

Novell® NetMail™

Scalable, Cost-effective E-mail and Calendaring
for Your Deskless Workforce

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table of contents

Novell NetMail: Scalable,
Cost-effective E-mail and Calendaring
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2	EXECUTIVE SUMMARY
3	DESKLESS WORKERS NEED COMMUNICATION AND COLLABORATION TOOLS
5	ROADBLOCKS TO EMPOWERING THE DESKLESS WORKFORCE
6	REQUIREMENTS FOR A SOLUTION
9	NOVELL NETMAIL—E-MAIL AND CALENDARING FOR THE DESKLESS WORKFORCE
12	CONCLUSION

Executive Summary

Large enterprises have invested millions of dollars to implement communication and collaboration tools that make their knowledge workers more productive. These employees exchange information effortlessly using e-mail, manage their time more efficiently with calendaring and task management tools, and tap into the power of the Web to do their jobs more effectively.

Until now, however, deskless workers—a group that represents more than half of all employees in the typical enterprise—have been left behind. Most organizations find that it's too costly and complex to equip this large employee group with e-mail and calendaring capabilities.

To succeed in the Net economy, organizations must find ways to empower this important group of employees by enabling them to communicate and collaborate electronically with each other and with people at corporate headquarters and branch offices. It's the only way to fully leverage the knowledge, skills and experience of these valuable front-line workers.

Fortunately, new technologies and the Internet are reducing the cost and complexity of providing e-mail and calendaring to large user groups. Novell®, the leading provider of Net business solutions, has developed a scalable, high-performance e-mail and calendaring system that is capable of supporting literally hundreds of thousands of users on a single server. Because of its scalability and ease of management, Novell NetMail™ offers organizations a low-cost, highly effective e-mail and calendaring solution for its deskless workforce.

This paper examines the importance of providing deskless workers with e-mail and calendaring. It describes the requirements for a solution that meets the needs of enterprises with a large deskless workforce. In addition, it provides an overview of NetMail and explains how this leading-edge solution makes it feasible and cost effective for enterprises in a broad range of industries to bring e-mail and calendaring to deskless employees.

DESKLESS WORKERS NEED COMMUNICATION AND COLLABORATION TOOLS

Effective communication and collaboration throughout the entire enterprise are key ingredients for success in today's business environment. Tools such as e-mail and calendaring enable people to:

- Interact and share up-to-date and consistent information and ideas.
- Carry on detailed communications among team members and groups—especially when people are scattered geographically.
- Manage their time effectively.

As a result, e-mail and calendaring have become mission-critical applications in many organizations. These tools maximize employee productivity and overall organizational effectiveness. They also help organizations meet customer

demands for high-quality service by enabling a free flow of information throughout the organization, thereby improving responsiveness and efficiency. By providing these important advantages, these tools enhance the bottom line.

Organizations of all types and sizes have already invested heavily to provide these tools for their knowledge workers—the executives, managers, professional and specialty personnel, and administrative support staff. These people typically work from a desk and have a dedicated desktop computer and perhaps a laptop computer as well. As Figure 1 shows, however, knowledge workers represent only 44.3 percent of the workforce in the U.S. The remaining 55.7 percent are deskless workers—people who don't have a desk at work and don't have convenient access to the enterprise network. Their jobs are often mobile in nature.

WORK SEGMENT	WORKERS (000)	PERCENT
Knowledge Workers		
Professional, specialty	20,729	
Administrative support	19,020	
Subtotal	59,513	44.3
Deskless Workers		
Sales	16,138	
Technicians	4,384	
Private household	884	
Protective service	2,364	
Other services	15,423	
Farming, forestry, fishing	3,245	
Precision production	14,386	
Machine operators	7,352	
Transportation, etc.	5,340	
Handlers, laborers	5,310	
Subtotal	74,825	55.7
Total	134,338	100.0

Figure 1. Percentages of desk-based and deskless workers in the U.S. workforce.

Source: AmeriStat (Population Reference Bureau) 2000

Figure 2. Examples of deskless workers.

Deskless workers play an important role in a variety of industries and in organizations of all sizes. Figure 2 lists various deskless worker groups in several key industries as well as in the public sector.

SECTOR/INDUSTRY	DESKLESS WORKERS
Manufacturing	Factory and warehouse workers
Healthcare	Nurses, some physicians, other medical personnel
Air transportation	Pilots, flight attendants, ground crew
Public utilities/telecom	Repair crews
Government	Police, firefighters, repair crews, inspectors
Retail	Store clerks, distribution staff
Construction	Construction workers, delivery personnel

Deskless workers typically don't have access to a computer at work. Those who do often share a computer with other employees. As a result, a large number of employees in many enterprises don't have convenient access to essential e-mail and calendaring tools.

Leveraging the Value of Deskless Workers

Deskless workers are key participants in the success of the enterprise. By arming them with communication and collaboration tools, these people can:

- Share their knowledge, ideas and insights with others in the organization.
- Receive vital job information in a timely manner.
- Receive corporate communications and human resource announcements.
- Communicate essential information such as progress reports and job status in an efficient, reliable manner.

Deskless workers are front-line employees with years of valuable experience. With the right tools, they can share their accumulated knowledge with other employees. Field technicians, for example,

can share customer service issues with sales representatives to enhance sales activities.

They can also share product defect information with engineering and manufacturing to improve product quality and reliability. Experienced store clerks can share insights regarding customer reactions to improve the effectiveness of merchandise displays and marketing promotions. Enterprises that tap the experience, skills and expertise of these employees benefit by expanding corporate knowledge and improving effectiveness—which enhances the bottom line.

Communication and collaboration tools also speed the dissemination of essential job information, ensuring its timeliness and ready availability. Examples include job schedules (both new and revised), work orders, manufacturing specifications, and process formulas and recipes. By making this information instantly available in electronic form, the enterprise can eliminate delays and errors that often occur when communicating by phone or paper. Employees don't waste valuable time going to the wrong locations because they didn't receive job schedule changes in time.

Manufacturing personnel receive updates to manufacturing schedules immediately, so they produce the right items at the right time. Rapid dissemination of information translates into higher employee productivity and higher profitability. It also increases job satisfaction and employee retention, which reduces costs substantially.

Communication and collaboration tools provide a highly efficient means of distributing corporate information. E-mail eliminates paperwork and speeds the dissemination of corporate announcements, policies, procedures and other vital information. Airline employees, for example, can access the latest security policies and procedures. This saves time, cuts costs and ensures that employees receive essential information in a timely manner.

The ability to communicate work order status and progress reports electronically provides timely and consistent information to all employees. It opens the lines of communications for coordination, inquiries and feedback. It also eliminates the delays and errors associated with manual coordination of efforts using telephone and paper forms. Electric utility workers, for example, can report on their progress toward restoring power during an outage. This enables the utility to keep customers informed as to when the problem will be resolved. By providing status reports throughout the day instead of batching them for entry at a later time, the organization saves time, cuts costs, reduces the risk of errors and enhances responsiveness.

ROADBLOCKS TO EMPOWERING THE DESKLESS WORKFORCE

In large enterprises, the deskless workforce can number in the thousands to tens of thousands. Such large numbers have made giving deskless workers access to traditional communication and collaboration tools cost prohibitive. That's because traditional collaboration tools are expensive to deploy and manage.

Enterprises cannot afford to provide every deskless worker with a dedicated computer. In addition, it is impractical for enterprises to pay high software license fees for capabilities that traditional tools include but deskless workers typically don't need—capabilities such as document management, contact management and project management. Deskless workers primarily need e-mail, calendaring and access to online discussion groups.

What's more, extending traditional collaboration tools, such as Microsoft* Exchange and Lotus Notes*, to deskless workers also requires the deployment of additional server hardware to support the large increase in users. More servers mean higher purchase, deployment, maintenance and administration costs.

What's more, providing access to deskless workers is technically complex because of the mobile nature of their jobs. Deskless workers need to be able to access the tools from a wide variety of locations as they move about during their workday. Extending enterprise networks to accommodate mobile access to traditional tools significantly increases network complexity and cost.

Some enterprises are using public messaging systems such as Hotmail* to extend communication to deskless workers. This approach, although it is low cost, has major drawbacks. It doesn't provide adequate control, and it doesn't provide security for confidential exchanges.

REQUIREMENTS FOR A SOLUTION

Enterprises need an e-mail and calendaring solution that permits easy, cost-effective, anywhere, anytime access by deskless workers. In addition, the solution must also support access by the current base of knowledge workers who use existing communication and collaboration systems. To be effective, the solution must offer:

- Extensive scalability
- Complementary to current environment
- Extensive standards support
- High availability
- Directory foundation
- Broad e-mail and calendaring functionality
- Support for Web-enabled mobile access devices

Extensive Scalability

Extending e-mail and calendaring to the deskless workforce involves supporting a huge increase in the network user base. Extensive scalability is crucial in this environment. It ensures that the e-mail and calendaring system can accommodate a large number of users and heavy message volume while containing costs, delivering fast performance and providing manageability.

A high level of scalability also permits the enterprise to extend access to users outside the organization in a cost-effective manner. Businesses, for example, can extend access to business partners, customers and suppliers, and governments can make e-mail services available to citizens.

The more users each server can support, the fewer servers the enterprise will need. By minimizing the number of servers, the enterprise can deploy the solution more quickly and reduce acquisition costs and floor-space requirements. Administration and management are also easier, so the IT staff spends less time on routine maintenance. Larger enterprises should look for a system that supports 100,000 to 200,000 or more users on a single server. In these large-scale environments, message volume can easily reach a million messages a day, so the system should be capable of supporting this level of traffic while still delivering fast performance.

To ensure maximum scalability, the solution should take full advantage of server hardware resources such as multiprocessors. Scaling up to support a growing user base should be a simple matter of adding processors to current servers, or adding servers—without having to shut down the system and disrupt service to users.

Complementary to Current Environment

Many enterprises are already using collaboration systems such as Novell® GroupWise®, Microsoft Exchange and Lotus Notes for their knowledge workers. It isn't practical to uproot these in-place systems because of the disruption to users and the

cost of retraining. Moreover, some organizations—particularly in higher education and government—use more than one e-mail and calendaring system. This environment is already difficult to administer. Extending this conglomeration of systems to deskless users would only add to the difficulty; however, organizations cannot afford the expense and disruption of replacing these systems.

As a result, organizations need a solution that fits in easily with their current environment. They need a solution that extends rather than replaces what they already have. This means the solution must interoperate with existing e-mail and calendaring applications and clients. By complementing rather than replacing e-mail and calendaring tools, the organization can leverage its existing investments.

The solution should run on all popular server platforms, including Windows NT*/2000, NetWare®, Solaris* and Linux*. In this way, the enterprise can implement the solution on the type of platforms it already has deployed, minimizing the impact on network administration and support.

Because deploying client software can be a time-consuming task, the solution should eliminate the need to deploy clients. Users should be able to access e-mail and calendaring capabilities through standard Web browsers. In addition, people should be able to continue using their current e-mail client if they choose. Both of these capabilities reduce training costs and increase user acceptance.

Enterprises should also look for a solution that consolidates their current environment. This is

especially important for those organizations, such as colleges and universities, which often have a variety of e-mail and calendaring systems. A solution that consolidates multiple, disparate systems into a single, unified and cohesive system can greatly simplify management, not only of the new user base but of the existing base as well.

Extensive Standards Support

Support for relevant industry standards helps ensure that the solution will complement the current environment as described above. The solution should support all popular e-mail, calendaring, Internet and security standards. Broad-based standards support eliminates the need for gateways and reduces file translation errors, all without degrading system performance. It also means compatibility and interoperability with other standards-compliant software. As a result, the organization can choose the products that best meet the needs of each user audience while ensuring the ability to communicate internally and externally with other standards-based messaging solutions.

Important standards to be supported include:

- Post Office Protocol version 3 (POP3) and Internet Message Access Protocol version 4 (IMAP4) to ensure compatibility with all popular e-mail application clients (Novell GroupWise, Microsoft Outlook and Outlook Express, Netscape Communicator*, Eudora*, Pegasus and other integrated or standalone e-mail clients).

- Simple Mail Transfer Protocol (SMTP) to provide compatibility with e-mail servers on the Internet and most TCP/IP systems.
- HyperText Transport Protocol (HTTP), so users can access their mailboxes and system administrators can manage users and servers from any standard Web browser.
- Internet Calendar (iCal) standard, to ensure interoperability with any client or server that supports the iCal standard.

High Availability

Disruptions in e-mail and calendaring services can result in substantial productivity losses and significant costs. That's why the solution should have a proven track record for reliability and trouble-free operation. It should include built-in fault-tolerance features. It should also support the distribution of services such as SMTP, IMAP4 and POP3 across multiple servers to shield critical processes from a single point of failure. High availability ensures that users stay productive and user satisfaction levels remain high. It also reduces support costs by minimizing the amount of time administrators and support personnel spend on troubleshooting and problem solving.

Directory Foundation

To meet the requirements discussed in this section, the solution needs to be built from the ground up on a directory foundation. A directory provides a single, consolidated view of all users and servers, even though user and server information may be scattered across multiple systems in the network.

A directory also provides a common interface for managing the e-mail and calendaring system in conjunction with all other network resources.

With a directory, administrators can manage user accounts, hardware and software configuration, and security all through a single point. Single point management simplifies user administration and problem solving. It also eliminates the need to maintain user account and server information separately in multiple applications, and the need to synchronize this information manually across multiple data repositories.

While the directory should provide a single point for management, it should also permit delegation of administration. Administrators should be able to assign management on a domain basis. This places administration capabilities in the hands of local people who are highly familiar with their users' information and needs. As a result, user management is more efficient and timely.

Administrators should also be able to delegate selected tasks to users, enabling user self-service. By allowing users to change passwords, define proxy settings, specify forwarding and vacation reply rules, and to select such preferences as time zone and language, the enterprise can reduce the burden on the IT staff and cut support costs.

The directory should support the Lightweight Directory Access Protocol (LDAP) standard. Compliance with this standard ensures that the mail system can perform lookups across multiple directory services, including Novell eDirectory™, Netscape Directory Server*, Microsoft Active Directory* or one of the many Web-based address

books, to locate organizations, individuals and resources within that directory. This permits consolidation of user information across diverse systems, greatly simplifying management.

Broad E-Mail and Calendaring Feature Set

While deskless workers don't need the range of communication and collaboration functions that knowledge workers require, they do need a full range of e-mail and calendaring features, including the ability to:

- Send, receive, store, organize and archive e-mail messages with attachments.
- Use standard e-mail options, such forward, copy, blind copy and reply.
- Automate forwarding, sorting, delegating, rejecting and vacation replies based on user-specified rules.
- Personalize and organize address books.
- Add appointments, schedule meetings and recurring events, and add notes and to-do lists to calendars.
- Participate in discussion groups.

Because of the loss of productivity that can occur as a result of large volumes of unsolicited bulk mail, the solution should also include extensive anti-spam mechanisms. Enterprises that operate internationally should also look for a solution that supports multiple languages and multiple time zones.

Support for Web-enabled Mobile Access Devices

It is impractical and cost prohibitive to equip all mobile users with portable computers. They need

to be able to access e-mail and schedules from a variety of devices—mobile phones, personal digital assistants (PDAs), Internet kiosks and shared computers. As a result, the solution should support easy and reliable access from a wide variety of fixed and mobile device types.

NOVELL NETMAIL—E-MAIL AND CALENDARING FOR THE DESKLESS WORKFORCE

Novell NetMail 3.1 is a scalable, high-performance e-mail and calendaring system that is based on Internet-standard messaging and security protocols. It is an important component of Novell's one Net vision, which involves a world in which all types of networks—intranets, extranets and the Internet; corporate and public; wired to wireless—work together as one Net to simplify the complexities of eBusiness and provide the power and flexibility organizations need to succeed in the Net economy.

NetMail enables the organization to extend its network to encompass all employees, from the traditionally connected knowledge workers to the deskless workers on the front line of the business. Users can communicate at any time, from anywhere, using any type of device—a personal computer, cellular phone, PDA, Internet kiosk or any other browser-based device. NetMail enhances organizational effectiveness by facilitating cooperative efforts among individuals, groups and teams. It is the only solution available today that meets the requirements of enterprises that need to extend e-mail and calendaring services to the deskless workforce.

Scalability to Make E-mail Affordable for Deskless Workers

NetMail scales to fit any size environment, from ten users to tens of thousands of users. The highly efficient, distributed NetMail architecture squeezes maximum performance out of every resource.

Support for multithreading and multiprocessor enables organizations to take advantage of the extra processing power of multiprocessor servers to maintain fast performance even under heavy usage loads. Administrators can easily add servers as workload increases, without reinstalling or losing any of the configuration information and without disrupting system operation.

NetMail supports far more users on fewer servers than other solutions. In a recent SPECmail 2001 benchmark test, NetMail processed 1,050 SPECmail2001 messages per minute on a single IBM eServer xSeries 342—the equivalent of 210,000 users. It's important to note that the test was run using off-the-shelf server hardware and standard Novell NetMail software. Developed by the Standard Performance Evaluation Corporation (SPEC), SPECmail2001 is the first standardized benchmark that measures mail-server performance using a real-world workload. (For more details on the SPECmail benchmark results, go to <http://www.spec.org/osg/mail2001/results/res2002q1/mail2001-20020312-00014.html>)

Field-proven Directory Simplifies Management and Reduces Costs

NetMail leverages Novell eDirectory, the industry's only secure, cross-platform directory with proven

reliability, scalability and performance. More than 420 million users worldwide are benefiting from Novell eDirectory. This leading-edge directory service permits nearly limitless scalability. It has been tested with more than one billion objects in a single tree.

NetMail uses eDirectory to store all user and server configuration information, providing a common point for managing NetMail in conjunction with other network resources. Administrators can manage NetMail user accounts, hardware and software configuration, and security all from a single point.

A global view of user accounts simplifies user setup, administration and support. Administrators can use either NetWare Administrator or WebAdmin, Novell's browser-based interface that enables anytime, anywhere access via the Web. Changing NetMail configurations on the server or the client is fast, easy, and requires no downtime.

eDirectory provides a single source of consolidated information for multiple network applications, eliminating the need to synchronize changes. For example, e-mail, FTP, Web and RADIUS services can share a common password. That means when a user changes his or her password, it is automatically changed for all applications. This saves considerable time for administrators, freeing them to work on more strategic business issues. It also eliminates the large number of password-related help desk calls that drive up support costs.

Rapid Deployment

NetMail makes optimum use of all hardware resources to minimize the number of servers required. The result is faster deployment and lower cost. Because there are no additional clients to deploy and administer, the enterprise saves even more time and money.

NetMail minimizes training requirements and ensures that users ramp up to full productivity almost immediately. Users can access e-mail through standard Web browsers or through their current e-mail clients.

NetMail also supports a variety of mobile access devices, including Palm* and Pocket PC* handheld devices and Web-enabled telephones. This ensures easy extension of e-mail and calendaring services to deskless employees who need to access the network with low-cost, mobile devices.

NetMail is especially easy and fast to deploy in environments that are already using eDirectory. Customers in these environments have reported that they were able to deploy NetMail in as little as one hour.

Easy Integration into the Existing Environment

NetMail runs on NetWare, Windows* XP/2000/NT, Solaris and Linux platforms and supports all popular e-mail, calendaring, Internet and security standards, including:

- POP3 and IMAP4
- SMTP
- LDAP
- HTTP
- iCal

Standards support ensures that NetMail integrates easily into the existing environment and interoperates with systems that are already in place. For example, support for the POP3 and IMAP4 standards ensures compatibility with GroupWise, Microsoft Outlook/Outlook Express, Netscape Communicator, Eudora, Pegasus and other integrated and standalone e-mail clients.

Reliable, Uninterrupted Access for All Users

NetMail delivers reliable, trouble-free operation. SMTP, IMAP4, POP3, NMAP and other NetMail services can be distributed across multiple servers to shield critical processes from a single point of failure. This ensures continuous availability for users while minimizing IT staff time for troubleshooting and problem solving.

The E-mail and Calendaring Features Deskless Workers Need

Users can send, receive, store, organize and archive e-mail messages with attachments. They have access to all popular e-mail options, including forward, copy, blind copy and reply. They can specify rules for forwarding, sorting, delegating, rejecting and vacation replies.

In addition to e-mail, NetMail includes calendaring and scheduling, task management, and a template-based Web client. Comprehensive anti-spam capabilities help keep user productivity high by preventing an overload of unsolicited bulk e-mail. Anti-spam features include:

- Real-time lookup of blacklisted sites
- Reverse Domain Name System (DNS) resolution

- Blocking of Internet Protocol (IP) address ranges
- Remote sending only from allowed or trusted IP address ranges
- SMTP authentication before sending remote mail
- Preventing the sending of remote mail to more than a specified number of recipients.

NetMail also supports 26 languages and multiple time zones to simplify the exchange of critical messaging and scheduling information between remote offices, customers and business partners.

CONCLUSION

Competition is fierce in the Net economy. Organizations that don't tap the full potential of all their employees—desk-based and deskless—will find it difficult to maintain a competitive edge. Providing e-mail and calendaring to all employees positions the organization for success in an extremely competitive environment. These tools empower people to interact and share up-to-date and consistent information and ideas,

communicate and collaborate with team members and colleagues, and manage time more effectively.

Novell NetMail offers organizations of all types and sizes an economical, high-performance approach to extending e-mail and calendaring to the deskless workforce. NetMail is the only solution that meets all the requirements for an enterprise e-mail and calendaring system for the deskless workforce. It's the most scalable solution available, supporting more than 200,000 users on a single server. Its directory foundation simplifies management and enhances scalability. NetMail offers high availability, extensive standards support and support for Web-enabled mobile access devices. What's more, its broad e-mail and calendaring feature set meets the needs not only of the deskless workers but of many desk-based workers as well.

With Novell NetMail, organizations can bring all employees into the collaboration zone to maximize employee productivity and improve overall organizational effectiveness. As a result, organizations can enhance their ability to compete in the Net economy.

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