls that are routed down each available terminating path.
Statistics	System and end user definable events within the call plan are lossed or counted.
Event logging	Events can be logged to a file on each service control point (SCP) for later collation and processing.
Event counting	Events can also be counted. The advantage of counting events over logging is that they can be collated and presented in real time. Event counting is very useful to services such as televoting.
Event count branching	A feature node to enable alternative call plan branches to be taken based on the value of a particular event count is provided.
Unconditional termination	This feature node routes a call to a specified destination, provided that the destination has been entered in the allowed destination directory numbers table.
Play announcement	The play announcement feature node allows announcements to be played to callers prior to routing a call.

Table 2 – ACS Call Plan Feature Nodes (Source: Ascend Communications, Inc., 1999)

Call plan management capabilities also include the provisioning of call plan data and the association of a call plan and call plan data with dialed customer numbers. Best of all, a single tool performs all of these functions. A call plan editor also allows the collection and presentation of statistics generated using the statistics feature nodes with call plans. Statistics can be exported in a tabulated text format suitable for importing into other applications (Excel, Word, and so on).

The limits of any individual customer's ability to perform call plan editing and analysis can be specified through a provisioning and configuration management interface. With IN-based ACS, business customers no longer need to take the time and energy to submit complicated call plan requests to their service provider. For those customers that prefer to leave call plan management to the CLEC, no problem. The call plan editing process is simple enough for call center representatives to manage.

Calling Name Delivery (CNAME)

Caller ID Service (calling number only) has been around long enough to be considered a mature service. The same cannot be said for CNAME. ILECs have a leg up on CLECs when it comes to offering CNAME. First, they can service the bulk of their CNAME requirements out of their own databases. Second, the majority of names not residing in a particular ILEC database most likely reside in another ILEC database. Reciprocal compensation agreements among the ILECs allow each ILEC to access out-of-region name information at essentially no cost.

Recent developments in IN-based CNAME technology make it more cost effective for CLECs to offer CNAME to business and residential customers. CNAME data can reside in multiple locations, depending on the given CLECs deployment strategy. For example, a CLEC can store only local names in the main database and store out-of-area names on another database. The local database will be smaller and updated more frequently. It will also be accessed more frequently. Keeping local data separate from national data improves access speeds and also streamlines management and administration.

Local CNAME databases can store up to 20 million records, more than enough for a local calling area. Extended databases can store upwards of 200 million records. CLECs may find it cost effective to mix the use of purchased name databases with dip charges from out-of-region ILECs. It all depends on the nature of calling patterns into the CLEC customer base. In the event that a name is not available in either the local or national database, the CNAME application performs a look-up of the city and state related to the area code and exchange (NPA-NXX). In instances where a city is not identified with a name, the application returns the state only.

6. The Intelligent Network Advantage

CLECs that plan to be around in five years have no choice but to deploy services like VPN, ACS, and CNAME. The real question for CLECs is whether to implement a switch-based or IN-based approach. The general consensus in the telecommunications industry is that IN is superior to switch-based at almost every level. However, the main advantages of IN are lower operational costs, survivability, and rapid service creation capability.

Given a choice, most service providers prefer to install, maintain, administer, and repair fewer network elements and applications. It just costs less. For example, with IN technology an application only needs to be installed on a single pair of SCPs, whereas with switch-based technology the application must be installed on several switches. With IN, hardware maintenance and repair activity can be limited to just two sites. This feature makes service providers more efficient and cost-effective in the personnel area.

Switches are typically placed close to the customers that they serve. This constriction allows service providers to limit the cost of physical facilities (copper or fiber) required to interconnect customers to the switch. The penalty paid by service providers is the proliferation of multiple switches throughout a large geographic region. Statistically speaking, the more elements a system has, the higher the probability of failure. Entire switches rarely fail, but applications within them can. Applications like VPN and ACS are not immune to failure, but customers that purchase ACS and VPN services do not accept service interruptions. CLECs that deliver IN-based services that rely on redundant fault tolerant platforms can rest easy knowing that their customers' reliability expectations will always be met.

Rapid service creation and delivery is a hallmark of IN-based technology. With IN, the brains of the network reside in one logical location. This configuration allows real time creation and delivery of new services and service features. Customer service requests that required complicated processes involving different operational systems can now be executed instantly by one administrator. Customers who have had to live with the "pick any color as long as its black" routine from the ILEC will be amazed at the speed with which they can have ACS and VPN services customized to fit their specific needs.

7. Sample CLEC Business Case

This section reviews the highlights from a sample CLEC business case for VPN, ACS, and CNAME. To demonstrate the opportunity for small CLECs, the model was run for a small fast-growing CLEC. The resulting financial benefits of deploying IN-based services prove that scalable IN platforms have arrived.

Figure 3 shows the CLEC subscriber base assumed for the business case. It is assumed that the CLEC ended the first year of the plan with 25,000 business lines and grew modestly (for a CLEC) over the last four years. It is assumed that the CLEC business customers represent an average cross section of small, medium, and large businesses. This profile allows the use of average call statistics, operational costs, and service penetration assumptions in the financial model.

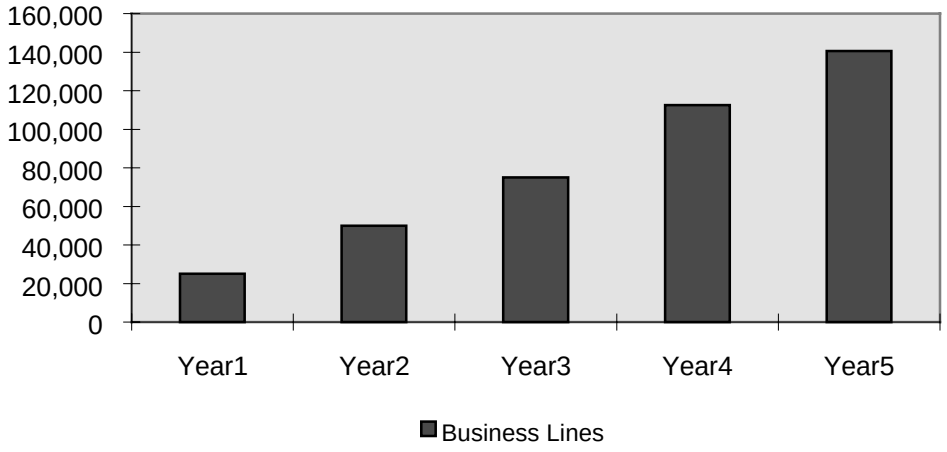
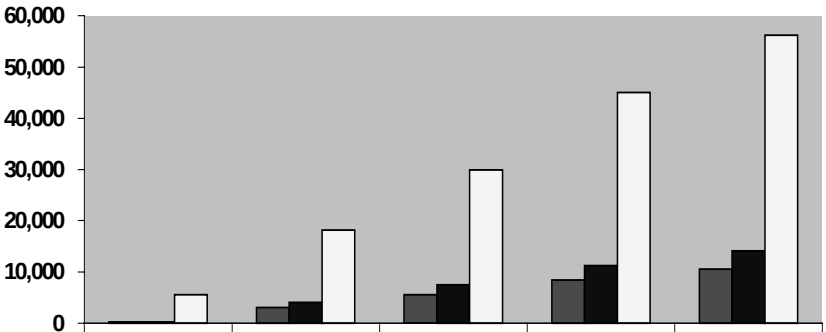


Figure 3 –CLEC Business Lines and Annual Growth (Sample CLEC Business Case)



	Year1	Year2	Year3	Year4	Year5
ACS Subscribers	205	3,066	5,591	8,436	10,547
VPN Subscribers	273	4,088	7,455	11,248	14,062
CNAM Subscribers	5,545	18,176	29,909	44,996	56,250

Figure 4 – VPN, ACS, and CNAME Subscribers (Sample CLEC Business Case)

Figure 4 shows the number of CLEC lines equipped with VPN, ACS, and CNAME services. Average penetration assumptions are used in the business case. The adoption of CNAME is assumed to be very high because of the awareness and demand already created by ILEC offerings. Demand for VPN and ACS grows at a slower pace due to the complex nature of the products and the need to establish strong account relationships prior to large volume sales.

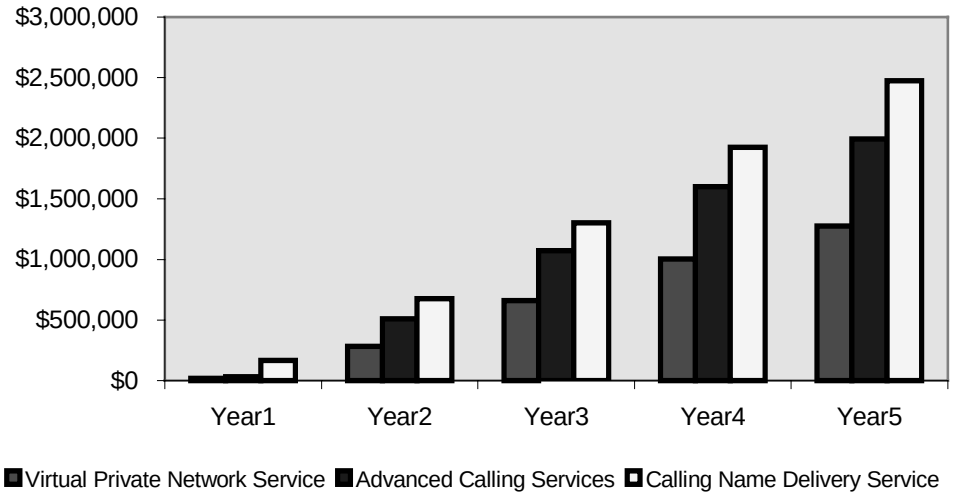


Figure 5 – VPN, ACS and CNAME Revenues (Sample CLEC Business Case)

Figure 5 shows the revenue generated from each service. Revenue tracks very closely with demand because it is assumed for this case that VPN, ACS, and CNAME would be priced on a per line basis with similar rates. Per minute pricing can possibly be considered for some aspects of VPN and ACS, but was not considered as part of this case.

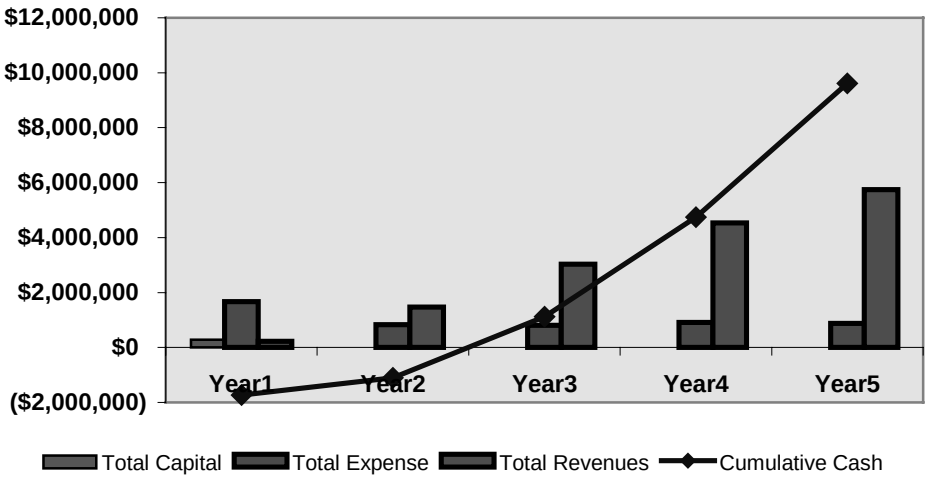


Figure 6 – Capital, Expense, Revenue, and Cash Flow Summary (Sample CLEC Business Case)

Figure 6 shows the financial outcomes for the Sample CLEC Business Case. This chart reflects the bottom line advantages of deploying IN based services. Operating income goes positive after two years, cumulative cash flow goes positive after three years, and revenue growth outpaces expense growth for the entire plan. This shows from a quantitative perspective that economies of scale are working for this CLEC.

With some telecommunications services, expense might grow at the same rate as demand and revenue. This case shows that an IN platform is more like a jumbo jet for an airline. Aside from food and refreshments, it probably costs about the same amount for United Airlines to fly a 757 with 25 passengers as it does for 150. The more passengers it packs on each flight, the lower cost per passenger trip. The same is true for IN. Once a CLEC justifies the investment in an IN platform based on a known set of services, the jet is paid for. That means that the next round of IN services need only bear the *incremental* cost of deployment. Thus, either the providers can establish a cost leadership position and capture market share, or they can offer the service at market price and put the cash away for future investment.

8. Partnering with Ascend

Ascend® Communications, Inc., (NASDAQ: ASND) is a leading provider of wide area network (WAN) and Intelligent Network (IN) technologies for the next-generation public network—a packet-based infrastructure that integrates data, fax, video, and voice communications. The company develops, manufactures, sells, and services WAN solutions for telecommunications carriers, Internet service providers (ISPs), and enterprises worldwide. Its comprehensive, best-of-breed solutions enable high-performance, cost-effective connectivity from the core of the service provider's network to the end user's WAN access point. In 1997, Ascend generated $1.2 billion in revenues. Founded in 1989, the company now employs more than 2,500 people worldwide and its products are distributed in more than 50 countries.

Market Leadership

- Twenty-seven of the world's top 30 carriers rely on Ascend for data, voice, and Intelligent Network systems.
- Ascend systems route the vast majority of AT&T 800-number calls.
- Ascend equipment supports more than 30 million Internet connections daily.
- Ascend is the leader in WAN Frame Relay switches with over 40% market share.
- Ascend is the leader in ATM core switches.
- Most widely used home location register (HLR) platform with over 30 million subscribers worldwide.

Products

With Ascend products, service providers build the network infrastructure to offer enhanced voice and data services and to connect enterprise customers to these services. The Ascend Carrier Signaling and Management Division (CS&M) leverages carrier-class, fault-tolerant based Intelligent Network (IN) solutions and Signaling System 7 (SS7) technology. CS&M Division has taken the lead in building the next-generation public network by introducing the first commercially available, standards-based SS7 gateway (Internet call diversion) product.

Ascend Delivers the Intelligent Network Advantage

New concepts of service delivery, increased competition, new technologies, and government deregulation continue to bring unprecedented change to the telecommunications industry. Across the wireline and wireless markets, plus the new frontier of VoIP, service providers are searching for ways to meet new challenges and capture emerging opportunities.

That's why more and more telecommunications service providers are using computer-based IN solutions to introduce leading-edge services faster and more cost effectively. By deploying services independent of telecom switches, carriers are gaining unprecedented flexibility to launch competitive new services and respond to change, while maximizing return on their investments in switching equipment and network infrastructure.

To thrive in the emergent telecommunications marketplace, service providers need to offer one-stop shopping for a diverse array of customer-oriented capabilities. They need to differentiate themselves from the competition by developing new services and new service delivery methods; by integrating their offerings in multifaceted service packages that have immediate customer appeal; by bringing these products to market quickly;and by pricing them competitively. Plus, service providers need to position themselves for the evolving next-generation public network.

A Sustained Record of Success in Intelligent Networks

Ascend IN customers come from the ranks of the world's leading telecommunications service providers — including CLECs, Post Telephone and Telegraph administration, RBOCs, interexchange carriers, independent carriers, equipment suppliers, and wireless/PCS providers.

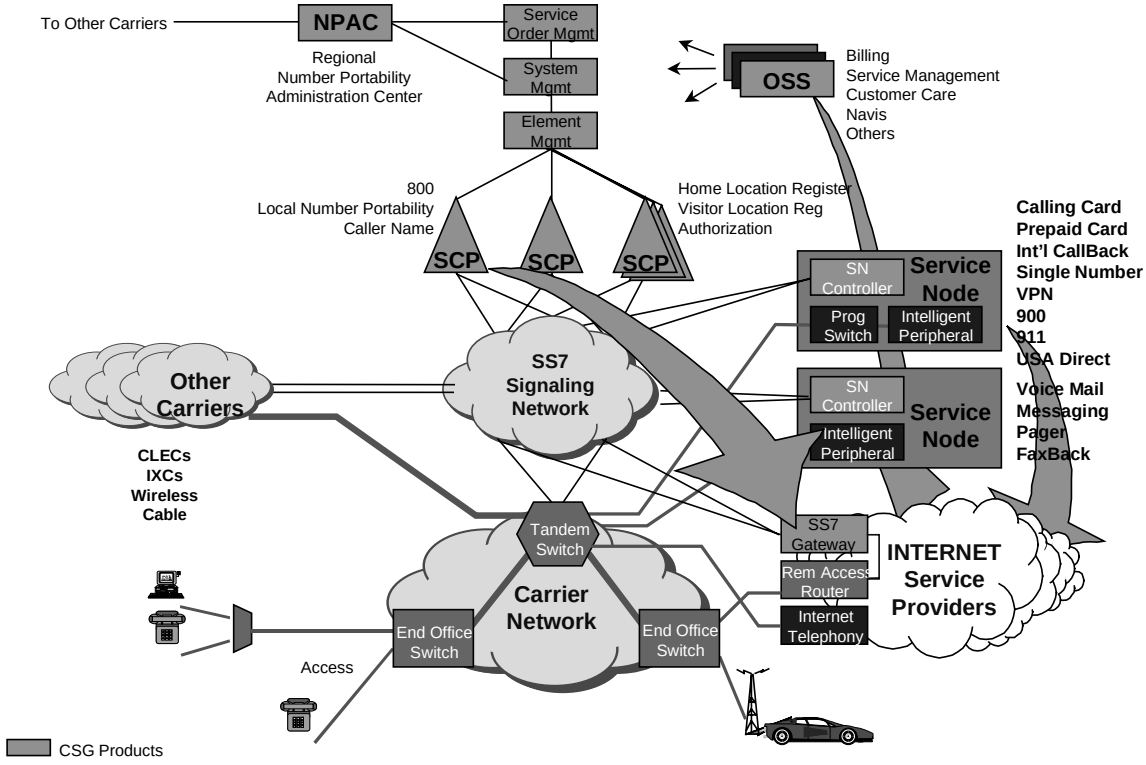


Figure 7 – Ascend delivers the Intelligent Network advantage across all service provider networks —PSTN, wireless, PCS, and VoIP to the next-generation network — integrating voice, data, video, and fax services.

Ascend provides open telecommunications-specific platforms consisting of hardware and software building blocks for implementing network elements, operations and administrative support systems, and advanced network management functions. These include service control point (SCP) database engines; service node (SN) and intelligent peripheral (IP) platforms for delivering diverse voice, fax, and information services; Service Management System for maintaining the master database of IN functions; and a rich service creation environment (SCE) for developing and deploying high-demand, revenue-generating applications. Its software platforms are built to internationally accepted Signaling System 7 (SS7, C7), European Telecommunications Standards Institute (ETSI), American National Standards Institute (ANSI), and Bellcore Advanced Intelligent Network (AIN) specifications.

These carrier-grade platforms provide a robust foundation for Ascend's growing portfolio of computer-based, IN solutions — Internet IN, number portability, home location register (HLR), and enhanced services.

- Open, Standards-based Platform
- Continuously available
- Central Office-Compliant
- Proven SS7 Middleware
- Rich Service Creation Environment - ease of adding new applications
- Systems Integration & Comprehensive Support

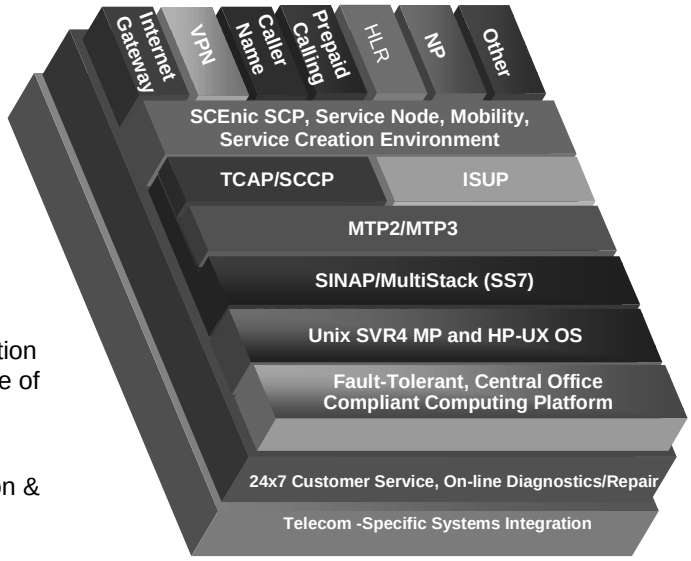


Figure 8 – Intelligent Network solutions leverage Ascend's leadership position in remote access and ATM solutions. As a result, Ascend is uniquely positioned to build next-generation network solutions from the carrier level through to the enterprise. With Ascend IN applications, carriers can deploy revenue-generating services on a single, open, fault-tolerant, carrier-class platform within PSTN, wireless, PCS, and emerging VoIP networks.

The Ascend Advantage

- Proven CLEC business partner
- "Start SMART and GROW" packages
- Flexible financing
- Worldwide professional services organization
    - Business planning, product introduction, and technical consulting
    - Turnkey solution provider
    - Training
- Mission-critical 24 hours a day, 7 days a week support

Today, Ascend has taken the lead in building the next-generation public network by introducing the first commercially available, standards-based SS7 gateway product. Already in field trials at leading service providers around the globe, the gateway works with Ascend's market-leading MAX TNT WAN access switches to provide the industry's only end-to-end solution for transparently routing calls between voice and data networks.

As stated by Mory Ejabat, Ascend's Chief Executive Officer:

"The next-generation networks of service providers will be high-bandwidth, data-based networks that will be highly reliable and available while operating at reduced costs. They also will need to offer high-grade voice quality over data networks.

The integration of Intelligent Network capabilities from the circuit-switched voice network into packet-based data networks will enable traditional phone services, including local number portability and 800 services to exist on the next-generation network".

ASCEND

Where Network Solutions Never End™

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