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GUNFIGHT AT SUNSET - Part II

Evaluating the IBM @server pSeries™ 610 "Colt" 333 MHz Performance Option and Internal RAID Support Announcement

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Background

As announced in October, 2001, the one - or two-way "convertible" pSeries 610 Models 6E1 and 6C1 demonstrated an innovative union of high end server technology and architecture with versatile entry level server packaging. The combination of large system RAS characteristics, enhanced wireless system management capabilities, operating system versatility, and industry leading price performance made the IBM p610, in both tower and rack form, a highly competitive solution to a wide range of customer requirements. At that time, the system was announced with either 375 or 450 MHz POWER3-II copper-based microprocessors - and delivered high levels of commercial and computational performance with less power consumption (and resulting higher reliability).

At the time of the original announcement, ETG noted that "High end server RAS characteristics and low-end ease of installation, setup and use - enhanced with industry-leading third generation remote system management tools - made the p610 a robust, versatile, and cost effective platform for a variety of application development and deployment scenarios."

Judged by many observers to be a serious threat to alternative Sun servers in the low end server space, the p610 met with considerable success in the marketplace - with IBM reporting thousands of systems on order and installed by a large number of e-business users - from small to large - in centralized server farms or as distributed application servers in a cross section of industries worldwide.

Perhaps caught off guard, Sun quickly announced a 900 MHz upgrade and a price reduction to the Sun Fire™ 280R system - no doubt hoping to overcome the performance and price-performance challenge posed by the new IBM system. Unfortunately for Sun, customers are increasingly aware that there's more to system level performance than chip speed - especially on a system with comparatively poor scalability!

The result? A growing recognition of IBM product superiority in the low-end UNIX server competitive shoot-out.

Update

Now, barely 120 days after the original p610 announcement, IBM has announced another invitation to a shoot-out - this time with a low cost 333 MHz performance option for the pSeries 610 and a new internal RAID (Redundant Array of Independent Disks) capability. By reducing the chip speed and making some system features - like the hot-swappable disk backplane - optional, IBM has targeted the entry price of the 333 MHz p610 to be just under $6,000.

This is an unprecedented low price for the industry leading full 64-bit POWER3™-II AIX® system. The combination of features, functions and low price should prove to be an attraction to ISVs looking for a low cost but full function development system - accelerating the availability of an extended pSeries software stack.

At the same time, adding a SCSI RAID Controller option to the internal hot-swappable disk drives in the p610 is a major enhancement of the system's already formidable RAS capabilities. Compared to the external RAID implementation of competitive systems like the Sun 280R, it provides a low complexity high availability solution to the requirements of businesses running mission critical applications as well as to service providers that manage sensitive data and transactions for their clients. A new, optional system acoustic package will also increase the installation versatility of the p610 in workspaces outside of equipment rooms and server farms.

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Competition

The target competitive system for the p610 6C1/6E1 is clearly the Sun 280R. On October 4, 2001 - when IBM initially launched the p610 - it enjoyed a clear price advantage over the 280R. Sun subsequently dropped the price of their machine and announced the 900 MHz version. At the same time, IBM saw an opportunity to challenge the high end of the Sun Enterprise™ 220R server. Enter the 333 MHz p610 - in the price range of the 220R, and at a lower price than a 280R - with a performance range roughly between the two competitors - and offering a richer array of features, functions, and capacities than either Sun system.

First and foremost, the p610 offers more robust configuration alternatives - expandability and reliability - than entry level Sun servers. Compared to the Sun 280R, the 333 MHz configuration offers:

- Up to 4 times more disk capacity and an internal RAID capability
- Better reliability (service processor, Light Path Diagnostics™, ECC memory,)
- Two Ethernet ports rather than one
- 4x faster external SCSI connection (160 MBps vs.. 40 MBps)
- Three serial ports (for system console, modem, and UPS connections) rather than two
- Lower 24x7x365 warranty cost
- Lower power consumption
- Lower price point

Compared to the Sun 220R 360 or 450 MHz system, the p610 333 MHz has substantial advantages

Systems Comparisons

	IBM p610 333 -450 MHz	**Sun 220R 360- 450 MHz**	**Sun 280R 750 - 900 MHz**
Disk Bays	**Up to 8**	2	2
Max Disk Capacity	**Up to 291.2GB Using 36GB drives**	145.6GB Using 73.4 GB drives	145.6 GB Using 73.4 GB drives
PCI I/O slots	**5**	4	4
Max memory	**8GB**	2GB	8GB
Processor	**POWER3 333 MHz**	UltraSPARC II 360 MHz	UltraSPARC III 750 MHz
SMP Capability	**1-2 way**	1-2 way	1-2 way
OS support	**AIX 4.3.3 & 5.1 64 bit Linux Planned**	Solaris 7 & 8	Solaris 8
Redundant Power	**Optional**	Optional	Optional
Physical Size	**8.75" H x 16.8"W x 24.8"D [5U]**	7"H x 17.25" W x 27.25" D [4U]	7"H x 17.25" W x 27.25" D [4U]
Configuration	**Tower or Rack**	Rack Only	Rack Only
Ethernet 10/100 MB/sec	**dual**	single	single
Internal Disk Bus	**160 MB/sec Ultra3 SCSI**	40MB/sec UltraSCSI	100 MB/sec Fibre Channel
External SCSI	**160 MB/sec Ultra3 SCSI**	40MB/sec UltraSCSI	40MB/sec UltraSCSI
Ports	**3 serial 1 parallel**	2 serial 1 parallel	2 serial 1 parallel
Internal RAID	**YES**	No	No

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Configuration Considerations

While the hot-swap disk drive backplane is optional on the 333 MHz system and standard on 375/450 MHz p610s, ETG strongly recommends it as a relatively low cost (~$200USD) feature that offers the user a foundation for future system upgrades and enhancements - considering that the cost of adding the feature at a later date is likely to be substantially higher! Other upgrades - power, chassis, backplane, memory, etc.) are relatively easy and designed for customer installation.

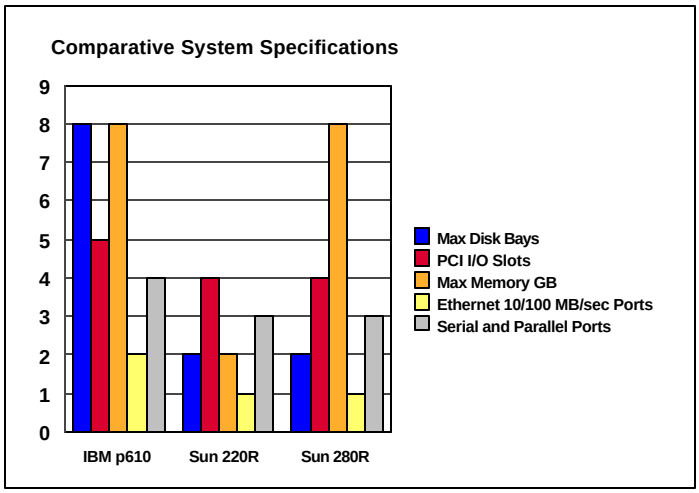
The p610 now offers another major advantage over competitive alternatives in it's ability to support an internal RAID 5 subsystem. RAID not only provides the ability to rapidly recover data in the case of a disk failure, it can also increase disk I/0 performance. Customers with a sensitivity to data loss should consider RAID as part of an overall high server availability strategy.

Sun implementations of RAID 5 for 220R and 280R systems require the attachment of an external storage enclosure, like the StorEdge™ A1000. Compared to the Sun StorEdge A1000 RAID solution, the IBM p610 integrated RAID facility:

- Is ~$600USD cheaper (typical four disk implementation with a hardware RAID controller)
- Is 4 times faster: Ultra3 SCSI (160 MB/sec) vs. Ultra SCSI (40MB/sec), 128 MB cache vs. 24/80 MB cache on Sun
- Has no "external box" (no additional power requirements, no external cabling....net lower cost of ownership and operation)
- Has a System External SCSI connector still available for use
- Has lower power consumption and heat dissipation
- Can implement in Tower and Rack configurations
- Is quieter

The Difference Makers

Although the UltraSPARCIII, like the IBM POWER3-II chip, is built with performance enhancing copper technology, there are substantial differences in the systems designs and implementations. The entire IBM system design concept is based on greater I/O capacity, large available memory, faster system interconnection, and reduced latency - resulting in system level performance and scalability.



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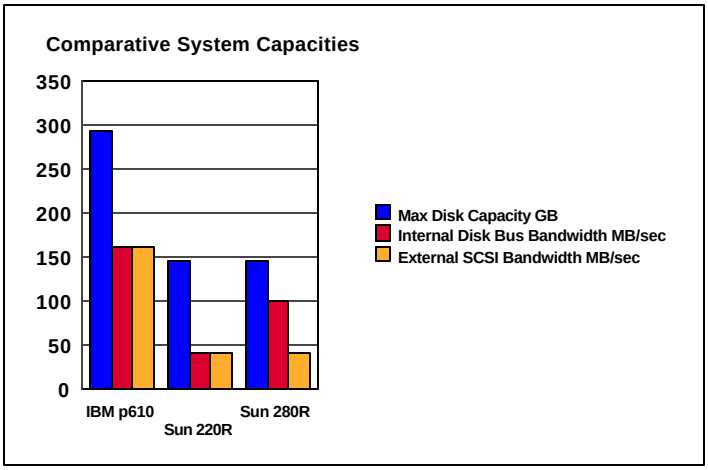
The large I/O capacity and high performance interconnections between p610 processors, memory and I/O are designed to achieve and sustain data transfer speeds (bandwidth) that far exceeds that of competitive Unix systems and deliver increased performance and greater scalability in data intensive e-business applications.



Project eLiza

Project eLiza is an industry leading IBM initiative to prevent unscheduled down time. The conceptual design is that systems will self-detect, self-diagnose, and self-heal potential causes of unscheduled interruptions - without human intervention. Furthermore, the duration of planned interruptions will be minimized. IBM p610 systems embed support for some of the most advanced eLiza functions, including the ability to automatically "deallocate" a failing processor or other system component without interrupting production work - the ability to perform predictive maintenance and identify potential points of failure - and the ability to capture error data on the fly resulting in the rapid resolution of problems and the potential for extended periods of uninterrupted operation. In highly critical installations where no system outage can be tolerated - even as the result of disastrous events - the p610 can be remotely backed up by IBM HAGEO and GeoRM clustering software, capable of interconnecting up to 32 systems with failover support in multiple widely dispersed locations. No such facilities are supported by the 220R or 280R systems.

Conclusions

Like the earlier 375 and 450 MHz versions of the p610, the 333 MHz system sustains a new standard for the industry in the 1-2 way Unix server space. It combines high end system RAS, manageability, and function with the innovative packaging and ease of installation and maintenance characteristic of the PC space - while offering users substantial cost of ownership advantages.

The 333 MHz p610 is still characterized by larger caches, or more system memory per processor, and/or support for larger I/O subsystems than competitive systems. These factors combine to enable it to substantially outperform higher priced competitive systems like the Sun 220R - and to approach - if not exceed - the performance of the 750 MHz Sun 280R, in SPEC benchmarks (like CINT2000 and CFP2000) at a fraction of the price!

Announcement of the 333 MHz pSeries 610 strengthens IBM's position in the entry level Unix server space. The unique combination of high end server RAS and manageability tools, advanced microprocessor technology, excellent price-performance, and innovative and versatile packaging continue to make the p610 a clearly superior alternative to other one- and two-way systems like the Sun Enterprise 220 and Sun Fire 280R.

Please send comments, corrections, and suggestions for
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