To reduce overall mail system costs, organizations must consolidate servers, but often the geographic distribution of the workforce is a barrier. Organizations must examine wide-area network (WAN) bandwidth costs, network latency, and user expectations as they contemplate providing remote e-mail services to distributed sites.

Reducing shared-service IT infrastructure costs has become a business imperative at most organizations. A thorough understanding of the total ownership costs is the first step in helping reduce overall costs. Our e-mail cost model concludes that help desk costs (26%) and Exchange operations (20%) are the two largest cost components of mail ownership, but we believe it is difficult for IT groups to directly reduce these costs. On the other hand, as Part 1 (see WCS Delta 1079, 17 Jan 2002) suggests, server consolidation is the easiest way to reduce overall costs (server and server operations expenses account for 18% of total costs). We believe per-user server scalability is no longer the bottleneck; Exchange 2000 can run up to 6,000 users on a single machine. The new bottleneck is workforce geographic distribution, which in many cases (as is with our model) prevents easy server consolidation. Companies should examine the cost of running local servers versus the bandwidth cost required to centralize mail servers. We believe most organizations should provide remote mail services to sites with 100 or fewer users (assuming network latency is not a problem and normal user mail activity). By 2005, we believe more efficient e-mail protocols and dropping bandwidth prices will make it economically attractive to provide remote mail services to sites of up to 500 users. Mail cost will also be driven down by administration duties moving to the Active Directory team and via increased system reliability. Here, we present the remainder of our e-mail total-cost-of-ownership (TCO) model based on our hypothetical 10,000-person organization (see Figure 1).

**Bandwidth**

Our hypothetical organization spends $81,000 per year on bandwidth dedicated to Exchange (we assume local-area network [LAN] charges and Exchange server-to-server charges are accounted for in other budget pools). Each 50-person site spends $675 per month for a 256 Kbps link (North American pricing). We assume 10 Kbps for each concurrent session and a high-water concurrency rate of 50%. The 10 Kbps/session assumption is hotly disputed, with some organizations finding 6 Kbps is sufficient and others finding that 14 Kbps is required for reasonable performance, so each organization needs to model this to its particular mail patterns (strategies can be employed to reduce remote bandwidth consumption, such as offline use with sporadic connections, automatic attachment compression, and low attachment size thresholds). Typically, an equipment and operational cost of managing WANs exists on both ends, but because our organization has these in place already to support other traffic, we do not include them in our model. The type of link, and the distance (or number of hops) will also affect quality of service.

We believe our hypothetical organization could save money by running the 100-person sites remotely, justified by the following equation: 50% concurrency means 50 users, multiplied by 10 Kbps equals 500 Kbps required for remote e-mail operations. Current North American pricing on a 512 Kbps link is $900 per month. We know the annual cost of that remote server is $1,666 per month ($20,000 divided by 12), yielding a savings of $766 per month per site, or a total annual savings of $45,960 ($766 x 12 months x 5 sites). Additional users would be added to the existing Exchange servers at the central site. We expect bandwidth costs in North America to drop 10% annually, increasing the economic attractiveness of remote e-mail operations.

**META Trend: During 2001, organizations will pursue “contextual collaboration” strategies enabling customers, employees, and partners to plan, share, clarify, negotiate, brainstorm, coordinate, build community, and exchange information within operational applications. Through 2003, traditional collaboration suites and emerging models (e.g., peer-to-peer, teamware, e-learning) will evolve as embedded, process-specific components within business systems. By 2005, collaboration services will exploit analytical performance measures.**
Exchange Utilities

We assume our organization uses two software utilities to augment the Exchange infrastructure. The company pays $1,000 per server per year for a management utility that aggregates server logs, highlights exceptions, and generates statistics. The tool is not run on the Global Catalog servers, so the equation is 16 servers multiplied by $1,000, for a total of $16,000. The company also spends $12 per user per year for gateway, server, and client virus protection, or $120,000 per year. We expect the virus protection fee to remain steady during the next several years, but the capability will be expanded to include content blocking at no additional charge, given the competitive nature of the market. So the total annual cost of Exchange utilities is $136,000. We expect utility spending to spike up sharply during the next several years as companies add dedicated e-mail archiving tools to alleviate storage burdens, adding $25-$35 per user per year.

Exchange Operations

There are four components to the Exchange operations category:

▲ One person for Exchange account administration (user adds/deletes/changes, mail list maintenance) at an annual fully burdened cost of $80,000
▲ One person for daily Exchange server maintenance (log monitoring, exception handling, Level 2 problem resolution, and SMTP monitoring) at an annual cost of $100,000
▲ One person for Level 3 support (architecture and migration planning, severe problem resolution, and outreach to business units) at a cost of $120,000 annually
▲ One person for virus management (detecting viruses, updating signature files and content filters, and cleanup) at an annual cost of $100,000

We expect the requirement for a dedicated Exchange account administrator to disappear as organizations merge Exchange and Active Directory management teams (technically possible at present but politically problematic). So we calculate the total costs of Exchange operations to be $400,000 annually. We expect spending on the other operational duties to remain steady during the next five years. We also find that larger organizations (50,000-100,000+ users) require proportionately less operational resources due to economies of scale (our hypothetical company has a 2,500-to-1 operations/user ratio, but we have seen it as high as 7,000-to-1 in very large Exchange deployments).

Planning/Deployment/Training

The annual costs for planning/deployment/training is $52,000. Our model looks includes the transition costs from Exchange 5.5 to Exchange 2000 written off over three years.

▲ Planning: There are a core set of steps which organizations go through during a same-system e-mail upgrade — architectural review, coordination with IT and business groups, design and testing, and project management. This works out to $79,000, assuming a two-month effort from a project manager ($160,000/year), two months of a engineering design architect ($120,000/year), and three months from a design and test engineer ($100,000/year).
▲ Deployment: We assume the deployment costs of moving from Exchange 5.5 to Exchange 2000 is $54,800, with most of the focus on project management (3 months at $160,000/year), server backup, load and restore (12 hours/server at $50/hour), directory cleansing and changing (8 hours per 1000 users at $50/hour) and changing Outlook profiles (24 hours at $50/hour). Active Directory planning and deployment costs are not included.
▲ Training: Training cost are only $8,000 (4-person operation staff multiplied by $2,000 for the course) because users do not have to be retrained as a result of the migration (which is independent of the Outlook client).

Forecasting changes around this category is difficult because we do not know the level of effort required to move from Exchange 2000 to the next major release (code-named Kodiak) in 2004. However, there is the potential for significant training costs with Kodiak, because that release uses a version of SQL Server as its store, raising the possibility that Exchange operational staff may have to acquire database administrator skills. We anticipate a minor Exchange upgrade in early 2003, which we believe can be handled as part of the normal Level 2 and 3 support duties.
Exchange License Fees

We estimate the annual Exchange license cost to be $32 per year. We do not expect this number to change for several years, but we do expect a 20% bump in 2004 as Microsoft introduces the SQL Server-based version of Exchange. The $32/user/year figure is based on the following calculation: licenses procured through Select Level C for 10,000 seats. License list price is $57 with a 15% discount equaling $48 per seat. Software assurance is $15 per year, with a 15% discount is $13 per user starting in the first year. Enterprise server licenses are $3,391 per server, with a 15% discount is $2,882 multiplied by 16 servers equals $46,000 or $4.60 per user. Software assurance for the server is $848, with 15% discount is $720 multiplied by 16 servers equaling $12,000 or $1.20 per user. So total capital costs are $480,000 plus $46,000, equaling $526,000; written off over three years, that comes to $175,000 or $18/user/year. So the final equation is $18 per user per year in capital costs, plus $1.20 per-user server maintenance, plus $13 per user per year for client maintenance, equaling $32 per user per year.

Help-Desk Support

We estimate mail-related help desk calls cost our hypothetical organization $630,000 per year. Our calculation for estimating e-mail-related help-desk costs is relatively simple (average help desk call costs $15, each user calls 1.75 times per month, and 20% of all calls are e-mail-related) but interpretation is not. This is because e-mail often has a “canary in the coal mine” effect, whereby users complain that mail is not working, when the cause may be a down router, a dropped link, or some other non-mail-related occurrence. Organizations need to check their own logs to determine true e-mail help desk costs. Anecdotal information suggests the percentage of “true” e-mail help desk calls is about 10%. We believe help-desk costs will drop several percentage points annually based on improved system uptime (via increased redundancy and maturing e-mail and utility software).

Bottom Line

Organizations must aggressively compare bandwidth costs for remote e-mail services versus local server costs to determine e-mail system cost savings potential.

Business Impact: Overall e-mail system costs can be reduced through various strategies, thereby freeing up funds or personnel for more strategic IT-related business endeavors.
Figure 1 — WAN Schematic of Hypothetical Organization

Source: META Group