



## **Unisys Brings On-Demand Processing To Open Systems Computing**

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### **Management Summary**

Planning ahead is always a delicate balance between utility and budget. Some purchases are small and we can justify acquiring more than we might think we need. Take golf balls, for example. You're a good golfer; you only need a couple of balls per round, so you think you can buy a 3-pack or half a dozen. But what do you do about the trees on #7 or the water on #3 and #12? If you lose a few, what do you do in the middle of a round? So you buy a dozen (or more), after all they're only \$20. Others purchases, however, are not as insignificant. Take a home, for example.

There are many questions that you need to consider when acquiring a home: first, is it big enough? *How many bedrooms does it have? How many do you need? How many children are you planning to have? Two? How about six? What about guest rooms for visiting parents or siblings?* If you're young and just starting out with a family of four you may not be able to afford a house to fit your plans or ambitions. You may have to start out with a three-bedroom model that fits your budget. Wouldn't it be great if you could buy a three-bedroom home that had six bedrooms, but you only had to pay for three now. When a third child arrives, you could open up the fourth bedroom and pay for it then. When Christmas arrives and your parents come for a visit, wouldn't it be great if you could open up an extra bedroom for one or two weeks and only have to pay a fraction of the cost?

The CIO of every data center faces the same type of questions every day when considering the amount of processing power that he or she needs to drive the enterprise. With the proliferation of mono-, dual-, and quad-processor servers throughout the enterprise, complexity and unused processing power have risen to unacceptable levels. In order to gain control of the total cost of running the data center, the staff is implementing consolidation programs for every department. Multiple applications are moving from single-use servers to larger, more expensive, shared platforms. The biggest questions facing the CIO now, however, are *how large* and *how much*? The CIO needs to be sure that the data center can handle not only the normal enterprise activity, but also spikes for end-of-month processing, increased seasonal loads, and the annual growth expected from a successful enterprise, not to mention the inevitable unexpected surge in demand. He or she also needs to ensure that he doesn't replicate the problem in the existing architecture with unused - and expensive - processing capability sitting idle.

In order to assist the CIO in making these decisions, Unisys has changed the paradigm for mission-critical servers by delivering a high-end, open systems platform with the capability for on-demand expansion to deliver just-in-time processing power. To see how the *ES7000 RTC* can help your enterprise gain control of data center complexity and cost, please read on.

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## Data Center Requirements

Today's enterprise data center is too often characterized by a myriad of mono- and dual-processor servers, each with dedicated storage, running a single application for a specific department. In some cases, in order to ensure that a mission-critical application will have sufficient power to support a growing number of users, within guaranteed service levels during peak usage periods, the data center staff will install a quad-CPU system. The costs to manage this server sprawl, in both monetary and personnel terms, can be burdensome.

The larger systems will typically be more expensive RISC servers, running some flavor of UNIX, in order to achieve the level of reliability, availability, and serviceability (RAS) that the enterprise requires for mission-critical applications. This not only contributes to the server sprawl, but, in fact, also impedes the data center's standardization efforts. They are often over-provisioned, with only about 30% of their processing power being utilized under normal processing conditions. This results in idle resources affecting the total cost of ownership for the server.

The number of system administrators required to manage the complex infrastructure of servers and storage also contributes directly to an increase in the total cost of IT ownership. The biggest challenge for the CIO trying to reduce costs and manage the environment is simplification. **This means reducing the number of manageable elements in the architecture, while creating a shared environment to ensure that flexible processing power is available – where it needs to be – when it needs to be there.**

In order to control costs and simplify the infrastructure, more CIOs are moving their enterprise installations to open systems: Intel architectures with *Windows* or *Linux* operating systems. In many scale-out environments where servers are deployed for legacy applications, such as Internet, file, and print services, the infrastructure is frequently based upon Intel's 32-bit *Xeon MP* processor. In scale-up environments where mission-critical, multi-user applications for business intelligence, consolidation, database, and UNIX migration are often deployed, we see open-systems mainframes using Intel's 64-bit *Xeon MP with EM64T*, or *Itanium 2* architecture. In either case, the use of commodity microprocessors keeps the cost of

the hardware platform down, and the use of *Windows* and *Linux* not only can reduce the cost of the operating environment, it also lowers the cost of the application set and staffing. Commodity environments allow the data center to avail itself of a vast pool of qualified programmers and administrators who are available for significantly lower salary than are the equivalent RISC/UNIX personnel. Unfortunately, the typical open systems server does not have the RAS characteristics of the enterprise mainframe or RISC/UNIX server; nor are they capable of meeting the quality of service objectives established by management.

Four-way Xeon systems are available from any number of vendors who can also provide services and support for *Windows* and *Linux* applications. The data center staff can also find scale-up *Itanium 2* servers from many of the usual suspects: Groupe Bull, HP, IBM, NEC, and Unisys, among others. Only one of those vendors, however, allows the enterprise to mix 32- and 64-bit Xeon MP and *Itanium 2* processors in the same system. Furthermore, **only one of these vendors enables the data center with the unique ability to install inactive processors, ready to be activated on-demand, at the turn of a key, to deliver just-in-time (JIT) processing power for seasonal requirements or unexpected growth.** That vendor is Unisys. The system is the *ES7000 RTC*.

## The Unisys ES7000 Platform

Relying upon their years of experience in mainframe design, Unisys has created the ES7000 with the highest levels of availability, manageability, flexibility, and performance in an Intel architecture for *Windows*<sup>1</sup> or *Linux*<sup>2</sup>. The ES7000 is a unique, enterprise-class family of servers – three families in fact:

- The *400 Series* - based upon the 64-bit Intel *Itanium 2* microprocessor;
- The *500 Series* - made up of 32-bit Xeon MP platforms; and
- The *600 Series* - the newest member of the family, based upon the 64-bit Xeon EM64T.

The ES7000 provides highly-scalable

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<sup>1</sup> The ES7000 family is certified for *Windows 2003 Enterprise Edition* and *Datacenter Edition*, along with *Windows 2000 Advanced Server* and *Windows 2000 Datacenter Server*.

<sup>2</sup> The ES7000 family is certified for *SUSE Linux Enterprise Server* and *Red Hat Enterprise Linux AS*.

performance with the RAS functionality required in mission-critical environments. In fact, the ES7000 provides 99.996% availability. This does not meet the five “9s” level of more expensive RISC servers, but to what extent? With five “9s”, a server is rated at 6 minutes of unscheduled downtime per year. The ES7000 is rated at 22 minutes of downtime. Considering the difference in price between RISC and commodity servers, the ES7000 provides a powerful alternative to RISC systems.

The highly-scalable top end of each series, however, combines the three architectures in a single, consolidated system. This makes a unique delivery vehicle for all of the mission-critical applications within the enterprise. The data center can configure the ES7000 as a single-system image or in multiple partitions with different applications or different operating systems. In addition, all three families are managed as a single operating environment by Unisys’ *Sentinel* management suite, included with the ES7000 at no additional charge, for greater security, and control. The latest version of *Sentinel* makes the ES7000 simpler to install and easier to configure, with enhanced security features that restrict permitted actions to specific roles within the data center, by administrators, operators, and users.

### ***ES7000 400 Family Servers***

If your enterprise requires a highly scalable, 64-bit platform for implementing large-scale, mission-critical Linux-based applications or databases, the *ES7000 400* family provides a wide-range of platform solutions. With an initial 4-way configuration, Unisys provides an entry-level commodity server with outstanding transactional performance and low-cost transaction ratios. With 128GB of memory and 16 PCI-X I/O slots, the entry 400 Series installs in a rack for data center application consolidation.

The high-end of the Itanium 2-only family can support up to 32 processors spread over four partitions or treated as a single 32-way partition. With a total of 512 GB of memory and 64 PCI-X slots, the 400 series of servers are positioned for high-performance computing environments and can consolidate a wide range of data center applications.

The ES7000 is unique among native Itanium 2 servers in that it can also support two domains of up to 16 Xeon MP processors as well as 16 Itanium 2 processors, for a total of 48 CPUs with 288GB of memory and 48 I/O slots, 16 PCI

and 32 PCI-X. With a fully-loaded server implementation, the data center can execute 64-bit Linux database applications and 32-bit legacy Windows applications in a single rack-mounted enclosure, sharing a common IT infrastructure of communications and storage.

### ***ES7000 500 Family Servers***

As with the ES7000 400 family, the *ES7000 500* can be configured as a mix of 4- to 32-way servers. The 500 Series, however, is based upon the 32-bit Intel Xeon MP CPU. This provides the CIO with a wide range of options to leverage the benefits of Windows standardization, capitalizing on the scalability of the ES7000 and the value inherent in the 32-bit architecture, as a growth path for legacy applications or as a consolidation platform to simplify the data center operations.

The 500 Series provides an entry-level quad-CPU platform with the capability to scale to a 32-way platform, initially supporting 16GB of memory and eight I/O slots, in a rack-mount platform, ideal for a scale-out architecture. At the high-end of the family, Unisys provides the 500 Series with the capability to scale-up to 32 Xeon MP CPUs, 64GB of memory, and 96 PCI slots. This ES7000 model is also capable of supporting both 32-bit and 64-bit processing, concurrently on up to 32 Xeon CPUs or 32 Itanium processors, either with up to 320GB of memory and 160 I/O slots. Like the 400 Series, the 500 has near-mainframe-class RAS, making it a platform suitable for mission-critical applications, large-scale databases, and business intelligence requirements as well as the legacy infrastructure.

### ***ES7000 600 Family Servers***

The newest member of the ES7000 family is the 600 Series, based upon Intel’s 64-bit Xeon processor with 32-bit compatibility, the EM64T. Referred to by Unisys as their *Xeon MP Premier Line*, this member of the family is an ideal blend of power and performance. **The 600 Series processor board is configurable with from 4 to 32 sockets, an indication that in addition to supporting 32 Xeon MP EM64T processors today, Unisys has made the 600 upgradeable to the dual core version of Xeon when that becomes available.** The 600 Series supports both 2 & 4GB DIMMs with up to 64GB of memory per base module. In addition, the 600 provides 5 internal PCI-X I/O slots or 11 external PCI-X/PCI Express slots.

Developed using the next generation of the Unisys *Cellular Multi-Processing (CMP)* architecture, the 600 Series has been designed to support:

- Directory-based memory, for improved scalability and application performance predictability;
- Shared cache for improved performance;
- Integrated management capability through *Sentinel Management*; and
- A highly robust and available platform.

With the ability to capitalize on lower cost 32-bit Xeon chips and EM64T Xeon technology, as well as Itanium 2, the ES7000 600 Series provides enterprise-class performance for applications and databases that demand high transaction rates and even higher RAS reliability. In fact, because of improved scaling, the 600 delivers an increasing delta of performance vs. the 500 Series as the platform scales to 32 CPUs. Using an analytic model provided by Unisys, running under a Windows/SQL environment, the 600 delivers close to twice the OLTP throughput of the 500 in a single-threaded environment. As with the other platforms in the ES7000 catalog, the 600 Series provides a choice of operating environments with Windows and Linux from Novell and Red Hat all available.

### ES7000 On-Demand Solution

Unisys has further changed the open systems processing paradigm. With the announcement of the *ES7000 Real Time Capacity (RTC)* series, Unisys has provided Intel-based, enterprise-class data centers, running Windows and Linux, with the capability to scale their computing power as their business requirements evolve. Each RTC server is shipped with four processors in reserve; processors that can be activated – and paid for – when they are required, on a temporary or permanent basis.

An ES7000 RTC server can be acquired with 4, 8, or 12 active processors, Xeon MP and/or Itanium 2, along with 4 additional CPUs, either Xeon or Itanium. These on-demand processors may be activated individually or all together, in response to additional support requirements for mission-critical applications, such as SAP, Siebel, Oracle, or any SQL Server need.

With real time capacity, the data center can maximize ROI by investing in what the enterprise, needs when they need it. **The CIO can**

**actually manage and prepare for peak utilization or unexpected growth without having to overprovision computing resources and wasting enterprise assets.** Underestimating capacity can be very expensive, causing disruptions to the IT infrastructure and disgruntled clients. With RTC, processing power can be activated when it can provide an immediate and significant return on investment. The Sentinel Manager automatically alerts the data center when additional capacity is needed. The IT staff can then make the decision to activate additional computing power in real-time using an encrypted authorization key. Today, on-demand processors may only be activated on a permanent basis. In 4Q05, Unisys will enable a temporary activation capability. Processors may be enabled for 15 days, up to 4 times. After the fourth activation, the processor is enabled permanently and the capacity is purchased. The purchase price will not exceed the price for purchasing the capacity in advance. This provides the enterprise with the flexibility it requires to respond and adapt to growth, while controlling cost.

### Conclusion

With the ES7000 RTC, Unisys is serving notice to UNIX-based vendors that they are ready to compete for the mission-critical, enterprise-class customer with an open systems platform. On-demand processing in a resilient, open platform provides a fundamental change in the way commodity systems are viewed with regard RISC, platforms. Now, JIT provisioning in a standard, simplified environment is available instead of over-provisioning with proprietary systems. With the ES7000 RTC, enterprises can adapt to changing workloads dynamically and automatically with a minimum up-front investment.

Unisys has decided to share the financial risk with their customers, with the expectation that there will be a need for additional processing capacity in the near future - an entirely reasonable assumption. If your enterprise is consolidating its IT resources or entering a period of unpredictable growth, take a close look at the Unisys ES7000 RTC. It may be the solution for your enterprise growth.



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