eNetwork™ Software Directions - Overview

Introduction

IBM eNetwork™ *Software* expands services provided by the IBM Communications Clients and Servers. It provides a next generation solution for Enterprise-Class™ universal connectivity and information access for Network Computing including host access, Internet/intranet access, multiprotocol/multiplatform network integration and increased services for interconnected LANs. The IBM eNetwork Software family of servers and clients addresses the problems enterprises are encountering today and will encounter in the future as businesses increasingly rely on networked solutions.

Global businesses today operate on a myriad of communications infrastructures. These infrastructures support the delivery of goods, services, and information. Through the late 1980s, the deployment of information technology solutions in businesses and public enterprises resulted in the establishment of internal networks. These infrastructures have since been extended to include the customers, suppliers, and business partners through early extensions of the internal network, such as Electronic Data Interchange.

Businesses are under tremendous competitive pressure to shorten their supply chains, reduce costs, and achieve greater employee productivity. The meteoric rise of the Internet has presented IT executives with opportunities to extend their networking infrastructure across the supply chain. The use of the communications infrastructure as a foundation for all business processes is the basis for Network Computing.

These new developments offer the enterprise a significant new opportunity to exploit communications infrastructures for greater competitiveness and profitability. At the same time, the move toward global networks, the Internet, and Network Computing have presented a number of new networking challenges.

Networking Challenges

Host Data / Application Access: Information technology solutions on host systems from IBM and other vendors continue to contain the bulk of the world's economically valuable applications and data.   As host/server systems are integrated with the Internet, new problems in access and connectivity emerge. The challenge is to support both the internal and external delivery of goods, services, and information.

This requires extending the reach of valuable databases to users throughout the enterprise and beyond. The increased variety of client access choices (such as traditional PCs, Network Computers, laptops, and hand-held computers) and networking technologies make it difficult to provide robust, secure host access without costly modifications to existing systems. Inconsistent end user interfaces for the disparate applications and platforms is another part of the challenge. Another major effort is to integrate major, established enterprise networks with the Internet as well as applying Internet approaches to enterprise intranets.

Solutions to these challenges must address

o Access to enterprise data across mixed platforms and connectivity options
o Consistent end user interfaces
o Integration of enterprise networks with the Internet and intranets
o Reduced complexity for end users accessing multiple network applications

IBM eNetwork Software is a family of networking infrastructure software products that address the challenges of global networks, the Internet, and Network Computing

One networking challenge is to extend the reach of valuable enterprise data to users throughout the enterprise and beyond

eNetworkTM Software Directions - Overview

Network integration: Studies consistently show that large global enterprises are very likely to use multiple networking technologies (such as SNA, TCP/IP, IPX, and NetBIOS). Installing, configuring, and managing these diverse technologies increases complexity and costs. The need continues for more cost effective ways to run any application over any network type with the quality and robustness required for business applications. Some believe network consolidation to a single network type (such as TCP/IP) is the solution to this problem. Others seek a network integration solution that leverages current investments while capitalizing on the large number of new network capabilities. Another key requirement is the need to extend the reach of networks further beyond existing enterprise communication lines for remote access and wireless operation.

Solutions to these challenges must address

o Communication server and gateway support across major enterprise platforms
o Wireless and remote access communications
o A simpler infrastructure that enables TCP/IP and SNA applications usage

Companies have installed many types of systems that have great difficulty accessing information and applications on other systems

Interconnected LANs: Networks in small or medium enterprises and in workgroups within large enterprises are less likely to have the support of traditional host computers. As LANs are interconnected within the enterprise and to the Internet, difficulties are encountered in providing the right bandwidth and network control. Even with a single technology like TCP/IP, managing all the resources associated with the network, such as end user addresses, is unnecessarily complex. Distributed networks have the additional complexities of cost-effective traffic management, security, and administration. Remote wireline and wireless access to LAN data is a key requirement as well.

Solutions to these challenges must address

o Integrated distributed network services such as directory, routing, and security
o Consolidation of the programs needed to run interconnected LANs effectively
o Easier installation and configuration management
o Lower training and support costs

Distributed LAN networks have additional challenges in cost-effective traffic management and complexity

Network Computing: The Internet has given rise to a new server-centric application model. In this model, components or JavaTM applets are dynamically downloaded "on demand" to requesting clients. The demand may stem from an end user request or a need from the central server to update end user data or programs. Today's networks have limited ability to dynamically adjust the underlying network infrastructure to the demand patterns of the user or the network. Response times can be erratic, as seen in Internet surfing. Networks, large and small, will be affected by this unpredictability that results in poor service, higher costs, or both. Other challenges include user authorization and license management for network computing products and services.

Solutions to these challenges must address

o Access optimization services for predictable response/utilization rates
o User and client platform profile management solutions
o Advanced mobile services, including disconnected operations
o Server capability to manage software components pushed to clients

Network Computing brings great promise for the future, but it requires a dynamic network infrastructure for success

Meeting the Challenges

eNetwork™ Software Directions - Overview

To address these critical challenges, IBM has expanded its current communications client/server product family and is developing a next generation of networking communication client and server products with the necessary capabilities for handling the networks of the future. The entire networking software family will be placed under the **IBM eNetwork Software** umbrella with a specific set of targeted values. These values, also known as "e" Values, support the fundamental goal of *more cost effective networking*:

IBM eNetwork Software

**Enterprise-Class Universal Connectivity and Information Access
for Cost Effective Network Computing**

✓ **Enterprise-Class Dependability for All Networks**

✓ **End to End Universal Access for Network Users**

✓ **Easy Implementation, Configuration, and Usage**

✓ **Effective Uitlization of Network Assets**

IBM eNetwork Software is based on Enterprise-Class dependability, end to end universal access, easy implementation and usage, and effective utilization of network assets

Enterprise-Class Dependability for All Networks
Enterprise-Class is the gold standard for enterprise business solutions. It is built on the foundation of over 30 years in providing state-of-the-art, mission critical networking software products.

It includes high standards in **reliability**, with minimum network disruptions due to product quality; **availability**, making sure that the communication path stays open; **scalability**, with a wide range of computing platforms to provide consistent support for large numbers of users and applications; **security,** making sure that information is accessed only by authorized persons; **predictability**, providing the appropriate priority and path access for each type of transmission, thereby enabling service level commitments; and **performance**, ensuring that high volumes are handled with timely response.

Enterprise-Class Dependability for...
- Reliability
- Availability
- Scalability
- Security
- Predictability

End to End Universal Access for Network Users
End to end universal access enables applications to run over any network. It emphasizes any client communicating with any server.

It includes **multiple protocols**, supporting the pervasive local area and wide area communication protocols across heterogeneous networks; **multiple platforms**, with a consistent communications capability across the various computing platforms in the enterprise; **multiple network technologies**, exploiting the advanced infrastructure capabilities; **multiple sources from multiple locations**, allowing the user access from office, home, and on the road to all major information systems; and **multiple application types**, including transaction processing, information access, client/server, and multimedia.

End to end universal access across multiple ...
- Protocols
- Platforms
- Network types
- Locations
- App types

Easy Implementation, Configuration, and Usage

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Ease of use is important to everyone in the enterprise who is associated with the network. By enhancing usability, the personnel costs of networking can be decreased and end user satisfaction increased.

Ease of use characteristics in this category include ***installation and configuration***, providing consolidated, integrated components with graphical setup tools; ***operation***, supporting a simple, consistent user interface across various application and computing platforms; ***management***, providing end to end control across the enterprise; and ***programming***, supporting open, standard programming interfaces transparent to underlying network infrastructures.

Effective Utilization of Network Assets
The physical network infrastructure is a significant part of the cost of networking, and the effective use of these resources represents a leverage point on cost and an opportunity for increased performance.

Characteristics being stressed in this initiative include ***network utilization***, using the network infrastructure effectively; ***communication efficiency***, supplying advanced techniques to reduce the demands on the infrastructure; ***operations flexibility***, handling communications effectively either on-line or off-line; ***infrastructure exploitation***, taking advantage of the new technologies without modification to applications; and ***network intelligence***, utilizing end user and application factors to optimize the interaction between clients and servers.

The Bottom Line Is More Cost Effective Networking
The successful fulfillment of these values addresses the major challenge of ***networking cost***. The underlying approach to lowering costs is to make networking simpler. eNetwork Software solutions ensure that the newest connectivity opportunities can be exploited without revamping the installed application systems or disrupting their stability. IBM eNetwork Software is designed to provide the freedom to choose applications independently from the installed network infrastructure. With eNetwork Software, almost any client workstation can be utilized with any type of server, regardless of the type of network in between. In addition, IBM provides effective world wide support to protect networking investments.

eNetwork Software Solutions

eNetwork Software addresses the major network problems described earlier in four initiatives.

Enterprise Networking. This initiative focuses on adding value to the current communications clients and servers to address the business problems of universal connectivity and information for host and Internet/intranet access, network integration, and the utilization of distributed services for more effective interconnected LANs. This evolution is being developed through the **Cepheus** and **Cassiopeia** projects.

On-Demand Networking. This initiative is focused on improving the networking communications efficiencies and Java application services for server-driven Network Computing solutions for Network computers and more generalized Java application usage. The **Aries/Andromeda** client/server project is defining this roadmap.

Advanced Mobile Networking. This initiative involves both wireless and wireline remote access and provides network efficiencies and reliability in low bandwidth or

Easy …

- Installation
- Configuration
- Operations
- Management
- Programming

Effective …

- Network utilization
- Comm. efficiency
- Operations flexibility
- Infrastructure use
- Network intelligence

The bottom line is more cost effective networking

Four Initiatives:

- Enterprise Networking
- On-Demand Networking
- Advanced Mobile Networking
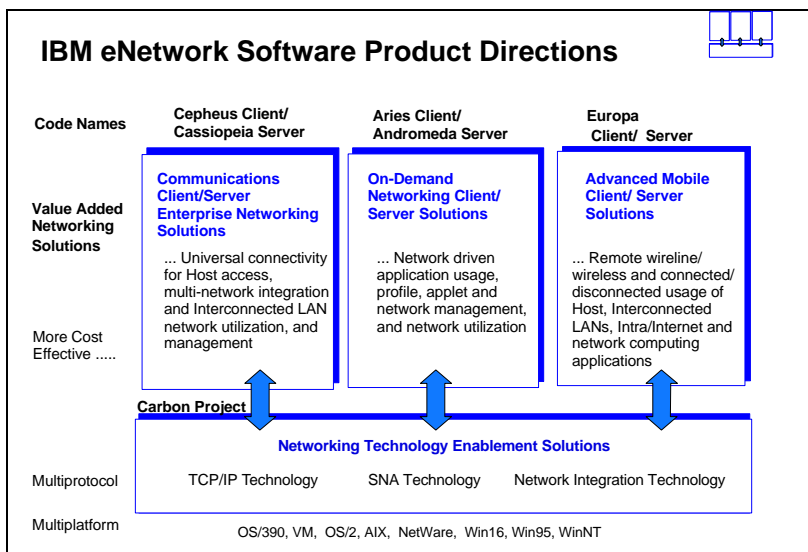*- Technology leadership*

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disconnected environments.   The advanced mobile definition is handled by the **Europa** client/server project.

Networking Technology Leadership. This initiative is focused on developing TCP/IP Enterprise-Class connectivity required for mission critical business applications and the ability for customers to run any application with the same level of services regardless of the network type. This initiative supports the large installed base of SNA through continued enhancements for large enterprise, mission critical applications and the integration of TCP/IP applications into a common infrastructure for simpler support and management. The **Carbon** project defines the TCP/IP leadership work.

Product Directions Overview

These initiatives are being developed through the following projects:

A summary of these four areas follows.

Product Directions ...

- Cepheus and Cassiopeia
- Aries Client/ Andromeda Server
- Europa Client/Server
- Carbon Technology Project

Enterprise Networking

Communications Client/Servers for Host Access and Network Integration
Most large enterprises use multiple networking technologies (such as SNA, TCP/IP, IPX and NetBIOS). These dissimilar systems have islands of electronic information not readily accessible by everyone who needs to use the information. Access to S/390 and AS/400 hosts has traditionally been made over SNA networks. With the growth of LANs and the Internet, applications written for other environments such as TCP/IP need to access information on these big servers.

IBM communications clients and servers, which are available today, provide host and internet access, and multiprotocol and multiplatform network integration

The current communications client/server family was designed to address the issues for host access and the multiprotocol, multiplatform network integration across TCP/IP and SNA networks. Communication Servers are being provided for Windows NT, OS/2, AIX, OS/390, MVS, Netware for SAA, and integrated capability available in OS/400.

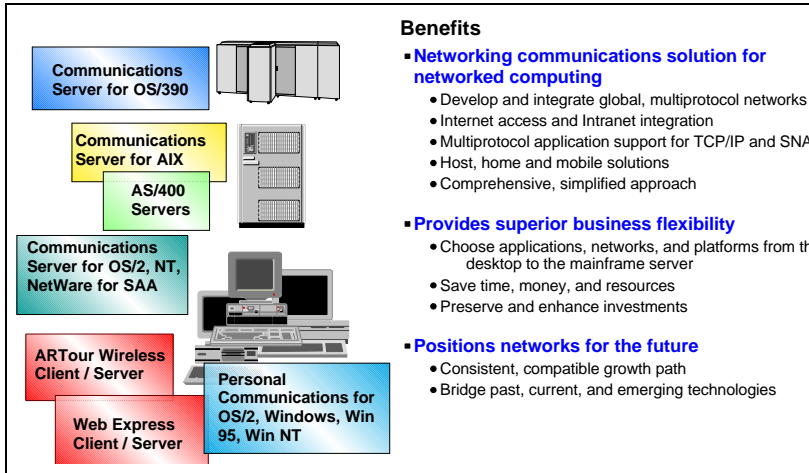# eNetwork™ Software Directions - Overview

Personal Communication Clients are provided for Windows NT, Windows 95, Windows 3.1 and OS/2.

The current solution provides the following benefits:

Current client/server products support the pervasive enterprise platforms

Next Generation Communications Client/Server Solutions
Enterprises with interconnected LAN networks require better ways of dealing with addresses, security, and more effective utilization of network resources. The next generation projects *code named* **Cepheus (Client) and Cassiopeia (Servers)** are targeted at developing further universal connectivity and information access capabilities coupled with exploiting distributed services such as directory access for more cost effective networking.

The following communications client/server roadmap illustrates this direction:
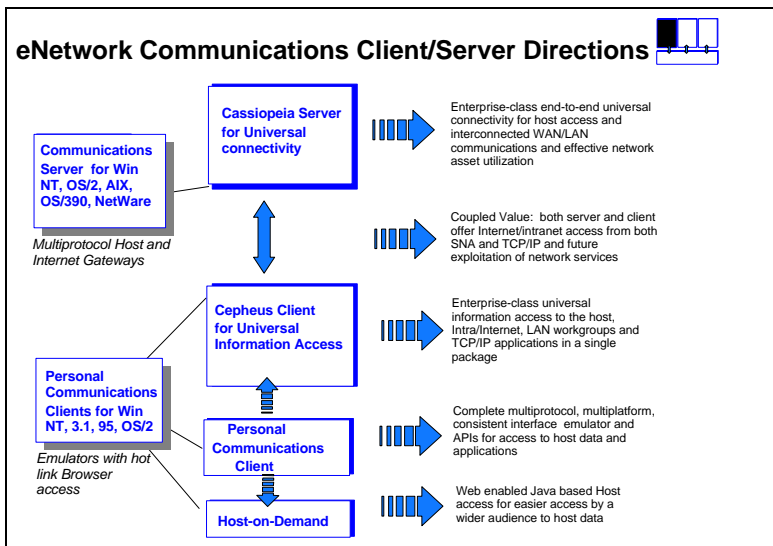
Next generation Communications Client/Servers are targetted at enhanced universal connectivity and information access, exploiting distributed services

Communications Client Evolution
The end user is also facing more complexity as the use of networked applications increases.   Each client workstation is being upgraded with mail programs, host

eNetwork™ Software Directions - Overview

emulators, and Internet and intranet browsers. Each system represents another source of network management and administration, as well as education needs for the end user. Our solution to this requirement is a consistent, powerful set of IBM Personal Communications (PCOMM) client offerings across the pervasive enterprise client platforms. PCOMM s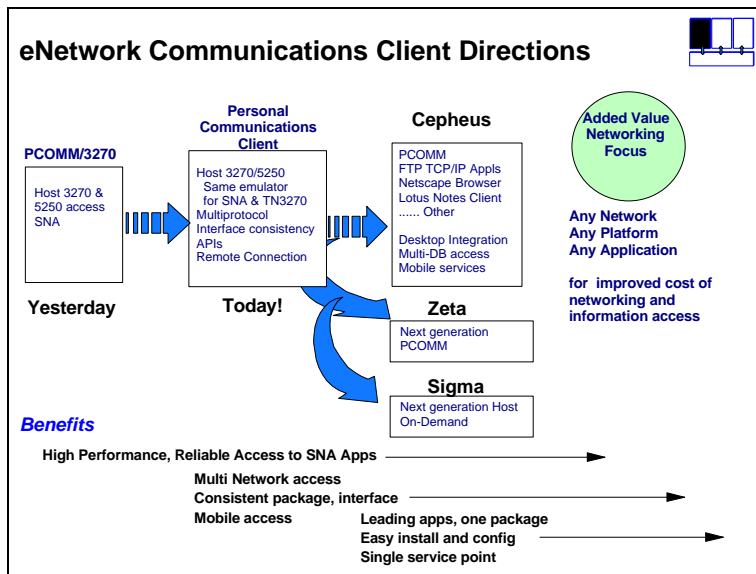upports Enterprise-Class access to traditional host applications across SNA or TCP/IP networks. Enhancing easy usage, IBM was first in the industry to allow the user to launch a browser and navigate to a Web URL from the emulator.

The PCOMM client evolution will take three forms. The first, code named **Zeta**, will continue enhancements to the stand-alone full function emulator with a consistent interface across multiple platforms, comprehensive connectivity, improved alternative data source access and extensive API support for application development.

The second product, code named **Sigma,** will be a higher function offering than the recently available Host On-Demand product. Designed for Web access, it will not provide all the capabilities of the full function PCOMM client due to limitations in Java. This product will evolve with the Java environment.

The third area of development is the next version of the recent Communications Suite, code named **Cepheus.** The following roadmap illustrates the client evolution:

Communications Client Directions ...

- PCOMM today
- Zeta Project
- Sigma Project
- Communications Suite with Cepheus Project follow-on

The first introduction of Cepheus is the recently announced ***IBM eNetwork Communications Suite*™.** This product includes host data/application access (the PCOMM products), leading edge TCP/IP applications for network access (from our partnership with FTP Software, Inc.*), Internet access (using a Netscape Navigator* browser), and collaborative application access (with a Lotus Notes* client). These capabilities are shipped in a single, easy to install and configure package with a single telephone number to call for support.

IBM eNetwork Communications Suite includes PCOMM, FTP Software, Netscape Navigator, and the Lotus Mail Client in a single package

eNetwork™ Software Directions - Overview

IBM eNetwork Communications Suite - *New!*

```
3270 /
5250
Host
Applications
                    Internet
          Corporate
          Intranet
VT52-420
                                              Communication
          Local or                           and
          Wide Area                          Collaboration
          Network      NFS,
                       FTP,
                       etc.

Communications Suite
■ IBM Personal            Windows 3.1,
  Communications          Windows 95,
  (PCOMM)                 Windows NT
■ Lotus Notes Mail*
■ FTP Software+ TCP/IP
■ Netscape Navigator* and
  plug-ins
```

■ **Enterprise-Class Dependability**
 – Leadership products in their class in capabilities
 – Leadership products for Enterprise requirements in reliability, scalability, security

■ **End to End Universal Information Access**
 – Host data, Host applications, Intranet access, Internet Access, Notes Mail, Notes Discussion, TCP/IP servers in the office
 – Office desktop, on the road or at home

■ **Easy To Install/Use**
 – Familiar user interfaces
 – Single installation
 – Integrated desktop (future)

■ **Effective Utilization**
 – Single service point contact
 – Standard desktop for consistent support

The key benefit is simplicity -- single installation interface, single point of service, standard desktop for less costly support, and future integration for easier and simpler working at a common desktop. All four of the most common network applications regularly used at enterprise workstations will be available and supported together in this one package.

This provides a standard communications desktop, helping reduce the cost of installation and management. The end user will be able to access to a wider range of host applications across multiple network types and platforms in a consistent manner from a familiar interface. This can reduce the cost of training for end users and give more flexibility to network administrators.

Communications Server Evolution
Managing all the resources associated with a network, such as end user addresses, can be unnecessarily complex. **Cassiopeia** is targeted to expand the services beyond host gateway access and multiple protocol integration, to simplify networking, and to provide easier management and more effective utilization of Interconnected LANs.

Cassiopeia is the next generation communications project with easier management and more effective utilization on Interconnected LANs

The key will be the exploitation of distributed services to build the notion of a set of interconnected networking communication services across a virtual enterprise network. This network can be connected to internal networks (intranets), external networks (the Internet) and to interconnected or "networked enterprises" for greater business productivity and efficiencies.

The following roadmap illustrates the Communications Server direction:

eNetwork™ Software Directions - Overview
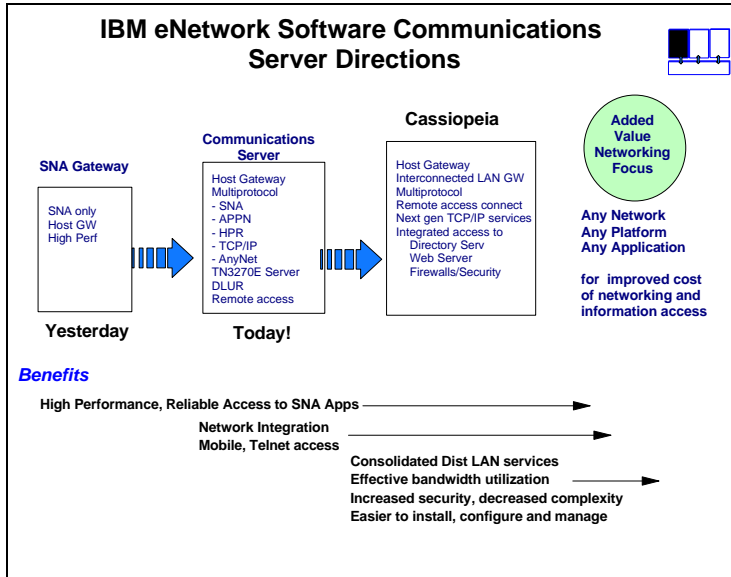
Cassiopeia will provide facilities for simplifying network administration. Some of the types of functions are firewalls for Internet/intranet security, easier access to enterprise applications, enhanced security management, and local directory access for configuration and management. These services improve the ease of installation and operation for the network manager, resulting in more cost effective use of the network. These new capabilities will be rolled out incrementally in the near future.

In addition to the features and advantages of the IBM communication clients and servers, there is significant **coupled value** in using the family of clients and servers together. The network owner is offered access to host applications from either SNA or TCP/IP networks, access to the Internet or intranets from both SNA and TCP/IP, and a common installation, administration, and support structure. These robust products provide the foundation upon which the other IBM networking initiatives will be based.

Cassiopeia will exploit distributed services to simplify network administration and more effectively utilize the network resources

On-Demand Networking

The demands placed on the network infrastructure by the Internet and Network Computing are significant. Since clients rely on servers to download Java and ActiveX applets, the traffic patterns are unpredictable. It becomes more difficult to provide end users with adequate response without investing in excessive, expensive network capacity.

By combining the capabilities of servers and clients, eNetwork Software addresses this problem on enterprise networks by dynamically tuning the network. Network utilization is optimized so that capacity expansions can be postponed. Response times are predictable so that transaction-oriented applications can be run productively.

The On-Demand solutions are targetted at optimizing the network and providing services for network server directed Java applications

eNetwork Software On-Demand Directions
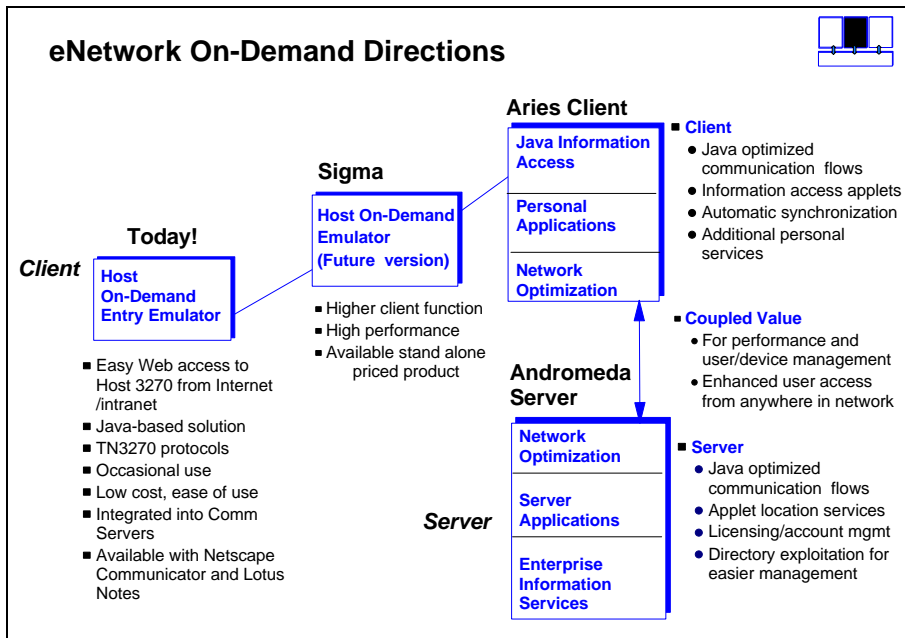
The following chart represents the planned solution directions. Consistent with the growing delivery philosophy for Web solutions, these products will be released in incremental stages for faster customer enablement. The following roadmap illustrates an overall goal for the initial set of releases over the next 12 - 18 months as technologies mature and solution benefits are realized.

eNetwork™ Software Directions - Overview

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eNetwork On-Demand Directions

Aries Client

Sigma

Today!

Client

Host On-Demand Entry Emulator

Host On-Demand Emulator (Future version)

Java Information Access

Personal Applications

Network Optimization

■ Higher client function
■ High performance
■ Available stand alone priced product

■ Easy Web access to Host 3270 from Internet /intranet
■ Java-based solution
■ TN3270 protocols
■ Occasional use
■ Low cost, ease of use
■ Integrated into Comm Servers
■ Available with Netscape Communicator and Lotus Notes

■ **Client**
  ● Java optimized communication flows
  ● Information access applets
  ● Automatic synchronization
  ● Additional personal services

■ **Coupled Value**
  ● For performance and user/device management
  ● Enhanced user access from anywhere in network

Andromeda Server

Server

Network Optimization

Server Applications

Enterprise Information Services

■ **Server**
  ● Java optimized communication flows
  ● Applet location services
  ● Licensing/account mgmt
  ● Directory exploitation for easier management

On-Demand Directions...

- Host On-Demand today
- Sigma HOD Project
- Aries Client Project

The first step was the introduction of **IBM Host On-Demand**™, a Java applet entry-level emulator that lets users access host applications from a browser. The initial version is part of the IBM Communication Server and PCOMM offerings as well as part of the Netscape Communicator Professional Edition offering from Netscape.

The next step will be a second offering that is an On-Demand full function emulator as a Java applet code named **Sigma.** This product will provide enhanced capabilities such as file transfer, programmable interfaces, print, and security. It will provide a solution for either network computer users (such as the IBM Network Station) or regular PC users for easy access to host applications and data with low network support costs.
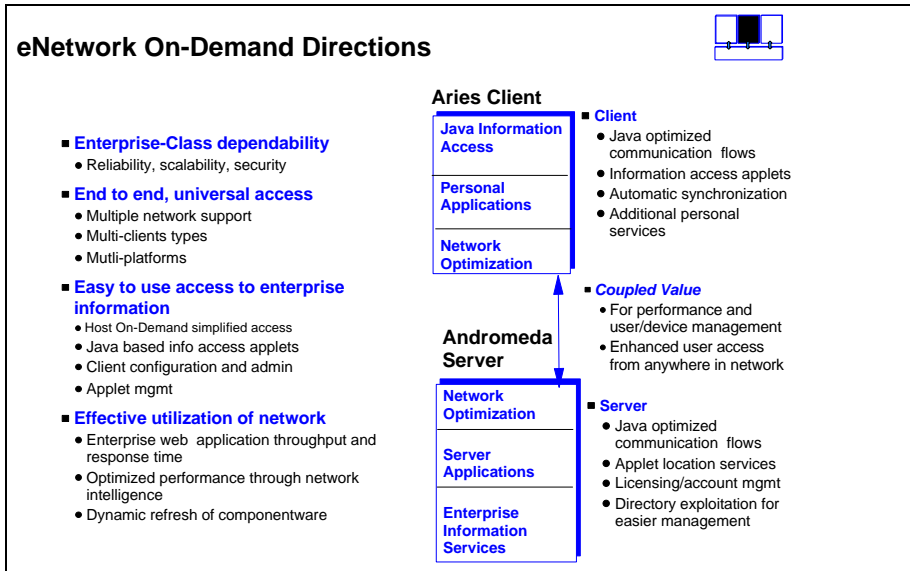
IBM will continue the direction established with the Host On-Demand emulator products in supporting Java environments, with a tailored client and server offering for all types of distributed applications. The **Aries** client project is a client which will utilize a browser as a desktop container and can provide not only the full function emulator but other Java applets and network computing services. It will support universal information access across the enterprise, intranets and the Internet.

IBM Host On-Demand products will be followed by a coupled value Network Computing On-Demand server and client product

Based on the end user and device profiles, the Aries client user will be able to get applications on demand independent of the client device thus improving any to any access and productivity. This can reduce the cost of networking through central administration of application software and network management. It can also aid in reducing the cost of enabling Java capability across multiple device types, either on the new network computing devices or standard PCs.

Aries client will be complemented by an advanced On-Demand server, code named **Andromeda,** to provide the fundamental communications, management middleware and applications. The Andromeda server provides enhanced services such as applet serving, user/device profile management, applet/user location, and work flow management.

eNetwork™ Software Directions - Overview

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eNetwork On-Demand Directions

Aries Client

- **Enterprise-Class dependability**
  - Reliability, scalability, security
- **End to end, universal access**
  - Multiple network support
  - Multi-clients types
  - Mutli-platforms
- **Easy to use access to enterprise information**
  - Host On-Demand simplified access
  - Java based info access applets
  - Client configuration and admin
  - Applet mgmt
- **Effective utilization of network**
  - Enterprise web application throughput and response time
  - Optimized performance through network intelligence
  - Dynamic refresh of componentware

Java Information Access

Personal Applications

Network Optimization

- **Client**
  - Java optimized communication flows
  - Information access applets
  - Automatic synchronization
  - Additional personal services

- *Coupled Value*
  - For performance and user/device management
  - Enhanced user access from anywhere in network

Andromeda Server

Network Optimization

Server Applications

Enterprise Information Services

- **Server**
  - Java optimized communication flows
  - Applet location services
  - Licensing/account mgmt
  - Directory exploitation for easier management

Andromeda will serve multiple client types including Network Computers, Desktops, and Mobile clients

The new On-Demand servers and clients will work with other types of clients and servers which use industry standard interfaces and protocols. A key value to the network owner, however, is the coupled value of the On-Demand products. Working together, the eNetwork Software On-Demand server and client address a whole series of management, network, and performance issues necessary to bring network computing to a global enterprise. They will be able to optimize bandwidth management and load balancing by adapting to the type of traffic being handled. They also will have the capability of tailoring the components sent from the server to the client based on device and user profiles. This ability to dynamically adjust to the nature of the application and the network allows outstanding service to end users.

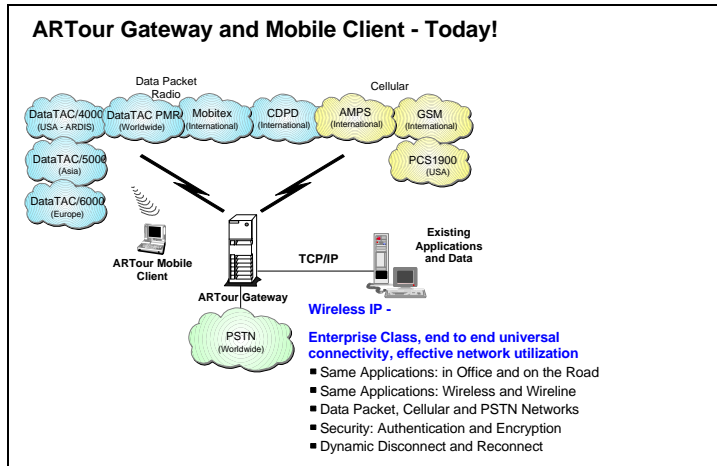### Advanced Mobile Networking

Providing reliable and efficient communications to the increasingly mobile workforce is another focus of eNetwork Software. IBM is expanding its wireless only offering in a staged evolution to mobile access, both wired and wireless.

Connections to mobile workers is becoming an increasing part of an enterprise network. Obtaining access to valuable corporate data regardless of location in a timely, secure, and efficient manner is a competitive advantage for a large number of enterprises. This adds significant complexity in dealing with the expensive, relatively low speed wireless (and even remote dial) facilities as well as the difficulty of granting secure network access to end users who are changing location.

Advanced mobile solutions for office applications, industry applications, and future mobile devices

In March 1997, IBM announced a family of wireless connectivity program products based on the IBM ARTour technology to make information available to mobile workers over a wide variety of wireless technologies, shielding all radio network-specific details from the user application. The IBM ARTour Gateway and IBM ARTour Mobile Client provide various data optimization features to reduce the ongoing usage costs of wireless networks. Existing TCP/IP applications can be run transparently over wireless links with ARTour; an SNA emulator option is also available. These products can enhance the productivity of the mobile workforce by providing cost-effective access to the Internet/intranet.
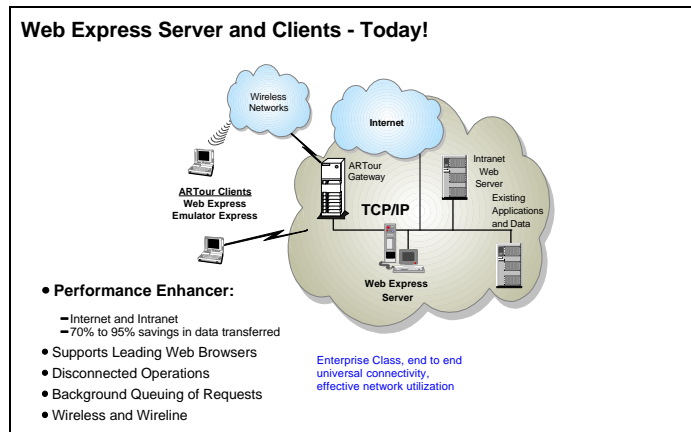
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ARTour Gateway and Mobile Client - Today!

Data Packet Radio

DataTAC/4000 (USA - ARDIS)   DataTAC PMR (Worldwide)   Mobitex (International)   CDPD (International)

Cellular

AMPS (International)   GSM (International)

DataTAC/5000 (Asia)

PCS1900 (USA)

DataTAC/6000 (Europe)

ARTour Mobile Client

TCP/IP

Existing Applications and Data

ARTour Gateway

PSTN (Worldwide)

Wireless IP -
Enterprise Class, end to end universal connectivity, effective network utilization
- Same Applications: in Office and on the Road
- Same Applications: Wireless and Wireline
- Data Packet, Cellular and PSTN Networks
- Security: Authentication and Encryption
- Dynamic Disconnect and Reconnect

Artour provides the ability to run TCP/IP applications over a wide variety of wireless networks

The next step is to extend ARTour technology into remote access and wireline communications as well to support the overall needs of the mobile professional. Using our ARTour Web Express technology, the efficiencies of optimized communication essential for wireless links can also be utilized over low-speed remote access lines. Another significant capability is "differencing," so that in the exchange of large pages of information only the modified content has to be transmitted.

Web Express Server and Clients - Today!

Wireless Networks

Internet

ARTour Gateway

Intranet Web Server

ARTour Clients
Web Express
Emulator Express

Existing Applications and Data

TCP/IP

Web Express Server

- **Performance Enhancer:**
  - Internet and Intranet
  - 70% to 95% savings in data transferred
- Supports Leading Web Browsers
- Disconnected Operations
- Background Queuing of Requests
- Wireless and Wireline

Enterprise Class, end to end universal connectivity, effective network utilization

Artour WebExpress optimizes performance of HTTP applications over low bandwidth, high latency networks
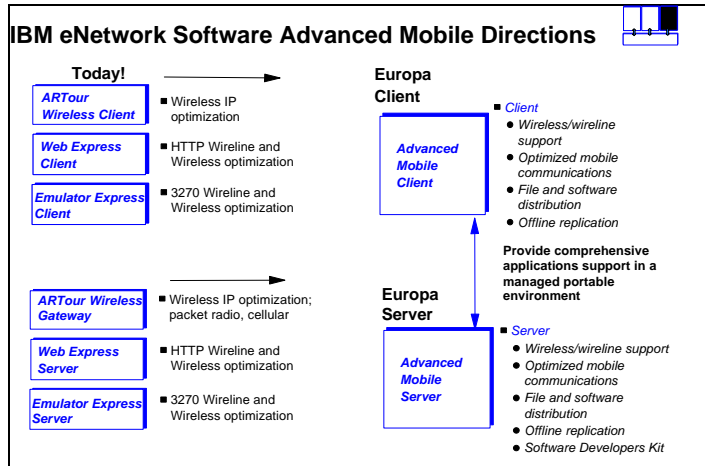
Mobile customers will be able to implement TCP/IP based communications effectively from any location with our new ARTour Web Express Client and Server. This technology will provide mobile access to host SNA applications as well. Real-time access to data and applications for a mobile work force is provided from any location. The ARTour Web Express client will also provide access to Lotus resources when a Lotus Domino server is in the network. Optimization for data traffic types, such as Web HTTP and 3270 data streams is also supported. Even though the technology is sophisticated, it is hidden from users and their applications, simplifying mobile computing for users and administrators.

Advanced Mobile Directions - The Europa Project

eNetwork™ Software Directions - Overview

A future phase, code named **Europa**, is to provide the professional user with advanced mobile access for more efficient remote connections and advanced disconnected operational capability. A person will be able to log on, replicate, log off and work offline. The result is lower connect costs, more flexibility, greater productivity and overall more effective business work.

The following chart provides the roadmap for the Europa project:

With this capability, customers will be able to run existing applications anywhere -- local, remote, wireless -- minimizing the cost of transmission, management, and configuration, and maximizing the usability, reliability, and performance in limited transmission networks -- wireless or remote dial.

The Europa project will "mobile enable" applications as well as develop new classes of applications for mobile professionals. In addition, it provides a tremendous opportunity for ISVs to mobile enable current applications; this greatly increases their opportunity in the marketplace.

Advanced Mobile Directions ...

Europa project to develop Mobile middleware that will enable applications for more efficient remote connections and disconnected operational capability

The following chart illustrates some of these possibilities in combination with the Cepheus and Aries/Andromeda projects as well as ISVs and emerging platforms:
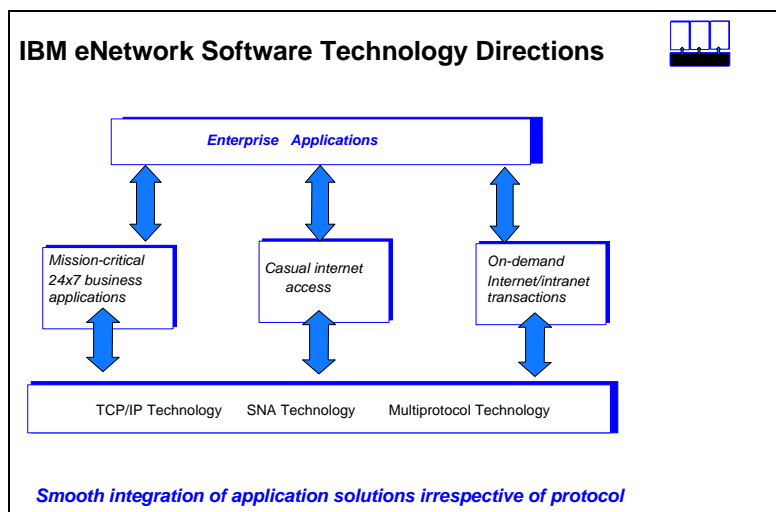
eNetwork™ Software Directions - Overview

IBM eNetwork Software Advanced Mobile Directions

- Cepheus Mobile enabled client

Europa client enables applications for Mobile Professionals

Europa Server

- Corporate Servers

DB2/IMS Domino CICS ...

- Aries Mobile enabled client

Advanced replication services
- Compressed and "pushed" to the mobile user

Offline processing
- Application, Transactions, Web browsing

Authenticated, automatic config mgmt
- Control of base site systems administrators

Gateways for alternative devices

- ISV Vertical Applications Mobile enabled

Other Mobile Devices Pager, SmartPhone, HPC

Mobile solutions can be integrated into all the other initiatives

Networking Technology Leadership

Many enterprises are looking for ways to run any application over any network type with the quality and robustness required by business applications. Unfortunately, it is time consuming and expensive to develop applications that support many different network types. So most applications only work with one network type. This means that the type of network may limit the choice of applications.

IBM eNetwork Software Technology Directions

Enterprise Applications

Mission-critical 24x7 business applications

Casual internet access

On-demand Internet/intranet transactions

TCP/IP Technology   SNA Technology   Multiprotocol Technology

Smooth integration of application solutions irrespective of protocol

Adding leadership in TCP/IP networking to the existing SNA position in the industry will offer IBM customers Enterprise-Class networking

Using eNetwork, the best network and applications can be chosen without compromise. For example, IT professionals can select networks based on criteria such as response time, security, manageability, reliability, and interoperability with other organizations. eNetwork Software integrated multiprotocol solutions will enable end users to access current and future applications using their choice of networking protocols.

IBM is widely known as the originator and leader in SNA networking, which is the basis for thousands of mission-critical business networks around the world. IBM is
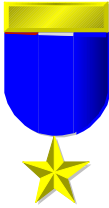
eNetwork™ Software Directions - Overview

emphasizing **leadership in TCP/IP** communications as well, so that network users can be assured of Enterprise-Class connectivity regardless of network protocol selection.

Within *e*Network Software, the TCP/IP leadership emphasis (project Carbon) is on four areas: Enterprise-Class TCP/IP, "plug and go" anywhere with secure network access, Internet/intranet solutions and enhanced solutions through the recent IBM/FTP Software alliance. Our recent alliance with FTP Software, Inc., which brings world class TCP/IP workstation support for the Windows platforms to IBM, is an example of how we will be delivering the best solution for enterprise network needs.

TCP/IP Leadership Initiative ...

- Enterprise-Class
- "Plug and go" anywhere with secure network access
- Leading edge technologies for Internet/Intranet solutions
- IBM/FTP alliance for enhanced solutions

IBM eNetwork Software TCP/IP Leadership Initiative

Providing networking solutions that satisfy our customers' diverse business requirements:

- **Enterprise class for real business networks**
  - Improved availability / reliability through dynamic connection
  - Enhanced scalability from desktops to parallel sysplex
  - Direct access to enterprise applications (CICS, IMS, 3270)
- **"Plug and go" anywhere with secure network access**
  - Secure access for mobile users
  - IP security and firewall solutions
  - Secure web servers
- **Leading edge technologies for expanding Internet/intranet solutions**
  - IPv6, providing increased addressability, quality of service
  - Video server, providing multimedia to the desktop
  - Java solutions for network computing
- **IBM / FTP alliance to provide enhanced solutions for our customers**
  - Virtual IP for dynamic network access, anywhere
  - Extended reach across enterprise desktop platforms

IBM is delivering many of the same kind of Enterprise-Class reliability, performance, and scalability characteristics in TCP/IP solutions that are present in SNA networks today. In 1997 we are shipping solutions for both mainframe and workstation products that will ease the establishment of enterprise networks by virtual addressing techniques. This makes it much more feasible to implement TCP/IP solutions across large enterprise networks. Increased performance, improved reliability, and consolidated packaging all make IBM TCP/IP the right choice. Users who need direct socket access to CICS or IMS data can use socket server features of Communications Server for OS/390 and MVS as well.

Our TCP/IP networking is being enhanced for the dynamics of mobile users, for "plug and go" secure network *access.* This includes support for the new Dynamic IP, which allows TCP/IP clients to change locations and still be able to gain access to network services. This mobility is coupled with new security support, such as IPsec, to help ensure that only authorized users can obtain access to business data from the mobile connection points. Security even in Internet applications is maintained by our firewall products as well as support for the industry encryption standards.

As a demonstration of the IBM commitment to the Internet and intranet, we will be shipping support for the IPv6 standards, which allows expanded address capability, enhanced security, and class of service functions. In addition, the Java-based technology used in the eNetwork Software On-Demand products is another part of this thrust. The

eNetwork™ Software Directions - Overview

express technology used in the mobile products is also a capability which allows use of the Internet for wide ranging business applications through data compression and protocol reduction.

IBM continues to enhance its SNA offerings as well. The roll out of SNA High-Performance Routing is being extended to all platforms in 1997, including the new Windows NT clients and servers. Enhancements being introduced currently on the Communication Server for OS/390 include expanded support for the S/390 Multi Path Channel, native ATM support with quality of service, enhanced availability in a S/390 parallel sysplex through multinode persistent sessions, and increased Advanced Peer-toPeer Networking management support.

IBM eNetwork Software will also offer integrated solutions to address the need to:
- Seamlessly access SNA applications over IP networks without reprogramming
- Access traditional transaction based applications from sockets clients
- Access sockets applications over SNA networks
- Access traditional host based applications from a Java environment

For example, our eNetwork Software communications client and server families contain capabilities such as the most scalable, cost-effective TN3270 function that will extend the reach and value of the large installed based of mission critical SNA applications to new TCP/IP clients. And we are prototyping the capability for Java clients to use traditional SNA programming interfaces over an SNA network. Such functions provide a choice of solutions to best meet business needs while protecting current network investments.

Summary

Never before have networking capabilities offered the promise for productivity and enterprise success that are available today. With the promise comes the challenge of harnessing these capabilities effectively. The network owner must be able to make valuable data accessible throughout the enterprise and beyond. Heterogeneous computing systems and network protocols must be integrated. New network computing advances must be exploited. Mobile workers and mobile professionals must be fully supported. And this all must be done in a cost beneficial manner.

To address these needs, IBM is introducing **eNetwork Software**. Based on many years of extensive enterprise computing experience, the eNetwork Software servers and clients will have enduring qualities of Enterprise-Class, end to end connectivity, ease of implementation and usage, and effective utilization of the available network resources. IBM eNetwork Software combines exciting new multiprotocol technologies with the quality reputation which has been a part of extensive mission-critical communications networks, including global banking networks, securities networks, and major manufacturing operations. These new comprehensive capabilities have the flexibility and range to be applied to all size networks, bringing the promise of Network Computing to all.

The eNetwork Software initiatives and project directions are summarized below:

Continued enhancements to SNA for HPR, multi-path channel, native ATM suport, parallel sysplex, and APPN management

With eNetwork Software, build an integrated solution to allow SNA applications over TCP/IP with quality of service support

IBM eNetwork Software for Enterprise-Class universal connectivity and information access is the foundation for Network Computing

eNetwork™ Software Directions - Overview

IBM eNetwork Software Summary

- **Enterprise Networking** for more effective universal connectivity and network asset utilization

- **On-Demand Networking** for leadership in lower cost Network driven Java application solutions

- **Advanced Mobile Networking** for more efficient mobile professional application usage

- **Networking Technology** Leadership with expanded focus on TCP/IP and network integration

- Personal Communications Today
- Communications Suite New!
- Communications Server for NT New!
- Cepheus Client Direction
- Cassiopeia Server Direction

- Host On-Demand Today
- Aries/Andromeda Client/Server Direction

- ARTour Wireless Client/GW Today
- WebExpress Client/Server Today
- Europa Client/Server Direction

- FTP Alliance
- TCP/IP Business Leadership
- Common application infrastructure initiative

IBM eNetwork Software for more cost effective Network Computing

- Enterprise-Class dependability
- End to end universal access
- Easy installation, configuration, and management
- Effective network asset management

IBM eNetwork Software Initiatives...
- Enterprise Networking
- On-Demand Networking
- Advanced Mobile Networking
- Networking Technology Leadership

So it is clear, that regardless of the size of the network, the type of the network, or the application running over the network - the solution that best addresses enterprise needs today and the changing needs in the future is IBM eNetwork Software.

For more information about IBM eNetwork Software solutions, contact an IBM representative or Business Partner.   Visitors are welcome to learn more and contact us on the World Wide Web at ***http://www.networking.ibm.com/eNetwork***.

eNetwork™ Software Directions - Overview

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