

intel | microsoft **innovation** centre@oakton

Providing World-class Resources for
Designing, Building and Testing Innovative
e-Business, Information Management
and Enterprise Application Solutions





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1 Introduction

Accelerate your time-to-market, limit your risk and minimise the cost of designing, building and deploying reliable solutions on Intel Architecture. Our facility, combined with our experienced IT consultants, helps provide leading-edge resources to design, develop and test e-Business, Information Management and Line-of-Business solutions.

Oakton Computing Limited has entered into an agreement with Intel Australia Pty Ltd, Microsoft Pty Ltd and Dell Computer Pty Ltd, to establish and operate an Intel/Microsoft Innovation Centre @ Oakton in Melbourne. The Innovation Centre became operational in August 2001.

Oakton Computing, Microsoft, Intel Australia and Dell Computer all independently realised the increasing demand from Australian businesses for a proof-of-concept and scalability/performance testing facility. The successful search for suitable partners to establish and operate such a facility has resulted in a unique partnership of three major global IT industry vendors with an Australian owned IT solution provider.

In addition, a growing list of other major global IT industry vendors such as Oracle Corporation, Informix Software, Ascential Software, Vitria Technology, BEA Systems, Rational Software and American Power Conversion Corporation are also supporting the Innovation Centre. We expect the number of vendors supported within the Innovation Centre to continue to grow as new products emerge and industry demand drives the requirements for the service.

1.1 OVERVIEW

Understanding how changes should impact your business can be a daunting task. Whether you are an IT manager planning your next release, or a business end user looking for the right way forward, staying on top of e-Business, Information Management and Line-of-Business solution advances is critical to success. In today's competitive environment, fully understanding, planning and maintaining an IT solutions infrastructure can be the difference between success and failure.

The Intel/Microsoft Innovation Centre @ Oakton provides you with the tools, resources and expertise to plan the growth and maximise the performance of your IT solution applications and infrastructure. Through our professional consultants we can put our expertise on key technology building blocks to work for you. This expertise combined with our relationships with industry leaders and the flexibility of our service delivery options ensures that we can help you.



1.2 INTEL/MICROSOFT INNOVATION CENTRE @ OAKTON FEATURES

Features

A Menu of Services

- Software Optimisation (application, middleware, OS)
- Stack Integration (hardware & software)
- Infrastructure Planning and Optimisation

Innovation Centre

Access to State of the Art Technology and Broad Industry Collaboration

Benefits

- Includes all levels of the application infrastructure
- Targeted solutions and guidance on end-to-end optimisation

- Flexible, cutting-edge resources for simulating and evaluation application and systems
- Ability to experiment with multiple solutions and non-standard configurations under realistic conditions
- Minimal impact on production systems
- Reduced drain on technical resources

- Oakton's extensive work with leading software vendors and systems manufacturers help you to deliver fully optimised solutions
- Our consultants have access to extensive resources and industry-wide alliances
- Our insights into emerging technologies enhance solution scalability

1.3 KEY SERVICES

The following table summarises the key services now available and planned, plus the expected value to be realised:

Service	Benefits
Business Community • Rapid systems requirements definition and validation • System requirements simulation and visualisation • Application tool selection management	• Increased certainty of system requirements • Increased business acceptance of what is possible • Reduced time to deliver system solutions — clearer definition and understanding of what is required • Reduced risk — simulation of the solution rather than documented requirements — managed expectations • Access to specialist design architects and analysts
IT Community • Technology architecture design • Technology configuration simulation and testing • Systems integration simulation and testing • IT infrastructure solution selection management • Capacity planning and testing • Benchmark performance assessment	• Access to a broad range of proven technology architectures and configurations • Reduced risk — ability to simulate multiple scenarios • Clearer understanding of the IT solution positioning within the overall architecture • Ability to remove the impact on internal systems during the simulation phase • Access to specialist product knowledge • Access to industry leading IT consulting resources

Because Oakton Computing works with a broad range of clients across a number of technology environments there is a continual process of maintaining a lead position in terms of understanding technology and product directions. This knowledge will influence the ongoing evolution of the Innovation Centre. The Innovation Centre is a managed environment ensuring that the required products and capacity exists to service the requirements of contemporary IT solution simulation.

2 Intel/Microsoft Innovation Centre @ Oakton Services

2.1 STATE-OF-THE-ART FACILITIES

Harnessing the power of the Internet to enhance your business operations is paramount in today's economy. Your e-Business, Information Management and Enterprise Application solutions must integrate the needs of today with the growth of tomorrow, all while meeting the budget constraints of yesterday. The question that looms is this: how do you organise the necessary resources to architect, develop, test and deploy quality business application solutions in today's mission-critical and constantly changing environment?

Oakton Computing provides the answer with our state-of-the-art Intel/Microsoft Innovation Centre @ Oakton, where you can work side-by-side with our experienced consultants to achieve your business goals.

The Innovation Centre is a top-of-the-line facility located in our Head Office in Hawthorn, Victoria. This centre is equipped with the latest technology building blocks and staffed by world-class consultants who can provide guidance on how to effectively and efficiently design, build, test and deploy high-performance solutions.

The Innovation Centre provides the optimal environment for safely and securely designing and testing flexible solutions with no impact on your day-to-day business. You can maximise the use of your existing infrastructure investment, investigate alternative implementation scenarios, and experiment with new technology — all without touching a single cog of your business engine.

2.2 WHAT DOES THE INNOVATION CENTRE OFFER?

The Innovation Centre is suitable for delivering a wide range of service offerings, including:

2.2.1 ENTERPRISE ARCHITECTURE AND DESIGN SERVICES

Architecture and Design Services — Working to architect and design best-in-class e-Business, Information Management and Line-of-Business enterprise solutions.

Enterprise Contingency Management — Architecting uninterrupted systems availability through innovative design and planning.

2.2.2 APPLICATION OPTIMISATION AND PORTING SERVICES

Application Optimisation Services — Help maximise software performance by implementing cutting-edge features.

Application Porting Services — Open doors to new ROI savings using the opportunities of new operating system, middleware and hardware architectures.

Microsoft .NET Architecture and Performance Services — Ensure your applications make the most of the new Microsoft .NET framework, tools and services.

Java Performance Service — Enhance performance of Java based solutions.

Oracle e-Business Suite Optimisation Services — Optimise your Oracle e-Business

Suite applications based on use and business goals.

2.2.3 MIGRATION SERVICES

Migration Feasibility Assessment — Financial and business analysis of your existing environment to determine the benefit and effort of migrating to new architectures.

Database Server Migration — Achieve optimal database performance through assessment and migration to a new database server.

Legacy Application Migration — Technical effort assessment of migrating your legacy applications and systems to leading-edge sustainable environments.

Web Server Migration — Achieve price performance advantages by migrating your front-end design to new architectures.

2.2.4 INFRASTRUCTURE SERVICES

Database Evaluation and Optimisation — Achieve optimal database performance through careful assessment and targeted recommendations based on use and business goals.

Infrastructure Evaluation and Optimisation — Exhaustive evaluation of your memory, system, network and database to find performance bottlenecks and provide actionable recommendations for eliminating them.

Business Continuity — Enhance your infrastructure's availability and reliability by identifying any single points of failure, high-risk elements and/or implementing a disaster recovery plan.

Security Evaluation and Implementation — Enhance the security of your infrastructure through assessment and actionable recommendations matched to your business and technology goals.

2.2.5 NETWORK ARCHITECTURE AND DESIGN SERVICES

LAN Architecture and Design — Architect a fully integrated network to meet your local area networking needs.

WAN Architecture and Design — Design a wide area networking solution that best fits your bandwidth, quality of services and financial needs.

2.2.6 NETWORK MANAGEMENT SERVICES

Network Manageability Evaluation and Design — Enhance the manageability of your network through comprehensive analysis of all network elements and provision of actionable recommendations.

Network Management Installation and Configuration — Increase the manageability of your network by installing a powerful network management tool and customising the configuration to match your business and IT needs.

2.2.7 NETWORK INFRASTRUCTURE SERVICES

Network Performance Evaluation and Optimisation — Achieve optimal network performance for tomorrow through systematic assessment of your network architecture, current usage patterns and business plans.

Network Reliability and Availability Evaluation and Design — Enhance the robustness of your network through rigorous

analysis of your current architecture and uptime needs.

Network Security Evaluation and Design — Enhance the security of your network with a thorough network security analysis and targeted recommendations based on usage and business goals.

2.3 IDEAL TESTING ENVIRONMENT

The Innovation Centre is equipped with tools to enable substantial testing of your solution and planned infrastructure. A project team has a secure, dedicated environment that consists of a lab, a lab-specific data centre, conference room and kitchen facilities.

Industry leading testing tools like Rational Suite TestStudio can be made available.

2.3.1 LAB-SPECIFIC DATA CENTRE

The Innovation Centre has a dedicated data centre for driving project specific loads and conditions. The data centre is equipped to the highest standards across all solution layers. Some of the technology at your disposal includes:

- Servers powered by Intel Pentium III Xeon processors
- 8-way, 4-way and 2-way servers
- Intel Pentium 4 processor based client workstations
- Fast Ethernet network

- High-speed switches and structured cabling system

Please see “Hardware Configuration” on page 16 for more details.

2.4 WORLD-CLASS CONSULTANTS

Beyond the physical equipment that enables the testing, the Innovation Centre has capable consultants who work with you to fully understand your environment and performance goals.

The Innovation Centre has access to consultants with the architecture, design, building and testing expertise you require. We are able to draw upon the highly skilled, world-class consultants from Oakton Computing, Charter Wilson, Microsoft Consulting Services, Intel Australia and Dell Computer as required. We can also bring in specialist consultants from vendor partners such as, Oracle, Vitria, Informix, Rational etc.

Whether you work independently within the Innovation Centre or use the expertise of the consultants available, the Innovation Centre is designed with flexibility in mind to help you quickly and effectively arrive at the answers that will help you make confident decisions about your applications and IT environment.

3 Intel/Microsoft Innovation Centre @ Oakton Engagements

As you can see from the vast menu of Innovation Centre services and resources available, a wide variety of engagements can be accommodated at almost any stage of a project.

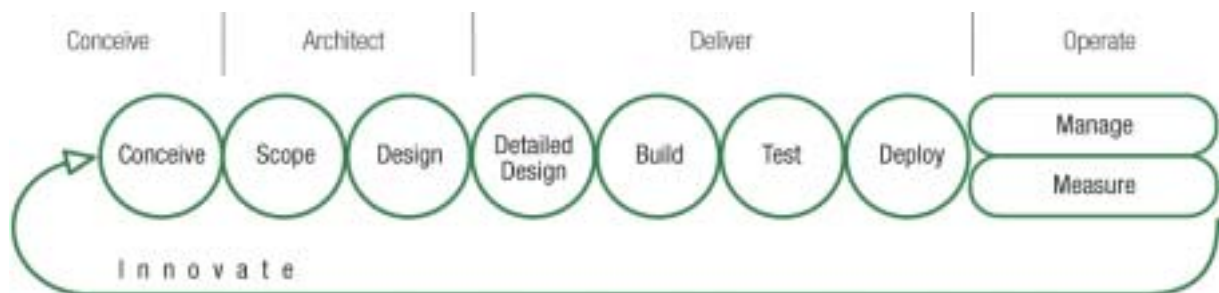
3.1 THE OAKTON APPROACH

The Oakton Approach is a framework for business innovation through the fusion of business design, customer experience, creation and technology integration.

The Oakton Approach is comprised of four stages:

- Conceive
- Architect
- Deliver
- Operate

As you can visualise from the illustration below, utilising the Innovation Centre at any of the stages within the Oakton Approach framework increases the probability of a successful solution.

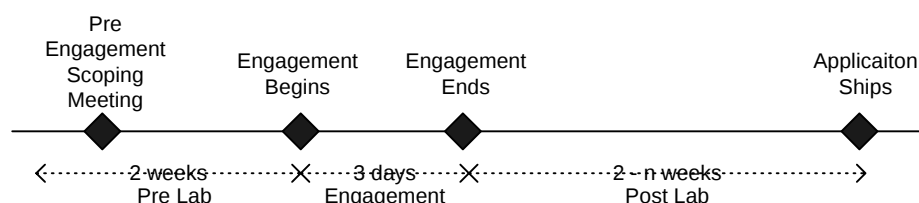


3.2 PRIOR AND PROPER PREPARATION

You can be assured your Innovation Centre engagement will be successful because the scope and deliverables will be well defined before the Innovation Centre engagement starts. Through pre-engagement scoping meetings, the Innovation Centre team agrees on the engagement deliverables, defines the

roles and responsibilities of the participants, and assembles the appropriate tools and technologies needed during the engagement. Once in the Innovation Centre, the engagement team designs, architects and builds the solution proof-of-concept prototype.

The following diagram illustrates an example Innovation Centre engagement timeline.



3.3 WHAT ARE THE INTEL/MICROSOFT INNOVATION CENTRE @ OAKTON DELIVERABLES?

3.3.1 PROOF OF CONCEPT ENGAGEMENTS

The Innovation Centre deliverables are listed below:

- The client's team receives extensive exposure to the products and technologies needed to illustrate concepts and/or build the solution prototype.
- The engagement team develops both a logical and physical solution architecture. The client sees architectural best practices from experienced solution architects and developers.
- The engagement team develops a "proof of concept" prototype solution.
- The client receives a customised CD-ROM that includes architectural documents, pertinent white papers, software development kits, and a copy of all the source code written during the engagement. The CD-ROM also includes an installation document and scripts needed to recreate the development environment back at the client's workplace.

- Where available, the customer also receives free 120-day evaluation copies of the software tools used during the Innovation Centre engagement.

3.3.2 LOAD/STRESS TESTING ENGAGEMENTS

These Innovation Centre engagements use elements as needed from a proof of concept engagement. In addition, the engagement team develops load and stress testing scenarios and execute them. Reports on performance are produced and bottlenecks identified and/or resolved.

3.4 HOW TO ENGAGE

In the first instance, contact your Oakton Computing, Charter Wilson or Oakton Solutions relationship manager to discuss your business and technical needs. They will review the services available with you and determine how to structure an Innovation Centre engagement to best fit your unique needs.

You can also contact the Innovation Centre team at Oakton Computing direct by:

Tel: +61 3 9818 4111

Email: enquiry@oakton.com.au

4 Intel/Microsoft Innovation Centre @ Oakton Resources

4.1 WORLD-CLASS PARTNERS

The Intel/Microsoft Innovation Centre @ Oakton has been established as the result of an agreement between Oakton Computing Limited, Intel Australia Pty Ltd, Microsoft Pty Ltd and Dell Computer Pty Ltd.



Oakton Computing hosts and operates the Innovation Centre. Oakton's consultants work with you to identify the resources required to successfully undertake an Innovation Centre engagement. Then the expertise of our consultants combined with our relationships with industry leaders and/or consultants from our partners, is then used to ensure the success of your Innovation Centre engagement. (www.oakton.com.au)



Intel Australia have provided substantial funding of the server, workstation and networking hardware resources used in the Innovation Centre. Intel network and engineering consultants are also available to assist in all phases of appropriate Innovation Centre engagements. And if the resources of the Innovation Centre are not enough, we have access to Intel Solution Centre resources also. (www.intel.com)



Microsoft Australia have made all of their range of software products available for use in the Innovation Centre. In addition, Microsoft Consulting Services are able to assist in all phases of Innovation Centre engagements. (www.microsoft.com)



All of the hardware and network infrastructure used in the Centre has been sourced through Dell Computer. In addition, Dell Computer has made available servers and storage solutions for use in the Innovation Centre, plus other equipment such as UPS units and fibre channel switches. Dell Computer's advance systems consultants are active in supporting the Innovation Centre infrastructure and are available to assist in all phases of appropriate Innovation Centre engagements. (www.dell.com)

4.1.1 CONSULTING PARTNERS



Charter Wilson, a consulting company specialising in the strategy, business architecture, technology architecture, selection and delivery management of information management, electronic business and enterprise application solutions, will participate in Innovation Centre engagements as a preferred provider of high-level consultancy resources.
(www.charterwilson.com.au)



Oakton Solutions is able to provide skilled consultants to assist on Innovation Centre engagements requiring ERP, CRM, HRMS and Supply Chain expertise. (www.oakton.com.au)

4.1.2 SOFTWARE VENDOR PARTNERS



Oakton Computing is an Oracle Certified Solution Partner. Oracle's database, application server, development tools and e-Business Suite applications are available for use in the Innovation Centre. Oracle consultants are available to assist in all phases of appropriate Innovation Centre engagements. (www.oracle.com)



Oakton Computing is a systems integrator member of the BEA Star Partner Program. BEA Systems has agreed to make its BEA WebLogic e-Business platform products available for use in the Innovation Centre. BEA Systems consultants are available to assist in all phases of appropriate Innovation Centre engagements. (www.bea.com)



Oakton Computing is a Vitria Systems Integrator and Consulting Partner. Vitria Technology has agreed to make its eBusiness platform platform solutions available for use in the Innovation Centre. Vitria Technology consultants are available to assist in all phases of appropriate Innovation Centre engagements. (www.vitria.com)



Oakton Computing is proud to be an Informix Solutions Alliance consulting, systems integration and VAR partner. Informix Software has agreed to make its information management solutions available for use in the Innovation Centre. Informix Software consultants are available to assist in all phases of appropriate Innovation Centre engagements. (www.informix.com)



Ascential Software has agreed to make its information asset management framework solutions available for use in the Innovation Centre. Ascential Software consultants are available to assist in all phases of appropriate Innovation Centre engagements. (www.ascentialsoftware.com)



Rational Software has agreed to make its Rational Suite TestStudio set of integrated automated testing tools available for use in the Innovation Centre. This initiative will help support your software development needs by offering performance testing throughout each stage of the development process. Rational Software consultants are available to assist in all phases of appropriate Innovation Centre engagements. (www.rational.com)



Informatica has agreed to make its infrastructure and analytics products available for use in the Innovation Centre. Informatica trained consultants are available to assist in all phases of appropriate Innovation Centre engagements. (www.informatica.com)

4.1.3

HARDWARE VENDOR PARTNERS



American Power Conversion has provided scalable, redundant rack-mountable power protection for the Innovation Centre servers. Plus high availability power protection for our workstations. (www.apc.com)



Brocade has provided a Brocade SilkWorm 2800 16-port enterprise fibre channel switch for use in the Innovation Centre. (www.brocade.com)

4.1.4

INTEL SOLUTION SERVICES & INTEL SOLUTION CENTRES

Our Innovation Centre is treated by Intel as a satellite Intel Solution Centre. This means that Intel Solution Services use our Innovation Centre in Melbourne as an Intel Solution Centre for their Melbourne based engagements. It also means that we have access to Intel's state-of-the-art mobile facilities should your Innovation Centre engagement require more hardware resources than we have on-hand.

In addition, if your engagement requires the specialist expertise available from Intel Solution Services, or access to the larger Intel Solution Centres, this can be arranged.

4.2 HARDWARE CONFIGURATION

The following tables describe the type of workstations, servers etc. that are in the Intel/Microsoft Innovation Centre @ Oakton.

4.2.1 WORKSTATIONS

Centre Consultant Notebook

The Centre Consultant's notebook is able to run all of the demonstration code and connect to the Innovation Centre to perform necessary administrative tasks.

Dell Latitude C600	
Intel Pentium III 850 MHz processor 256MB 100MHz SDRAM memory 14" TFT XGA display Built-in 20GB Ultra-ATA disk drive plus Dell 18GB hard-disk drive module Integrated 10/100MB Ethernet Card, 56K modem, 8MB VRAM 128-bit graphics accelerator 8X Speed DVD and Zip250 drive modules Dell Latitude C/Dock II Docking Station	

Development Workstations (Three)

Dell Precision 330M Workstations	
Intel 1.3GHz Pentium 4 256MB ECC RIMM (RAMBUS) memory 40GB Ultra ATA hard disk drive Integrated 10/100MB Fast Ethernet NIC 32MB Matrox G450 32MB Dual monitor capable graphics card 19 inch Trinitron flat display Sound card and Harmon Kardon speakers 48X CR-ROM EIDE drive Intel Pocket PC Camera	 Configuration is optimal for unit and integration testing

Administrative/Monitoring Workstation

The administrative/monitoring workstation is used to remotely manage the development environment, monitor the environment and master CD-ROMs.

Dell Precision 330MT MiniTower Workstation	
Intel 1.5GHz Pentium 4 512MB RAMBUS memory 36GB Ultra160 SCSI hard disk drive Integrated 10/100MB Fast Ethernet NIC 32MB Matrox G450 32MB Dual monitor capable graphics card 19 inch Trinitron flat display Sound card and Harmon Kardon speakers Adaptec 29160N SCSI controller 16X DVD-ROM SCSI drive 12/8/32X SCSI CD-RW SCSI drive Intel Pocket PC Camera	 A photograph of the Dell Precision 330MT MiniTower Workstation. It features a dark blue tower unit, two 19-inch flat-panel monitors displaying graphical interfaces, a keyboard, and a mouse.

4.2.2 SERVERS

The following tables provide the configurations of the web, database, application, system and administration servers available in the Innovation Centre. All servers are rack mounted, with a monitor/keyboard/mouse combination being used via a suitable KVM switch arrangement to provide operations/configuration access to the servers.

PDC/DNS Server

MS Windows 2000 Advanced Server, Active Directory Services

Dell PowerEdge 1550 Server	
Dual capable, single processor Intel Pentium III 933MHz 512MB of 133MHz ECC SDRAM 2 x 18GB Ultra160 SCSI drives Dual Integrated Intel Pro/100+ Server NIC Adapter Dual-channel integrated Ultra3 (Ultra160) SCSI Adaptec AIC-7899 controller 2 x 64-bit/66MHz PCI slots on separate PCI buses 24X Speed IDE CD-ROM	 A photograph of the Dell PowerEdge 1550 Server, a 1U rack-mountable server with a silver and black front panel. High performance and high availability in an ultra-thin 1U form-factor

Administration/System Management/Image/Backup Server and BDC

MS Windows 2000 Advanced Server, System Management Server, SiteScope/Microsoft Cluster Sentinel, SourceSafe, drive images etc.

Dell PowerEdge 4400 Server	
Single processor Intel Pentium III Xeon 933MHz/256K (dual capable) 512MB ECC 133MHz SDRAM memory 5 x 36GB Ultra160 SCSI drives in hot-pluggable hard drive bays Dual integrated Adaptec AIC-7899 Ultra3 (Ultra160) SCSI RAID controller Integrated Intel Pro/100+ Server NIC Adapter 2 x Intel Pro/100+ Dual Port Server NIC Adapters 40X Speed SCSI CD-ROM using Integrated Ultra/Narrow SCSI-3 Adaptec adapter PowerVault 120T DDS4 Autoloader DAT 20/40 GB Tape Drive with Adaptec Ultra-2/LVD SCSI 2940 card	 Delivers high-performance Xeon processing with quad-peer 64-bit PCI architecture

Quad Processor Cluster Servers (Two)

Pair of Quad processor Dell PowerEdge 6450 servers

MS Windows 2000 Advanced Server, MS Cluster Services, MS SQL Server 2000, OLAP Server, DTS etc.
or MS Exchange 2000 Enterprise Server

Dell PowerEdge 6450 Servers	
Quad processor Intel Pentium III Xeon 700MHz/1MB 2048MB ECC SDRAM memory 2 x 36GB Ultra160 SCSI drives in hot-pluggable hard drive bays Integrated dual channel Adaptec AIC-7899 Ultra3 (Ultra160) SCSI RAID controller Integrated Intel Pro/100+ Server NIC Adapter Intel Pro/100+ Server NIC Adapter 2 x Intel Pro/100+ Dual Port Server NIC Adapters 24X Speed EIDE CD-ROM drive	 Increased performance, serviceability and availability in a 4U rack-optimised chassis form factor.

Dual Processor Cluster Servers (Four)

Four x Dual processor Dell PowerEdge 6450 servers

MS Windows 2000 Advanced Server, MS Application Center 2000 Server

Dell PowerEdge 6450 Servers	
Dual processor Intel Pentium III Xeon 700MHz/1MB (quad capable) 1024MB ECC SDRAM memory 2 x 36GB Ultra160 SCSI drives in hot-pluggable hard drive bays Integrated dual channel Adaptec AIC-7899 Ultra3 (Ultra160) SCSI RAID controller Intel Pro/100+ Server NIC Adapter 2 x Intel Pro/100+ Dual Port Server NIC Adapters 24X Speed EIDE CD-ROM drive	 Increased performance, serviceability and availability in a 4U rack-optimised chassis form factor.

Single Processor Cluster Servers (Four)

Four x Dell PowerEdge 1550 servers

MS Windows 2000 Advanced Server, MS Application Center 2000 Server

Dell PowerEdge 1550 Server	
Dual capable, single processor Intel Pentium III 933MHz 512MB of 133MHz ECC SDRAM 2 x 18GB Ultra160 SCSI drives Dual Integrated Intel Pro/100+ Server NIC Adapter Dual-channel integrated Ultra3 (Ultra160) SCSI Adaptec AIC-7899 controller 2 x 64-bit/66MHz PCI slots on separate PCI buses 24X Speed IDE CD-ROM	 High performance and high availability in an ultra-thin 1U form-factor

Eight Processor Server

An Eight processor Dell PowerEdge 8450 server for load generation or Database/Messaging Server

Dell PowerEdge 8450 Server	
Eight processor Intel Pentium III Xeon 700MHz/1MB 2048MB ECC SDRAM memory 2 x 36GB Ultra160 SCSI drives in hot-pluggable hard drive bays Symbios Dual integrated Ultra-2/LVD SCSI RAID controllers Intel Pro/100+ Server NIC Adapter 2 x Intel Pro/100+ Dual Port Server NIC Adapters 48X Speed EIDE CD-ROM	 Designed to support enterprise applications and consolidate server resources in data environments in a 7U rack-optimised chassis

Firewall Server

MS Windows 2000 Advanced Server

Internet Security and Acceleration Server 2000

Dell PowerEdge 1550 Server	
Dual capable, single processor Intel Pentium III 933MHz 512MB of 133MHz ECC SDRAM 2 x 18GB Ultra160 SCSI drives Dual Integrated Intel Pro/100+ Server NIC Adapter Dual-channel integrated Ultra3 (Ultra160) SCSI Adaptec AIC-7899 controller 2 x 64-bit/66MHz PCI slots on separate PCI buses 24X Speed IDE CD-ROM	 High performance and high availability in an ultra-thin 1U form-factor

4.2.3

FIBRE CHANNEL RAID STORAGE SYSTEM

Dell PowerVault 660F	
Fully redundant Fibre Channel RAID storage solution in a single 3U enclosure with dual RAID controllers Populated with fourteen 18GB disk drives	
Dell PowerVault 35F	
Fibre Channel/SCSI Bridge High-performance bridge for centralised, automated SAN tape backup.	
Brocade SilkWorm 2800	
Enterprise 16-port Fibre Channel Switch The SilkWorm 2800 is used to create an intelligent connectivity infrastructure, or Fabric, to support connectivity of a wide range of host and storage types. Users share these resources efficiently in a Storage or Server Area Network (SAN). Fabric services are deployed automatically and transparently throughout the Fabric to assure it is resilient to failures. The Fabric is scalable, expanding rapidly to increasing demands by users for highly available, heterogeneous access to growing storage pools.	

4.2.4 NETWORKING HARDWARE

The following networking hardware peripherals are also used to complete the Innovation Centre:

Intel Express 510T Switches & Intel Express 550T Routing Switch	
Three of the Intel Express 510T 24-port 10/100MHz Fast Ethernet Network Switches are used to provide the Innovation Centre's network infrastructure An Intel Express 550T 8-port routing switch is also used.	

4.2.5 OTHER HARDWARE

The following hardware peripherals are also used to complete the Innovation Centre:

Dell 1U Flat Panel Monitor, Keyboard and Mouse	
14" LCD flat panel monitor Specially designed keyboard / trackball combination Attached power transformer Built-in wrist pad Pair of standard PS/2 connectors SVGA video output	 Provides a system operators control station directly in our Dell racks

Dell 16-port Console Switches	
Two of these are used in the Innovation Centre to allow the dual point control of up to 31 separate servers. Manufactured to Dell specifications by Avocent Specially designed graphical user interface that operates independent of any system it controls. This allows for system status operation of any server regardless of the current operational state	 These switches are a vital part of the overall server management system

APC Uninterruptible Power Supplies (UPS) & Power Management

Four rack mounted APC UPS systems



Hewlett-Packard LaserJet 2100TN Printer

1200 dpi resolution, 10 pages per minute,
8MB memory black and white laser printer
HP PCL 6, HP PostScript Level 2 emulation
IEEE 1284-compliant bidirectional parallel,
infrared, HP JetDirect 10Base-T print server
in EIO slot
3 paper trays



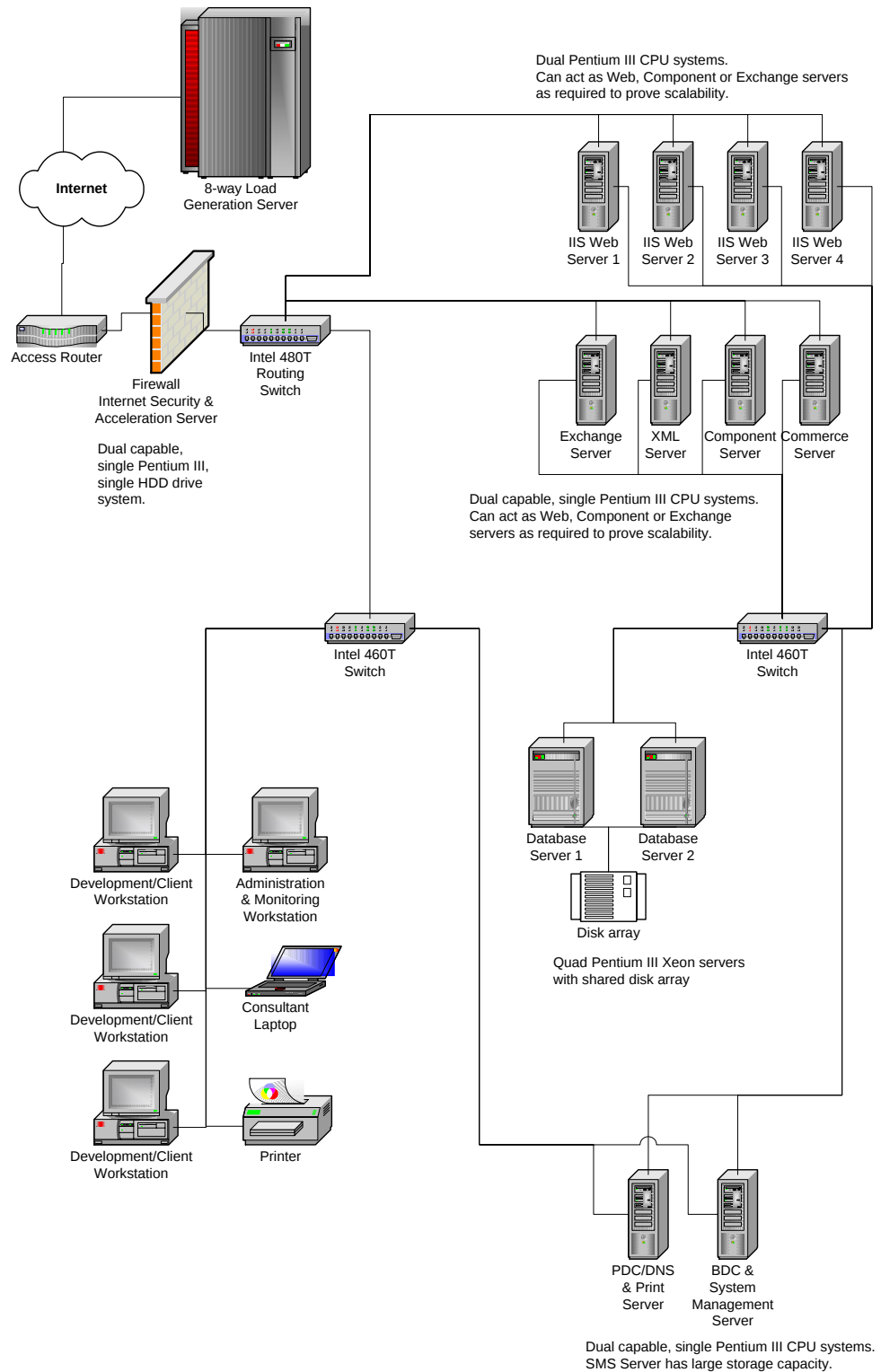
4.3 EXAMPLE SCENARIO CONFIGURATIONS

The intention is to try and standardise as much as possible on the components and configuration used in all of the servers. This will enable the Innovation Centre to be easily reconfigured at will, using scripts and image files, for a wide range of proof-of-concept and load testing scenarios.

The following diagrams show how the equipment might be configured for three example scenarios.

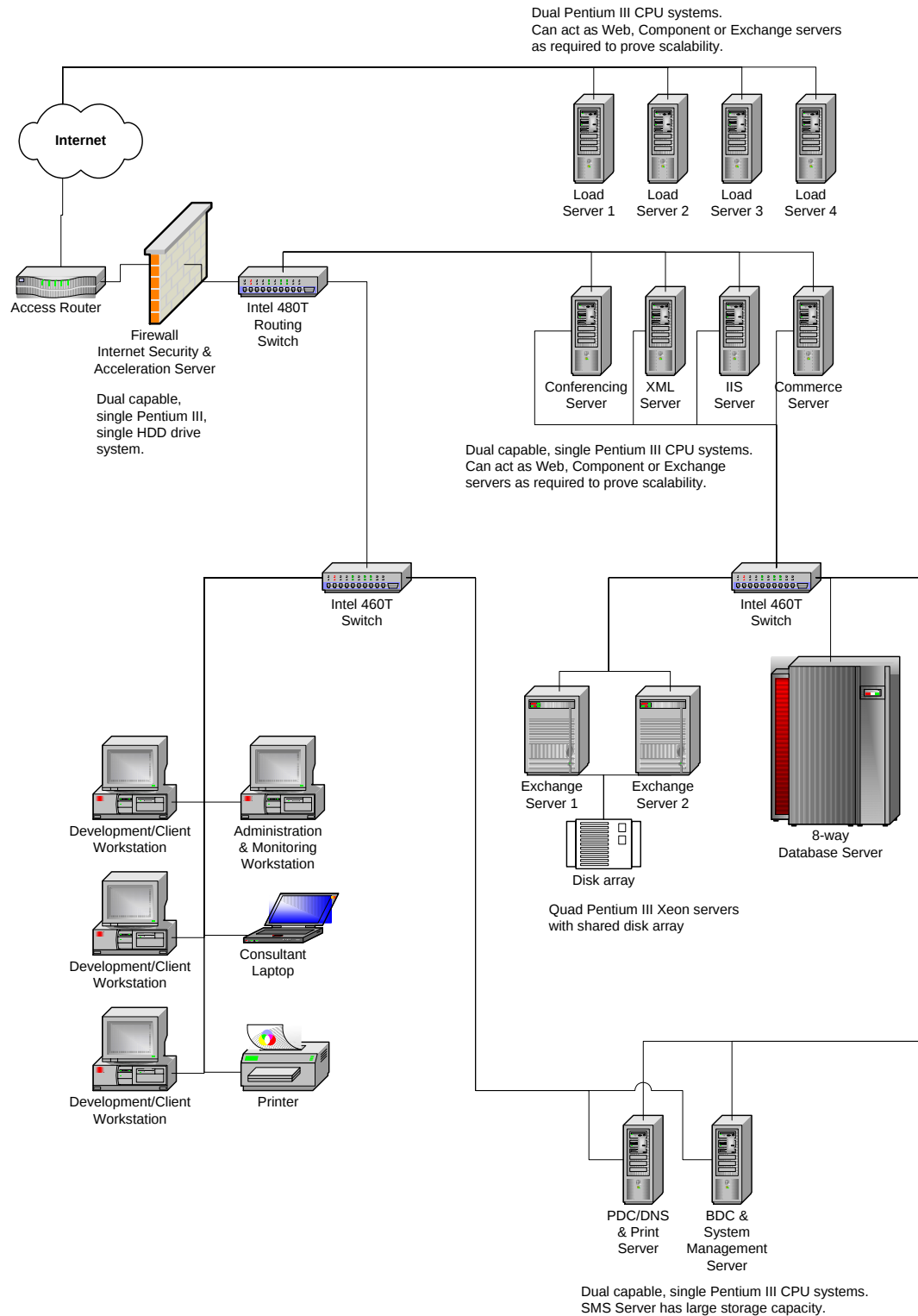
4.3.1

E-BUSINESS/WEB APPLICATION PROOF-OF-CONCEPT AND LOAD TESTING



4.3.2

BUSINESS INTELLIGENCE PROOF-OF-CONCEPT AND LOAD TESTING



4.3.3

MIXED ENVIRONMENT DOCUMENT AND INFORMATION MANAGEMENT PROOF-OF-CONCEPT AND LOAD TESTING

