



## SYSTEMS DESIGN

### Capacity planning: cost and design

By [Ron Herardian](#)

Many Domino projects go over their budgets and slip away from their deadlines because IT organizations and integrators often don't understand the way capacity planning relates to cost and to Domino system architecture and design. Unfortunately, Lotus and even companies that provide technical capacity planning tools provide very little help in this area.

Capacity planning is not just a matter of knowing how many MB of disk per user to put in a server. The real issues involve a number of things, including: correct methodology for capacity planning; network design and cost considerations; and organizational and budget considerations.

Failure to take all three of these things into account will result in budget overruns, costly redesign, and project delays.

In many cases, IT puts their dollars in the wrong place: into servers instead of bandwidth, into bandwidth instead of servers, or into a large number of low-cost consultants instead of into experience and expertise. The challenge, assuming correct project and deployment methodologies, is to determine how to allocate the budget over servers, bandwidth, and human resources (including consulting). In general, it's best to put in a larger investment up front and reduce bandwidth and operational costs.

### Correct methodology for capacity planning

The technical methodology and the necessary modeling techniques for capacity planning are nontrivial. It's not the case that you can use a simple measure of RAM, network speed, and disk per user. The formulas must take into account the fact that different variables change at different rates as the number of users and system loads increase. Some of the relationships are not linear. Each Domino system has a unique set of characteristics. It's not the case that the same hardware specifications and system design can be used for all customs with 'n' users, unless the system is grossly over-engineered.

### Network topology and cost of bandwidth

Specifying individual servers is only part of the puzzle. The network topology and the cost of bandwidth must be taken into consideration when specifying the number and location of servers and MTAs (Message Transfer Agents). For example, it may be more cost effective over 24 months to install 12 servers instead of four because of the added cost of bandwidth required to support users over a WAN (Wide Area Network). It's necessary to calculate the bandwidth requirements and to work with your network supplier to determine the costs involved in different deployment scenarios.

### IT organization and budget

In addition to methodological considerations, network design, and bandwidth cost, factors such as administration, security, support, and internal budgeting must be mapped to the IT organization. In most cases, the system must be designed in a cost-effective way to accommodate organizational considerations. These issues can dictate many aspects of system design such as the certification hierarchy and the number of levels in it. In other cases, the IT organization or the budget needs to change to allow for cost-effective deployment of Domino.

### Getting good answers

The best way to work through these issues is to leverage the experience of people who have successfully

deployed Domino systems for many different customers. Automatically, this rules out software resellers. They may be able to help you figure out what you need to buy, but they're usually out of their league when it comes to capacity planning, system architecture, and detailed system design.

There are several things you can ask an integrator to find out if they know what they're doing. One of the best things you can ask is how they determine the capacity and number of servers. If they don't say anything about where the servers will go in the network or about what network bandwidth costs, you're probably not talking to an integrator with the right experience.

I like to ask for a map of the network topology showing the available bandwidth as well as the current average and peak utilization if known. I also ask for the number of users per location and explore, with the customer, how these users break down into different groups and how they will use Notes and Domino. If you're working with an integrator that isn't asking these questions, you're probably not going to be happy with the results.

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DominoPower Technical Editor Ron Herardian is CEO and Chief Technical Consultant at Global System Services (GSS). You can reach Ron via email at [rherardi@gssnet.com](mailto:rherardi@gssnet.com), or via his web page at <http://www.gssnet.com>. GSS also sponsors Messaging Central (at <http://www.messagingcentral.com/>), a Web-based resource devoted to electronic messaging integration, Internet messaging standards, and migration.

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