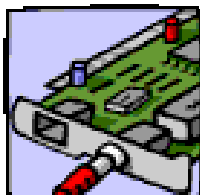# *El Dorado County*

Computer and Network Resource Usage Policies and Standards Guide

Departmental IT Staff

Revision Date: 12/4/06

INTRODUCTION

This Computer and Network Resource Usage Policies and Standards Guide, for County Departmental IT Staff has been created to assist El Dorado County employees in understanding their responsibilities when using County computer workstations, printers, peripherals, software, and network resources. The Guide is intended to comply with Board Policy A-19.

Page 17, "Departmental Information Technology County User Agreement" must be signed by all County Departmental IT staff indicating they have read and understand this entire document.

This policy and standards document is subject to periodic revision.

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This policy and standards document is subject to periodic revision.

DEPARTMENTAL INFORMATION TECHNOLOGY STANDARDS AND GUIDELINES

Department Heads are responsible for ensuring all IT Administrators under their control have fully read and understand every aspect of this section of the Computer and Network Resource Usage Policies and Standards Guide.

Department Heads are also responsible for providing the appropriate computing tools for their County Users to maximize the return on the technology investment and to provide them with adequate tools to complete their assigned tasks

1.1 Hardware, Software And Application Standards And Guidelines

This document provides descriptions of recommended "standards" for personal computer systems, servers and related systems, peripherals and software to be used throughout El Dorado County. Additionally, this document will be used to establish a common security and computer usage guideline for all El Dorado County departments. The objective of these recommendations is to standardize computer configurations and software in El Dorado County. Our goal is to recommend the best possible systems that meet end-user requirements and at the same time maintain a reasonable total cost of ownership.

Together with these recommended systems we specify a standard set of productivity and communication client software tools. By implementing hardware and software standards, the County will enable its personnel to communicate and collaborate, and reduce support and training costs. It is recommended that no software be more than 2 versions behind the current offering from the applicable vendor.

IT will provide standards for:

- Operating Systems

- Application Software

- Collaborative Software/Tools

- Desktop Computers

- Laptop (notebook) Computers

- Wireless PDA's

- Printers

- Network Server Specifications

- Desktop or Server Network Interface

This policy and standards document is subject to periodic revision.

- Network Naming Conventions

- Application Development Tools

The implementation of Countywide technology standards ensures that the County will position itself to take advantage of the many benefits and protections that come with a standardization plan. Standards will also minimize total information technology costs.

Deviations from these standards may occur based on specific departmental technical needs.   Deviations must be reviewed and approved by the Director of IT or designee. IT decisions may be appealed to the IT Steering Committee.

The benefits reflected in a Countywide standards implementation are:

- Interchangeable data and formats utilized by all departments.

- Manageable and cost effective Countywide upgrades to operating systems, office applications, communications/emulation software, security/virus protection software, etc.

- Economies of scale utilized in purchasing, deployment, and support of the Countywide Information Technology environment.

- Standardized training and general understanding of the operational aspects of standardized software and hardware.

- Countywide assurance of connectivity of workgroup environments such as electronic communication, Calendar, E-Meetings, etc.

- Countywide quality assurance of technology.

Information Technologies and El Dorado County Department IT staff together will negotiate with vendors for the best price/performance value for the recommended hardware and software in this document. Support and training will be available in accordance with these recommended standards. To keep pace with technology, the hardware, software, software version levels, and specifications presented in this document will be reviewed and updated when appropriate or required.

1.1.1   Operating Systems (OS)

Desktop Systems:
Windows XP Professional is the County's desktop operating systems standard. This standard will optimize installation and support while maximizing flexibility and the ability to ensure compatibility of additional layers of connectivity software and application software. The use of this operating system will ensure that internal and external devices will operate properly through the OS as defined by the Microsoft, Intel consortium which established the PC2000 or later standards of hardware design. The Information Technologies Department will be analyzing the new Microsoft Vista operating system for its suitability to future County use.

PC Server Systems or Network Operating Systems (NOS):
Microsoft Windows is the County's standard server operating system, using Active Directory Services.

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1.1.2   Application Software

Microsoft Office Suite XP and Office 2003 is the County's standard office productivity tool. This 'suite' may include Word (word-processing), Excel (spreadsheet), PowerPoint (presentation), and Access (database). Office 2007 is due for release soon. After testing of the suite, Office 2007 and Office 2003 will be the County's standard office suites.

Mainframe Access, TN3270+, produced by SDI, is the current County's standard emulation software. Acceptable alternatives are: IBM Personal Communications, RUMBA 3270/5250, and Attachmate emulation software. All connections to the Enterprise Server will be via IP. SNA connectivity is no longer supported.

Anti-Virus, firewall and malware protection software standard is **McAfee** for desktop computers, laptops, wireless and standard personal digital assistants and servers. This anti-virus protection is selected because of cross protection over both the server and the client (desktop PC). Anti-virus software will be continuously updated to ensure that we have the most up-to-date protection available.

Lotus Notes Client will be used for the client side of the County's **workgroup software**. This will allow County Users to access high level workgroup and applications. Information Technologies will be upgrading servers and desktop clients to the current version of Lotus Notes in FY 2006-2007.

Microsoft Internet Explorer is the County's current standard Internet Browser. Using Internet Explorer 6.x and above will minimize training and increase efficiency as County departments continue to utilize the Internet as a tool for conducting their business.

Application databases should be selected based upon the environment that the database supports. Microsoft Access is recommended for most departmental database applications. For large number of users or deployment across multiple locations, a client server database such as Microsoft SQL or DB2 should be utilized.

Imaging software: Several departments now use Questys, DayStar/LegisStar, EMC/ApplicationXtender (Windows) and Filenet/ATPAC (Unix) for their imaging solutions. The County is currently exploring suitable options for a standard imaging solution.

Voice Recognition software will be based on Dragon Naturally Speaking, with IBM's Via Voice an acceptable alternative.

1.1.3   Collaborative/Work Group Software & Tools

Work group software and its corresponding tools allow for collaborative work within departments and inter-departmental groups. The most prominent of these software tools consist of Countywide electronic communication. These tools allow for a complete integration of electronic communication within the Windows XP PC operating environments and allow generic interchange of attachments of data and documents.

1.1.4   Desktop Computers (Office Personal Computers)

At minimum, all desktop computers the County purchases will be manufactured using PC2000 or later construction standards. This will ensure first and foremost that all newly purchased hardware will meet the minimum base motherboard and card design specifications to ensure hardware stability and consistency of all desktop systems used

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within the County. Computers manufactured by Dell Computer are the County standard platform. If you need assistance determining the hardware that is required by your software needs, please contact Information Technologies.

During the installation of office suite applications, the installer should use EDCxx (see section 4.3.3 Machine Identification, Workgroup Names) for the user name and El Dorado County for the Organization name. These conventions would apply to first time setup of the applications.

For detail Desk Top Computer Specifications, see Appendix 1.

1.1.5   PC Laptop (Notebook) Computers

All mobile computing equipment should be equipped with either biometric or "smart card" security and BIOS/Hard Drive password protection. Devices containing confidential or regulatory protected data should also use hard drive encryption to provide maximum protection against un-authorized access to data contained on the device.

For detail Laptop Computer Specifications, see Appendix 2.

1.1.6   Wireless/Personal Digital Assistants (w/PDAs) Specifications

Physical Memory	64 MB minimum
Operating System	Palm OS 4.1/Windows 5.0 or greater
Connectivity Software	Intellisync Desktop or Enterprise

If you need assistance determining the hardware that is required by your software needs, please contact Information Technologies.

1.1.7   Printers

El Dorado County predominantly purchases Hewlett Packard printers for use at the desktop and for networked printers. Multifunction copier/scanner/printer machines are being installed in many locations, typically Xerox or Minolta. The exact model, speed and features are governed by the needs of the department and location. In general, ink jet printers have significantly higher per page costs than do their laser jet counterparts.

Wherever possible all printing should occur at laser jet networked printers or combination peripherals such as Xerox Work Center series printer, scanner and copier to control printing costs. Smaller printers, physically connected to a personal computer, should be used exclusively for printing sensitive or confidential information.

The Information Technologies department assists departments with determining their exact needs and must be notified prior to connecting network printers to the WAN.

Departmental IT staff should use their judgment to determine if connecting non-network printers meets the needs of a unique situation.

1.1.8   Network Server Specifications

Base Requirements: Servers must have higher I/O performance and reliability than that of their associated client desktops. The server must incorporate features that allow it to support the environment for its intended use. It may be used as a database server, an

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application server, or as a file and print server. Uses may be specific for a departmental application, or may be for general departmental or Countywide use**.**

Server hardware must include the following:

- Windows 2003 Server. Windows 2003 R2 will become the County standard after evaluation testing.

- Microsoft IIS version 5 is the current County web server standard. Testing and certification of IIS version 6 is underway with implementation as the new County standard to be completed in FY 2006-07.

- Minimum 3 years on parts and labor, onsite, same business day, 3 years of 24X7X4 hour response on mission-critical servers.

- ECC memory protection.

- CERC or PERC RAID controllers and a RAID level offering the best level of data protections and speed as applicable.

1.1.8.1   General Server Configuration Specifications

Single Processor	Pentium 4 3.0 GHz
Dual Processor	Pentium 4 Xenon 2.8 MHz to DC chip
Quad Processor	Pentium 4 Xenon 3.06 MHz to DC chip
Installed RAM	1 to 8 gigabyte
SAS/SCSI/SATA Hard Drive	73/146/300 GB 10,000 to 15,000 RPM
SCSI CD-ROM	24x
Raid Controller	PERC/CERC
Tape Backup SCSI	LTO 2/3
Ethernet NIC	Intel pro 100/1000 PCI
Monitor	15", .28 dpi
Network Operating Systems	Windows, Novell
Backup Software	Tivioli

Note: Server specifications can vary greatly depending upon the application being run. Departments should always consult IT for assistance with server specifications.

1.1.9   Disposal of Surplus Computing Equipment

Computers to be surplused must have data permanently stored in any manner thoroughly destroyed prior to disposal. Methods similar to those of the Department of Defense formatting process should be performed on hard drives or other permanent data storage devices. This process typically consists of seven (7) passes alternating writes with 0 and 1 bits.

Follow normal surplus procedures performed by the General Services department to dispose of County property.

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1.2 Network Infrastructure, Server And Application Administration Standards And Guidelines

El Dorado County offices and computers are connected to networked resources through a Wide Area Network (WAN). The Information Technology Department administers the wide area network and the vast majority of networked resources attached to the County's WAN. Effective implementation of these standards and guidelines will minimize unauthorized access to El Dorado County proprietary information and technology and ensure reliable delivery of networked resources. Many factors must be considered prior to the introduction of any application, network device or server to the WAN.

1.2.1 Ownership and Responsibilities

The majority of all file and print, application, electronic communication, Internet and intranet web, enterprise servers deployed in the County are administered by the Information Technologies department. Information technologies staff maintain major environments at the root level. Approved server configuration guidelines must be established and maintained.

The Information Technologies Department must authorize the connection of devices other than County owned desktop or laptop computers prior to insertion into the WAN or the joining of any server to its respective environment. Configuration changes for production servers must follow appropriate change management procedures as established by the Information Technologies Department.

1.2.2 General Guidelines

- Operating System configuration should be in accordance with approved El Dorado County Standards as noted in section 4.1 Hardware, Software and Application Standards and Guidelines.

- Services and applications that will not be used must be disabled where practical.

- Access to services should be logged and/or protected through access-control methods.

- The most recent security patches must be installed on the system prior to placing the server in production

- Always use standard security principles of least-required-access to perform a function.

- Servers should be physically located in a secure and access-controlled environment.

- Servers are specifically prohibited from operating from unsecured or uncontrolled cubicle areas.

- Network administrators have server user rights that grant them access to County servers and files. Administrators are not allowed to browse or otherwise access the files of County Users without authorization.

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1.2.3   Monitoring

All security-related events on critical or sensitive systems must be logged and audit trails saved **at a minimum**, as follows:

- All security related logs will be kept online for a minimum of 1 week.

- Daily incremental tape backups of logs will be retained for at least 1 month.

- Weekly full tape backups of logs will be retained for at least 1 month.

Security-related events will be reported to Information Technologies department, who will review logs and report incidents to IT management. Corrective measures will be prescribed as needed. Security-related events include, but are not limited to:

- Port-scan attacks.

- Evidence of unauthorized access to privileged accounts.

- Anomalous occurrences that are not related to specific applications on the host.

1.2.4   Server Account Deletions

When a County User is confirmed to have permanently left County service, their account is deleted. Their data files are moved to "obsolete status". Files placed in "obsolete status" are retained for 60 days and then deleted.

1.2.5   Compliance

Audits of items in this section will be performed on a regular basis by authorized personnel within the Information Technologies department. Out of compliance findings will be reported to the IT Director, and to the affected Department Head.

Every effort will be made to prevent audits from causing operational failures or disruptions

1.3 Network Addressing Standards

1.3.1   Background

TCP/IP will be the El Dorado County standard network communication protocol. All devices in the El Dorado County Intranet shall be addressed in accordance with RFC1918.

Each location will have its own subnet. In larger locations, addressing might also follow wiring and switching topology.

All addressing will be controlled and set by Information Technologies personnel to ensure Countywide security and adherence to address inventory, to avoid address conflicts, and prevent potential destruction of the respective network. Within each subnet, conventions will be established assigning static ranges of addresses to printers, servers, DHCP, secure terminals, switches, hubs etc.

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All computers, laptops, servers, printers or other devices that will be connected to the County's Wide Area Network (WAN) must use TCP/IP addresses supplied by the Information Technologies department via DHCP or static addresses. The Information Technology department administers all devices serving TCP/IP addresses on the County WAN. All DNS services will be provided and managed by Information Technologies. Computers accessing outside services via modem to another network may not be simultaneously attached to the County's Wide Area Network.

Information Technologies must be notified prior to installing any network-attached device on the El Dorado County Wide Area Network, especially when new PCs or servers are removed from any domain or tree. This notification requirement will allow Information Technologies to prepare properly for the introduction of new equipment to the respective environment and plan to respond rapidly to potential problems within the network caused by the introduction of new or moved network attached devices.

1.3.2   Network Naming Conventions

The following server and PC "naming convention standards" shall be used to ensure network stability, increased support capabilities, and enhanced diagnostic abilities within the Information Technologies Technical and Network support groups.

Item	Format	Explanation
User ID: (Typically for file and print servers use 8 characters, electronic communication can also use firstname.lastname.)	**nnnnnnnn**	Where nn**nnnnnn** is First Initial (N) and Last Name. Use Middle Initial in ID if the name is a duplicate.
Computer Name:	**ddaaaaa**	Where **dd** is Department Initials and aaaaa is Asset Tag Number.
Work Group Names: (up to 6 characters)	**EDCddd**	Where **ddd** is Department Initials.
Windows ADS Information:	**co.el-dorado.ca.us/**	County Tree Name
Windows Departmental Organization Units:	**XXX.co.el-dorado.ca.us**	Where xxx equals the 2 or 3 letter department initials.

1.3.3   Machine Identification, Workgroup Names

Department	Computer Work Group Names (Non-ADS)	Machine ID & Computer Names
Administration/CAO	EDCAD	AD aaaaa
Agriculture	EDCAG	AG aaaaa
Airport (General Services)	EDCAP	AP aaaaa
Animal Control (Public Health)	EDCAC	AC aaaaa
Assessor	EDCAS	AS aaaaa
Auditor/Controller	EDCAU	AU aaaaa
Board of Supervisors	EDCBS	BS aaaaa

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Department	Computer Work Group Names (Non-ADS)	Machine ID & Computer Names
BLDG Dept (Development Services)	EDCBL	BL aaaaa
Buildings & Grounds	EDCBG	BG aaaaa
County Counsel	EDCCC	CC aaaaa
District Attorney	EDCDA	DA aaaaa
Department Of Transportation	EDCDOT	TD aaaaa
Elections	EDCEL	EL aaaaa
EMS (Public Heath)	EDCES	ES aaaaa
Engineering (GS)	EDCEN	EN aaaaa
Environmental Management	EDCEM	EM aaaaa
Child Support Services	EDCCSS	FS aaaaa
Fair Grounds	EDCFG	FG aaaaa
General Services	EDCGS	GS aaaaa
Human Services	EDCCS	HS aaaaa
Human Resources	EDCHR	HR aaaaa
Information Technologies	EDCIT	IT aaaaa
Library	EDCLB	LB aaaaa
Museum (GS)	EDCMS	MS aaaaa
Mental Health	EDCMH	MH aaaaa
Parks & Rec (GS)	EDCPR	PR aaaaa
Planning (Development Services)	EDCPL	PL aaaaa
Probation	EDCPB	PB aaaaa
Public Defender	EDCPD	PD aaaaa
Public Health	EDCPH	PH aaaaa
Recorder/Clerk	EDCRC	RC aaaaa
Risk Management	EDCRM	RM aaaaa
Sheriff	EDCSH	SH aaaaa
Superior Courts	EDCSC	SC aaaaa
Surveyor	EDCSV	SV aaaaa
Treasurer/Tax Collector	EDCTC	TC aaaaa
UC Cooperative Extension	EDCUC	UC aaaaa
Veteran Services	EDCVA	VA aaaaa
Water Agency	EDCWA	WA aaaaa

Note: aaaaa: equals Asset Tag Number

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1.4 Application Development

1.4.1   Development Tools

Currently, the County is using the following application development tools and programming languages. These toolsets should be periodically re-evaluated as emerging technologies mature.

Desktop: MS Access with VBA, VISIO, MS Office Suite with VBA

Server: Visual Basic, Visual Studio.NET, Domino Designer, MS Access with VBA, JavaScript, LotusScript.

Web: Adobe Dreamweaver Suite or individual products included in suite such as Dreamweaver, Flash, Fireworks; HTML, Adobe Photoshop.

Enterprise Server: COBOL, CICS, M204 UL, PLATINUM

1.4.2   Reporting Tools

Currently, the County is using the following reporting tools. These toolsets should be periodically re-evaluated as emerging technologies mature.

Desktop: MS Access, Crystal, MS Office Suite.

1.4.3   Web Development Guidelines

All sites designed and maintained on the El Dorado County domain co.el-dorado.ca.us and EDCNET should comply with the following web development (designer) guidelines:

- Web sites should be developed using 800 X 600 screen defaults with fonts no smaller than '8' and '10' as default.

- Use only standard Arial, Verdana, Times New Roman, Helvetica, Courier or Sans Serif as the font of choice. Other fonts are not available on all computers.

- Pages should use standard templates as provided by IT.

- Pages are to use style sheets (CSS) provided by IT.

- Use of frames is discouraged due to its less friendly exit from site to site.

- Designed for public ease-of-use navigation and functionality.

- Dark backgrounds should be avoided since laser jet printing usually does not properly render print output with dark backgrounds.

- All HTML pages are to have a page title.

- Home page of department site should be named index with the appropriate extension. (.html, .asp, .aspx, etc)

- Pages should be tested for compatibility with Internet Explorer and Firefox web browser versions no older than one version prior to the then current release.

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(Example; Internet Explorer as of this writing is at version 6.0, sites should be compatible with both versions 5.x and 6.0.)

- Meta tags (description and keywords) should be loaded for search engine propagation.

- Compressed images should be in JPG or GIF format.

- Images should be set up to incur 'fast load' and in an efficient format to minimize loading time.

- All images should have 'alternate text'.

- All pages should be tested for compliance with section 508 (accessibility stds).

- Use of "full screen" at 100% should automatically re-size to fit any size monitor without scrolling horizontally.

- Pages should be tested on a 17" monitor running at 800 x 600 resolutions.

- On the internet (www.co.el-dorado.ca.us), documents are to be published in .PDF format. Proprietary software such as Word, Excel or Powerpoint should not be used because not all citizens have these applications. .PDF readers are readily available at no cost to the user.

- Lengthy documents should be provided in PDF format. Always include the Adobe Acrobat icon and path for the "free" reader.

- Spell check and proofread prior to posting site pages live. Use the test web-server environment for substantial changes to web sites, prior to placing them into the production environment.

- Each page should be tested for its printing ability prior to loading.

- Prints from a site should be a complete page.

- Prior to loading site, identify orphan pages and images for removal.

- Whenever a web page link is re-directed to a non-government site, it should be clearly stated the link is for informational purposes only. The County is not responsible for the information contained on those sites.

- The County does not accept advertising on its website.

- Contact the site you want to link to and inform them of the link.

- When applicable, 'last updated' date and time should be displayed on the web page.

- An electronic communication (E-mail) link for questions regarding the site should be provided.

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Departmental Information Technology County User Agreement (All County IT Positions)

El Dorado County
Information Technologies Security & Standards Policy
Departmental IT Staff Acknowledgement

I have read, understand and am fully aware of the El Dorado County Information Technologies "Computer and Network Resource Usage Policies and Standards Guide". I understand as a departmental Information Technology staff member, contractor, sub-contractor or governmental affiliate who may use the El Dorado County's networked resources that I must fully comply with the terms and conditions of this policy. I also agree to remain informed of and comply with future revisions to this policy.

Departmental Information Technology Administrators of the County's Technology network and attached devices may have access to and responsibility for sensitive resources that are connected within the County network. To assure security throughout the entire County network, it is critical that all administrators actively support and fully comply with the measures described in the El Dorado County "Computer and Network Resource Usage Policies and Standards Guide". Failure to comply can place the entire County network at serious risk; and administrators who fail to comply will be subject to disciplinary action. Department Heads are responsible for ensuring all Administrators under their control have fully read and understand every aspect of this Standards and Policies document.

Department Heads, and all County IT Staff shall at all times act in accordance with all applicable laws and County policies, rules or procedures. No County User shall use the Information Technology systems in an improper, inappropriate or unauthorized manner as defined in the "Computer and Network Resource Usage Policies and Standards Guide" document and/or revisions thereof.

Information Technology County User:

Name: _____

Title: _____

Signature: _____

Date: _____

This original signed and executed document shall be returned to the Information Technologies department. This document will be signed annually and a copy shall be retained in department, district or agency files.

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Appendix 1
Desktop Computer Specifications in a Network Environment

Level 1 Desk Top Computer Specifications in a Network Environment (Dell Optiplex GX520)

Processor	Pentium 3.0 GHz
Physical Memory	1 gigabyte
Hard Drive	80.0 gigabyte SATA
Video Memory	Shared
CD-ROM (Optional)	48x24x48 CDRW
Ethernet NIC (AWOL)	10/100/1000
Sound Card	16 bit, PCI
Monitor	17-inch Ultra-Sharp LCD
Operating System	Microsoft Windows XP Professional
Warranty	3 years on parts and labor, onsite, next business day

Level 1 desktop computers are for general use, performing routine word processing, spreadsheet work, mainframe access, electronic communications and web access etc.

Level 2 Desk Top Computer Specifications in a Network Environment (Dell Optiplex GX520/GX620)

Processor	Pentium 3.4 GHz
Physical Memory	2 gigabyte
Hard Drive	80.0/160 gigabyte SATA (dependent on usage)
Video Memory	128/256
CD-ROM (Optional)	48x24x48 CDRW
Ethernet NIC (AWOL)	10/100/100
Sound Card	16 bit, PCI
Monitor	17/19-inch with Ultra-Sharp LCD
Operating System	Microsoft Windows XP Professional
Warranty	3 years on parts and labor, onsite, next business day

Level 2 computers share many of the Level 1 specifications. They feature increased processor speed, system memory, 17 or 19" monitors and extra hard drive space, if needed. In addition to performing the tasks as specified in Level 1 use, these systems may perform database development, scan documents, have multiple applications or views open at once or perform other graphics intensive work.

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Level 3 Desk Top Computer Specifications in a Network Environment (Dell Optiplex GX620)

Processor	Pentium 3.8 GHz/ 3.2 GHz DC
Physical Memory	2-4 gigabyte (dependent on usage)
Hard Drive	80/160/250.0 gigabyte SATA/SATA II
Video Memory	256 MB
CD	48X24X48 CDRW
DVD-ROM (Optional)	16x DVDRW
Ethernet NIC (AWOL)	10/100/1000
Sound Card	16 bit, PCI
Monitor	19/20-inch with Ultra-Sharp LCD
Operating System	Microsoft Windows XP Professional
Warranty	3 years on parts and labor, onsite, next business day

Level 3 computers may perform many of the same functions as Level 1 and 2 computing systems. Their specification has been altered to perform in much more demanding environments, including but not limited to; computer aided design (CAD) and GIS functions wherein the computers manipulate large geographical maps beyond the power of a Level 2 computer. Level 3 usage may also necessitate the need for a 20" or greater size LCD monitor.

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Appendix 2
Laptop (Notebook) Computer Specifications In A Network Environment

**Level 1 Laptop Computer Specifications in a Network Environment
(Dell Latitude D520)**

Processor	1.86 GHz
Physical Memory	1 gigabyte
Hard Drive	40/60 gigabyte
Video Memory	Shared
CD-ROM	24x
PCMCIA Ethernet NIC	On-board 10/100mb Ethernet
Sound Card	16 bit
Monitor	15" TFT
Operating System	Microsoft Windows XP
Warranty	3 years on parts and labor, onsite, next business day

Level 1 laptop computers see the same type of service as Level 1 desktop computers, but are for the mobile user, attending off-site meetings or having to work from remote locations.

**Level 2 Laptop Computer Specifications in a Network Environment
(Dell Latitude D620)**

Processor	Core Duo/Solo 2.0 GHz
Physical Memory	1-2 gigabyte
Hard Drive	60/80 gigabyte
Video Memory	64 MB
CD-ROM	24x CDRW
PCMCIA Ethernet NIC	On-board 10/100/1000 MB Ethernet
WIFI	802.11 a/b/g
Sound Card	16 bit
Monitor	15.4", WXSGA 1600 x 1450
Operating System	Microsoft Windows XP
Warranty	3 years on parts and labor, onsite, next business day

Level 2 laptops may perform many of the same functions as Level 1 computing systems. Their specification has been altered to perform in much more demanding environments, including but not limited to; data base development, scan documents and view multiple scanned images across two monitors which require a specification beyond the power of a Level 1 computer. Level 2 usage may also necessitate the need for a separate 19" LCD

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monitor. Laptops in this configuration level are purchased for the mobile user meeting the above criteria.

Level 3 Laptop Computer Specifications in a Network Environment (Dell Latitude D820)

Processsor	Core Duo/Solo2.16 GHz
Physical Memory	1-2 gigabyte
Hard Drive	80/100 gigabyte
Video Memory	128-256 MB
CD-ROM	16x DVD RW/24x CDRW
PCMCIA Ethernet NIC	On-Board 10/100/100mb Ethernet
WIFI	802.11 a/b/g
Sound Card	16 bit
Monitor	15.4," WXSGA 1600 x 1450, WXUGA, 1900 x 1200 Resolution
Operating System	Microsoft Windows XP
Warranty	3 years on parts and labor, onsite, next business day

Level 3 laptops may perform many of the same functions as Levels 1 and 2 computing systems. Their specification has been altered to perform in much more demanding environments, including but not limited to; computer aided design (CAD) and GIS functions wherein the computers manipulate large geographical maps beyond the power of a Level 2 computer. Level 3 usages may also necessitate the need for a separate 19"/20" LCD monitor. Laptops in this configuration level are purchased for the mobile user meeting the above criteria.

If you need assistance determining the hardware that is required by your software needs, please contact Information Technologies.

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