Reader Notes

1. What are the primary requirements and components of an effective server strategy?

2. What are the considerations in including or excluding legacy systems in an enterprise server strategy?

3. What are the technology trends that will be most important in formulating an effective server strategy?

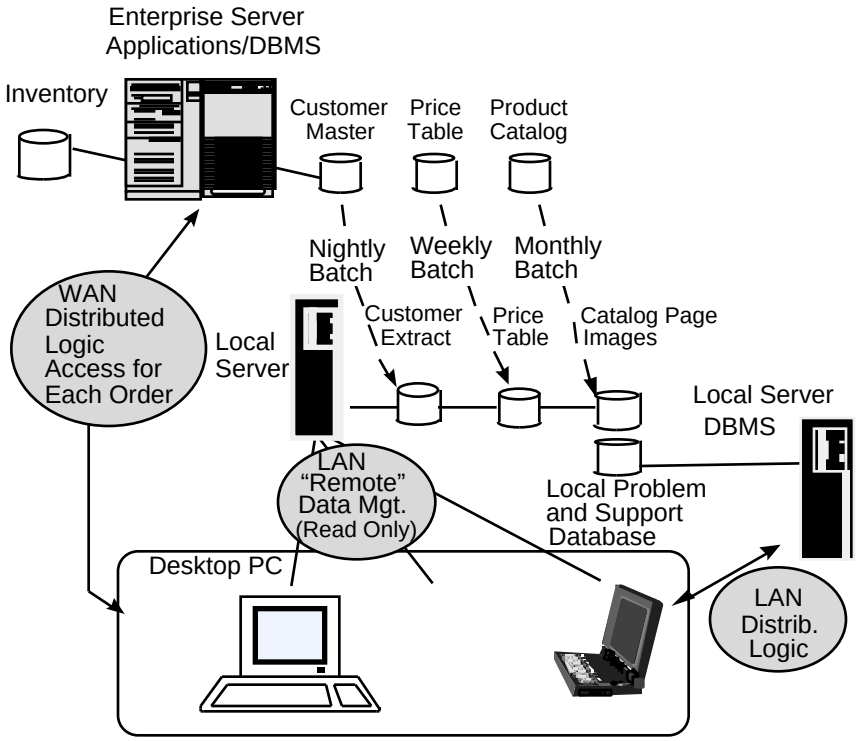
4. What critical organizational issues should be considered before formulating your enterprise server strategy?

Developing an effective and sustainable server strategy can have the benefit of minimizing cost and complexity, and/or maximizing flexibilities in performance and scalability. But for the next planning period and beyond, it is more than a matter of cost or performance, it is a necessity of business function. Server strategy decisions are now driven by the increasing need for virtually complete connectivity between and among employees, workgroups and teams. Rapid and timely flow, the processing of information with accessibility from PCs, laptops, handhelds with voice access, voice recognition input, and scanner data input are or will be business assumptions, not just conveniences or "nice to haves."

But as the necessity of formulating a server strategy becomes more intense, the complexities associated with an effective strategy increase dramatically. Technology prices are dropping rapidly, network bandwidths will increase by 100-fold, and systems management for a distributed environment is improving, but may limit the degree of centralization possible. Legacy systems and applications cannot be ignored — as new applications and associated server and client products progress, new ideas in storage servers promise to help integrate and improve data sharing. Surrounding all of this are base platform battles among operating systems and microprocessor architectures. Simultaneously, organizational issues abound.

What are the primary requirements and components of an effective server strategy?

Reader Notes



Source: Gartner Group

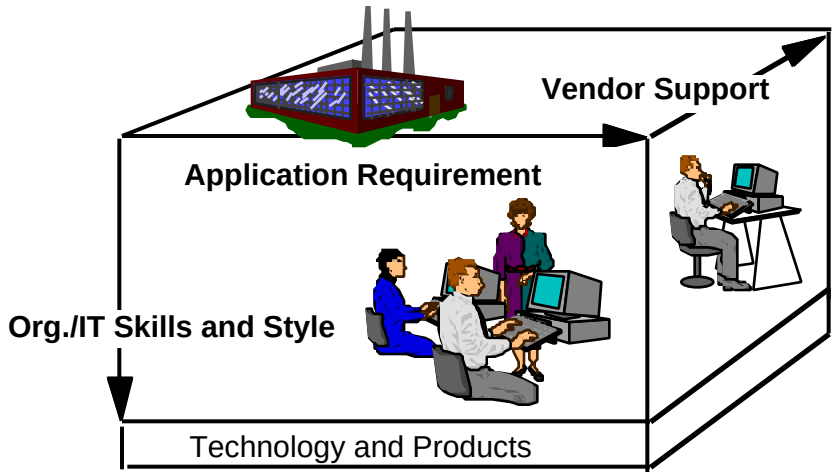
Complexity is the byword for tomorrow's processing environment. A realistic server infrastructure strategy will take this into account and assume that there will be complexity of server levels and a homogeneity of types. Key components that must be considered include:

- Systems management from server to PC
- System performance and responsiveness challenged by unpredictable demands
- Data accessibility from multiple and heterogeneous network-based servers
- Security necessities to limit external access as well as virus and data volume invasion
- Back-up and data restore requirements for distributed as well as central server sites
- Application and system maintenance needing software download and version synchronization
- Cost challenges in people and software/hardware tools
- Technology turnover for appropriate as well as inappropriate reasons

The most critical factors for consideration in a viable server strategy are not technologies, but application needs, organizational styles and skills, and mapping supplier prowess with solution complexity.

Reader Notes

Critical Dimensions of a Server Strategy



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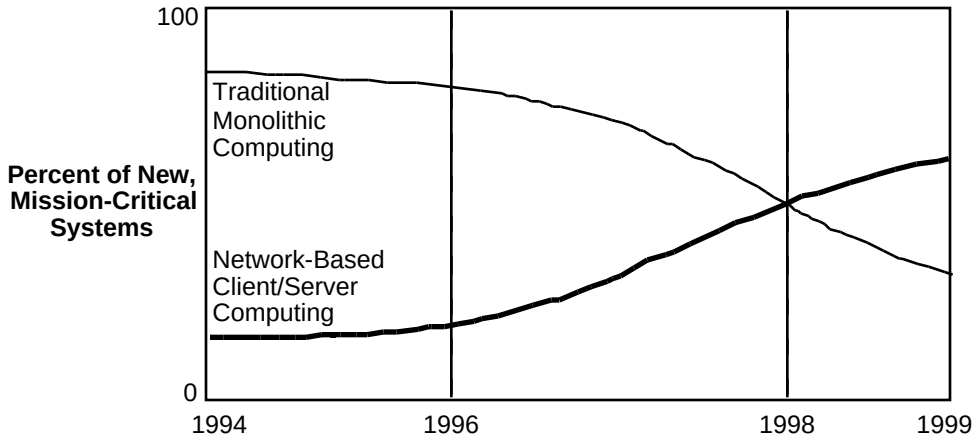
We are still in the expansion and learning phases of infrastructural inclusion for PCs and departmental server-based IT. Important skills in the newest technologies are not in place, whether it be a new graphics package needed by PC users or object brokers and Unix and C-language support for application servers. Many key enabling technologies, such as remote procedure calls or object-based techniques, are not yet mature enough for mainstream use. Yet today's environments will include "buzzword" demands such as client/server, object-oriented and distributed severs — a plan that ignores the skill needs will be a ticket to failure.

Vendors are rushing in to aid (or take advantage) where customer skills are short. Systems integrators are doing a booming business and systems suppliers are building business models assuming a continuing need for supplementing lagging customer capabilities. We are still far from infrastructural "plug and play." Equally, if not more important, is a new level of business user and IT team cooperation for application definition, selection, design and implementation.

True client/server applications will be less than 30 percent of an average enterprise's core infrastructural processing by 1998 (0.8 probability) and by the year 2000 (0.7 probability).

Reader Notes

Shifting Applications and IT Profile



Source: Gartner Group

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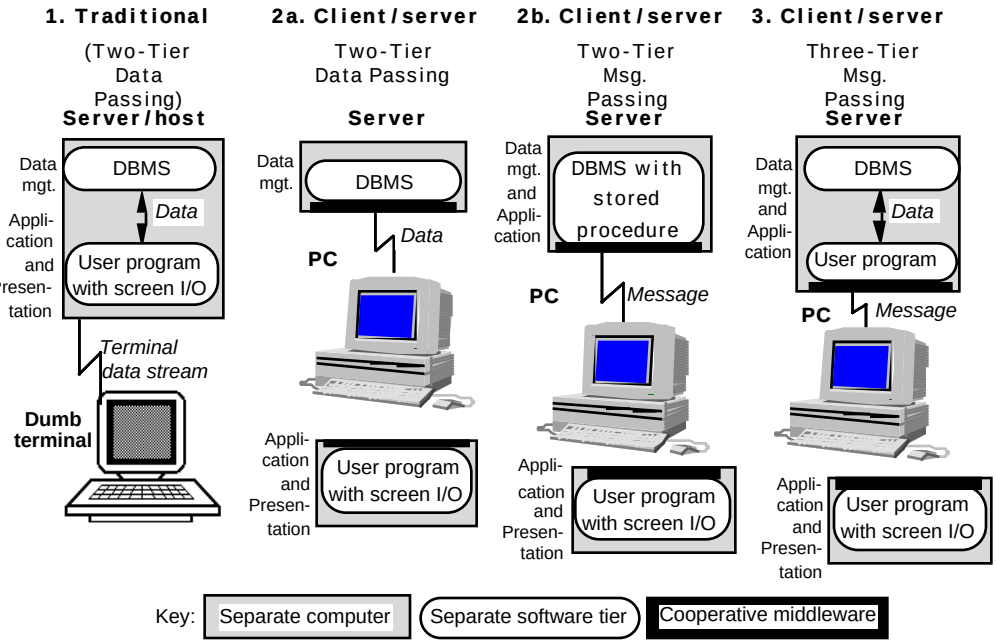
A "screen scraper" GUI front-end is not a true client/server application, though it may be a useful improvement for legacy applications. A client/server application makes significant use of PC-based capabilities and capacities. It can allow multimedia, workflow, asynchronous applications for mobile users, and data object brokering to enable new generations of custom applications that were previously too complex or unwieldy for the average user or programmer to take on. But tools, network infrastructure, environmental management and data interconnect standards are either not yet available, or user ability to implement is lagging enough to prevent wide-scale implementation. Besides, many businesses can still compete with enhanced traditional "back office" systems and useful but locally isolated end-user front-office PC applications.

By 1998, client/server applications for core infrastructural processing will be three-tiered for 60 percent of implementations in large corporate situations (0.7 probability), but will be two-tiered for 90 percent of departmental and small company implementations (0.8 probability).

Reader Notes

Two-Tiered vs. Three-Tiered Client/Server Environments



Source: Gartner Group

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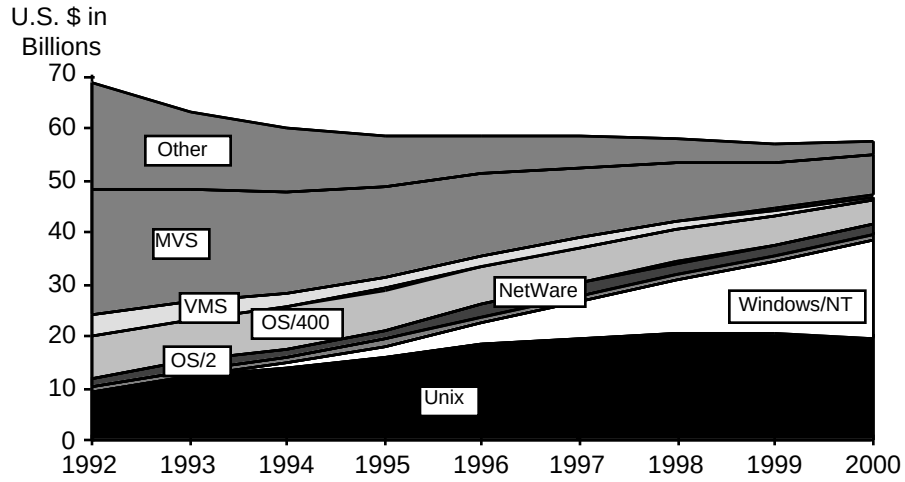
The complexity of many-to-many access requirements and business flexibility, combined with mainframe, PC and departmental legacy systems, will engender the need for multitiered architectures. Communication between clients and various servers may become quite complex, requiring extra work for the user or an extremely robust client. The limitations of current desktop systems make this complexity impractical to implement broadly without creating performance problems or management problems. An infrastructure tier between client and server application segments can offload from multisource, multitype data retrieval problems; format conversions; networkwide access and routing; authorization; and message and workflow management. Separation of infrastructure services from application services can help simplify resource optimization and performance management.

What are the considerations in including or excluding legacy systems in an enterprise server strategy?

Reader Notes

Worldwide Server/Host Spending by Operating System

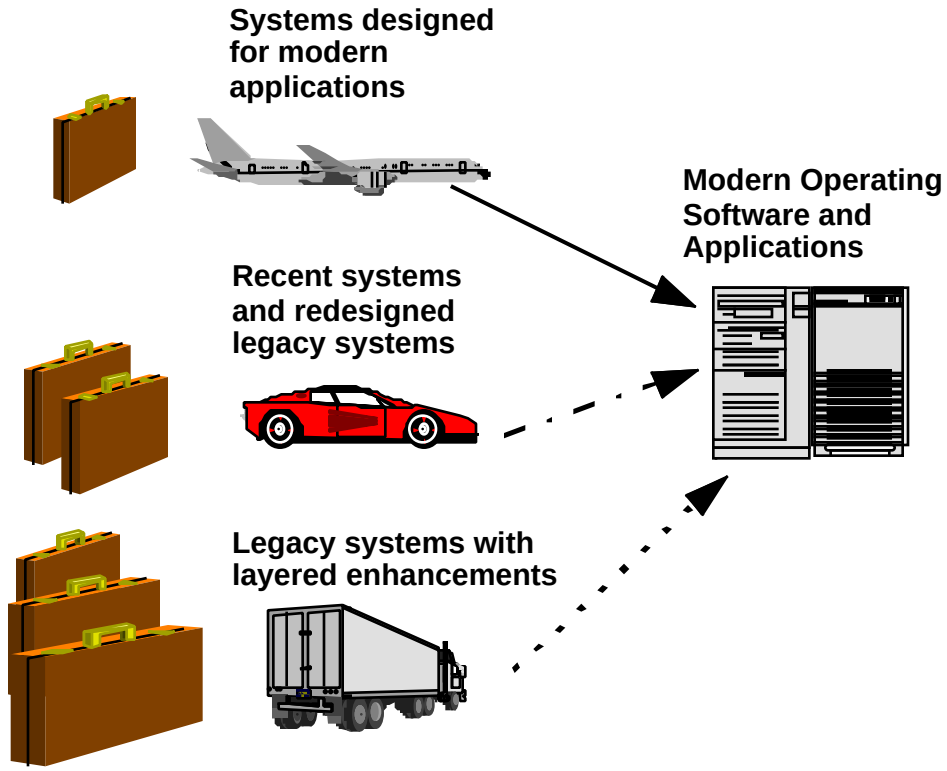


Source: Gartner Group

At the high end of the server market (servers above $100,000 in value), users are recognizing that the functionality and price/performance that were sought in the open systems debate are also being delivered through the improved competitive position of their existing OSs. Additionally, the skills associated with these environments are difficult to reteach or replace, the migration costs are high and the cost savings are limited. Furthermore, many of the portability and interoperability requirements that users had (e.g., DCE services and common directories), are frequently independent of the underlying hardware/OS choices. The current high rate of Unix growth in commercial markets will be increasingly under pressure from the above factors, favoring some stabilization of legacy system viability as well as the increasing enhancements and robustness of "bottom up" systems, particularly Windows NT.

Legacy operating software bandages and/or layering-on new APIs, networking and management functionality almost never results in effective or competitive products; performance considerations coupled with a potential for no further improvement are real pitfalls (0.75 probability).

Reader Notes



Source: Gartner Group

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There is no magic in accomplishing effective coding of new foundation system capabilities. A "burn in" and learning curve is required. For the basic operating and system software, this applies especially in I/O subsystems, system interconnectivity, communications protocol support, databases, data structure compatibility and code compatibility (emulation and emulation avoidance). As underlying technologies change and market demands shift, most traditional system vendors have been caught delaying new investment and waiting for clear signs of market direction. The result in many cases was "quick fix" code layering so that they could claim new capabilities (e.g., TCP/IP) when, in fact, the implementation was incomplete and performance characteristics were poor.

In some cases, the vendors invested no further than the code-layering phase. In others the underlying operating system and middleware were completely redesigned for performance and functionality. In no case can the legacy system vendor afford to drop the old functional compatibility "baggage," but rewriting basic code can result in at least effective new versions.

There will be three categories of legacy systems through 1998: 1) viable for the planning period; 2) usable but lagging effective vendor or ISV attention or enhancement; 3) dormant (0.8 probability).

Reader Notes

System/Server Categories of Market Potential

	Viable	Usable	Dormant
Vendor Cost-effective Investment	• Low-cost components • RISC or Intel • RAID+ • Clustering	• Low-cost components • RAID+ • Continuing price decreases	• "Tweak" existing technology and/or no recent upgrades
ISV Push/Pull	• Push—direct ISV invest • Key applications and devel. tools • Key middleware (DBMS, ORB and OLTP)	• Pull—Often system vendor subsidized • Select/limited applications, tools middleware	• Virtually no ISV attention except for maintenance
Interoperability	• Windows and Mac integration • Full TCP/IP and SNMP • Database ODBC and DRDA • RPC and MSG • OLE3 and ORB • Mail	• Many of the same elements as "viable" but usually layered implementations	• Stopped adding strategic function in mid- to late '80s
Vendor Support	• Full maint. program • Competitive prices	• Full maint. program • Reasonable prices	• Limited maint. program • Noncompetitve prices
Strategic Relevance	7 to 10	3 to 8	0 to 2
	(chance of payback from continued user investment)		
Examples	• Most Unix • NT as improving	• AS/400 • Alpha/VMS • Guardian • OS/2 • MVS	• HP/MPE • AOS/VS • VSE • CTOS • Wang VS

Source: Gartner Group

Key Issue: What are the considerations in including or excluding legacy systems in an enterprise server strategy?

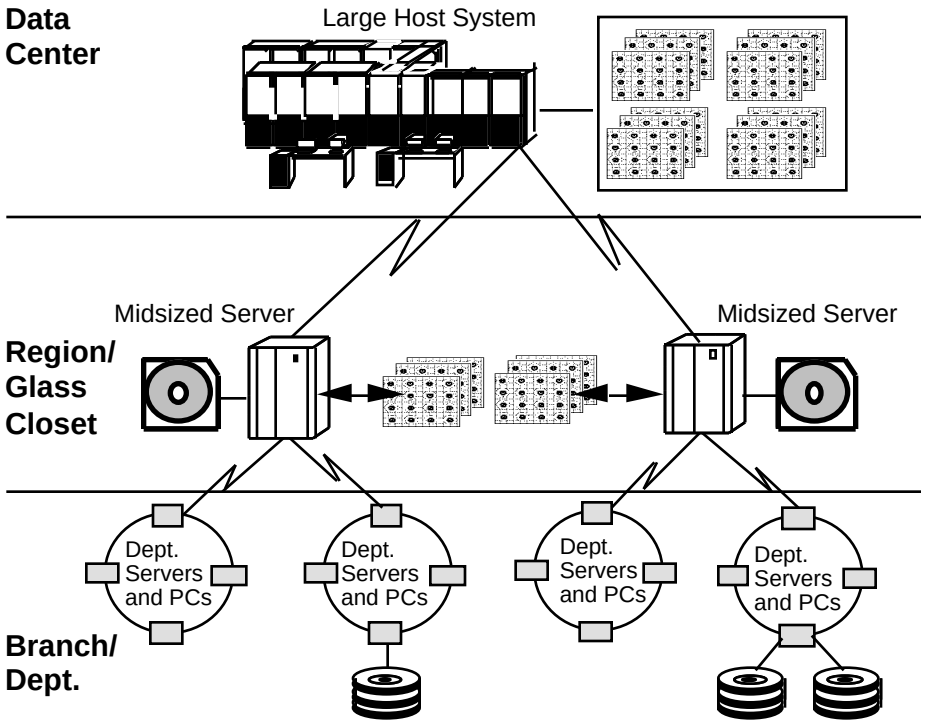
Legacy systems are a rapidly broadening product set. Within two to three years, 60 percent to 80 percent of Unix-based applications will be considered legacy because many were "old," traditional design is the first place, and many enabling technologies of today will not survive the tests of market. Even NT at the server level will begin entering a partial legacy status within three years, in part because many Unix ISVs will port their applications to NT.

The key question is when and to what extent users should invest in the various systems categorized above as legacy. As a general rule, users should be investing in server systems that have corresponding and significant investment from the system vendor and from key ISV organizations. Investment in the "viable" category is the most obvious, and some server products could switch from the usable to viable category. There will be short-term valid reasons to invest in even "dormant" systems, but payback potential should be closely scrutinized.

Tactical Guideline: Users should make early and clear decisions (with periodic review) on status and plans for legacy systems to avoid infrastructural confusion and misinvestment.

What are the technology trends that will be most important in formulating an effective server strategy?

Reader Notes



Source: Gartner Group

Technology progression. Most of us are accustomed to an assumption of rapid technology improvement: faster, bigger (capacity) and more for less. This progression, largely predictable through the laws of physics and assumptions of manufacturing prowess, enable us to do more of what we have done, and faster. But the interesting questions are in regard to usage change, the discontinuities of technology use and the thresholds of technology delivery that offers, for the insightful, new opportunities to take their enterprises in a direction of differentiation and competitive leadership.

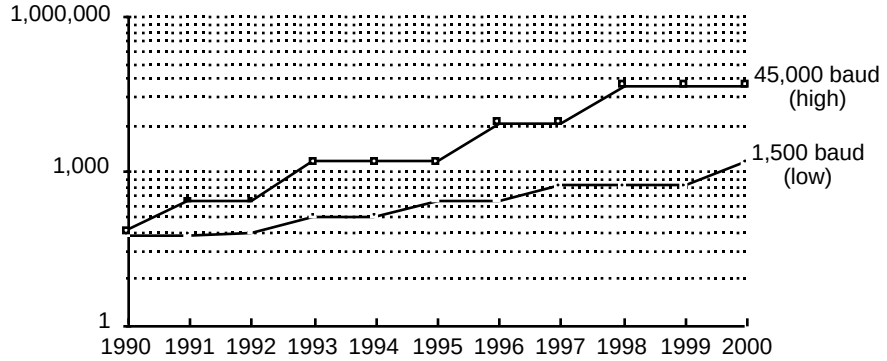
Technology absorption. Vendor offerings based on new technology and market absorption can and usually do occur at different rates. PC and LAN server products have been and still are absorbed by users at rates almost equal to anything the vendors can dish out (witness Windows 95 and Pentium-based PCs). But these are relatively simple increments from a very simple base compared with, for example, tying all of this together in a systems sense for cross-net data access, client/server management with synchronization of software versions, avoidance of failure, recovery from failure, bandwidth engineering and tuning.

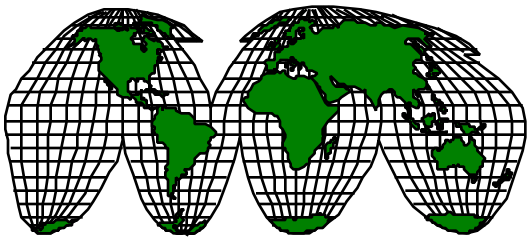
Distribution of processing vs. centralization. Technology enablers for either; which is best?

Network bandwidth technology will evolve rapidly toward LAN/WAN neutrality (0.7 probability), but not universally, thus demanding consideration in an enterprise's strategy, as well as geographic implementation (0.9 probability).

Reader Notes

Wide-Area Network Speeds





Source: Gartner Group

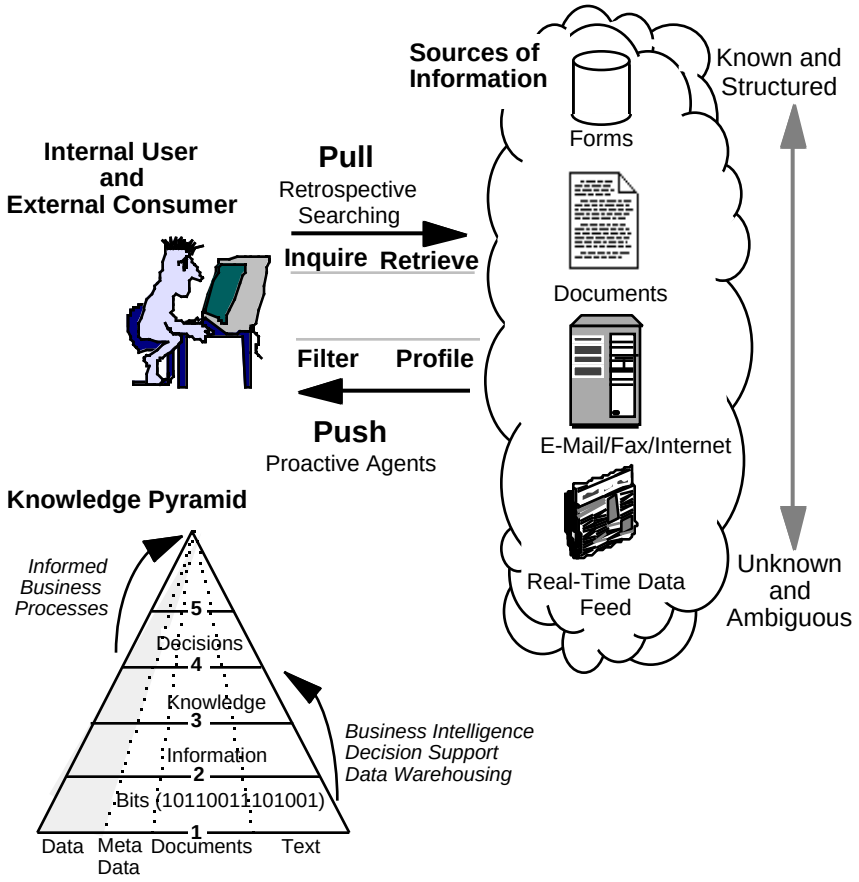
Key Issue: What are the technology trends that will be most important in formulating an effective server strategy?

The potential for wide-area network bandwidths that are four times the speed of basic Ethernet are enticing as a basis for new kinds of highly integrated data access and interchange. In-house disaster recovery plans can and will be more cost effective.

But differences in affordability, local accessibility and network stability must be considered. The maturity of network infrastructures will remain a key inhibitor to consistent worldwide and/or regionally-large strategies through 2000. Nevertheless, rapidly growing demands and capabilities for IT functions and interconnectivity during the next three to five years will bring the industry to an acute stage of system complexity. Users will have to weigh the technology-based potentials against the accessibility and dependability of networks and consider the degree of complexity, and therefore reliability, of large, perhaps globally oriented, interactive network applications.

Dramatic component price/performance improvement will continue, enabling continued expansion of application opportunities (0.7 probability).

Reader Notes



Tactical Guideline: Users will have opportunities to save on cost, but also have demands to increase spending for strategic investment; they should clearly distinguish between the two.

Source: Gartner Group

Key Issue: What are the technology trends that will be most important in formulating an effective server strategy?

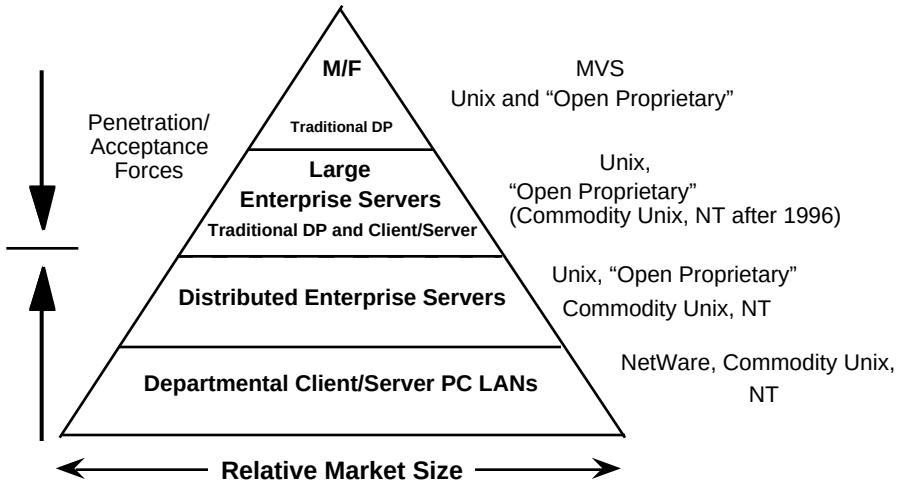
Knowledge is most valuable when it's relevance enables more-effective decisions and actions. As more and more data is digitalized, finding and using the relevant information will be more challenging. Searches will include local file systems, centralized repositories and external public news feeds, often in the same user inquiry. Incoming information will be "pushed" from E-mail, faxes, the Internet and a variety of data feeds. The use of database technologies like SQL will increase the structure of "pushed" repositories. As the technology and server power and capacity increase, the use of "artificial intelligence" and natural-language representation will enable the agent-like filtering of information based on an individual's profile.

In addition, increasing use of MPP, large SMP and hybrid servers will be key in crossing a threshold from data accessibility to information discovery through parallel manipulation of massive amounts of data detail. IT progression is not just to do things faster, but to discover better things to do.

Making a choice between an adapting traditional system technology (e.g., Unix/"open proprietary") for server deployment and an evolving and improving server technology (e.g., NT) will remain a challenge, but the evolving bottom-up solutions will be appropriate for 90 percent of distributed server needs by 1998 (0.6 probability).

Reader Notes

Bottom-up vs. Top-Down Server Acquisitions
Operating Systems by Market Segment



Source: Gartner Group

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The most expansive aspects of IT usage — client/server applications — will evolve through a combination of top-down-driven initiatives and bottom-up-driven requirements. With the major percentage of IT spending already invested in individual PCs and software, and networked systems overtaking traditional monolithic systems, "bottom-up" vendors are exploring opportunities for moving into enterprise solutions. With hardware performance and reliability rapidly approaching equality with, or betterment compared with many midrange systems, and with software capabilities improving, it is time to evaluate and track whether the "bottom-up servers," with commodity operating systems, can be considered practical alternatives to systems from integrated system/OS vendors.

For many years, "top down" systems including MVS, OS/400, platform-integrated Unix servers and others will be the mainstay for traditional and client/server applications, usually in larger central or regionalized environments. But in departmental and other distributed solutions, commodity hardware and software solutions will be entirely appropriate.

What critical organizational issues should be considered before formulating your enterprise server strategy?

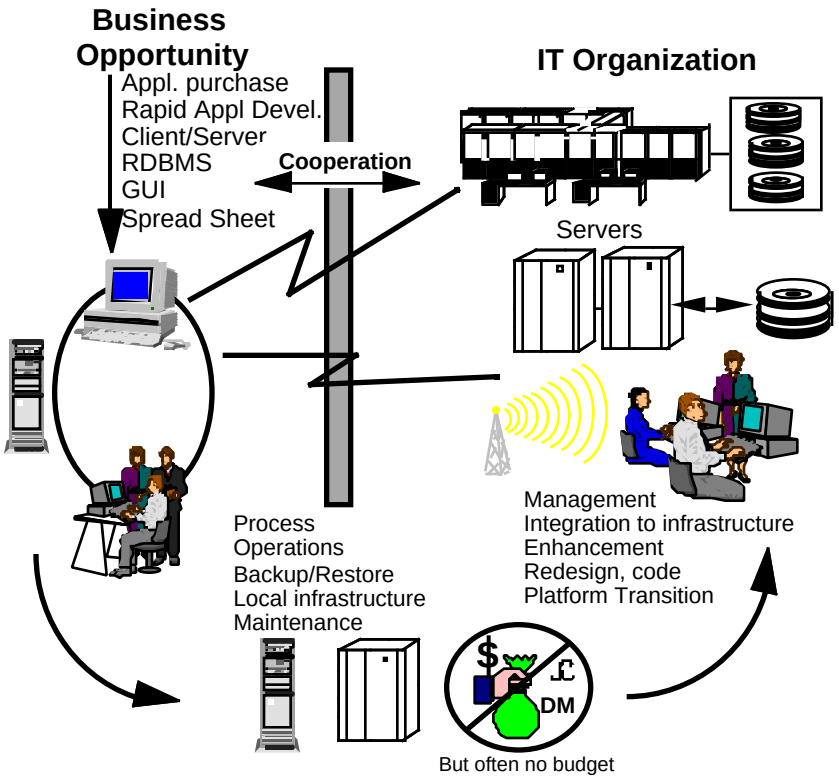
Reader Notes

Source: Gartner Group

During the next five years, professional IS organizations will continue to experience turmoil and change as they adapt to the business demands for technology (solutions) deployment. As well, IS-related groups within the business units will struggle with increasing complexity and the overhead staff costs that dealing with that complexity will bring. Progress has been made in most organizations toward more cooperation between IS departments and the business-unit users. Necessity from the reality of technology presence is driving much of that. But there is also a maturing of the distributed PC (client) and departmental server technologies that can and is effecting the confidence of IS organizations to accept and increasingly take the initiative in recommending and supporting the less expensive “bottom up” solutions that were inevitable by their presence anyway.

IS professionals and end-user business units will be in a constant responsibility exchange as new innovative application deployment from business units is handed to IS organizations for stabilization, infrastructural inclusion and ongoing support (0.7 probability).

Reader Notes



Source: Gartner Group

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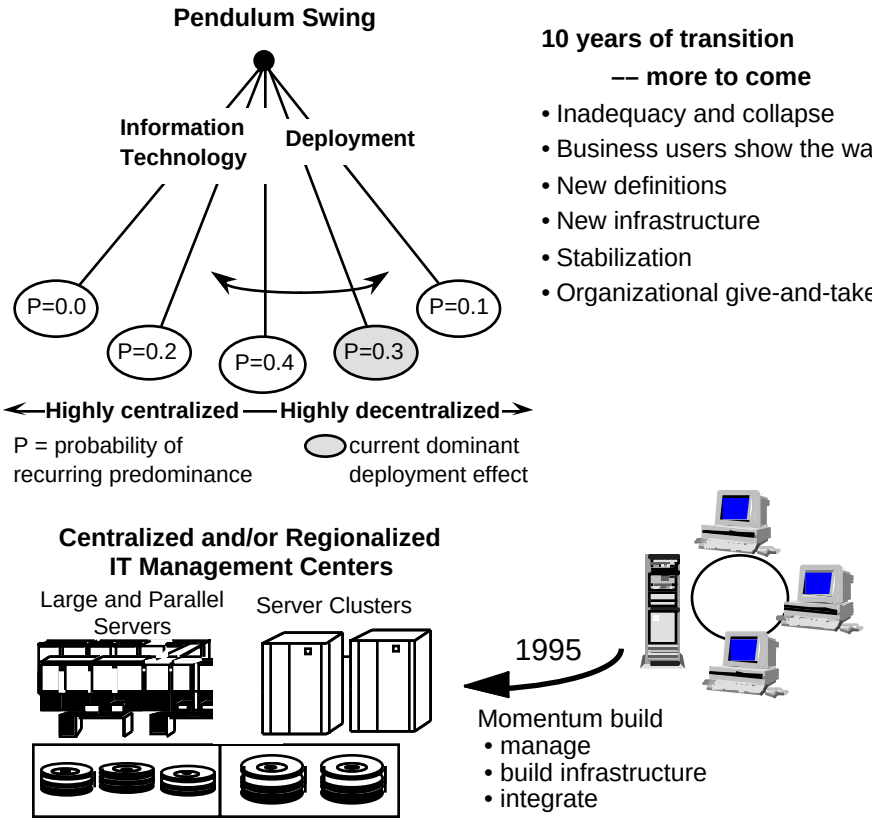
There are "user owned" servers and applications being handed to IS professionals to house and manage. Many of these are NetWare or similar file/print servers, but many are Unix or AS/400 application servers acquired by user divisions or departments for specific packaged solutions. Depending on the situation, the business-unit user has either grown tired of dealing with the operational issues of the systems or the systems, and use has grown to a point of size and complexity that it is not reasonable for continued user responsibility. We do not expect user-initiated acquisition and implementation of technology to stop even as the IT organization more willingly takes on operational responsibilities. Quick, perhaps prototype solutions will continue to be taken on by the business units that will, in some cases, include the server platforms as well as the applications and/or tools. But, especially as the enterprise infrastructure matures, the process of handing responsibility to IS organizations will become more automatic and smooth. Recognizing that should encourage business-unit people and IS professionals to discuss and cooperate more fully and earlier in the process.

Management and support for the processing infrastructure will move toward the professional IT units and tend toward centralization and consolidation, though there will be wide variances (0.7 probability).

Reader Notes



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The spending center of gravity for IT product and support has shifted dramatically toward the end-user no matter where the budget may actually reside. The degree to which server processing is physically centralized or decentralized depends on many factors, including organization philosophy, in-place infrastructure, data accessibility and application demands, and particularly, organization size. In some organizations, especially larger ones, where business units take an initiative to acquire, install and support autonomous distributed IT environments, there is a pendulum swing toward soliciting greater degrees of central IT involvement and server placement.

The pendulum of centralized vs. decentralized processing will continue to swing, but in a smaller arc and very much closer to the decentralized extreme (the laws of physics aside). Ultimately, we believe that system and network management tools will improve to the point of enabling high degrees of central, or at least regional IT infrastructural management, and greater and relatively high degrees of flexibility in the physical placement of server systems.

Bottom Line

Reader Notes

• The most critical factors for consideration in a viable server strategy are not technologies but application needs, organizational styles and skills, and mapping supplier prowess with solution complexity.

• By 1998, client/server applications for core infrastructural processing will be three-tiered for 60 percent of implementations in large corporate situations (0.7 probability), but will be two-tiered for 90 percent of departmental and small-company implementations (0.8 probability).

• Legacy operating software bandages and/or layering-on new APIs, networking and management functionality almost never results in effective or competitive products; performance considerations coupled with a potential for no further improvement are real pitfalls (0.75 probability).

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