



Appliance Servers

Prepared for: Sun Microsystems

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Executive Summary

- Appliance server is generally understood to refer to a single-function, closed-box server. When respondents who had never heard the term were asked to guess what it might be, their guesses were similar.
Server appliance, on the other hand, is virtually always assumed to be an adjunct to a server, like a peripheral, or totally unknown, as in Japan.
- Top of mind perception of an appliance server is that it is different from a general purpose server primarily because it is optimized for a specific function. Secondly, it is perceived as having an O/S transparent to the user, having less flexibility, and offering easy administration.
On the one hand, respondents say they think of appliance servers as a different category from general purpose servers. On the other hand, they often speak of them as application servers, and equate them to general purpose servers being used for a single function, like a firewall.

Executive Summary (cont'd)

- Applications often mentioned as appropriate for appliance servers include firewalls, remote access servers, storage, and caching.
E-mail was less often mentioned by the majority of respondents, although SPs thought of e-mail more often than other respondents. Respondents agreed that appliance servers could find a use in every company, although those with remote offices or smaller IT staffs were particularly likely to find them useful.
- While the vast majority of respondents are at least very interested in hearing more about the product, and service providers are more interested than others, the descriptions of both the category and the product were not fleshed out enough for many respondents to really be able to talk about purchase interest.
They are confused about what the appliance server actually is, whether it could meet specific company needs, the amount of service and support needed, and the cost.

Executive Summary (cont'd)

- The most likely vendors for appliance servers were Cisco, Compaq, HP, and IBM. Sun was rarely named, except in France, usually because it is identified with open systems and is perceived as out of context in relation to a closed box. When Sun was mentioned, it was because of acknowledged leadership in clustering technology or the Internet.
- Choice of channels depended on respondents' perception of which would be more reliable in terms of support.

Unlike other sites, Japan felt that at a cost of around \$3000, they could easily replace it, and so cared less about support.

Executive Summary (cont'd)

- Expected cost of an appliance server depends heavily on the function for which it will be used.

Opinion is split as to whether it would be more or less expensive than a general purpose server, with some expecting a higher price because of more specialization, others a lower price because of singular function.

- Performance expectations run from 50 percent higher than a general purpose server to 3-4 times higher, but a minority of respondents are willing to accept equal performance if they could be assured of higher availability.

Executive Summary (cont'd)

- The favored positioning across sites was based on ease of use (Concept U). This positioning was especially strong in Europe and Japan, while in the US it tied with another concept.
- ISPs and ASPs were interested in appliance servers to handle customer needs as well as to resell. Service providers, unlike other respondents, reacted most positively to the positioning which emphasized scalability and was clearly directed toward their market (Concept S).
- The most important product benefits were perceived to be good price/performance, scalability, RAS, lower TCO, security, reduced administration cost, three year warranty, and no user level license fee.

Executive Summary (cont'd)

- Remote users would like to have one handheld device with as many functions as possible, delivering content customized to their own needs and interests.

Voice activated devices and voice recognition were particularly appealing concepts.

- Remote users were for the most part very interested in the home appliance server, although a minority felt strongly that it would be an unwanted intrusion of technology into the home.

Objectives

- **IT**
 - **Explore target market understanding of appliance servers**
 - **Investigate reactions to Sun appliance server**
 - **Evaluate potential positioning concepts**
- **Remote Users**
 - **Investigate understanding of Internet appliances**
 - **Explore preferences for devices**
 - **Evaluate reactions to home appliance server**

Methodology

- **5 focus groups in US**
 - **2 in New York**
 - **1 each in San Francisco, Chicago, Sunnyvale**
- **4 focus groups internationally**
 - **1 each in UK, France, Germany, Japan**
- **Groups conducted by André Associates, Oakland, CA**
 - **A strategic partner of IDC**
 - **On behalf of Sun Microsystems**

Target Audience Definition

- **US focus groups**
 - **Companies**
 - **All have remote access users**
 - **Industries**
 - **Finance, transport, manufacturing, government, higher education, telecom, business services industries**

Target Audience Definition (cont'd)

- **Five groups in US among 4 target audiences**
 - **2 groups among companies with 500 or more employees**
 - **New York, Chicago**
 - **1 group among companies with 100-499 employees**
 - **San Francisco**
 - **1 group among ISPs/ASPs**
 - **Sunnyvale**
 - **All have servers used for customer web access, hosting, e-mail, content, applications or commerce, or configure servers for customers**
 - **Some function as resellers to customers**
 - **1 group among remote access end users in companies with 500 or more employees**
 - **New York**

Target Audience Definition (cont'd)

- **International focus groups**
 - **Industries**
 - **Finance, manufacturing, transportation, telecom, business services, higher education, government**
 - **Companies**
 - **All have remote access users**
 - **100 employees to more than 1000 employees**
 - **Respondents**
 - **IT managers involved in the decision-making process for their company's computing architecture and for the purchase of servers for their company**
 - **1-3 ISPs/ASPs included in each group**
 - **All have servers used for customer web access, hosting, e-mail, content, applications or commerce, or configure servers for customers**

Respondent Examples - Title Company, Industry, Size

Title	Company	Industry
New York		
VP, MIS	Bank of New York	Finance
Chief Network Spec.	Empire Blue Cross	Insurance
VP, IT	Oppenheimer Funds	Finance
Chicago		
Network Analyst	Unilever	Manufacturing
MIS Manager	Illinois Dept. of Empl. Secur.	Government
Sr. MIS Manager	Quaker Oats	Manufacturing

Respondent Examples - Title Company, Industry, Size (cont'd)

Title	Company	Industry
San Francisco		
Network Administrator	Hastings Law School	Education
Manager, IS	Paler International	Transportation
Applic. Devel. Manager	Dolby Laboratories	Manufacturing
Sunnyvale		
General Manager	Internet Frontier	ISP
President/CEO	1st Family Internet	ISP
CTO	DataNet	ASP

Respondent Examples - Title Company, Industry, Size

Title	Company	Industry
UK		
IT Director	Andrew Weir Shipping	Transportation
Infrastructure Mgr.	HSBC Private Bank	Finance
IT Manager	Email Address Ltd.	ISP/ASP
France		
IT Engineer	CAP Gemini	ISP
Network Admin	SNCF	Transportation
IT Director	Groupe Arcade	Construction

Respondent Examples - Title Company, Industry, Size (cont'd)

Title	Company	Industry
Germany		
IT Manager	Dresdner Bank	Finance
IT Director	Lafarge	Business Services
System Admin.	KL-Services	ASP
Japan		
IT Manager	Sony Life Insurance	Finance
IT Manager	Tokyo CATV Network	ISP
IT Manager	Credit Saison	Finance

Caveat and Note

- **Caveat**
 - Findings from focus groups are qualitative in nature and are not therefore statistically projectable to a larger audience
- **Note about respondent quotes**
 - Quotations in this report are in italic and indicate which focus group the respondent participated in
 - [new R] indicates another respondent speaking

Findings

Current Internet/Intranet Environment

Modes of Access

- **Majority of companies have T1 lines**
 - **Others have DSL, ISDN**
- **Remote users typically restricted to dial-up, sometimes DSL**
- **Some companies moving to offer DSL, cable access to home users, others off-site**
- **Wireless seen as the wave of the future, but not yet**
- **A few have multiple ISPs for redundancy**

“We have a secure leaseline, T1. [new R] Yeah, T1. [New R] Our branches are going DSL.” (Chgo)

“We’re looking into DSL, cable. Whatever someone can get at home, whatever the highest speed that they can get, we want to provide connectivity from that.” (NY)

Essential Intranet Services

- **Prior to each group, respondents were asked to check off a list of intranet services they consider essential, i.e. those that they have already deployed or plan to deploy within 12 months. Those most often checked are as follows:***
 - **Firewall/Security/Virtual Private Network**
 - **Routing**
 - **TCP Services (remote-login, telnet, ftp)**
 - **Domain Name Services (DNS)**
 - **Messaging Services (e-mail, calendar)**
 - **Web Server**

 - **DHCP (Dynamic Host Configuration Protocol)**
 - **Shared Internet Access**

*Spacing indicates a gap in how often services were checked.

Intranet-Based Applications, Issues

- **Majority of respondents currently have relatively few applications which are intranet-based**
 - Typically HR, support, time and expense records
 - Some have e-mail
- **Remote users complain of inability to connect, slow speed**
 - Perceived as mostly ISP problem
- **Most respondents feel they don't have enough bandwidth**
 - Load varies with time of day

“For the intranet, the things we use it for are basically company news information about the company, financial reports are posted there, also employee information, as far as their benefits, HR-type stuff.” (NY)

“We don't have enough bandwidth on the intranet...As the day goes on and more people login, it reaches capacity. You throw more bandwidth at it, it's okay for a month or two, then it slows down again.” (NY)

“There are times of the day when it's extremely busy...[new R] During the day I need gigs. At night I don't.” (Germany)

“There's always the [complaint that] I can't get a connection, my ISP isn't quite working, why are you so slow today, and it has nothing to do with us. It's their connection to their ISP that morning or that afternoon.” (SF)

Intranet Access Restricted to Internal Users

- **Virtually all restrict access to their intranet to internal users**
 - Remote users enter through secure portal, Centrex
 - 1 or 2 allow access as part of supply chain management (Chicago)
- **Would like to allow customers, partners, suppliers access to data, but security is major concern for most**
 - “It’s not worth the risk”
 - 3-4 in UK planning to offer access w/in 12 months

“We deal with a lot of financial systems, transferring a lot of money back and forth, and it’s one of the reasons we have gone pretty slow in selling the access into the intranet and giving people access from the outside, access within our company, because of the security.” (Chgo)

“Our remote users go through a portal, which is a remote access server that is all fully controlled and password protected and encrypted and all the other things. So that’s the only way they can get into the intranet from outside.” (SF)

“We will offer it to our customers within the next six months. It’s easier than flying information around the world.” (UK)

Service Providers: Current Environment

- **In addition to connectivity, many service providers offer web hosting, web development, application development, storage, system management**
- **Availability, security, reliability most important metrics**
- **Server space a problem for co-locations, but bandwidth isn't**
- **Majority build own servers**
 - **Also use major vendors**
- **About one-third resell to customers**
- **Customers asking for secure extranet solutions**

“Our target is small to medium companies with 50-100 employees. We do everything, hosting, programming, web pages, links, establish networks, remote access. We resell packaged solutions, do e-commerce consulting, project transactions with big customers, build and maintain systems.” (Germany)

“Performance is important, uptime. Availability of the applications, response time....[new R] I just echo what I'm hearing. Availability, security, reliability. Security is a big issue.” (Sunnyvale)

“One problem is tunneling proprietary data through firewalls...VPN technologies are still kind of nascent and very difficult to employ, but a lot of my corporate customers want to present their internal data outside their internal networks in a reasonably secure fashion...So that's been a big problem for the last three years. We don't have a good solution for it.” (Sunnyvale)

“We have to give our clients good quality, and that is stability and availability of service.” (France)

Terminology & Definitions

Top of Mind: What is a Server Appliance?

- **Virtually all assume a server appliance would be something attached to a server**
 - **Peripheral of some sort**
 - **Adds functionality to server**
- **Respondents in Japan couldn't guess at the meaning**
 - **Meant nothing**

“A special device that adds some functionality to a server. [new R] Snap-on firewall or some sort of thing like that....[new R] I would think it's a third-party add-on piece of equipment to the server. Some sort of enhanced functionality.” (NY)

“It's an add-on gizmo. [new R] Like a back-up tape device. [new R] A peripheral, maybe.” (UK)

Top of Mind: What is Appliance Server?

- **Majority define appliance server as single-function plug and play server**
 - **Even though about half have never heard the term**
 - **When asked to guess, most think single task, limited server**
- **Often connotes application server, dedicated server**
 - **App servers like firewall, cache, web, file**
- **Other connotations**
 - **Closed box**
 - **Easy to use**

“Well, an appliance server performs one function, sort of like a washing machine versus a dryer versus a refrigerator.” (Chgo)

“A single-purpose server like a cache server or application server or setting up a firewall.” (Japan)

“Single-use server, easy to maintain, hopefully at lower cost... [new R] Actually our firewall is an appliance server... [new R] It could be a black box. One of the things that come to mind is a CD-ROM server.” (SF)

“An application server, a server which provides users more or less specific applications.” (France)

“A rack-mountable device that can host applications or data that plugs directly into the network.” (Sunnyvale)

Appliance Server vs. General Purpose Server

- **Appliance Server:**
 - Optimized for a specific purpose
 - Closed box
 - Transparent O/S
 - Minimal complexity
 - Less flexibility
 - Easy administration
- **General Purpose Server**
 - Full O/S
 - Configurable
 - More complexity
 - Multi-function
 - Not optimized for specific function

Reactions to Definition of Appliance Server (Category)

- **Large majority say appliance server is different category than general purpose server, but equate it to application server, particularly in Japan**
 - **Specialized function is what they're responding to**
 - **Assume less support is needed, but no room for failure**
- **Depending on task, may be high end or low end in terms of power**
 - **More efficient usage**
 - **Lower load**

“It better be very robust. If I'm going to buy an appliance device, it cannot fail because that's the whole idea behind why I'm buying a single function or limited function device.” (Sunnyvale)

“It's probably more of a black box. Less administration is required on it. You may not have to load the operating system. You may not even know what operating system is in it. It might be invisible.” (NY)

“I'd say low end. It's for a small network, maybe about 25 users.”(UK)

“I don't think it's completely new, just faster, easier to use and doesn't need a user license. [new R] A box with a specialized set of server functions, so it's like an application server, a reduced server.” (Germany)

Possible Functions for Appliance Server

- **Vast majority mentioned firewall as a likely task for an appliance server**
 - **Other functions: router, storage, fax, caching, remote access, SQL database, VPN, CD-ROM**
- **E-mail less often mentioned**
 - **More frequently by SPs**
- **Useful for management of remote sites, smaller companies with limited IT staff**
- **Something that could be used by everyone for some function**
 - **Often seen by non-service providers as particularly useful for service providers**

“Cisco boxed firewalls, pre-configured box, buy it, it works right away...[new R] It’s answering a need that’s more and more present with the Internet, firewalls, caching...” (France)

“Examples of what they do? Storage, firewall server.” (NY)

“This strikes me as something Cisco would be using as a switch or a router.” (Chgo)

“We have 17,000 mailboxes to manage in France alone. It could work very well for us.” (France)

[Mod asks: Who would use them?] We all would. [new R] To some degree or other, everybody would use it... [new R] A good [way to think about it] is to ask what general purpose servers do you have that’s just being used for one specific purpose.” (SF)

Vendors and Channels

Possible Vendors

- **Cisco, Compaq, HP, IBM, mentioned most frequently**
Others included Nokia, Network Appliance, 3Com
Product frequently perceived in networking context
- **Sun rarely named unaided**
Closed box \neq Sun
“They wouldn’t build a specialized box, it’s not the nature of their business”
Remote users coming in from Wintel, so not a good match as a remote solution
When Sun was mentioned, Sun = clustering (France) or Sun = Internet (Chicago)
- **Could also be provider like AT&T, Bell Atlantic, Qwest**
- **A few respondents assume a partnership between hardware vendor and application vendor or service provider**

Purchase Channels

- Availability is a major concern, so choice of channel is based on who will support them best, fastest
 - While assumption is that service and support will not be needed, if it is, it must be immediate
 - Germany: Sun support too slow, too many layers from ISP to reseller to Sun
 - Japan an exception
 - At \$3000, cost is low enough to toss it out and buy another
- Respondents split between buying from VAR, manufacturer
 - Whoever will fix it right away, without finger pointing
 - Large vendor usually perceived in US as offering global support
 - Germany: prefer ISPs and mail order
 - UK: prefer ISPs, VARS
- Most would buy through their regular channels if possible
- Delivery in Europe and Japan expected to be overnight
 - Not asked in US

Appliance Server Vendor Purchase Criteria

- **Prior to each group, respondents were asked to read and rate a list of factors that they might find important in selecting an appliance server vendor. The factors rated most important are as follows:***
 - **Performance of both application and hardware**
 - **Security**
 - **Expandable - can expand to support more users and data by stacking**
 - **Easy system management**
 - **Price/performance**

 - **Integrates into a heterogeneous environment**
 - **Comprehensive system management capabilities**
 - **Low administration costs**

*Spacing indicates a drop in positive response. It should be noted that this exercise took place before any discussion of appliance servers.

Product Description and Value Proposition

Reactions to Product Description: Secure Extranet

- **Large majority at least very interested, though still not sure exactly what it is**
 - **Virtually all SPs very interested, see opportunities**
 - **Both internally and as reseller**
 - **Chicago, Japan less than others**
 - **Reluctant to try something new**
 - **Japan: don't get why it's a secure extranet solution**
 - **Want proof of concept**
- **Remote access needs addressed**
 - **Secure**
 - **Easy to set up**
 - **Browser-based**
- **Brand name important for reliability**

“Industry standard, minimal software, and then easy installation, kind of give me a warm and fuzzy feeling.” (SF)

“It offers the opportunity for us [as ISPs] to address an area of business that we don't currently have resources and tools to address.” (Sunnyvale)

“I need a close look, but this is the type of solution we're being asked for more and more [as an ISP] for remote access, e-business.” (France)

“If there really was a company who's making one and they've got a good reputation, and could be counted on to train you to the extent you need to be trained and help you identify prospective customers, I'd buy this in a heartbeat.” (Sunnyvale)

“What is the difference between this product and the existing conventional product? [new R] I can't understand if this is stable or secure. There's no proof. [new R] This description is not saying enough.” (Japan)

“We already have a way of doing that and I'm not overly interested because what we have is working...If you've got something and you've got people who know it and support it, why switch?” (Chgo)

Reactions to Three Additional Areas of Optimization

- **Server optimized for caching is most interesting of the 3 options**
 - **Particularly larger companies, SPs**
- **Substantially less interest in an appliance server optimized for e-mail only**
 - **SPs more interested than others**
- **An appliance server optimized for all 3 functions (e-mail, caching, and a secure extranet solution), is not interesting**
 - **It's a general purpose server**
 - **No longer specialized**
 - **Germany an exception**
 - **More interesting, “but not a knockout”**

“It has to do more than just send e-mails. Maybe for a very small company.” (Germany)

“[As an ISP] I'd be interested[in optimization for e-mail] for small customers. If it's easy to set up and doesn't need a lot of support it would be good, but not for a large customer.” (UK)

“Just caching? That's not enough. [new R] I think it would be enough if you had a real lot of users, 2000 or 3000 people coming in, then caching is really important then.” (SF)

“If I had a real caching problem, then maybe yeah, it would be desirable.” (NY)

“If you had all the applications on it, it might get complicated.” (France)

Reactions to Potential Product Benefits

- Respondents were asked to read and rate how positively they viewed a list of potential benefits of appliance servers. The benefits viewed most positively are as follows:
 - Good price/performance
 - Scalable solution that grows with customer needs (Rack-N-Stack)
 - RAS (Hot Swap Disks, Mirrored-Boot Disks and Hot Swap Power Supplies)

 - Lower total cost of ownership
 - Does not compromise network security
 - Reduced administration costs
 - 3 year product warranty
 - No user level license fee

*Spacing indicates a drop in positive response.

Cost Expectations

- **Cost depends almost entirely on the task appliance server is running**
 - **Also, on number of users in Germany, Japan**
- **Split opinion re whether higher or lower cost than general purpose server**
 - **Fewer options, so less cost**
 - **More specialized, all inclusive, so higher cost**
- **General agreement that TCO would be lower**
 - **Although initial cost might be higher**

*“The cost would be based on the size and what it has in it. The components inside, the number of processors, the amount of memory, the amount of disk space, any other type of peripheral attachments. If you’ve got a proxy server, now proxy servers are servicing 5000 people, you’re going to need that machine to be able to handle all these people constantly accessing it. [new R] You can buy a low end file server for \$5000. It just depends on what your needs are. Depends on the purpose of it.”
(NY)*

“Value to me is that it is very easy to implement and will not take anything to support it after that. Especially as I’m deploying them both centrally and putting them in all the branches where I don’t have anyone, so if it breaks it’s a big deal for me to go send someone to fix it. So our up front cost is less, but then the ongoing cost is also less.” (NY).

*“It should be a scalable price. For a one-man office, 150 marks, for 20 users, 15,000 to 20,000 marks.”
(Germany)*

Performance Expectations

- **Majority expect at least 50-100% better performance than general purpose server**
 - **Some want 2x or more**
- **Higher performance coupled with lower TCO appealing**
- **For a minority, availability is major concern**
 - **As long as performance = general purpose server, uptime is most important**
 - **Particularly in UK**

“Compared to the standard solution, I’d want the same performance as a multi-purpose and with no more expense.” (France)

“I can’t afford to have any downtime. That’s more important to me than speed. It needs to work all the time, even if it’s no faster.” (UK)

“[I expect] better performance. [new R] Virtually no downtime. [new R] Maybe 50 percent improvement. [new R] Downtime, I agree with him.” (SF)

Positioning Concepts

Evaluation of Positioning Concepts

- **Respondents were asked to read and rank three positioning concepts in order of appeal (See Attachments for text)**
- **Concept U (Ease of Use) won across all sites**
 - **Although it didn't win in every site**
 - **More appealing by far in Europe and Japan**
 - **Tied with Concept E (Industry Standard) in US**

Concept U: Ease of Use Winner Across All Sites

- **Pros:**
 - Targeted to benefits of product
 - Installs in minutes
 - Easy to maintain
 - GUI user interface
 - Plug and play
 - Makes remote office management easier
 - Without expensive techs
- **Cons:**
 - Doesn't give enough technical information
 - So simple, some find it hard to believe
 - SPs feel it's not aimed at them
 - They have in-house expertise

Concept E: Industry Standard

- **Tied with Ease of Use in US**
- **Pros:**
 - **Industry standard microprocessor and operating system**
 - **“It talks about the microprocessor”**
 - **“Standardization is important”**
 - **PCI slots**
 - **More detailed than Concept U**
- **Cons:**
 - **Sounds like a general purpose server**
 - **Can’t understand what’s different about the product**

Concept S: Scalability

- **Distant third place across sites**
- **Pros:**
 - **Most appealing to those who are rapidly growing**
 - **Favored by ISPs and ASPs**
- **Cons:**
 - **Too narrowly directed for most respondents**
 - **Perceived as meant for service providers**
 - **Many companies, larger companies, not growing so rapidly**

Remote Access Users

Remote Users: Device Usage and Problems

- **Virtually all have cell phones, home PCs, about half have PDAs**
 - **Home PCs not networked**
- **Handheld device issues**
 - **Keypad too small**
 - **Stylus awkward to use**
 - **Hard to learn**
 - **Manuals too long**
 - **Too many functions to learn them all**
 - **Hard to see screen, keys**

“I find the keypad so tiny that I could never even imagine typing messages of any substance...The screens are typically small, I can live with that, but the keypad is so much smaller and to use those little pencils or whatever, I just find them cumbersome. Then a phone up here, you’re trying to do that all at once, and you’re driving at the same time.”(user)

Remote Users: Other Remote Problems

- **Most have service provider complaints**
 - **Can't get online**
 - **Dropped calls**
- **Speed of access not a major issue**
- **Can't access everything they need**
 - **Or need special software**

"It drops you, but you don't know that you're dropped. I'm carrying on, keep going for another 10 minutes in the conversation... You have to call back, look like an idiot, and have to figure out where in the conversation you got dropped." (user)

"I have access from home...and it's a little slower when you're home. You count to five instead of count to one before the application changes." (user)

"I can't access my personal files, I can access the company listing systems in certain programs, but not everything." (user)

"They gave me some software which was put on to the machine and then you can basically connect the way you normally would and then it connects and I can get into my office." (user)

Remote Users: Device Preferences

- **Preference is for one device with as many functions as possible**
 - **Small, like PDA**
 - **Cell phone impractical as single device**
 - **Can't talk, see screen, type**
 - **But would be great if could somehow be all-in-one**
 - **Compatible across devices, PCs, smart appliances**
 - **Security beyond PIN number**
 - **Thumbprint, iris recognition**
- **Voice activation/recognition seen as a big plus**
 - **Speeds data exchange**

“My cell phone, I can't get e-mail on it, I guess it would be pretty difficult to talk and read your e-mail on it at the same time, which I'm always doing five things at once. I guess the more things you can get the better, I guess PDA would be better. If you can get everything at once, it would be better.” (user)

“Voice recognition would help because a person who's in a car, if it had an understanding or a voice print of that person's voice and understood it and could speak back, that would help.” (user)

“Voice recognition would speed it up, wouldn't it? Because by the time you typed in 'red sweater', it comes up and you get 5000 responses with red sweater or red, and then you go 'go to number 17' as opposed to clicking, waiting. I just find that frustrating.” (user)

Remote Users: Content Preferences

- **Content should be customized**
 - **Traffic information for own route**
 - **Sports stats for home team**
 - **Stock quotes for own portfolio**
 - **Trivia tailored to interests**
- **Want to choose what data should be pushed, depending on changing interests**
 - **Shopping for specific item**
 - **Flight status at airport**
- **Automatic billing, interactive calendar**

“It would be nice to have a hand-held device that would serve as a debit card that I can use to make purchases...I’d like to be able to use it to call in to my workstation and get my messages that have been left and cull them and clean them up. I guess it would be nice to program in 80 stock quotes that would just regularly roll through when the market is open and I can see where those stocks are. I don’t need access to the whole market and I don’t want to have some cumbersome device flashing me every time Cisco moves half a point.” (user)

“If I could say, ‘what are the March 11 calls on Microsoft selling for?’ and then the last quote, and I could ...say what I wanted and it could respond to me intelligently from its database, that would be great.” (user)

“Right now I’m interested in buying a new car, I’m interested in buying a Scottish puppy, I’m interested in home prices in my neighborhood, so that information I want constantly sent to me.” (user)

Remote Users: Terminology

- **Remote users define “appliance” as household device, a tool**
- **“Internet appliance” is a tool that allows Internet access, including smart household appliances**
 - **Not necessarily wireless**

“I assume you’re taking about a standalone Internet access tool, like the new Palm Pilot or PDA sort of scenario... [new R] Intelligent household appliances that can communicate to a main system, be it a PC or a peripheral.” (user)

Remote Users: Reaction to Home Appliance Server

- **About two-thirds of remote users at least very interested in home appliance server hub**
 - **Some resistance to idea of everything technologically controlled**
 - **But ease of centralizing functions is appealing**

“If I could do two or three things at once, I’d be happy.” (user)

“It sounds threatening. [new R] I don’t know how much I’d use it.” (user)

Attachments

Concept U

- **Our appliance server is easy to set up and administer on a day to day basis without sacrificing performance.**
- **That's because our appliance server**
 - **is designed to install in minutes, enabling your business to build an intranet without hiring costly technical staff**
 - **provides a browser-based graphical user interface that enables easy remote system and site management, a big plus when administering a remote branch/office.**

Concept E

- **Our appliance server uses an industry standard microprocessor and operating system and has a modular system architecture that allows for capacity on demand.**
 - **Industry standard architecture enables you to deploy existing applications thereby increasing ROI on IT infrastructure.**
 - **Open PCI slots can be filled to add functionality and performance.**
 - **Popular programming models are supported, allowing you to deploy new web services in your intranet.**

Concept S

- **Our appliance server is a platform for service providers, whether your company is an existing Internet service provider/application service provider or interested in entering the service provider market.**
- **That's because our appliance server scales up as you need it.**
 - **It allows you not only to offer basic ISP/ASP services to your customers with one solution, but also supports advanced general purpose server features like clustering, which allows several appliance servers to be combined to provide higher performance.**
 - **Our appliance server is rack-mountable, so adding capacity is as easy as adding an extra appliance server unit to the existing rack.**