

## **I.T. Centralised Consolidation**

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### **SUMMARY**

Global I.T. consolidation with centralisation is a compelling set of strategies designed to reduce overall enterprise I.T. costs and they include the unique possibility of increasing service levels. These strategies include the physical consolidation of data centres with additional follow-on strategies such as server, storage, and application consolidation and are made possible by advances in many areas of technology performance and application architecture.

Reliable global high-speed data networking, at greatly reduced costs, has enabled this key industry trend along with other network computing hardware and software enabling technologies.

Consolidation targets the benefits of cost effective operations through the elimination of distributed global I.T. duplication. This is accomplished by creating effective staff utilization, facilitating centralised cost/budget tracking with purchasing control, ensuring higher reliability (through resilient infrastructure and common management practices), simplifying data protection, and by providing greater control over mission critical data.

There are many additional business benefits that require the investment (or re-investment) of some of the cost reductions in:

- Expert I.T. staffing.
- Higher availability through investment in server technology resiliency/redundancy.
- Higher performance through investment in performance related architecture. Includes improved corporate communications through a faster more reliable network.
- 7/24, or highly available, infrastructure which “all” applications get to take advantage of

### **BACKGROUND**

Today’s data centres are places to house globally or regionally defined applications operating on centralised processing and data storage. To be most successful, applications are ideally Internet standards based (HTML related, XML, J2EE, and possibly Microsoft .NET), or are efficiently designed back-office applications using more traditional client/server methods.

The goal of consolidation is to reduce distributed computing from many data centres and “computer rooms” to a few. Distributed global I.T. currently results in redundant facilities, hardware, and organizational costs performing similar and even identical functions repetitively around the globe.

The natural progression from Data Centre consolidation (which is effectively housing all servers at a few locations) is to achieve further cost effective measures, and arguably greater reliability, through Storage Consolidation and then Server Consolidation. Server Consolidation requires detailed technical analysis and planning to get multiple applications housed on fewer servers. Consolidation depends heavily on Application Architecture and how effective I.T. has been in enforcing development standards. (e.g. message based interfaces between applications)

According to the Gartner Group, consolidation takes one of three basic approaches -- logical, physical, or a combination approach called rational. These following 3 points are copied from Gartner:

### **Logical**

In logical consolidation, actual systems are still distributed while administrative procedures and processes are standardised company-wide. This kind of consolidation is relatively easy and safe to implement, but it carries the least potential for significant returns. Cost savings come from better asset management and opportunities to deploy high-quality, consistent administrative practices across the enterprise.

### **Physical**

Physical consolidation does pretty much what it says: Systems are relocated to a single server site. The number of servers you have to manage remains the same, and cost savings come from better staff utilisation, higher service levels, simplified backups and restores, and better asset management and security.

### **Rational**

In combination, or rational, consolidation, the company's distributed applications and services are combined onto fewer servers. It is a considerably more complex undertaking, but the potential rewards are greater. Cost savings -- and estimates range from 25 to 75 percent here -- result from better asset utilisation and elimination of unnecessary systems, reduced staffing, lower maintenance costs, and fewer operating environments to support.

If applications and data access were well-behaved on networks then centralization is possible and further strategies, some falling under Gartner's "Rational" approach, would provide the following flexible strategies for our organization:

### ***The Advantages***

- Invest well in only a very few facilities to provide resiliency and highly available environments so that "all" applications benefit. (may create improved service levels)
- Less I.T. staff throughout the enterprise, but should ensure expert staff at these few new locations to provide technical administration and support of the systems. Target 7/24 availability requirements including staffing to achieve it if this is a business desire.
- Easier to perform capacity planning.
- Easier to perform back-office related asset management.
- Centralised ownership of corporate data.
- Economies of Scale for network bandwidth, resiliency, redundancy (high availability), and for minimizing hardware purchases.
- After physical Data Centre/Computer Room consolidation the process for Data Storage Consolidation can begin, which may be accompanied by Server Consolidation reducing even more support costs, operating system licensing, application licensing, and on-going maintenance/support costs.
- Easier to maintain servers and related software because there are far fewer servers and software instances to upgrade and maintain.

### ***The precautions:***

- After consolidation, a server or facility outage has a very large impact, possibly to multiple applications and definitely involves a broader user base (global). The strategy is to avoid this through the purchase of highly available servers with redundancy built-in and resilient networks.
- Reduced staffing is a result of consolidation, but the staffing must then have a greater amount of expertise than before, and they will hold greater responsibilities. (i.e. there should be a lower “overall” payroll for I.T. staffing, but the average per head cost will increase)
- Cost overlaps during implementation may cause difficulties for budget approvals and planning. Obviously, while taking the steps to consolidate there is a period of time when the enterprise is paying the “old” costs associated with the existing infrastructure while incurring costs for the “new” centralised approach being initiated. (e.g. paying for additional WAN bandwidth for some centralised applications while still maintaining regional expenses for existing distributed applications; or paying new real-estate costs and not being able to release the old space from I.T. for other uses until everything is completed; ramping up staff expertise at the new consolidated location while still maintaining existing operations – there are strategies available to minimise these overlaps, but they will be incurred)
- Keeping staff, and keeping them motivated, during the transition in distributed locations that will not be required afterwards.
- Must have WAN/network redundancy/resiliency and perhaps carrier diversity for select parts of the network (usually WAN backbone-related improvements). Investment must be made here to be successful.
- Network latency is sometimes more of a problem for the end-user’s performance than is bandwidth and must be factored by specific application. (distance and technology related)
- Must plan for maintenance “windows” (for planned downtime) which becomes very difficult in a global data centre that is required to support all time zones (if targeting 7/24-365). Some area of the world will be affected with any downtime.

**Reference Information:**

Technology industry leaders, HP and Oracle, have completed their Global Data Centres. They both started their work over 5 years ago. Oracle is the most extreme with Server, Storage, and Application consolidation having changed Oracle's enterprise from over 65 data centres to 4, and from over 70 instances of Financial Applications to 3 (yes, they claim 1, but they are really using 3 – still a sizeable achievement). There are various claims that Oracle saved \$1Billion annually, and is trying to get that to \$2Billion through globalization of their I.T. organization, through consolidation of I.T., and through the use of their application software and re-engineering business processes. Although much of the savings is related to business methods using “e-business strategies”, a sizeable portion is due to I.T. consolidation and reduced I.T. staffing. Some estimates put the total savings lower at about \$700Million (still sizeable) with approximately \$250Million of that directly related to I.T. consolidation and to globalization of the I.T. organization (i.e. reduced staffing).

HP located their centre in Atlanta GA, and Oracle at their headquarters near San Francisco with much of the main data centre activities moving now to their Colorado Springs data centre which also is the location of their largest customer technical support facility. A new facility in Texas is also in use.