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Research Summary

Compelling Internet Security Services for the Residential Market

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Introduction and Overview

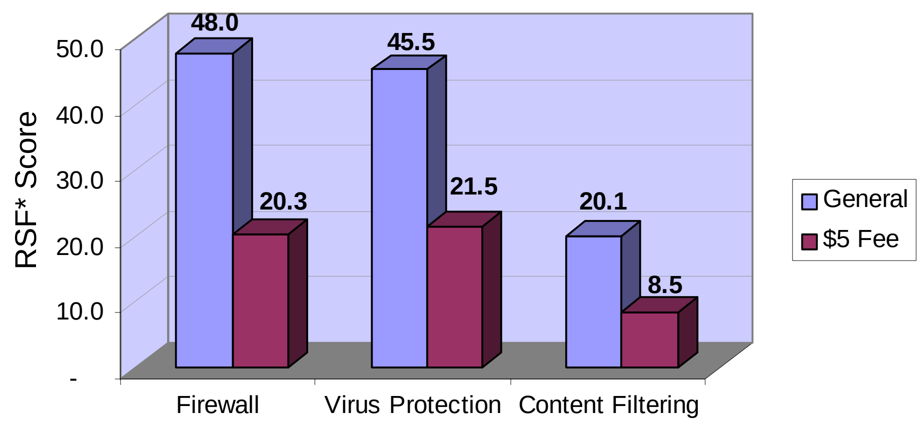
The Internet phenomenon continues to expand with new applications, content sources, and access media. Households are increasingly tapping the ubiquity, flexibility and open environment of the Internet for personal business, education, and entertainment. To improve their Internet usage and speed, subscribers are rapidly adopting broadband access. TeleChoice forecasts the number of residential DSL lines to grow from 5.9 million in 2002 to 10.7 million by 2004 in the U.S. alone (77% of all DSL lines). Kinetic Strategies predicts North American residential cable Internet subscribers will balloon to 26.9 million in 2006, up from 8.7 million in 2001. But while the beneficial characteristics of the Internet and “always-on,” high bandwidth connectivity greatly facilitate positive communication, they also create a thriving environment for wrongdoers. Growing numbers of hackers & their malicious attack schemes, proliferation of viruses, as well as sites with objectionable content have resulted in security and control requirements for the residential market. Meeting this demand represents an opportunity for the service provider, but which services should they consider first?

To this end, Parks Associates conducted research to explore levels of interest in firewall, virus protection, and content filtering services within the residential market. This document summarizes the research findings, identifying the degree to which security services are important to subscribers, and what this can mean to the service provider, outlining technical/architectural options through the delivery of service from the network. It then presents marketing suggestions for how a service provider can capitalize on this opportunity through service offers, packages and pricing structures.

Summary of the Research: What Services are Important

Parks Associates obtained their research information from 10,800 Internet residences via an Internet-based survey and 611 Internet residences via a 10-question interview. *The net take-away of this effort is that opportunity exists for service providers to offer firewall, virus protection and (in limited cases) content filtering services to households with Internet access. Secondly, pricing has a substantial impact on residential interest levels.* The following diagram depicts the percentage of residential subscribers indicating any positive interest (indicated by a response of 5, 6 or 7 on a 7-point Likert scale) in each of the three services in general and with a proposed $5 monthly fee per service:

Figure 1: Residential Interest in Security Services



*Note: Developed by Parks Associates, the RSF (Relative Strength Formula) is an index that reflects weighting of those participants answering 5, 6 and 7 on a 7-point scale. It can be used to compare interest, usefulness, etc. and to forecast penetration (i.e., the number or percentage of participants who are likely to buy or adopt a specific service or solution).

There is obviously a very high level of interest in the firewall and virus protection services. While content filtering is not nearly as popular, the interest levels for it are still noteworthy for a service provider. Further examination of the data by cross-tabulating various criteria against each of the three services helps explain demand nuances and identifies niche markets, briefly summarized in the following chart:

Figure 2: Research Summary

Criteria	Firewall	Virus Protection	Content Filtering
Geographic Location	In general, states with small/medium population have highest interest. Otherwise, not a strong relationship between geographic region with interest. See Parks Associates' research for detail.		
Ownership of Desktop PCs	Not a strong determinant for this service	Homes with 1 or 2 PCs most interested	As # of PCs increases, interest in service increases
Ownership of Home Networks	Slightly more interest (7%) for homes without networks	Homes without networks 25% more interested	Not a strong determinant for this service
Type of Internet Service	Not a strong determinant for this service	Narrowband users 12% more interested than broadband	Not a strong determinant for this service
Age of Head of Household (HoH)	In general, the older the head of household, the more interested in the service. For firewall, nearly half of HoH's ages 35+ are extremely interested		Age group 35-44 most interested with nearly half of participants showing positive interest
Marital Status	All are interested, separated HoH the least interested	Divorced or widowed HoH has highest interest; separated or single HoH has the least	Married couples have the highest interest
Presence of Children	Not a strong determinant for this service	8% more interested than homes without children	As # of children increases, interest in service increases
Education Level	In general, HoH with high school, some college or college grad most interested. Interest level decreases with more or less education than this range		
Annual Household Income	Slight variance, but highest interest in $75K - $150K range	Very slight variance, but highest interest in $75K - $150K range	Minimal variance across income ranges
Current Service Provider	Residences in Adelphia, AOL, Bellsouth and MSN customers most interested in security	Ameritech, MSN, Cox and PacBell customers most interested	On average, 31% of all subscribers definitely not interested. BellSouth, AOL and MSN customers most interested
Interest with Sample Pricing ($5/month)	Interest declined by nearly 60% when pricing introduced	Interest declined over 50% when pricing introduced	Relatively low interest fell to practically no interest once pricing was introduced

Each of these "services" was defined to survey participants in terms of its respective functionality only – not its delivery mechanism. By defining the functionality as a service, residences imply interest in obtaining this capability from a provider, as opposed to adopting it on a "Do It Yourself" (DIY) basis. Additional detail follows for each potential service:

Firewall

Firewall service was functionally defined to the participants as something that "protects all of your home PCs from being hacked by intruders." This service resonated well with residential users, as 72% indicated any level of positive interest with 44% highly interested and a RSF of 48. However, when the $5 monthly fee was proposed, interest declined significantly to RSF of 20.3 and a nearly 60% drop for those previously highly interested. Demand for firewall is fairly even across demographic groups, appealing slightly more to non-networked homes

Virus Protection

Survey participants understood virus protection to be a mechanism that "constantly monitors and protects your home PCs from a virus infection." Virus protection was highly desired, with RSF score of 45.5, 78% of residences responding positively, and 48% extremely interested. Introduction of the monthly fee reduced these numbers substantially, to only 18% highly interested, and RSF of 21.5 (highest of the three services). Nevertheless, this rate represents a substantial market for a service provider. Demand for this service is greatest for homes with 1 or 2 non-networked PCs, and slightly higher for divorced or widowed heads of households.

Content Filtering

Content filtering service is described as "an enhanced parental control and content filtering feature that enables you to set parameters for each of your children to better control how much time and what specific times your child spends on the Internet each day, what specific sites they can visit and those that they cannot visit, etc." The content filtering service appears less appealing than that for the other services, with only 13% extremely interested and less than 30% showing any positive interest, a 20.1 RSF score. Like the other two services, interest dropped substantially when pricing was introduced (to only 7% extremely interested). However, there is high enough interest level to warrant services in a few niche markets – specifically the middle-class Internet household with children. Additionally, these demographic criteria did not include religious affiliation, segments which would most likely have high interest in such a service.

General Key Findings

The following list contains key findings and conclusions drawn from analysis of Parks Associates' research:

- Interest in security is high, and customers seek to leverage a service provider's expertise to gain the functionality.
- Demand for these services exists at levels that should be of interest to service providers – incenting them to consider methods of meeting these requirements.
- Residential customers are highly sensitive to the introduction of price. Interest declines substantially when pricing is introduced at $5 per service charge. It is unknown how bundled pricing or lower price points for individual services would impact interest levels. Yet, even these lower interest levels represent sufficient opportunity for service providers.

- It is reasonable to conclude that the target segment 35+ age group with income levels between $75K-$150K and some college are more likely to subscribe to these services.
- It is reasonable to conclude that more highly educated or technically savvy people with home networks and multiple PCs are more likely to DIY than others.

Why These Services Are Important to the Service Provider

The residential market demand for these security/control services represents business opportunity to the service provider in several areas, each described below:

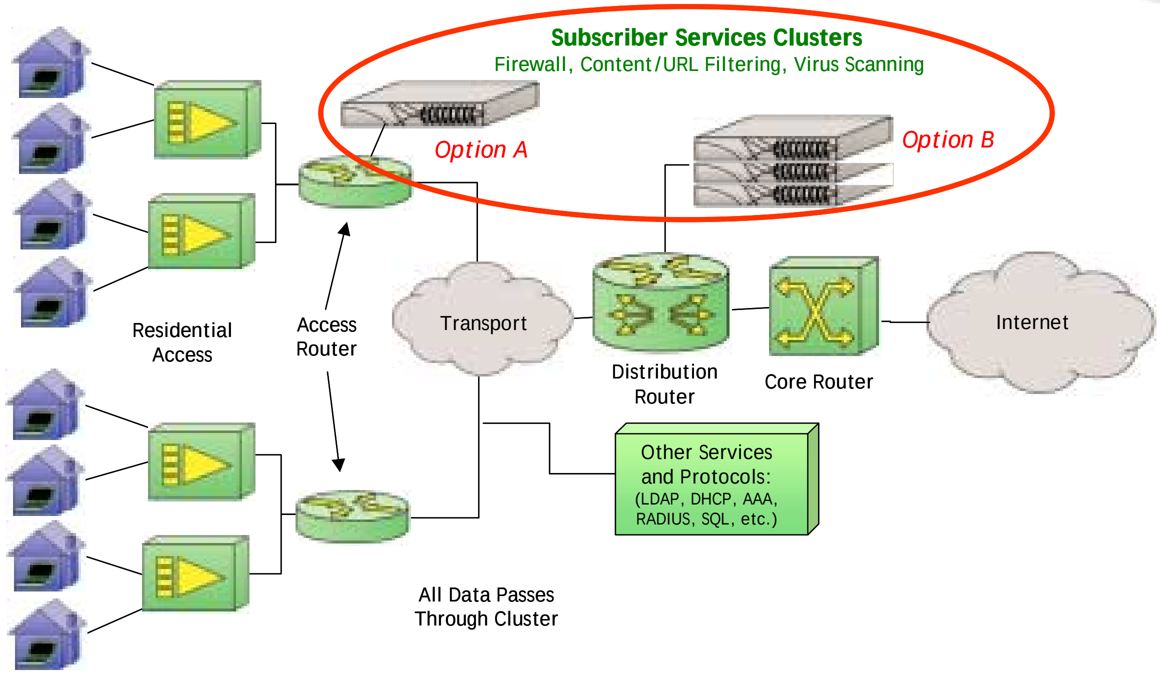
- **Revenue Growth.** Attracting new access subscribers with robust, secure service will organically grow service provider revenues. Additionally, up-selling security services to existing access subscribers will grow incremental revenues.
- **Increased Market Share.** In competing for Internet access subscribers, providers attract customers through differentiated services. As the Internet access market continues to grow, enhanced features and security services can solidify a provider's share. Likewise, a land grab for security services is underway, and the first movers/first finishers can gain an advantage.
- **Customer Retention.** In the climate of churn and provider hopping, service providers that offer enhanced offers can increase customer stickiness. Customers are generally less likely to leave if doing so is perceived as difficult and/or would result in less functionality – making it difficult for providers to compete on price.
- **Addresses Security Concerns**. The research survey respondents were residences already connected to the Internet. However, other studies have shown residential resistance to adopting Internet access due to concerns over security. By offering these services, the provider may effectively overcome this hurdle and enlist more subscribers.

Clearly, these security services represent business opportunity to service providers. This is particularly the case with firewall and virus protection, and with targeted content filtering offerings.

Network-Based Service Delivery

Service providers have several delivery options for enabling residential security/control solutions – customer premise equipment, client software, and/or via network-based solutions delivered from the cloud. Network-based solutions typically involve layering a device in the service provider's POPs, a centralized management control solution & NOC, and a web-provisioning/customer service tool. This architecture is displayed in the following diagram:

Figure 3: Network-Based Security Service Delivery



Additionally, Parks' report indicated that some residential users would implement solutions on a "do it yourself" (DIY) basis. Users in this category are generally highly educated and or very technical. They would tend to use a CPE or client software solution. While each option has its benefits and drawbacks, the case for network-based solutions is clear, as described in the following table:

Figure 4: Network-Based Solutions

Advantages	Disadvantages
• **Easily Supported.** Customer support for network-based services is easier and less costly to the service provider than software on a PC. Arguably more effective than manually updated software. Also less nuisance factor – fewer truck rolls/DIY headaches.	• **Less Functionality/Granularity.** CPE and client software typically exceed network services in number and granularity of functions.
• **Highly Scalable.** Network-based architectures scale exponentially better than point solutions.	• **Unprotected Last Mile.** Because security is applied in the network, the last mile and other desktop access points are less secure.
• **Cost Savings.** Centralized management/ maintenance, fewer devices to touch, fewer truck rolls results in lower OPEX.	• **Higher CAPEX.** Although OPEX of Network-based solutions is generally lower, these solutions typically require a large initial investment.
• **Revenue Generation.** Ability to add new subscribers quickly through web enabled self-provisioning and self-administration.	• **Install base of CPE/Client Software.** As the incumbent solution set with a large install base, it may be difficult to convince subscribers to change
• **Rapid Service Creation.** Centralized platforms enable rapid rollout of new services, usually through new software load/cards and web-based subscription.	

• **Leverage Service Provider Expertise.** Service providers are typically more adept at cloud-based solutions, and existing NOC systems/procedures generally follow this model. • **Clear Demarcation.** Services delivered from the network more clearly define boundary between service provider & subscriber than software on a PC.	

Service providers selecting a network-based security solution from a vendor such as Sandvine can benefit financially, operationally, and in terms of overall service quality. These advantages specifically relate to each of the services addressed in Parks Associates' research. By deploying a firewall at the provider edge, unwanted traffic is stopped in the network – reducing the chances of back door vulnerability on a PC. Virus scanning functions in the cloud stops infected traffic before it reaches the PC, saving bandwidth and PC resources. The DAT files used in virus detection are updated centrally in a timely fashion. Similarly, content filtering databases in the network are easily and effectively maintained, without configuration to or additional overhead on the household PC. For all three of these solutions, basic functionality, new software revisions, and patches can be installed within the network – saving operational cost, bandwidth, time and complexity of installing CPE or software on individual PCs.

But as the Figure 4 indicates, network-based architectures are not without limitations. Generally speaking, these devices have less functionality or fewer configuration options than CPE or client software. However, major technology vendors have developed carrier-class versions of their solutions for use in the network – particularly for virus scanning and content filtering.

Furthermore, end users deploying or modifying CPE or software solutions on their own can often require a service call. Having the technician touch the customer PC is not an easy task – and drives up costs for the service provider. A few providers regard these on-site visits as sales referral opportunities, but virtual direct contact can be obtained easily by a call and/or webcast from the provider's customer service team – not to mention configuration changes are made in the cloud.

In short, the service provider must choose the right solution for its particular network, breadth of target markets, and strategic business goals & objectives, weighing the advantages and disadvantages of network-based and premise-based solutions. That said, a network-based deployment is attractive to service providers addressing the residential market.

Capturing the Opportunity

Once the service provider has determined the specific service features and corresponding technology platforms, and has identified and sequenced target market segments, it can plan to capture this residential opportunity through effective marketing tools such as targeted packaging, pricing and promotions.

Three sample packages are briefly outlined in the table below:

Figure 5: Sample Service Packages

Item	Surf-Guardian	Safe2Surf	Safe2Surf Family
Description	Secures the perimeter from attacks and viruses	Securely connect to the Internet with perimeter protected from attacks and viruses	Securely connect to the Internet with perimeter protected from attacks and viruses, and allowing parental controls for content
Target Segment	Broadly target current Internet subscribers	Broadly target current Internet subscribers and non-subscribers with high school – college education.	Middle-class families with children, HoH 35+.
Services	Firewall and Virus Protection	Access, Firewall and Virus Protection	Access, Firewall, Virus Protection, and Content Filtering
Other Features	Phone and web support,	Phone and web support	Phone and web support,
Up-Sell Opportunity	Content filtering, access, and additional complementary services	Content filtering and additional complementary services	Additional complementary services

Service providers can leverage the Parks Associates research and create additional packages, depending on their current and planned service portfolio and their key target markets. Providers may also change service bundle elements and corresponding marketing programs by geographic location and/or type of household within a given area.

Some providers may elect to offer services on a menu basis, allowing subscribers to select components a la carte. These providers may provide discounts for subscription to multiple services. They may also offer a hybrid offer to allow minimal packages plus one or two additional elements (such as access, voice service, home network installation, content, collaboration capabilities, etc.).

Whether packaging in a bundle or offering components a la carte, selecting an effective pricing structure with market-acceptable rates is crucial for success in the residential space. Pricing structures in this space tend to have a monthly recurring fee for services, and one-time connection/ installation/configuration elements. While the research did not test bundled pricing, it is clear that monthly fee of $5 per service is too high for most customers, and could be considered a ceiling for bundles. Service providers should conduct more research and/or market trials before selecting the actual rates appropriate for their specific market(s).

In addition to standard packaging and pricing, specific promotions can be implemented, targeting specific segments with high interest in the above features – advertising in media consumed by the target segment, offering promotional discounts for extended-term contracts, waiving one-time fees, etc.

Creating the appropriate marketing strategy and tactical plans is crucial. The ability to adapt these plans & programs to accommodate climate changes in the market is equally important.

Conclusion

Parks Associates' research indicates that residential Internet users have significant interest in Internet security services. Service providers face a solid opportunity to tap into this demand and gain revenue, market share, and contribute to the bottom line. Specifically, households have substantial interest in virus protection and firewall services on a broad scale, and a niche market exists for content filtering services. By deploying a network-based platform to deliver these services, providers could reap benefits in cost savings, rapid service creation/subscription, and scalability, without compromising service quality. Though not part of this research, service delivery from the network would also apply to business users, particularly the market of small, single-site business entities, should the provider target these markets currently or in the future.

But providers must market these services adeptly – packaging, pricing, and promoting as applicable to their target markets. Whether leveraging formal research such as the Parks Associates study, focus groups, field trials and/or additional surveys, or by simply noting comments from customers to sales and customer service representatives, service providers need to be aware of demographic profiles driving adoption of service components. The detailed research report created by Parks Associates is available by contacting www.sandvine.com.