PRODUCT VIEWPOINT

AberdeenGroup

Volume 11 / Number 10
June 16, 1998

Selecting Web-to-Host Solutions That Enable Security & Control

Every large enterprise has a heavy investment in the applications that keep the business running. And no sane manager will put these critical assets at risk during the process of transforming the enterprise into a Web-enabled organization.

Aberdeen research shows that to enhance the enterprise's valuable run-the-business applications to Web-capable status — that is, the application itself can be operated by users connected through the Internet — requires a well-thought-out Web-to-Host connectivity project. And at the outset of such a project, no IS planner can foresee all the potential technical pitfalls caused by user business-policy requirements and legacy infrastructure. And since Web-to-Host projects typically are motivated with the intention of both capturing significant new markets and supporting the current customer base, failure can be a market disaster.

In this Viewpoint, Aberdeen describes the strategic business issues faced by IS in establishing a plan to implement Web-to-Host connectivity, the trade-offs of different approaches that are now available, and how IBM has developed a technology solution that increases deployment flexibility — and therefore lowers risk — beyond anything else available today.

Executive Summary

Aberdeen field research continues to show that enterprises undertaking what appears to be the straightforward task of transforming existing, production applications to operate across the Internet — or even within Intranets and Extranets — are failing to meet their objectives due to current inadequate and limited Host Connectivity product capabilities.

Most suppliers of Host Connectivity products offer specific types of solutions today — but not the broad range required for Web-enabled connectivity. The problem these smaller suppliers have created for enterprise IS executives is that none of their solutions are capable of offering a comprehensive and shared security and control infrastructure. As a result, experienced IS managers are reporting that as they implement multiple point solutions, they are leaving their network vulnerable to security risks and, at the same time, increasing the operating costs required to maintain acceptable service levels.

Recognizing a market requirement for a comprehensive, production-quality Web-to-Host solution, IBM has announced its eNetwork Host Integration Solution. eNetwork Host Integration Solution is both a consolidation of its already proven Web-to-Host product set and an architectural framework for integrating these products. IBM's objective is to provide robust security, common directory services, and pragmatic, flexible end-user licensing policies. The result is the offering that many IS executives tell Aberdeen they want today.

Bottom line — Aberdeen believes that the key benefit that will propel IBM eNetwork Host Integration Solution to be successful is that it protects and leverages IS investments in their existing host-based security model as applications are Web-enabled. And this comes in a package that includes the broadest range of Host Connectivity solutions available from one supplier today — providing tools to solve unanticipated issues that experience has shown will arise during every Web-to-Host deployment.

Lower The Risk Of Internet Transition

Connecting current legacy applications to the Internet is not accomplished by simply gluing a

Web interface on current applications. Legacy applications were designed to be used by employees with a specific desktop device — not by partners and customers using Web browsers. One of the prime goals for Web-enabling existing applications is to allow customers and partners to obtain more accurate information faster from the enterprise by eliminating the need and expense for a staff intermediary. With these multiple advantages, it should be no surprise that Web-based self-service solutions are the fastest growing use of the Internet today.

But where internal employees must tolerate confusing screens and data hidden across multiple applications, these encumbrances will most often drive your external users either back to the high-cost 800 phone number — or into the arms of the competition.

Web browsers have typically proven to be an inappropriate user interface for controlling and operating complex production applications.

Aberdeen field research shows that Web-to-Host application transformation plans that depend on the use of a single, pre-specified desktop solution will fail. Information Systems (IS) executives simply cannot identify or anticipate who the enterprise's information consumers will be and what they will want. Such prescient planning is not possible in a world where business relationships are changing on Internet time.

The all-too-simple historical assumption has been that merely supporting Web-browser access would be sufficient upgrading to existing applications for use on the Internet. While a Web browser is great for disseminating information, — it has typically proven to be an inappropriate user interface for controlling and operating complex production applications.

Pioneering IS executives report that to increase their probabilities of success, they must deploy user access products that are capable of evolving as business and user-specific requirements change. These changes are caused by the evolution of the Internet as an integral part of today's business processes. And as we all know, e-business is a work in progress, the stable state of which nobody can yet confidently project.

The Right Host Connectivity Option

Selecting the technology that effectively deploys an application across the Intranet for a specific class of user is a balance between ease of deployment, ease of use, security, and cost. The difficulty in determining the balance is that these attributes are continuously changing for each class of user and for every application as the Internet shifts drives business processes.

Members of a user class share the same attributes — they access applications from the same network, share the same organizational affiliation, perform the same tasks, access the same applications, and require the same security characteristics. But, supporting a user across the internal corporate Intranet — which is typically secure — is a totally different situation than supporting the exact same user when he or she is traveling with Internet access — which is not secure. As one can see from this very common example, a user will be in two different user classes just by the change in any one attribute. Aberdeen's conclusion is that user dynamics are changing so frequently today that basing a Web-to-Host enhancement project with one Web connection method is impractical.

Today, there are five types of unique connectivity solutions. Aberdeen's research shows that in larger enterprises, all five of these may need to be deployed against a single application to meet the requirements of different user classes. The current market is segmented into the following five categories, each populated by a healthy set of smaller suppliers that tend not to offer products outside any one category:

- Protocol Specific Terminals
- Terminal Emulation
- Java Terminal Emulation
- Java Desktop Application Integration
- Web to Host Publishing

Aberdeen field research indicates most IS organizations are confused by trade-offs available

Telephone: 617 723 7890
One Boston Place
Fax: 617 723 7897
Boston, Massachusetts 02108
www.aberdeen.com

across categories and the competing claims of the numerous suppliers in the Host Connectivity marketplace. None of the IS decision makers recently interviewed by Aberdeen had the resources to fully understand all five different approaches, and each vendor is only offering a single solution backed by an insular vision of the truth.

IBM Changes The Market Dynamics

IBM has introduced a comprehensive software suite — eNetwork Host Integration Solution — that will both simplify the decision making process for IS executives and fundamentally change the Host Connectivity marketplace. The IBM Network Computing Software Division has assembled a simplified offering of its eNetwork Communications Server, eNetwork Host On-Demand, and eNetwork Personal Communications products. It is now possible for IS executives to purchase a single product offering that includes a production-level solution for every category of the Host Connectivity Market.

What distinguishes the eNetwork Host Integration Solution is that it provides *all* the tools and capabilities that IS might and will need during a full-scale Web-to-Host deployment project.

IBM Host On-Demand

A Java enabled desktop connectivity solution has proven effective for several classes of users, because it does not require any special desktop hardware, or any software pre-loaded on the client. Unlike a browser-based solution, a Java implementation enables processing to be deployed onto the desktop, to offer a special user interface, and to perform simple local data processing functions. Host On-Demand provides a Java terminal emulation package that includes TN3270, TN5250, and VT 52/100/220 Java desktop emulators, and provides support for several advanced features, including the ability to print the emulation screen, cut-and-paste editing, and host-file-transfer support. When performing 3270 or 5250 access, Host On-Demand uses standard TN3270 or TN5250 protocol to communicate back to the host. This eliminates the need for a middle-tier server, which might be both an additional security issue and performance bottleneck. Host On-Demand runs on any operating system that supports the Java Virtual Machine. Supported Web server platforms include OS/390, OS/400, AIX, and Windows NT.

What distinguishes the eNetwork Host Integration Solution is that it provides *all* the tools and capabilities that IS might and will need during a full-scale Web-to-Host deployment project.

Aberdeen research indicates that OS/390 support for Host On-Demand may prove to be the most cost effective for many organizations, because it eliminates the need to manage multiple operating systems and to coordinate the software and operations procedures across two or more platform environments — situations that risk security and degrade reliability.

Another difficult problem that IBM has addressed with Host On-Demand is the integration of data from multiple back-end sources — data within an enterprise is commonly scattered across multiple systems and applications. Host On-Demand solves this problem in the thin-client environment with the eNetwork Host Access Class Library API. Using this API, Java programs in the client can use the emulator data stream to collect data from multiple sources — and then present a customized user interface to meet the user's business needs.

IBM Host Publisher

Despite the power of the Java-based solution, the Web browser on the desktop is still clearly recognized as the universal desktop, and therefore the appropriate vehicle for delivering host information to the widest possible audience through the Internet. This creates a requirement for Web to Host Publishing tools. IBM's eNetwork Host Integration Solution that will provide Web Host Publishing is called Host Publisher.

Host Publisher enables host data to be integrated directly into Web pages so that it can be made available to the widest possible spectrum of end-users. Host Publisher runs in conjunction with any http Web server. The Host Publisher product

Telephone: 617 723 7890
One Boston Place
Fax: 617 723 7897
Boston, Massachusetts 02108
www.aberdeen.com

itself is built on a distributed and multithreaded architecture in order to maximize performance, throughput, and reliability while also ensuring a high level of security.

Host Publisher a leading-edge solution for extending existing business-critical applications to the Internet.

Application deployment with Host Publisher is accomplished using "drag and drop". The Web administrator can map specific fields on a Web page (using HTML tags) back to specific fields on the host emulation screen. When running, any time the selected Web page is called, Host Publisher will automatically retrieve the required host data and merge it into the appropriate fields. This approach makes it extremely simple to deploy current host applications to basic Web users. One of the significant strengths of Host Publisher is the ease with which the output from multiple applications can be consolidated into a single Web page.

For more complex Web applications, Host Publisher can call native Windows NT applications for specialized processing prior to the Web page being generated. Through this technique, decisions can be made based on the data received from the user or from the host. And new business logic can be integrated into an existing application service without having to modify the current application itself.

Since the server must actively support every client in Web to Host Publishing based solutions, scalability is critical to its successful deployment. Host Publisher accomplishes this through unique clustering technology that provides load balancing and hot backup between a pool of Host Publisher servers. The clustering approach to scalability also provides high-availability. These two characteristics — scalability and high availability — combined with a wide range of supported back-end application types and Internet-optimized security, makes Host Publisher a leading-edge solution for extending existing business-critical applications to the Internet using a Web server application integration approach.

Host Publisher will be available on the next release of Communications Server for Windows NT that will be available in July, 1998.

IBM Personal Communications

While Java-based and browser-based solutions simplify the job of deploying Host Connectivity for both heads-down data-entry operators and complex applications that target production users, a full PC Terminal Emulation is still the most robust and complete approach. While PC Terminal Emulation requires PC emulation software to be loaded on the desktop, it delivers several compelling advantages — including high performance, the most complete terminal feature set, and the ability for end-users to customize their own user interfaces.

The IBM eNetwork Host Integration Solution provides this functionality with its Personal Communications product. Personal Communications supports 3270, 5250, and VT emulation capabilities, and can be deployed on DOS, Windows 3.1, Windows 95, Windows NT, and OS/2. Few products in the market today have continued to maintain emulation offerings across so many platforms, yet Aberdeen research indicates most corporations are using numerous different desktop operating systems and terminals.

IBM Communications Server

Communications Server is IBM's multi-protocol software platform for gateways that enables users to connect to various hosts, and enables different hosts to interoperate. To make these capabilities as broadly available as possible, Communications Server runs on most of the platforms IS has installed today, including Windows NT, AIX, OS/2, SCO, and System/390.

As a true gateway, Communications Server supports not only TCP/IP, but also SNA, and can even run TCP/IP solutions over an SNA network or SNA solutions over TCP/IP. Companies that have SNA deployed within their network infrastructure can protect these investments by providing TCP/IP socket services over SNA. TCP/IP-based applications such as browsers, Lotus Notes, SAP R/3, and Tivoli, can run over an SNA network using Communications Server.

Even more importantly, Protocol Specific Terminals — single-function desktop devices programmed to understand a single host-specific

Telephone: 617 723 7890
One Boston Place
Fax: 617 723 7897
Boston, Massachusetts 02108
www.aberdeen.com

communications protocol (3270, VT100, etc.) — still represent the largest installed base of all desktops. These devices must be supported if the Web-to-Host project has any hope of extending the use of enterprise applications to customers and partners through Extranets. Communications Server supports these Protocol Specific Terminals, and provides the connectivity and concentration points for Web to Host solutions. As a result, it lowers the risk of Web-to-Host project failure by the typically unanticipated requirement to support older, installed user devices and by providing a common infrastructure for all host connectivity solutions.

Communications Server eliminates the need for enterprises to replace their current SNA infrastructure — terminals and networking — by enabling the deployment of TCP/IP-based applications over SNA. And facilitates the extension of production applications into customers' and partners' business processes.

Managing Security And Control

Most enterprises that have rushed to implement Web-to-Host functionality have used multiple vendors' products to meet different, specific Host Connectivity requirements. The result of this solve-today's-problem-now-and-we'll-worry-about-the-future-tomorrow approach is that an overreaching management control and security infrastructure capability has been left out. As a result, management is a nightmare and security is vulnerable.

And this is the situation in most enterprises today. Every IS executive Aberdeen has interviewed on the subject of Web-to-Host connectivity overwhelmingly ranked end-to-end security as his or her primary requirement. Yet as Aberdeen tracked their implementation processes, the pressure from business unit executives to deliver solutions as soon as humanly possible caused IS to deploy separate solutions, on multiple server platforms, that had no common management or security infrastructure. After the Web-to-Host project met end-users' needs, IS managers planned to apply additional IS resources to manage the applications both effectively and efficiently. Not commonly considered during the deployment frenzy is that the deployment of heterogeneous solutions makes it

Deployment of heterogeneous solutions makes it nearly impossible to manage security.

nearly impossible to manage the one aspect of production computing considered too important to be compromised — Security.

Maintaining consistent authorization and access controls across three or four connectivity solutions is complex. And complexity generates security vulnerability. Each connectivity application has its own administration and security console. And each of these applications runs on a server that also has its own administration and security. As if this were not complex enough, these must then be integrated to the management and security that is already deployed on the host. Trying to determine if end-to-end security is actually maintained in such a complex environment is mathematically intimidating. Clearly, complexity can be eliminated by reducing the number of security and administration platforms being deployed, or by finding integrated solutions with automated tools that tightly and transparently couple these many different environments.

The eNetwork Host Integration Solution from IBM will address the problem of maintaining security across multiple Host Connectivity categories by implementing a single security and directory model based on open standards. As described in Figure 1, the components that comprise the IBM eNetwork Host Integration Solution share a common architectural framework.

For example, the Communications Server can be interconnected with RACF or ACF — the classic mainframe security solutions — on the host. In addition, all the components of the eNetwork Host Integration Solution are in the process of being integrated with IBM's public key certificate server, LDAP Directory Server and the IBM Firewall. IBM's integrated security framework will enable Host Connectivity to be deployed safely and confidently on an end-to-end basis, even across the Internet.

Telephone: 617 723 7890
One Boston Place
Fax: 617 723 7897
Boston, Massachusetts 02108
www.aberdeen.com

Because IBM's architecture is based on standards, enterprises can effectively and quickly share user information with trusted business partners.

An additional and key benefit derived from the use of a common framework is that it allows user's to be centrally administered. And every user's access can be monitored across all the different connectivity solutions simultaneously.

Because IBM's architecture is based on standards, enterprises can effectively and quickly share user information with trusted business partners as appropriate. For example, this capability will be critical to economically support the outsourcing trend of basic but necessary functions, such as data entry, that Aberdeen has described in previous reports.

IBM — Providing User Freedom

Enterprises that have installed stovepipe Internet Host Connectivity solutions report that unexpected end-user requirements were the most common and significant cause for a time-delaying and expensive change in deployment plans. For example, in one enterprise Aberdeen surveyed, MIS planned to deploy a Java Terminal Emulation product to every desktop, which would eliminate the cost of installing and managing Terminal Emulators. However, as the deployment got well-underway it was discovered that a missing feature (printing for a specific form type), initially considered irrelevant, was actually a show-stopper for some end-users. As a result, while the solution did get deployed to some users, a significant percentage of the population had to remain on the old system. The projected cost-savings that was anticipated quickly evaporated as the server that supported the emulation solution could not be removed.

In another example, IS began to move some casual usage employees to browser-based access. When a creative Line-of-Business manager saw this capability, it suddenly became critical that a similar offering be made available to 4,000 of the company's largest and closest business partners. The new users, part of the extended enterprise, required additional capabilities most easily deployed through Java to the desktop. To complicate matters within this same company, another business unit rejected the Web-browser solution because it was too slow and unresponsive. It quickly became obvious to Aberdeen that a single solution for Host Connectivity is too confining and, therefore, unrealistic in the long run.

With IBM's integrated product set, the entire portfolio of connection types is incorporated into the per-user license fee.

The IBM eNetwork Host Integration Solution supports all of the most commonly needed connectivity options and masks these from the application. As a result, applications can be broadly deployed across all connectivity types without having to be modified. Whatever connectivity is appropriate for the user, the application, and the company, can be accommodated.

Importantly from a budget perspective, enterprises will no longer be required to license every user across every connectivity solution — a nightmare for cost containment, but necessary when users must be able to access the host across multiple connection types. With IBM's integrated product set, the entire portfolio of connection types is incorporated into the per-user license fee. Companies pay the license fee once per user, regardless of how that user accesses the system. This benefit is particularly important as users are migrated to different desktops, and to prevent the delay of the implementation phase of a Web-to-Host deployment project as the most appropriate solution is determined based on unexpected end-user requirements.

Freedom during deployment is key to success. And by Aberdeen's criteria, the eNetwork Host Integration Solutions offers IS

Telephone: 617 723 7890
One Boston Place
Fax: 617 723 7897
Boston, Massachusetts 02108
www.aberdeen.com

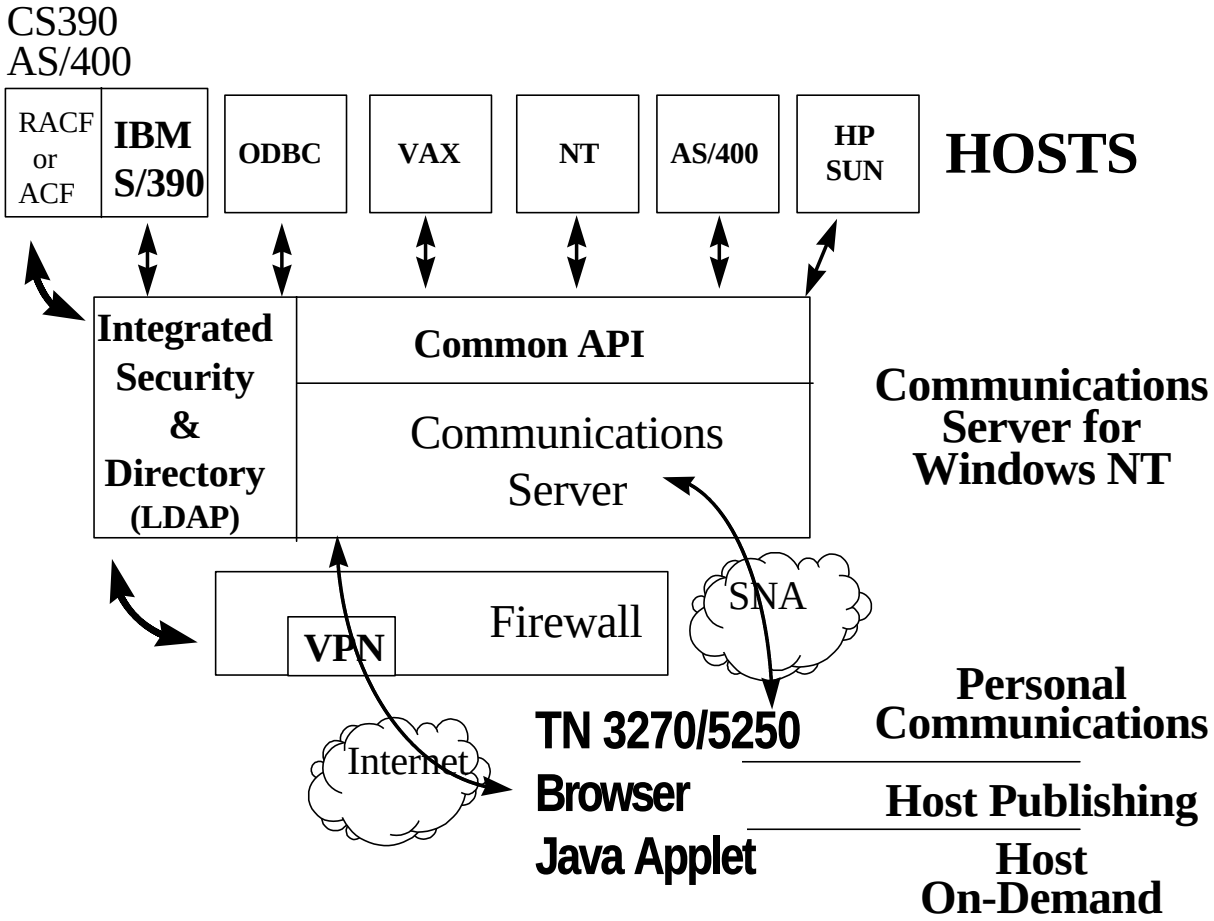
executives the greatest level of freedom available in the marketplace today.

Conclusion

The Internet has created the modern-day equivalent to a land grab. Companies must move aggressively to position themselves on the Internet. A critical aspect of this process is to transition legacy production applications and data to support Web-based users. To achieve this objective, IS managers must deploy Host Connectivity solutions that are manageable, secure, and flexible.

While there are many Host Connectivity products available in the marketplace today, the majority of these are narrow, stovepipe solutions that meet only one connectivity need. If a company deploys one or more of these solutions, it will increase security and management problems. The result will be inefficiencies, costs and potential vulnerabilities that begin to skyrocket as the operating environment becomes more complex over time.

Figure 1. eNetwork Host Integration Solution



Source: AberdeenGroup, June 1998

One Boston Place
Boston, Massachusetts 02108
Telephone: 617 723 7890
Fax: 617 723 7897
www.aberdeen.com

The Network Computing Software Division at IBM has announced that it will consolidate all of its connectivity solutions into one solution, with a common architectural framework and an end-user-friendly approach to licensing. Enterprises can safely acquire the IBM eNetwork Host Integration Solution and deploy it as needed on different platforms, to different clients, and enable users access to host applications and data, knowing that only one license is required per user.

IBM's approach makes Web-to-Host connectivity more secure and manageable because all the components share the same security framework and directory model. This approach will ultimately lower annual support costs — the costs of licensing multiple stovepipe packages, the cost of administering and managing multiple systems, and the incremental cost of licensing the same user for two or three different access mechanisms.

If IBM *can* keep these products integrated to the common framework, while also extending functionality, the Host Connectivity market will be fundamentally different. And competitors with stovepipe solutions will need to further differentiate their offerings, or find merger partners to broaden their portfolio to remain competitive. All eyes are now on IBM.

Aberdeen expects IBM's eNetwork Host Integration Solution to have a profound impact on the Host Connectivity marketplace as the best opportunity for IS executives to maintain flexibility and freedom of deployment. And, yes, IBM appears well on its way to building the e-business infrastructure that is its overriding corporate vision of the future.

Aberdeen Group, Inc.
One Boston Place
Boston, Massachusetts
02108
USA

Telephone: 617 723 7890
Fax: 617 723 7897