



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
DEP13834

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
CHUCK BOWMAN
304-558-2157

RFQ COPY
TYPE NAME/ADDRESS HERE

Terradon Communications Group
 401 Jacobson Drive
 Poca, WV 25159

ENVIRONMENTAL PROTECTION
DEPARTMENT OF
OFFICE OF INFORMATION SERVICES
601 57TH STREET SE
CHARLESTON, WV
25304 **304-926-0499**

DATE PRINTED 02/07/2007	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
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BID OPENING DATE: **02/22/2007** **BID OPENING TIME 01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LS		920-45	\$67,613.41	\$67,613.41
<p>ENTERPRISE BACKUP SOLUTION</p> <p>THE WEST VIRGINIA PURCHASING DIVISION, ON BEHALF OF THE AGENCY, THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S INFORMATION TECHNOLOGY OFFICE, IS SOLICITING BIDS FOR AN ENTERPRISE BACKUP SOLUTION PER THE ATTACHED IBM PRODUCT DESCRIPTION (OR EQUIVALENT) AND BID SCHEDULE.</p> <p>THIS PROCUREMENT IS NECESSARY TO ENABLE THE AGENCY TO UPGRADE THEIR CAPABILITY TO ARCHIVE DATA RESIDING ON VARIOUS SYSTEM PLATFORMS INCLUDING A STORAGE AREA NETWORK (SAN). THIS SOLUTION SHOULD BE CONFIGURED TO BACK UP MULTIPLE OPERATING SYSTEMS, INCLUDING BUT NOT LIMITED TO, MICROSOFT WINDOWS, NOVELL NETWARE, AND SUSE LINUX. THIS SYSTEM IS INTENDED TO REPLACE THE CURRENT BACKUP SYSTEM.</p> <p>THE MODEL/BRAND/SPECIFICATIONS NAMED HEREIN ESTABLISH THE ACCEPTABLE LEVEL OF QUALITY ONLY AND ARE NOT INTENDED TO REFLECT A PREFERENCE OR FAVOR ANY PARTICULAR BRAND OR VENDOR. VENDORS WHO ARE BIDDING ALTERNATES SHOULD SO STATE AND INCLUDE PERTINENT LITERATURE AND SPECIFICATIONS. FAILURE TO PROVIDE INFORMATION FOR ANY ALTERNATES MAY BE GROUNDS FOR REJECTION OF THE BID. THE STATE RESERVES THE RIGHT TO WAIVE MINOR IRREGULARITIES IN BIDS OR SPECIFICATIONS IN ACCORDANCE WITH SECTION 148-1-4(F) OF THE WEST VIRGINIA LEGISLATIVE RULES AND REGULATIONS.</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE: *[Signature]* TELEPHONE: 304-755-1324 DATE: 2/22/2007

TITLE: President FEIN: 55-0778021 ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

**GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125.00 registration fee.
5. All services performed or goods delivered under State Purchase Orders/Contracts are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this contract is automatically null and void, and is terminated without further order.
14. **HIPAA Business Associate Addendum** - The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Covered Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in cases of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications.

SIGNED BID TO:

Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130



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SHIP TO

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 OFFICE OF INFORMATION SERVICES
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 25304 304-926-0499

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02/07/2007				

BID OPENING DATE: **02/22/2007** BID OPENING TIME **01:30PM**

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VENDOR PREFERENCE CERTIFICATE CERTIFICATION AND APPLICATION* IS HEREBY MADE FOR PREFERENCE IN ACCORDANCE WITH WEST VIRGINIA CODE, 5A-3-37 (DOES NOT APPLY TO CONSTRUCTION CONTRACTS). A. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED: <input type="checkbox"/> BIDDER IS AN INDIVIDUAL RESIDENT VENDOR AND HAS RESIDED CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR <input checked="" type="checkbox"/> BIDDER IS A PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR AND HAS MAINTAINED ITS HEAD-QUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR 80% OF THE OWNERSHIP INTEREST OF BIDDER IS HELD BY ANOTHER INDIVIDUAL, PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR WHO HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR <input type="checkbox"/> BIDDER IS A CORPORATION NONRESIDENT VENDOR WHICH HAS AN AFFILIATE OR SUBSIDIARY WHICH EMPLOYS A MINIMUM OF ONE HUNDRED STATE RESIDENTS AND WHICH HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA CONTINUOUSLY FOR THE FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION. B. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE 	TELEPHONE 304-755-1324	DATE 2/22/2007
TITLE President	FEIN 55-0778021	ADDRESS CHANGES TO BE NOTED ABOVE

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RFQ NUMBER:
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 3

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SUBJECT

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 401 Jacobson Drive
 Poca, WV 25159

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LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>(xxx) BIDDER IS A RESIDENT VENDOR WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES WORKING ON THE PROJECT BEING BID ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID; OR () BIDDER IS A NONRESIDENT VENDOR EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS OR IS A NONRESIDENT VENDOR WITH AN AFFILIATE OR SUBSIDIARY WHICH MAINTAINS ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES OR BIDDERS' AFFILIATE'S OR SUBSIDIARY'S EMPLOYEES ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID.</p> <p>BIDDER UNDERSTANDS IF THE SECRETARY OF TAX & REVENUE DETERMINES THAT A BIDDER RECEIVING PREFERENCE HAS FAILED TO CONTINUE TO MEET THE REQUIREMENTS FOR SUCH PREFERENCE, THE SECRETARY MAY ORDER THE DIRECTOR OF PURCHASING TO: (A) RESCIND THE CONTRACT OR PURCHASE ORDER ISSUED; OR (B) ASSESS A PENALTY AGAINST SUCH BIDDER IN AN AMOUNT NOT TO EXCEED 5% OF THE BID AMOUNT AND THAT SUCH PENALTY WILL BE PAID TO THE CONTRACTING AGENCY OR DEDUCTED FROM ANY UNPAID BALANCE ON THE CONTRACT OR PURCHASE ORDER.</p> <p>BY SUBMISSION OF THIS CERTIFICATE, BIDDER AGREES TO DISCLOSE ANY REASONABLY REQUESTED INFORMATION TO THE PURCHASING DIVISION AND AUTHORIZES THE DEPARTMENT OF TAX AND REVENUE TO DISCLOSE TO THE DIRECTOR OF PURCHASING APPROPRIATE INFORMATION VERIFYING THAT</p>						

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BID OPENING DATE: 02/22/2007		BID OPENING TIME 01:30PM		

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<p>BIDDER HAS PAID THE REQUIRED BUSINESS TAXES, PROVIDED THAT SUCH INFORMATION DOES NOT CONTAIN THE AMOUNTS OF TAXES PAID NOR ANY OTHER INFORMATION DEEMED BY THE TAX COMMISSIONER TO BE CONFIDENTIAL.</p> <p>UNDER PENALTY OF LAW FOR FALSE SWEARING (WEST VIRGINIA CODE 61-5-3), BIDDER HEREBY CERTIFIES THAT THIS CERTIFICATE IS TRUE AND ACCURATE IN ALL RESPECTS; AND THAT IF A CONTRACT IS ISSUED TO BIDDER AND IF ANYTHING CONTAINED WITHIN THIS CERTIFICATE CHANGES DURING THE TERM OF THE CONTRACT, BIDDER WILL NOTIFY THE PURCHASING DIVISION IN WRITING IMMEDIATELY.</p> <p>BIDDER: Terradon Communications Group</p> <p>DATE: 2/22/2007</p> <p>SIGNED: <i>[Signature]</i></p> <p>TITLE: President</p> <p>* CHECK ANY COMBINATION OF PREFERENCE CONSIDERATION(S) IN EITHER "A" OR "B", OR BOTH "A" AND "B" WHICH YOU ARE ENTITLED TO RECEIVE. YOU MAY REQUEST UP TO THE MAXIMUM 5% PREFERENCE FOR BOTH "A" AND "B". (REV. 12/00)</p> <p>NOTICE</p> <p>A SIGNED BID MUST BE SUBMITTED TO: DEPARTMENT OF ADMINISTRATION</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS			
SIGNATURE <i>[Signature]</i>	TELEPHONE 304-755-1324	DATE 2/22/2007	
TITLE President	FEIN 55-0778021	ADDRESS CHANGES TO BE NOTED ABOVE	

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PHOTO

**ENVIRONMENTAL PROTECTION
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LINE	QUANTITY	UCP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130</p> <p>THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:</p> <p>SEALED BID</p> <p>BUYER: CB-23</p> <p>RFQ. NO.: DEP13834</p> <p>BID OPENING DATE: 02/22/2007</p> <p>BID OPENING TIME: 1:30 PM</p> <p>PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:</p> <p>-----304-729-9203-----</p> <p>CONTACT PERSON (PLEASE PRINT CLEARLY):</p> <p>-----Ryan Wheeler-----</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS			
SIGNATURE <i>[Signature]</i>	TELEPHONE 304-755-1324	DATE 2/22/2007	
TITLE President	FEIN 55-0778021	ADDRESS CHANGES TO BE NOTED ABOVE	

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BID SCHEDULE

006

RFQ# DEP13834

Bid Date: 02/22/2007

Bid Opening Date: 1:30 pm

Part Number	IBM Product Description or EQUIVALENT	Qty
System X Hardware Description		
System X 88652RU	x260, Xeon MP, 3.66GHz/667MHz, 1MB L2, 2x1GB, O/Bay SAS , CDROM 48x-20x, 2x775W p/s, Rack	1
40k2520	xSeries 3.66GHz/667MHz, 1MB L2 Upgrade with Xeon Processor MP	1
39m5821	2 x 512MB PC2-3200 ECC DDR2 SDRAM RDIMM Kit	2
41y5000	Active Memory(tm) 4-Slot Memory Expansion Card	1
39R8729	ServeRAID 8i SAS Controller	1
24P0960	IBM Total Storage DS4000 FC2-133 Host Bus Adapter	3
26K5699	146GB 15K 3.5" SAS HS Drive	6
13M7415	775-watt Hot-Swap Power Supply	1
39m5697	5m LC-LC Fibre Channel Cable	2
30L9187	3 YR onsite repair 24x7x4 hour	1
OS 22P8692	System X Operating System - Windows Server 2003	1
TSM Software Description		
TSM D5127LL	IBM Tivoli Storage Manager Processor License plus SW Maintenance 12 Months	30
D510ELL	IBM TSM for Database Managed Process License + SW Maintenance 12 months	3
Tape Model Number Feature Code TS3310 Tape Hardware Description		
3576-E9U 0000	TS3310 TAPE LIBRARY	1
1900	ADDITIONAL POWER SUPPLY	1
6013	13M LC-LC FIBRE CHANNEL CABLE	2
7003	RACK MOUNT KIT	1
8038	ULTRIUM 3 FIBRE TAPE DRIVE	2
3589-008 0000	400GB ULTRIUM TAPE CARTRIDGES WITH LABEL	1
0820	400GB ULTRIUM TAPE CARTRIDGES W/LABEL 20	3
8000	JEWEL CASE	1
9003	LABEL BACKGROUND COLOR RED	1
9022	COLOR/VIBRANT BACKGROUND	1
9110	FIRST CHARACTER OF VOLSER IS A	1
9200	SECOND CHARACTER OF VOLSER IS 0	1
9300	THIRD CHARACTER OF VOLSER IS 0	1
9400	FOURTH CHARACTER OF VOLSER IS 0	1
9500	FIFTH CHARACTER OF VOLSER IS 0	1

Hardware/Software \$ 60,459.95

Services	Services Description for TSM 80 Hours of Install, Configure and Setup Services	1
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Services \$ 7153.46

Total \$ 67,613.41

A F F I D A V I T

007

West Virginia Code §5A-3-10a states:

No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

EXCEPTION:

The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

LICENSING:

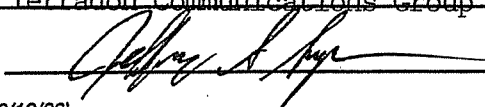
Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit www.state.wv.us/admin/purchase/privacy for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: Terradon Communications Group

Authorized Signature:  Date: 2/22/2007

Backup Information and Comparison Chart of Proposed System

TCG Comparison Chart for DEP Enterprise Backup Solution

Component State System Spec TCG Proposed System Spec Comparison

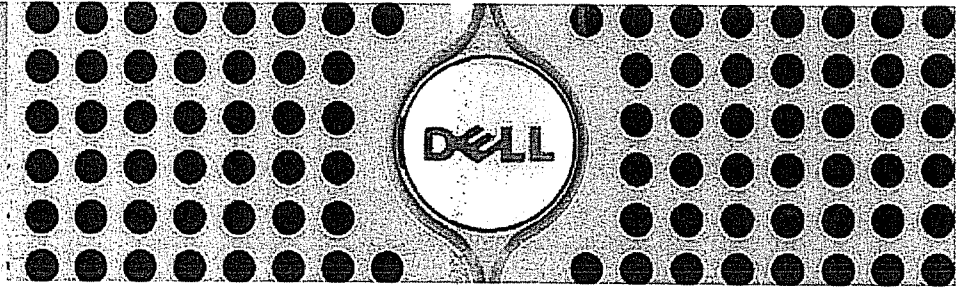
Manufacturer/Model	IBM x260	Dell PowerEdge 6800	
Processor	(1) Xeon 3.66GHz / 667MHz FSB, 1MB L2 Cache	(2) Dual Core Xeon 2.8GHz / 800MHz FSB, 2x1MB L2 Cache	Superior to Spec
Memory	(4) 512MB PC2-3200 ECC DDR2 SDRAM	(4) 512MB DDR2 400MHz	Comparable to Spec
Controller	ServRAID 8i SAS Controller	PERC4 Embedded RAID Controller	Comparable to Spec
HBA	(3) IBM Total Storage DS4000 FC2-133 HBA	(3) 64-bit 266MHz PCI-X 2-4GB FC HBA	Comparable to Spec
HDD	(6) 146GB 15K 3.5" SAS HDD	(6) 146GB 15K 3.5" U320 HDD	Comparable to Spec
Power Supply	(2) 775W Hot Swap Power Supply	(2) Redundant 600W Power Supply	Comparable to Spec
Cabling	(2) 5m LC-LC Fiber Channel Cable	(2) 25m MM LC-LC Fiber Channel Cable	Comparable (Longer) to Spec
System Support	3YR 24x7x4 Onsite Support	3YR 24x7x4 Parts & Labor Onsite & 3-pack Premier Enterprise Support for Complex Resolutions w/ Advanced Software Support	Superior to Spec
OS	Windows Server 2003	Windows Server 2003 R2	Superior to Spec
Backup Software	(30) IBM Tivoli Storage Manager with 12 month SW Maintenance (3) IBM TSM for Databases with 12 month SW Maintenance	(30) IBM Tivoli Storage Manager with 12 month SW Maintenance (3) IBM TSM for Databases with 12 month SW Maintenance	Comparable to Spec

Server & Software

Tape Library	TS3310 Tape Library	ML610 Tape Library	Superior to Spec
Library Support	Not Apparent	3YR NBD Parts & Labor Onsite	Superior to Spec

Tape Library

DELL POWEREDGE 6800 SERVER



The Dell™ PowerEdge™ 6800 delivers outstanding price/performance/watt with the next generation of dual-core processors that can help you realize performance improvements of up to 123%¹.

This server offers high availability and performance scalability as part of Dell's comprehensive data center solutions for the Scalable Enterprise.

Performance

Designed to give you the latest high performance technologies, management tools and storage features, the scalable, quad-socket Dell PowerEdge 6800 server is a part of Dell's comprehensive solution for databases and business-critical applications such as Microsoft® SQL Server, Oracle®, PeopleSoft® and SAP®. Powered by the latest dual-core 64-bit Intel® Xeon™ processors MP 7100 sequence, a 800MHz Front Side Bus, up to 64GB DDR-2 Memory and PCI Express™, this server provides exceptional performance in a 6U free standing tower or rack-mountable chassis.

Availability

The PowerEdge 6800 server features advanced memory technology for enterprise-class availability. Memory features such as Memory RAID, memory mirroring and DDR-2 SDRAM with Error Correcting Code (ECC) memory plus SDDC keep systems performing without interruption by withstanding errors that could normally bring a system without these high availability features down. In addition, the PowerEdge 6800 provides hot-plug redundant power supplies, hard drives and cooling fans so that you can replace components without having to make the server unavailable to its users.

Expandability

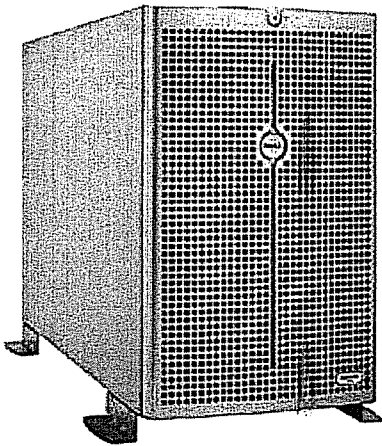
The Dell PowerEdge 6800 server is designed to meet the growing needs of demanding database and enterprise application environments with exceptional expandability internally plus the flexibility of external scalability. It features four PCI Express slots and three PCI-X slots that deliver further expandability for redundant connections to the network and storage. In addition, this server includes redundant integrated NICs so that you can get the most out of your PCI slots. Twelve one-inch SCSI drives and the PCI Express capable PERC 4e/DC RAID option or PERC 4e/Di onboard option enhance availability and performance. Additionally, PERC 5/E provides connectivity to the PowerVault MD1000, an external SAS storage enclosure that can help satisfy the performance requirements of both mainstream and demanding single-server applications.

Manageability and Serviceability

The PowerEdge 6800 server offers the latest in easy-to-manage and easy-to-service technology. The Dell OpenManage™ software suite helps to minimize deployment time, costs and impact on productivity. What's more, the optional PCI-based DRAC 4 remote management card allows your IT administrators to securely manage servers located in different buildings or cities.

The PowerEdge 6800 also features a modular chassis designed to provide day-in, day-out ease of serviceability. This server model features tool-less access to internal components. Furthermore, Dell Enterprise Support Services provide the right level of support and outstanding service quality.

Designed for high performance, high availability, ease-of-management and simplified serviceability, the Dell PowerEdge 6800 is ideal for growing data center environments.



Dell PowerEdge 6800





DELL POWEREDGE 6800 SERVER

DELL IT INFRASTRUCTURE SERVICES

Dell brings pure execution to IT Services. The planning, implementation and maintenance of your IT infrastructure deserves nothing less. Variability in execution can compromise user productivity, IT resources and ultimately, your reputation. By leveraging our heritage of process driven excellence, Dell Services can deliver a smarter way.

We don't claim to do everything. We focus on IT infrastructure services. And we take a customer led approach, grounded in the philosophy that you know your business better than anyone. That's why Dell does not try to take key business decisions out of your hands, or lock you into more than you need. Instead, we apply our world-class process management and "no excuses" culture to deliver what customers today most need – flexibility and repeatable quality. That's pure execution. That's Pure Dell.

Assessment, Design and Implementation Services

IT departments are continually challenged to evaluate and implement new technologies. Dell's assessment, design and implementation services can restructure your IT environment to enhance performance, scalability and efficiency while helping to maximize your return on investment and minimize disruption to your business.

Deployment Services

System deployment is a necessary evil that plagues nearly every organization. You must deploy new systems to help improve performance and meet user demand. With Dell's deployment services, we help simplify and speed up the deployment and utilization of new systems to maximize uptime throughout your IT environment.

Dell Data Center Environmental Assessment and Database Optimization Services provide end-to-end data center solutions for customers.

Asset Recovery and Recycling Services

Proper disposal, reselling and donation of computer equipment is a time-consuming task that typically falls to the bottom of many IT to-do lists. Dell simplifies the end of life processes for IT equipment in a way that can maximize value for customers.

Training Services

Arm your employees with the knowledge and skills they need to be as productive as possible. Dell offers comprehensive training services which include hardware and software training, as well as PC skills and professional development classes. With Dell training you can help improve system reliability, maximize productivity and reduce end user requests and downtime.

Enterprise Support Services

With Dell, you can get maximum performance and availability of your Dell server and storage systems. Our Enterprise Support services offer proactive maintenance to help prevent problems as well as rapid response and resolution of problems when they do occur. We have built a robust global infrastructure that offers multiple levels of enterprise support for systems throughout your infrastructure.

To help you get the most from your Dell systems, visit www.dell.com/services.

Services vary by region.

FEATURES DELL™ POWEREDGE™ 6800 SERVER

Form factor	Tower or 6U rack-mount
Processors(s)	Up to four dual-core 64-bit Intel® Xeon™ processors 7100 sequence
Front side bus	Dual independent 800MHz
Cache	Up to 16MB L3 cache per processor (dual-core)
Chipset	Intel 8501 (800MHz)
Memory	1GB/64GB DDR-2 400 ECC SDRAM
I/O slots	Seven total: four PCI Express™ slots and three PCI-X slots
Drive controller	Embedded dual channel Ultra320 SCSI
RAID controller	PERC 5/E, 4/DC, PERC 4e/DC and PERC 4e/Di
Drive bays	Ten 3.5" Ultra320 hot-plug SCSI drives plus an option for two 3.5" hot-plug Ultra320 SCSI drives in the media bay; floppy drive and CD or CD-RW/DVD*
Maximum internal storage	Up to 3.6TB ¹
Hard drives²	3.5" Ultra320 SCSI (10k rpm): 73GB, 146GB and 300GB 3.5" Ultra320 SCSI (15k rpm): 36GB, 73GB and 146GB
Internal storage performance	10K/15K RPM SCSI drives
External storage	SAS, SCSI and fibre channel storage systems
Tape backup options	Internal: PowerVault™ 100T DDS4 and DAT72; 110T LTO, LTO2, LTO3, SDLT320 External: PowerVault 124T, 132T, 136T, ML6000 series
Network interface card	Dual embedded Broadcom® Gigabit* NICs
Power supply	1570W, hot-plug redundant power ³ ; 110-240V
Availability	ECC memory with SDDC, Memory RAID and Memory Mirroring; hot-plug SCSI hard drives; hot-plug redundant power ³ ; hot-plug redundant cooling; tool-less chassis; high availability fibre channel and SCSI cluster support; optional ROMB with battery-backed cache
Video	Embedded ATI-Radeon 7000 controller with 16MB SDRAM
Remote management	Baseboard Management Controller with IPMI 1.5 compliance, accessible via network or serial port; optional DRAC 4/p
Systems management	Dell OpenManage™
Rack support	4-post for Dell rack or supported 3rd party racks
Operating systems	Microsoft® Windows Server™ 2003, Standard x64 Edition; Microsoft Windows Server 2003, Enterprise x64 Edition; Microsoft Windows Server 2003, Standard Edition; Microsoft Windows Server 2003, Enterprise Edition; Red Hat® Enterprise Linux® 3 and 4; SUSE® Linux Enterprise Server 9 EM64T SP2

¹ Based on the SPECintb2000 benchmark test performed by Dell Labs in August 2006 on a PE6850 with four dual core Intel Xeon 7140M (3.4GHz 150 watt Tulsa) processors, 16GB 400MHz DDR-2 memory and Windows Server 2003 Enterprise x64 Edition+SP1 OS as compared to a PE6850 with four dual core Intel Xeon 7041 3.0GHz (Paxville MP) processors, 16GB 400MHz DDR2 memory and Windows Server 2003 Enterprise x64 Edition+SP1 OS. Actual performance will vary based on configuration, usage and manufacturing variability

² DVD-ROM drives may have write-capable hardware that has been disabled via firmware modifications

³ For hard drives, 1 GB means 1 billion bytes and 1 TB means 1 trillion bytes; actual capacity varies with preloaded material and operating environment and will be less.

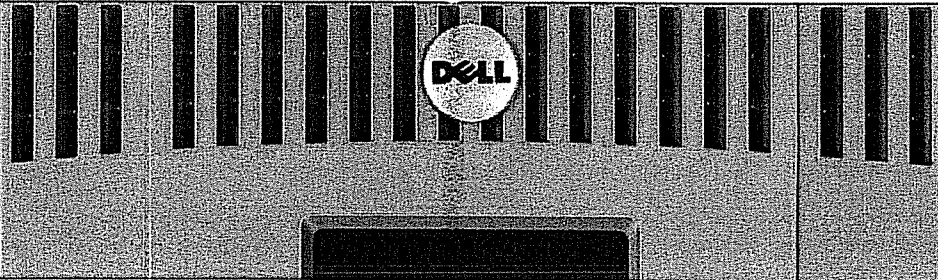
⁴ This term does not connote an actual operating speed of 1 GB/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

⁵ Redundant power is available in all 200-240V configurations and most 100-119V / 120-127V configurations except those that contain or exceed four processors, 64GB of memory, 8 hard drives, and four PCI cards. Redundant power availability will vary by configuration, please contact your Dell sales representative for more information.

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PowerVault ML6000 Tape Library



The Dell™ PowerVault™ ML6000 is the first truly modular tape library to intelligently protect your Scalable Enterprise.

Long Term Investment Protection

Exceptional modularity and versatility for long-term investment protection.

The PowerVault ML6000's modular architecture provides versatility to help protect long-term investments. The control module can be placed anywhere in the expansion stack making it simple to grow and customize your library. Using 9U expansion modules, the platform easily scales from 14.4TB of native backup storage capacity to a maximum of 161TB* to support both workgroup and mid-range data centers. In fact, each additional expansion module leverages existing robotics to help increase reliability.

Additionally, the PowerVault ML6000 series is compatible with software from Symantec®, Legato® and CommVault® as well as certified and tested with Dell PowerEdge™ servers and the Dell/EMC disk portfolio so you don't have to invest additional resources to achieve compatibility.

Available with multiple service offerings such as backup design and assessment and backup implementation, you can help ensure your backups are appropriately planned for long-term support. And with the use of LTO-3 drives and WORM-capable media, the PowerVault ML6000 series aids in compliance by preventing data from being overwritten or digitally altered.

Predictive Self Diagnostics for Optimum Availability

Remarkable self awareness guarantees backups execute as planned.

The PowerVault ML6000 tape library series features built-in, intelligent diagnostics that help isolate failures and provide exceptional availability. It proactively sends e-mail notifications to help predict failures and proposes resolution paths through an integrated data path verification tool, so you can limit unplanned downtime.

Easy-to-use wizards provide you with painless maintenance tools. The straightforward administration wizard is driven through Microsoft® Windows® using library action requests. Similarly, the troubleshooting wizards offer resolution options for known issues ranging from cleaning or restoring drives to opening a service ticket.

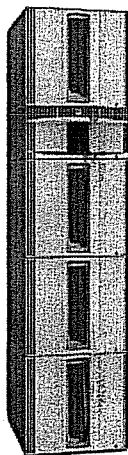
Scalable Capacity and Performance

High performance SAN and server backup that scales from 14TB to 161TB.*

The ML6000 series uses capacity-on-demand scalability to allow users to increase usable capacity easily and non-disruptively as data grows. Users simply select an initial configuration that provides additional tape slots, preinstalled and ready to be activated using a simple software key. When all the base systems' tape slots are activated, users can increase slots available for growth by adding expansion modules.

The Dell PowerVault ML6000 tape library series is designed to automate the retrieval, storage and management of tape cartridges with exceptional modular scalability. It helps satisfy shrinking backup windows, as it has a minimum native transfer rate of 80MB/s and grows to a maximum of 1.44GB/s. You can also scale from 14.4TB of native backup storage capacity to 161TB* using LTO-3 SCSI or fiber channel drives.

The PowerVault ML6000 series offers flexible configurations scaling from 1 drive to a maximum of 18 and from 36 to 402 cartridge slots to give customers added backup performance and capacity as their businesses require it. You can even add or remove tape cartridges from the library while it is online further enabling you to expand your library as your data grows.



Dell PowerVault ML6000 series





PowerVault ML6000 Tape Library

DELL IT INFRASTRUCTURE SERVICES

Dell brings pure execution to IT Services. The planning, implementation and maintenance of your IT infrastructure deserves nothing less. Variability in execution can compromise user productivity, IT resources, and ultimately, your reputation. By leveraging our heritage of process driven excellence, Dell Services can deliver a smarter way.

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- **Enterprise Support Services:** Platinum Enterprise Support; Gold Enterprise Support; Silver Enterprise Support; Basic Enterprise Support; Dell/EMC Maintenance, High Performance Computing Cluster (HPC) support

- **Assessment, Design and Implementation Services:** IT Architecture Services; Hardware Consolidation; Software Migration
- **Asset Recovery and Recycling Services:** Disposal; Donation; Value Recovery; Lease Return
- **Training Services:** Dell Hardware Training and Certifications; Infrastructure Software Training and Certification; PC Skills and Professional Development Training; Learning Management

Look for more detailed IT Infrastructure Services information at www.dell.com/services.
*Services may vary per region.

FEATURES

DESCRIPTION

	ML6010 Control Module (5U)	ML6020 Control Module (14U)	ML6030 Control Module (23U)	ML6000 Expansion Module (9U)	ML6030CM+ ML6000EM (32U)	ML6030CM + (2) ML6000EM (41U)
PHYSICAL						
Rack height	5U	14U	23U	9U	32U	41U
Dimensions (H x W x D)	8.6" x 17.4" x 31.4" (21.9cm x 44.2cm x 79.8cm)	24.4" x 17.4" x 31.4" (61.9cm x 44.2cm x 79.8cm)	40.1" x 17.4" x 31.4" (101.9cm x 44.2cm x 79.8cm)	15.8" x 17.4" x 31.4" (40cm x 44.2cm x 79.8cm)	55.9" x 17.4" x 31.4" (141.9cm x 44.2cm x 79.8cm)	71.7" x 17.4" x 31.4" (181.9cm x 44.2cm x 79.8cm)
I/E station slots	6	6, 12, 18	6, 12, 18, 24, 30	Add 6 or 12	6, 12, 18, 24, 30, 36, 42	6, 12, 18, 24, 30, 36, 42, 48, 54
Maximum storage slots	36 (with Import/Export I/E Station)	128 (with I/E Station)	218 (with I/E Station)	Add 46 or 92	310	402
Drive types	LTO-3 SCSI or Native Fibre Drives					
Drives	1, 2	1-6	1-10	1-4	1-14	1-18
Interconnect type	SCSI or Native Fibre Channel					
Weight	66lbs (30Kgs)	125 lbs (56.8Kgs)	184 lbs (83.6Kgs)	59 lbs (26.8 kgs)	243 lbs (110.4 kgs)	302 lbs (137.2 kgs)

RELIABILITY

Mean cycles between failure (MCBF)	> 2,000,000
Mean time to repair (MTTR)	30 minutes

ENVIRONMENTAL

Electrical	100-240 VAC, 50-60Hz
Temperature	10° to 40°C operating
Humidity	20-80% non-condensing operating
Frequency	50-60 Hz
Operating altitude	30,000 ft (9,144 m)

POWER

Requirements	350W with optional redundant power supply and line cord
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DRIVES AND PERFORMANCE

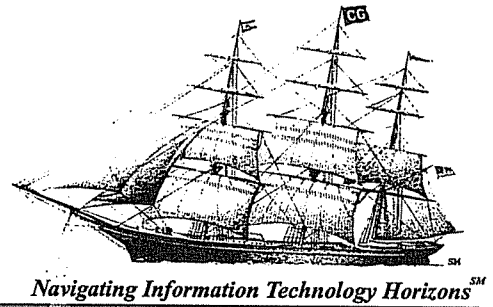
Supported media	LTO-1 (read-only in LTO-3 drives), LTO-2 (read/write in LTO-3 drives), LTO-3, LTO-3 WORM					
Library management	Operator panel touch screen: web client; SNMP protocol; SMI-S protocol					
Library robot control	LUN					
Maximum library capacity	14.4TB	51.2TB	88TB	36.8 TB	124 TB	160.8 TB
Native cartridge capacity (LTO-3)	400GB					
Native drive throughput (min.) (LTO-3)	80MB/s					
Data buffer (LTO-3)	128MB					
File access time (LTO-3)	68 sec					

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THE CLIPPER GROUP Navigator™



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September 29, 2006

Dell Delivers Improved PowerEdge 6800s with Latest Intel Technology

Analyst: David Reine

Management Summary

As the dog days of summer fade away in the rear-view mirror, we can take a step back and review an unusual three months of weather where many parts of the country experienced extremely hot temperatures, matched only by the heights that gasoline prices achieved at the pump that have been well in excess of \$3.00/gal across the country. Despite that, vacation season took the American family out on the highway, heading toward the seashore or the mountains, whichever suited our holiday desires. Unfortunately, the increase in travel also placed additional strain on the supply, and cost, of gasoline, as the demand for more fuel, and increasing world tensions, drove the cost of energy ever higher. The arrival of Labor Day only serves to emphasize how expensive energy has become. Who could have imaged the joy of *only* having to pay \$2.80/gal to get to work?

This past summer also brought something even more unusual to the data center – a series of announcements from microprocessor developers and server manufacturers that has been unprecedented in its scope. Intel alone delivered 23 new processors in less than 100 days, some of them not only on schedule, *but early!*, and all intended to reduce the total cost of server ownership (TCO) by reducing the amount of energy required to drive the server and cool the data center from the generated heat. The competition from AMD has obviously had a most beneficial effect within the bowels of Intel. Their latest announcement, the new dual-core Intel *Xeon Processor 7100 Series*, formerly called *Tulsa*, has entered the fray with eight new models to compete with AMD's latest offerings in the *Opteron* family, designed to provide high-end price/performance for the quad-socket (and above) server space. The availability of a new CPU, however, no matter how innovative, is of little use to the data center by itself. The enterprise data center requires a server solution that takes advantage of the new technology and surrounds it with innovations of its own to deliver even more value to the enterprise through improved reliability, availability, and serviceability (RAS) to meet higher enterprise SLAs.

Dell has done just that by taking this new family of microprocessors from Intel and packaging them in revised *PowerEdge 6800* and */6850* server platforms with outstanding RAS to increase the return on investment that enterprises have been making in Dell products, and to lower the TCO for their data centers. By combining expanded server functionality with innovative microprocessor design, Dell has enabled the enterprise data center to improve performance and lower costs, at the same time. If you would like to take advantage also, please read on.

IN THIS ISSUE

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> Dell Delivers Expanded RAS	2
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Enterprise Data Center Costs

Every enterprise CIO goes to sleep at night wondering if his/her data center will be able to handle the ever-increasing workloads being placed upon it by an increasingly voracious blend of employees, partners, and customers, all demanding instant response for ever more complex requests. One major question revolves around the need to handle peak demands while trying not to over-provision an initial deployment. The data center needs to be able to improve the return on investment (ROI) with a scalable IT infrastructure, while at the same time, lowering the TCO of *all* IT resources, from acquisition costs, to operating expenses such as data center staffing, and the energy required to run and cool the data center.

Key issues facing the data center in every enterprise focus around *server utilization, growth, physical and logical consolidation of enterprise resources, and energy cost*. Existing IT infrastructures consist of a plethora of aging, underutilized mono- and dual-processor nodes. Most of these platforms execute a single application and use less than 15% to 20% of available CPU cycles, clearly not realizing the best ROI possible. **This has to be improved!** The advent of virtualization enables the data center to consolidate applications, and platforms, on a single new server, improving the utilization ratio from 20% to upwards of 80%, with a carefully planned consolidation of applications within a single server environment. Virtualization enables multiple applications, in fact, multiple operating environments, to share the same resources, memory, disk, and I/O. This enables the data center to facilitate additional demands being made on IT resources from acquisitions and expansion, adding new users to a once rigid architecture.

In addition, today's typical IT network consists entirely of older, single-core CPUs that simply run too hot. The availability of new energy-efficient, dual-core servers enables the data center to lower its operating costs, replacing older servers and their expensive maintenance contracts, with new technology carrying new hardware warranties. Reducing energy requirements for running and cooling the data center efficiently is of paramount importance. With the cost of energy rising to previously unheard of limits, it becomes necessary for every data center to increase the performance per watt in order to reduce the recurring costs of data center operation. With one eye on the bottom line and the other on the horizon, the CIO must protect the enterprise's investment with a scalable platform, capable of adding, and upgrading, processors and memory without the aid of a forklift. By eliminating the maintenance contract with its annual raises, the CIO can also take back control of that escalating portion of the data center's operating expenses.

Once the CIO makes the decision to replace an older, inefficient architecture, the question on the table becomes *with what to replace it?* Before determining whose logo to acquire, the CIO must first determine which of the open systems architectures, Intel, AMD, or others, to deploy. We do not have space here to analyze all of the options, so let's take a look at the latest, the newest *Xeon*

MP from Intel, the dual-core *Xeon Processor 7100 Series*.

Intel Innovation

In response to the urgings of their biggest clients, and in reaction to the competitive pressures from AMD, IBM, and Sun, Intel has taken a giant leap forward this summer with the introduction of 23 new processors across their product line. The latest announcement has enabled Intel to move back into the forefront of the open systems quad-socket server competition with eight new members of their high-end Xeon family, known internally as *Tulsa*, but officially announced as the Xeon Processor 7100 Series Family. Developed using Intel's 65nm architecture, the 7100 Series is available in speeds ranging from 2.5GHz up to 3.4GHz and with power requirements ranging from a standard 150-watt usage down to an energy efficient 95-watt implementation to provide outstanding power-saving capability to the data center. Designed for scalable performance from 4 to 32 sockets, with four threads per socket, the Xeon 7100 is socket-compatible with the previous generation of Intel micro-processors, the Xeon 7000 (known internally as *Paxville*). The 7100 Series supports up to 128GB of DDR2-400 memory, with lower power consumption than required by DDR1-333 DIMMs, and PCI-Express I/O for improved performance and RAS functionality with hot-plug compatibility. Memory management is provided by Intel's *E8501 Netburst* architecture with advanced redundancy and error checking, memory sparing via reserved DIMMs, mirroring, and hot-plug memory to continue processing without interruption. The Xeon 7100 Series is probably the last implementation using Netburst, as Intel transitions to the new Core architecture.

The Xeon 7100s have many new features (see Exhibit 1, on the next page) to reduce downtime and improve TCO, as well as retaining Intel's *EM64T* technology to protect enterprise investment in 32-bit and 64-bit applications. The 7100 family has up to twice the performance of the 7000, with a front side bus of either 667 MHz ("N" series processors) or 800MHz ("M" series processors) and system throughput of up to 128GB/s. Based upon industry-standard benchmarks, the 7100s are 60% faster than the 7000 for business process applications such as ERP and CRM, and 70% faster in a transactional processing environment. Coincident with Intel's announcement of the Xeon Processor 7100 Series, Dell has announced a repackaged *PowerEdge 68x0* family to deliver this new technology to a variety of compute environments.

Dell Delivers Expanded RAS

Dell has repackaged their enterprise-level *PowerEdge (PE) 6800* family¹ of servers with a second generation of dual-core chip technology from Intel. Using the Xeon processor 7100 Series with an 800MHz

¹ See **The Clipper Group Navigator** dated November 1, 2005, entitled *Dell Completes PowerEdge Dual-Core Upgrade – Integrates MS/SQL 2005 with Xeon MP*, available at <http://www.clipper.com/research/TCG2005071.pdf>.

Exhibit 1 – Xeon 7100 Features

- **Dual-Core architecture** – with 16MB of shared, on-die L3 cache;
- **HyperThreading Technology** – supporting two threads for each core, four threads for each processor;
- **Intel Virtualization Technology** – enables higher levels of consolidation and facilitates migration with integrated interfaces for virtual environments;
- **Intel CacheSafe Technology** – improves system availability in the event of a L3 cache error with automatic detection and disabling of cache lines;
- **Improved Processor Power Efficiency** – with up to 2.8x performance/watt of the Xeon 7000, reducing energy consumption and heat generation;
- **Retains Socket Compatibility** with Xeon 7000.

Source: Intel

FSB, Dell has improved the configurability, performance, and price/ performance of its scalable, quad-socket servers, with two form factors - rack-mount and tower - to meet the needs of any-sized data center. The *PE 6800* is available as a tower or 6U rack-mount, while the *PE 6850* is deliverable as a 4U rack-mount platform. Both are available with Microsoft *Windows Server 2003 (Standard or Enterprise Edition)* or *Red Hat Linux Enterprise v4, Enterprise Server*, factory installed, with many other operating environments validated. The PE 68x0 family is also available with the single-core Xeon MP and older Paxville dual-core Xeon processors.

The PE 68x0 servers are driven by up to four dual-core Xeon 7100 CPUs running at up to 3.4GHz with 2MB of internal L2 cache, and up to 16MB of L3 cache. They support up to 64GB of memory, offering **increased memory scalability and lower latency while consuming less power**. The PowerEdge 68x0 family supports an advanced variety of memory features such as **Memory RAID, mirroring, and hot-plug DDR2-400 ECC SDRAM** memory to improve availability by withstanding errors that might otherwise bring the system down.

With four sockets, both of these HPC configurations are highly scalable, supporting up to eight Xeon cores or 16 compute threads, using Intel's *HyperThreading Technology*. By maintaining compatibility with the previous release of the PE 68x0, using Intel's Xeon 7000, Dell is able to **improve performance** for existing 32-bit applications while continuing to support the migration to a 64-bit environment through Intel's EM64T technology. The PE 6800 supports up to ten 3.5" Ultra320 hot-plug SCSI drives, while the PE 6850 supports five 3.5" hot-plug SCSI or hot-plug SAS drives or eight 2.5" hot-plug SAS drives. Serial-Attached SCSI (SAS)² drives represent the next generation of performance and reliability for busi-

² See **The Clipper Group Explorer** dated January 4, 2006, entitled *Breaking the I/O Paradigm – SAS Enters the Nearline Storage Race*, available at <http://www.clipper.com/research/TCG2006002.pdf>.

ness-critical applications. All disk configurations are supported by a variety of RAID options to improve availability. There is also an embedded dual channel Ultra320 SCSI controller and redundant integrated NICs, along with seven PCI slots, of which four are high-speed *PCI Express*^{3,4}. The 6800 can drive up to 3.6TB of internal storage while the 6850 supports up to 1.5TB in a 4U drawer. Combined with an 800 MHz front side bus, the PowerEdge 68x0 can help you realize performance improvements in the SPECjbb benchmark of up to 123% as compared to the previous generation of dual-core processors (Paxville).

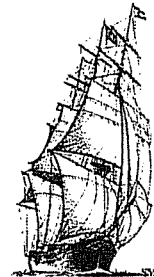
The PE 6800 and 6850 include an integrated *Intelligent Platform Management Interface (IPMI)* with an optional remote management controller for robust remote server management. In addition to the latest platform technology, Dell also has a complete set of IT infrastructure services⁵ to complement your IT staff. These include design, deployment, and training services, as well as a full set of enterprise support services.

Conclusion

The long-standing relationship between Dell and Intel has never been more in evidence than in the continued improvements that have been made to the high-end of Dell's PowerEdge server family. Both the PE6800 and the PE6850 take advantage of every new feature available in Intel's Xeon 7100 microprocessor set. **The PowerEdge 68x0 family improves business-critical performance in the data center while at the same time lowering price/performance/watt through improvements made in power consumption.**

These quad-processor servers enable the enterprise to consolidate their IT resources into a single host, improving server utilization and reducing administrative overhead. They provide a platform offering high availability and performance to enable the scalable enterprise of all sizes to grow, with plenty of headroom for expanding access or additional application development.

In an environment where microprocessor lifecycles are measured in months as opposed to years, it is critical that the enterprise choose wisely before investing in new technology. However, in order to stay competitive, every enterprise must put a stake in the ground and move forward when a new product appears that satisfy today's, and tomorrow's identifiable needs. The Dell PowerEdge with Intel Xeon 7100s has the performance and economy to do just that.



³ See **The Clipper Group Captain's Log** dated June 28, 2005, entitled *PCI Express Will Change Paradigm for Server Functionality and Deployment* and available at <http://www.clipper.com/research/TCG2005040.pdf>.

⁴ The PCI Express slots in the PowerEdge 6850 are hot-swap.

⁵ See **The Clipper Group Navigator** dated July 18, 2006, entitled *Dell Provides New Servers with Premium Services*, available at <http://www.clipper.com/research/TCG2006061.pdf>.

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- **The Clipper Group can be reached at 781-235-0085 and found on the web at www.clipper.com.**

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