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Bulletin

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This Bulletin establishes the policy and minimum recommended system requirements for attaching equipment to ARS computer networks. It also provides requirements and guidance for the purchase of operating system, office suite, and security software, including licenses.

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1. Purpose

This Bulletin provides ARS Office of the Chief Information Officer (OCIO) guidelines for the minimum requirements to attach equipment to the ARSnet 2.0 wide area network, as well as recommendations for the acquisition of new computer hardware for desktops, servers and routers.

2. Technology Refresh

The purpose of this document is to provide guidelines for maintaining information technology (IT) hardware capable of handling the current business requirements of the Agricultural Research Service and providing recommendations for replacement of IT hardware to meet future requirements. Ideally, all IT hardware will be replaced on a regular basis as part of a “technology refresh” strategy. These guidelines are intended to assist with planning and budgeting the replacement of technology to reduce operating costs, improve system security, increase end-user satisfaction, and enhance budget planning.

Operating systems for workstations should be upgraded to the current recommended technology as the hardware is replaced. All operating systems have a vendor supported lifecycle. Once the lifecycle expires, the vendor stops providing critical patches that improve performance, fix known flaws, and ensure security weaknesses are corrected.

The IT recommendations as indicated below will provide the optimal balance of lowest operating costs and highest user productivity. These hardware standards should be used when making IT purchases for upgrades or new equipment. Technology refreshment at each Area and Location will depend upon available funding.

3. Minimum ARSnet 2.0 Network Requirements

Desktop and laptop computers (hereafter referred to as PCs) must be able to support a Microsoft Windows 7 or higher operating system (OS). PCs must furthermore support the Enterprise or Ultimate edition of those operating systems. *Effective April 8, 2014, PCs running the Windows XP OS will NOT be able to connect to ARSnet.*

3.1 Approved PC Operating Systems

Existing workstation PCs running the following operating systems will be able to connect to ARSnet.

Windows XP (only through April 8, 2014)

Windows 7 (Enterprise or Ultimate editions)

Windows 8 (Professional or Enterprise editions)

3.2 Approved Macintosh and Linux Operating Systems

All existing Intel-based Macintosh computers running the following operating systems will be able to connect to ARSnet.

Mac OS X Lion (10.7)

Mac OS X Mountain Lion (10.8)

Linux: There is no specific recommendation for Linux operating systems. ARS Locations should decide on the most appropriate versions for their customers based on the scientific computing needs of their own customers.

3.3 Approved Server Operating Systems

Windows Server 2008

Windows Server 2008 R2

Windows Server 2012

3.4 Recommended Operating Systems for Computer Hardware Acquisition

PC Microsoft Windows 7 Ultimate or Enterprise editions

 Microsoft Windows 8 Professional or Enterprise editions

Servers Microsoft Windows Server 2008 R2 or Windows Server 2012

MAC Mac OS X Lion (10.7)

Mac OS X Release 10.8 (Mountain Lion)

Linux: There is no specific recommendation for Linux operating systems. ARS Locations should decide on the most appropriate versions for their customers based on the scientific computing needs of their own customers.

4. Recommended Minimum Requirements for Computer Hardware Acquisitions

Below are guidelines for the acquisition of new desktop and laptop computers, routers, firewalls, and servers. This list is based on the awareness of the limited funds available for the purchase of new equipment as well as the realization that some of this equipment will be in use well beyond the 3-year replacement cycle. Since software requirements for memory and speed are anticipated to increase, the following recommendations attempt to account for minimum software requirements 3 to 5 years in the future.

4.1 Desktop Computer

Recommended Configuration for Standard Desktop PC:

Base Unit and Processor:	Core i5 Dual Core Processor 650 with VT (3.20GHz, 4M)
Memory:	4GB DDR3 Non-ECC SDRAM,1333MHz,
Keyboard:	Smart Card Reader,USB KeyboardBlack
Monitor:	22 Inch Flat Panel,22.0 Inch Viewable
Video Card:	Integrated Video,GMA4500
Hard Drive:	500 GB 7,200 RPM 2.5" SATA,
Floppy Disk Drive:	3.5 inch, 1.44MB, Slimline Floppy Drive
Operating System:	Windows 7 Enterprise or Ultimate (32bit)
Cybersecurity	Must be compatible with United States Government Configuration Baseline (USGCB)
Mouse:	USB 2-Button Optical Mouse with Scroll
CD-ROM or DVD-ROM Drive:	16X DVD+/-RW
Speakers:	Stereo Speakers
Documentation Diskette:	Resource CD
Energy Efficiency	Energy Star 4.0 category B

4.2 Monitors - Defined in the PC specifications.

4.3 Laptop Computer

Recommended Configuration for Laptop with Docking Station:

Base Unit and Processor:	Core i5-2520M (2.50GHz, 3M cache)
Memory:	4.0GB, DDR3-1333MHz SDRAM, 2 DIMMS
Keyboard: (Mobile)	Internal Backlit English Keyboard
Keyboard: (Docked)	Smart Card Reader,USB Keyboard
Monitor:	Flat Panel with Height Adjustable Stand,22.0 Inch
Video Card:	Intel® HD Graphics 3000
Hard Drive:	250-500 GB 7200rpm Hard Drive
Hard Drive Controller:	Touchpad with Internal fingerprint reader and contactless smartcard reader
Floppy Disk Drive:	none
Operating System:	Windows 7 Enterprise or Ultimate (32 bit)
Cybersecurity	Compatible with McAfee Endpoint Encryption
Wireless	Intel® Centrino® Advanced-N 6205 802.11a/b/g/n Half Mini Card
Mouse:	USB 2 Button Optical Mouse with Scroll
CD-ROM or DVD-ROM Drive:	8X DVD+/-RW

Speakers:	Sound Bar for UltraSharp Flat Panel
Battery	6-cell (60WH) Primary Lithium Ion Battery
AC Adapter	90W A/C Adapter (3-pin)
Port Replicator:	210W Simple Port Replicator
Stand:	Monitor Stand, for large flat panel monitor
Carrying Case	Nylon Carrying Case - Fits Laptops with Screen Sizes Up to 15.6"
Energy Efficiency	Energy Star 4.0 category B

Recommended Configuration for Travel Laptop

Base Unit and Processor:	Dual Core Processor 2.40GHz, 1066MHz, 6ML2 Cache, Dual Core
Memory:	4.0GB, DDR3-1066 SDRAM, 2 DIMM
Keyboard:	Internal Backlit English Keyboard
Video Card:	Mobile Intel Integrated Graphics Media Accelerator 4500MHD
Hard Drive:	250-500 GB Hard Drive 7200RPM
Hard Drive Controller:	Internal Fingerprint Reader and contactless smartcard reader
Floppy Disk Drive:	None
Operating System:	Windows 7 Enterprise or Ultimate (32 bit)
Cybersecurity	Compatible with McAfee Endpoint Encryption
Physical Security	Include cable lock to physically secure the device while on travel.
Mouse:	USB 2 Button Optical Mouse with Scroll
CD-ROM or DVD-ROM Drive:	8X DVD+/-RW

4.4 Server

GHz, processor, and memory size selection should be based on intended end use. As a recommended best practice, any servers which are providing important business functions should allow for component redundancy to allow for service continuity in case of certain hardware failures. For example:

- RAID 0+1, RAID 5 or similar drive configuration to allow the failure and hot-swap of hard drives without service impact
- Redundant, hot-plug power supplies
- Redundant, hot-plug fans
- N+1 network interface card

4.5 Routers and Firewalls

ARSnet is based on a Cisco platform.
Edge routers and all firewalls must be Cisco products.

5. Lifecycle Management

5.1 Desktop and Laptop Computers

A 3-year lifecycle for desktop and laptop computers is recommended. Data shows that a 3-year refresh cycle provides the best balance between operating costs and user productivity. Extending the computer lifecycle from 3 to 4 years may increase operating costs over the long term.

5.2 Network Printers, Shared Network Devices, and Peripherals

Printers and peripherals should be replaced approximately every 5 years. The primary factor to consider when determining replacement of printers and peripherals is volume. Volume affects the amount of wear on equipment that can lead to hardware failure. Higher volume and use will shorten the hardware system life.

5.3 Network Servers (file and print sharing)

A 3-year production lifecycle is recommended for network servers used to provide file and print services. Typically network servers should be used in full production for a period of 3 years, and then used as resource servers for 3 additional years.

5.4 Web Servers (content, application, and database)

A 3 to 4 year lifecycle is recommended for servers used to provide web services, content management, application support, and database management.

5.5 Network Infrastructure (routers, firewalls, switches)

A 5-year lifecycle is recommended for network infrastructure including routers, firewalls, switches, and similar technologies.

5.6 Recommended Replacement Schedule

Desktop and Laptop Computers	3 years
Network Servers (file/print sharing)	3 years + 3 (3 yrs full production, 3 yrs resource server)
Network Printers (shared network devices)	5 years
Web Servers (content, application, and database)	3-4 years
Network Infrastructure (routers, firewalls, switches)	5 years

6. Standardized Software Configuration

Desktop and laptop computers must be configured with operating systems as described above, as well as Microsoft Office 2013. Additionally, each user is required to have a Client Access License (CAL) to support connections to the USDA e-mail system.

6.1 Microsoft Software and Client Access Licenses

Management Units (MU) are responsible for purchasing Microsoft Operating Systems and Office Suite software and licenses. (Note: the Area/National Agricultural Library (NAL) may choose to consolidate the purchase of licenses in one order.) If currently-owned Windows XP and Office 2003 software was not purchased with upgrade assurance, the MU will need to purchase new licenses for Microsoft Windows 7 and Office 2013.

Microsoft Corporation licenses the Exchange environment by requiring each user to have a CAL. On July 1, 2007, Headquarters purchased 11,050 CALs that are effective through June 30, 2013. This number was derived by working with the Area Offices and Headquarters who utilized human resource data. In June 2013, CALs will be renewed. In order to ensure Agency compliancy and purchase these licenses in the most efficient manner, the OCIO will retain the responsibility of purchasing the CALs on behalf of the Agency.

In May of each year, the OCIO will issue a data call asking each Area for the number of additional license requests based on the currently licensed CALs. That information will be used to purchase additional CALs, if necessary. Each MU will be responsible for the cost of the additional licenses and purchasing of these CALs.

Hardware

All desktops, laptops, and mobile devices should be replaced or added on a regular basis as part of a technology refresh strategy defined in the ARS Hardware Lifecycle Management Bulletin, which is defined in Section 2 of this document. The policy in this document should be followed as such technology is replaced. If planning for a longer lifecycle than recommended, consideration should be given to purchasing a more powerful desktops, laptops, or Internet capable telephony devices to ensure that systems will offer useful performance for a longer period of time. It is recommended that a longer warranty and service contract be purchased to cover extra year(s) of service. However, planning for a longer life cycle might increase the risk that technological advances will push the machines into early obsolescence or require expensive technology upgrades to support new capabilities.

6.2 Mandatory Software and Security Requirements

In order to protect the Agency's mission, resources, and information, all IT resources covered in this document must comply with the Federal and USDA cyber security regulations which include, but are not limited to:

Anti-Virus Software Suite (includes Anti-Spyware software and Central Management Console). This anti-virus software suite must be installed on ARS devices prior to their being connected to the USDA/ARS networks. Anti-virus software should not be included with the purchase of any new desktop or laptop.

Component Inventories. Accurate inventories of all IT resources, including both software and hardware must be maintained at all times. The inventories should contain details deemed necessary to achieve effective property accountability (e.g., serial number, manufacturer, type, name, version number, location, custodian, Agency inventory number, etc.).

Security Configuration Settings. Mandatory configuration settings using baselines provided through the National Institute of Standards and Technology National Checklist Program, the United States Government Configuration Baseline (USGCB formerly known as Federal desktop core configuration or FDCC), or their approved modifications must be implemented on all hardware resources covered in this document.

Least Functionality. Federal requirements mandate that all IT resources covered in this document must be configured in accordance with the least functionality principle to provide only essential capabilities and restrict the use of unnecessary functions, services, or protocols.

Least Privilege. Federal requirements mandate that all IT resources covered in this document must be configured in accordance with the least privilege principal to allow only authorized access for users (and/or processes on behalf of users), which are necessary to accomplish assigned tasks in accordance with the Agency's mission and business functions.

Whole Disk Encryption. USDA has mandated the use of whole disk encryption on all laptop computers.

Vulnerability and Patch Management. USDA has mandated the use of Tivoli Endpoint Manager (formerly BigFix) by all agencies (USDA DM3535-002). The Tivoli agent software *must be installed* on ARS devices prior to their being connected to the USDA network. All ARS desktops and servers must be scanned for vulnerabilities in accordance with applicable regulations (USDA DM3530-001) and all devices found to contain vulnerabilities must be promptly remediated or removed from the network.

Funding for Mandatory Security Software. These technologies are centrally funded through the ARS Agency IT Budget. The cost of OCIO maintaining licenses Agencywide is considerably less expensive than the individual per-unit cost when licenses are bundled with a new computer.

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Date