Kentucky Information Technology Standards (KITS)

If you are unsure whether there is an existing standard that addresses your request, perform a search in this PDF for the product or technology. This searches the entire KITS library. You can search by any word (you might find an iPad by searching by iPad, Apple, or mobile).

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<th>EAS Code</th>
<th>EAS Category</th>
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<tr>
<td>1200</td>
<td>High Volume Scanners – Digital Imaging</td>
<td>Capable of scanning resolutions between 300 &amp; 9600 depending on the application. Use at least 256 levels of grey or 48 bit color. Compliance with CCITT Group III or IV. Minimum scan speed 100ppm duplex.</td>
<td>I01.004.402</td>
<td>Platform &gt; Peripheral &gt; Computer Input Device</td>
<td>Inputs are the signals or data received by the system, and outputs are the signals or data sent from it. For the purposes of the IRM, computer input devices are those that provide data to the machine/application combination for further processing or for manipulation by users through the human-computer interface devices.</td>
<td>• Canon • Fujitsu • Hewlett Packard • Kodak</td>
<td>See information on the scanning service offered by the Kentucky Department of Libraries and Archives.</td>
<td>7/1/1997</td>
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1310 Remote Network Access
All Remote Users must follow the security requirements set forth in this standard for any remote host accessing Commonwealth IT resources. Remote users must make every effort to secure the remote host used to access Commonwealth IT resources. All remote users are responsible for following applicable Commonwealth policy when handling Commonwealth data that has been accessed remotely. In addition, all remote users are also responsible for following any guidelines issued by their agency’s Privacy/Compliance Officer, if applicable. Remote access to the Commonwealth’s network should only be achieved by using one of the approved products specified herein.

S03.002.003 Controls > Control Categories > Technical
The security controls (i.e., safeguards or countermeasures) for an information system that are primarily implemented and executed by the information system through mechanisms contained in the hardware, software, or firmware components of the system. See FIPS 200.

To request remote access, please complete COT Form F-181 and select one of the following options:
- IPSEC VPN
- SSL VPN
- NetMotion VPN
- Palo Alto Global Protect VPN
- Cisco AnyConnect Secure Mobility Client
(Approved for CHFS and Kentucky Historical Society use)

Effective: 7/1/1997
Revised: 7/1/2020
Reviewed: 4/3/2019
### 1320 Servers - Application / Database / Web

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<tr>
<td>1320</td>
<td>Application / Database / Web</td>
<td>Standard</td>
<td>Must be able to run either z/OS, the UNIX / AIX / Linux operating systems, or Windows Server operating system.</td>
<td>• IBM iSeries (Formerly AS/400 series. Approved for &quot;upgrade only&quot; for agencies previously designated as strategic AS/400 users.) • IBM pSeries (Formerly known as the RS/6000 series, for UNIX) • IBM xSeries servers for Windows and Linux • IBM zSeries servers for z/OS • IBM zSeries servers for Linux (LinuxONE) • Wintel servers running the Microsoft Windows Server OS from Dell, HP/Compaq, IBM</td>
<td>7/1/1997</td>
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</table>

Wintel Server Minimum Configuration: One vCPU with 2 cores, 2 GB RAM, 80GB disk of disk space for Operating System and minimum 20GB for data.

SMP Wintel Server:

The minimum configuration of a server should reflect the resource requirements of the application. Initial application resource requirements plus at least one year of growth both in memory and processor capacity should reflect the minimum configuration requirement.

Redundant power supplies.

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### 1410 Desktop Computers

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<th>EAS Code</th>
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<tr>
<td>1410</td>
<td>Desktop</td>
<td>Standard</td>
<td>A desktop computer is a personal computer in a form intended for regular use at a single location, as opposed to a mobile laptop or portable computer. A Personal Computer (PC) is any general-purpose computer whose size, capabilities, and original sales price make it useful for individuals, and which is intended to be operated directly by an end-user with no intervening computer operator.</td>
<td>• Dell • HP • Wacom Cintiq 22HD Creative Pen Display (For Graphic Design and Engineering Drawing Markup)</td>
<td>7/1/1997</td>
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</table>

Desktop Base (Minimum) Configuration:
- Processor: Intel G2030 Dual Core
- Memory: 4 GB DDR3
- Storage: 250 GB SATA Hard Drive
- Video: Integrated Graphics
- Optional Video: 1 GB AMD Radeon Graphics
- Power: Integrated Power Supply
- Ports: Eight USB ports
- Network Card: 10/100/1000 MB Integrated
- Optical Drive: 16XDVD-ROM SATA
- Monitor: 17" or 19" Flat Panel Display
- Keyboard: USB Keyboard
- Mouse: USB Optical Mouse
- OS: Windows 7 Enterprise or Professional, 32 or 64 bit | 2/24/2017 |

Effective: 7/1/1997
Revised: 2/24/2017
Reviewed: 2/24/2017
### 1460 Notebook / Laptop Computers

#### NoteBook/Laptop Base (Minimum) Configuration:
- Processor: Intel Core i3
- Memory: 4 GB DDR3
- Storage: 320 GB SATA Primary Hard Drive
- Video: Intel Integrated
- Power: 90 W A/C Adapter, 6 Cell Li-ion battery
- Ports: Four USB ports
- Network Card: 10/100/1000 MB Integrated
- Monitor: 14" HD
- Keyboard: Integrated
- Mouse: Integrated Track Pad
- OS: Windows 7 Enterprise or Professional, 64 bit
- Wireless: Integrated 802.11n
- Optional: Bundle includes: Port Replicator, 17" or 19" Flat Panel Display, USB External Keyboard, USB Optical Mouse

#### I01.001.104 Platform > Hardware > Personal Computer – Laptop

A laptop computer is a personal computer for mobile use. A Personal Computer (PC) is any general-purpose computer whose size, capabilities, and original sales price make it useful for individuals, and which is intended to be operated directly by an end-user with no intervening computer operator. A laptop integrates most of the typical components of a desktop computer, including a display, a keyboard, a pointing device such as a touchpad and speakers into a single unit.

- Dell
  - Dell Latitude 12 Rugged Extreme (For Ruggedized Convertible Laptop)
- HP
- Chromebook

#### Approved Products:
- Effective: 7/1/1997
- Revised: 9/27/2019
- Reviewed: 1/27/2017

### 1480 Mobile Computing Devices

All mobile computing devices should use endpoint encryption.

#### I01.001.105 Platform > Hardware > Mobile Computing Device

A mobile computing device is a small, hand-held computing device, typically having a display screen with touch input and/or a miniature keyboard and weighing less than 2 pounds (0.91 kg). Such devices have an Operating System (OS), and can run various types of application software, known as apps. Most devices can also be equipped with Wi-Fi, Bluetooth and GPS capabilities that can allow connections to the Internet and other Bluetooth capable devices such as an automobile or a microphone headset. A camera or media player feature for video or music files can also be typically found on these devices along with a stable battery power source such as a lithium battery.

- HP Elite X2 1012
- Dell Latitude 12
- Apple iPad and iPad Pro
- Microsoft Surface Pro
- Samsung Galaxy Tab

#### Approved Products:
- Effective: 7/3/2018
- Revised: 9/27/2019
- Reviewed: 7/3/2018
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<tr>
<td>1500</td>
<td>Platform as a Service (PaaS)</td>
<td>Platform as a service (PaaS) is a complete development and deployment environment in the cloud, that offer resources to deliver simple apps to large enterprise applications. The resources can be procured from a cloud service provider on a pay-as-you-go basis and accessed over a secure internet connection. PaaS includes infrastructure (servers, storage, and networking), middleware, development tools, business intelligence (BI) services, database management systems etc. PaaS helps to avoid the expense and complexity of buying and managing software licenses, underlying application infrastructure, middleware or development tools and other resources. Deployed applications and services are managed by the customer, while everything else is managed by the cloud service provider.</td>
<td>I01.005.KY0 02</td>
<td>Platform &gt; Virtualization &gt; Service as a Platform as a Service (PaaS)</td>
<td>Capability provided to the consumer to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.</td>
<td>The utilization of PaaS for specific business applications must be approved by the Commonwealth Office of Technology on a case by case basis. Currently approved PaaS are listed below: • Salesforce (All Salesforce deployments must be pre-approved by the CIO) • Google Cloud Platform (Approved for KYTC’s Intelligent Transportation System use case).</td>
<td>Effective: 12/13/2017 Revised: 10/21/2020 Reviewed: 6/7/2019</td>
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<tr>
<td>1600</td>
<td>Printers</td>
<td>• Network printers must be Ethernet ready • SNMP Support • Support Postscript 2 functionality • Support PCL Level 5 or higher • Laser • Duplex Capable</td>
<td>I01.004.403</td>
<td>Platform &gt; Peripheral &gt; Computer Output Device</td>
<td>Inputs are the signals or data received by the system, and outputs are the signals or data sent from it. For the purposes of the IRM, computer output devices are those that provide data from the machine/application combination to other machines or to the user for asynchronous consumption.</td>
<td>Xerox MPS <a href="http://www.ky-mps.com">www.ky-mps.com</a> Also see information on the volume printing services offered by the Kentucky Transportation Cabinet. • Large Format Printer - HP Designjet Z5200 • For 3D Printing - DeltaMaker 3D Printer, Airwolf 3D Printer AW3D HDL, MakerBot Replicator Desktop 3D Printer 5th Generation</td>
<td>Effective: 7/1/1997 Revised: 6/13/2016 Reviewed: 6/13/2016</td>
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| 1610     | Multifunction Devices (MFD) | Minimum acceptable configuration:  
• TCP/IP  
• Ethernet  
• SNMP capable  
• Must support Postscript Level 2 and include PCL Level 5 or higher support.  
• Fax Modem - 56 Kbps  
• Color scan  
• Laser  
• Secure Print  
• Duplex | I01.004.403 | Platform > Peripheral > Computer Output Device | Inputs are the signals or data received by the system, and outputs are the signals or data sent from it. For the purposes of the IRM, computer output devices are those that provide data from the machine/application combination to other machines or to the user for asynchronous consumption. | Xerox MPS  
Revised: 6/17/2015  
Reviewed: 6/17/2015 |
| 1710     | Mailing Machine - Postage Meter | Mailing Machines, Systems and Related Software Includes Mailing Machines that automatically or manually feed, seal, postmark, meter stamps, count and stack letters and machines that print postage on wet, dry or pressure-sensitive tape for packages and bulky envelopes. Mail/Parcel Scales and Weighing Machines that are used for weighing and managing weighing/shipping information for packages and envelopes. | I01.004.KYO 01 | Platform > Peripheral > Mailing Systems | Mailing Systems that feed, seal, postmark, meter stamps, count and stack letters and machines that print postage on wet, dry or pressure-sensitive tape for packages and bulky envelopes. Mail/Parcel Scales and Weighing Machines that are used for weighing and managing weighing/shipping information for packages and envelopes. | • Pitney Bowes DM400C™ postage meter | 9/18/2018 | Effective: 9/18/2018  
Revised: 9/18/2018  
Reviewed: 9/18/2018 |
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| 1910     | Smartphone   |          |               |                               | A smartphone is a mobile phone that offers more advanced computing ability and connectivity than a contemporary basic feature phone. Smartphones and feature phones may be thought of as handheld computers integrated with a mobile telephone, but while most feature phones are able to run applications based on platforms such as Java ME, a smartphone usually allows the user to install and run more advanced applications. Smartphones run complete operating system software proving a platform for application developers. All wireless phone devices are required to be password protected to prevent unauthorized access to wireless voicemail through Caller ID “spoofing”. | I01.001.105 | Platform > Hardware > Mobile Computing Device | A mobile computing device is a small, hand-held computing device, typically having a display screen with touch input and/or a miniature keyboard and weighing less than 2 pounds (0.91 kg). Such devices have an Operating System (OS), and can run various types of application software, known as apps. Most devices can also be equipped with Wi-Fi, Bluetooth and GPS capabilities that can allow connections to the Internet and other Bluetooth capable devices such as an automobile or a microphone headset. A camera or media player feature for video or music files can also be typically found on these devices along with a stable battery power source such as a lithium battery. | Carriers: • AT&T Wireless • Sprint • T-Mobile • Verizon For agencies in the executive branch, AT&T will be the prime vendor. Executive branch agencies that may need service from one of the three alternate carriers must get approval in advance on this form: “Wireless Carrier Exception to AT&T Wireless Services Contract for Executive Branch Agencies”. Devices: • BlackBerry (existing replacement only, not approved for new purchases) • Any smartphone device on AT&T price contract, including iPhones, are approved for use and do not require an exception. | Effective: 6/1/2006
Revised: 5/1/2014
Reviewed: 6/17/2015 |
Open Source Software (OSS) is defined as "computer software for which the source code and certain other rights normally reserved for copyright holders are provided under a software license that meets the Open Source Definition or that is in the public domain. This permits users to use, change, and improve the software, and to redistribute it in modified or unmodified forms. (Wikipedia).

Agencies are responsible for support of any OSS products they implement unless a written support agreement is in place between the agency and COT. Agencies should also thoroughly test all OSS products for both functionality and especially security, in a Test and/or QA environment before implementing in production.

NOTE:
One of the driving forces behind the utilization of OSS is an expectation of considerable cost savings as opposed to a closed source or vendor-owned software solution. Gartner research shows that the reality of cost optimization will vary from one open source solution to another but that approximately half of OSS adopters do not enjoy measurable cost savings. This depends in large part on the maturity of the IT organization, employee skills sets and the organization’s ability to self-support OSS implementations.

OSS products are required to undergo the same acceptance criteria for utilization in the Commonwealth’s Executive Branch as Closed Source products.

Security issues related to OSS products are similar to those related to proprietary software, in that vulnerabilities may be discovered by the vendor or community after implementation. Vendor software is more likely to have a set maintenance schedule for updates, security issues and bug fixes. Because of the large community supporting mature OSS products, fixes may be available in a more timely fashion. Agencies desiring to utilize OSS products that are not listed as approved enterprise standards must submit an Exception request for consideration through the established process. Approved open source products are listed within each specific domain category. Open Source Software (including additional features) in these categories needs to be evaluated for adware, spyware, or malware before installation.
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<td>Freeware</td>
<td>Enterprise Licenses and Software includes License Management and Software Distribution; it supports the purchase, upgrade and tracking of legal usage contracts for system software and applications and supports the propagation, installation and upgrade of written computer programs, applications and components.</td>
<td>Agencies desiring to utilize Freeware products that are not listed as approved enterprise standards must submit an Exception request for consideration through the established process. Approved freeware products (if any) are listed within each specific domain category. Freeware software (including additional features) in these categories needs to be evaluated for adware, spyware, or malware before installation.</td>
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Cloud computing is defined as “a style of computing in which massively scalable IT-enabled capabilities are delivered ‘as a service’ to multiple customers using Internet Technology.” (Gartner) Cloud computing services often provide common business applications (email, document create, etc) online that are accessed from a web browser, while the software and data are stored on the service provider’s servers. One of the driving forces behind the utilization of “the cloud” is an expectation of significant cost savings as opposed to a closed source or vendor-owned software solution. However, cloud computing currently lacks security and privacy guarantees necessary to support much of government’s internal functions. Some concerns that are not fully defined include, but are not limited to: the physical location of the data (U.S. vs. overseas), sanitation of equipment prior to disposal, security vulnerabilities of the applications themselves, security vulnerabilities of data in transit, and audit logging and regulatory compliance become very prohibitively complex. A lack of standards within the industry, at the present time, creates unacceptable levels of risks to the overall security of Commonwealth’s data.


IT Strategy and Innovation includes all activities outside of normal Strategic Planning that focus on trying new approaches, new systems and thinking about/ planning IT investments in different ways.

• iConstituent’s Signal CRM
• CattleMax
• Jurisdiction Online
• Box - For cloud based file storage and file sharing. The utilization of Box for specific business functions must be approved by the Commonwealth Office of Technology on a case by case basis.

Agencies desiring to utilize Cloud Computing products must submit a request for approval using the Cloud Stage Gate process.

Operating System (O/S) – Desktop and Laptop / Notebook

64-bit operating system with graphical user interface for Intel processor compatible platform.

Windows 10 Enterprise

Stratodesk NoTouch Desktop - Thin client endpoint OS and Management solution
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<tr>
<td>2110</td>
<td>Operating System – Server</td>
<td>For zSeries enterprise servers: POSIX compliant 64-bit operating system. For RISC platforms: POSIX compliant 64-bit operating system. For Intel platforms: 32-bit or 64-bit operating system.</td>
<td>I01.002.202</td>
<td>Platform &gt; Operating System &gt; Server – Midrange</td>
<td>A midrange computer operating system is, in simplest terms, a collection of programs that manage a computer system’s internal workings - its memory, processors, devices, and file system. Midrange computers are almost universally known as servers to recognize that they often “serve” applications to end users at “client” computers, that they use a client/server computing model.</td>
<td>• IBM AIX 7.1 and newer IBM AIX 6.1 moved to EOS (End of Support) in April, 2017. Any remaining customer systems on 6.1 are charged for extended support. • IBM z/OS • IBM z/VM • OLVM (Oracle Virtualization Manager for Linux) • Microsoft Windows Server • Oracle Solaris • Red Hat Linux 7 and newer • Oracle Linux 7.x and newer • Ubuntu 18.04 and newer • CentOS 7.X and newer</td>
<td>Effective: 7/1/1997 Revised: 10/16/2020 Reviewed: 2/20/2020</td>
</tr>
<tr>
<td>2110</td>
<td>Operating System – Server</td>
<td>For zSeries enterprise servers: POSIX compliant 64-bit operating system. For RISC platforms: POSIX compliant 64-bit operating system. For Intel platforms: 32-bit or 64-bit operating system.</td>
<td>I01.002.201</td>
<td>Platform &gt; Operating System &gt; Server – Mainframe or Supercomputer</td>
<td>A mainframe or supercomputer operating system is, in simplest terms, a collection of programs that manage a computer system's internal workings - its memory, processors, devices, and file system. Mainframe operating systems are tailored to meet the substantially different architectures and purposes of mainframes as high-volume transaction processing devices, or the purposes of supercomputers as high-volume algorithmic processors.</td>
<td>• IBM AIX 7.1 and newer IBM AIX 6.1 moved to EOS (End of Support) in April, 2017. Any remaining customer systems on 6.1 are charged for extended support. • IBM z/OS • IBM z/VM • OLVM (Oracle Virtualization Manager for Linux) • Microsoft Windows Server • Oracle Solaris • Red Hat Linux 7 and newer • Oracle Linux 7.x and newer • Ubuntu 18.04 and newer • CentOS 7.X and newer</td>
<td>Effective: 7/1/1997 Revised: 10/16/2020 Reviewed: 2/20/2020</td>
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### Remote Desktop Control Software

Requires a PPP TCP/IP based connection. All transmissions must be encrypted using the Secure Sockets Layer (SSL) protocol, and require a non-anonymous login before establishing the session connection. Remote Desktop Control Software is grouped into three categories, depending on its intended purpose:

- **Single User** (a user accesses their workstation desktop remotely)
- **Multi User** (many users execute applications remotely)
- **Remote Administration** (system administrators’ access user workstations in order to debug problems and make configuration changes.

Software for controlling a computer remotely via another device that’s connected through a network or the Internet. Remote desktop software enables the user to see and control a connected PC as though they are sitting directly in front of it.

**Single User:**
- Symantec pcAnywhere Not approved for new installs.
- Windows Remote Desktop Services

**Multi User:**
- Citrix (GoToMeeting, GoToWebinar, GoToTraining, XenApp)
- Remote Desktop Services (formerly Windows Server 2008 Terminal Services)
- Windows Server Terminal Services

**Remote Administration:**
- Client Management Suite (Symantec)
- DameWare
- LANDesk
- Microsoft System Center Configuration Manager (SCCM)
- Microsoft System Management Server (SMS)
- Windows Remote Assistance feature
- Webex
- Cygwin

### Host Print TCP/IP host printing

Print server virtualization extends the virtualization concept to the access to and management of print resources. For the purposes of the IRM, a print server can be a dedicated device, a standalone computer, specialized software, or some combination that handles receipt, queuing, delivery, and status of print jobs for printers on the network.

Brooks Remote Print Manager (RPM)
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<tr>
<td>2250</td>
<td>Barcoding</td>
<td>Software</td>
<td>Application</td>
<td>Components &gt; Visualization &gt; Charting</td>
<td>Software to develop graphical representation of data in which the data is represented by symbols such as bars, lines, slices, dots, size, etc.</td>
<td>NOTE: Due to the large number of Barcoding products available, no product standard is listed. However, be advised an Enterprise License is available for TechnoRiver Studio Pro.</td>
<td>Effective: 3/20/2013 Revised: 6/17/2015</td>
</tr>
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</table>

Software must adhere to the following:

Barcode Support:
- Industry standard adherence
- Precise bar width specification
- Stretchable Bar Width specification
- Database integration barcodes
- Advanced Serialization
- Sequentially Numbered Bar Codes
- Print-time Data Prompt
- Start/Stop character specification
- Human readable text options
- Automatic Check Digit
- Wide-to-narrow bar specification
- Fixed Data Source
- Human Readable Text Formatting
- Variable Data Source - database and counter

(2D) Industry Standard:
- PDF417 (Truncation, ECC Level, Data Columns)
- Micro PDF417
- Data Matrix (Square and Rectangular)
- QR
- Micro QR (Linear)

Standard:
- Australian Post 4-State
- CODE128 (A, B, C)
- CODE39
- CODE39 FULL ASCII
- EAN13 (with extension support)
- EAN8 (with extension support)
- GS1-128
- GS1 DataBar-14
- GS1 DataBar Limited
- GS1 DataBar Stacked
- GS1 DataBar Stacked Omnidirectional
- GS1 DataBar Truncated
- I2OF5
- Circular I2OF5
- ISSN (with extension support)
- ISBN 13 (with extension support)
- ISBN 13 (with extension support)
- ISMN
- ISSN (with extension support)
- MSI
- POSTNET
- RATIONAL CODABAR
- RSS14
- RSS14 Limited
- RSS14 Stacked
- RSS14 Stacked Omnidirectional
- RSS14 Truncated
- S2OF5
- UCCEAN128 (Full AI Wizard support)
- UPCA (with extension support)
- UPCE (with extension support)
- UPC Extension 2
- UPC Extension 5
- USPS ONECODE
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<th>Approved Products</th>
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<tbody>
<tr>
<td>2255</td>
<td>Barcode Reader Software</td>
<td>Software to read various types of barcodes</td>
<td>A02.028.KYO04</td>
<td>Application Components &gt; Productivity &gt; Miscellaneous Productivity Tools and Utility software</td>
<td>Software used for miscellaneous productivity and utility tasks.</td>
<td>• Orca Scan - Bulk Barcode Scanner app for iPhone.</td>
<td>Effective: 11/2/2016  Revised: 12/21/2016  Reviewed: 12/21/2016</td>
</tr>
<tr>
<td>2300</td>
<td>Statistical Software</td>
<td>Software that operates across the range of platforms used by applications in the commonwealth (desktop, midrange, mainframe) that can extract data, store in various formats, can group data, and can perform all required statistical processes and tests.</td>
<td>A02.020.206</td>
<td>Application Components &gt; Analysis, Reporting and Statistics &gt; Mathematical</td>
<td>Software that provides an environment for statistical analysis, predictive and descriptive modeling, data mining, forecasting, optimization, simulation.</td>
<td>• SPSS (IBM)  • Statistical Analysis System (SAS), available for a number of platforms, including desktop, midrange, and mainframe.  • EP Evaluator - Laboratory statistics program used for clinical laboratory method evaluation, validation and quality assurance.  • ProMiles (Government Version) - software to verify compliance with approved jurisdictional mileages for the trucking industry.  • Mplus Ver 8 - Base Program and Combination Add-On  • MARK - Windows based software for analysis of data about marked animals - Used in Department of Fish &amp; Wildlife Resources.  • RStudio - IDE for R programming language  • Statit piMD - For analyzing healthcare data</td>
<td>Effective: 7/1/1997  Revised: 6/4/2020  Reviewed: 5/10/2019</td>
</tr>
<tr>
<td>2310</td>
<td>Business Intelligence Software</td>
<td>BI software capable of accessing and integrating data across the diverse range of IT platforms (LAN, departmental, midrange, mainframe) used by applications in the commonwealth, and that can query and extract data, analyze data, group data, store in various formats and can perform all required analytical processes and tests.</td>
<td>A02.020.202</td>
<td>Application Components &gt; Analysis, Reporting and Statistics &gt; Business Intelligence</td>
<td>Software to support identifying, extracting, and analyzing business data, such as performance and cost metrics to support better business decision-making.</td>
<td>• BusinessObjects Software Suite from SAP  • Tableau  • Microsoft Power BI</td>
<td>Effective: 11/1/2005  Revised: 7/13/2018  Reviewed: 7/13/2018</td>
</tr>
</tbody>
</table>
### KITS Domain > Area > Category

**Application Components > Analysis, Reporting and Statistics > Decision Support**

**Software that supports business or organizational decision-making activities. Supports the management, operations, and planning levels of an organization and helps to make decisions, which may be rapidly changing and not easily specified in advance.**

- **Decision Lens**

**Date:** 7/5/2018

**Approved Products**

**Effective:** 7/5/2018

**Revised:** 7/5/2018

**Reviewed:** 7/5/2018

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**NOTE:** Due to the large number of products now capable of producing electronic forms, no product standard is listed.

**Effective:** 3/5/1999

**Revised:** 1/18/2012

**Reviewed:** 6/17/2015

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**Software that supports the creation, modification, and usage of physical or electronic documents used to capture information within the business cycle.**

- **OpenText Exstream (formerly known as HP Exstream)**
- **Nintex DocGen for Salesforce (formerly Drawloop)**
- **GemBox.Document**
- **ActivePDF Toolkit**
- **ActivePDF Toolkit Developer**
- **Engage One Designer (Approved for DORIS project use)**

**Effective:** 3/5/1999

**Revised:** 3/10/2020

**Reviewed:** 6/24/2019

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**Software that supports the management and stewardship of a type of information by the government in order to facilitate communication and information archival.**

**NOTE:** Portable Document Format (PDF) is the approved format for the creation of final official copies of records for distribution.

PDF, ISO 32000-1:2008 (non-archival) is the standard for short term document storage where archival storage is not a requirement.

PDF/A, ISO 19005-1:2005 (archival) is the required format for long term document storage to comply with KDLA requirements.

**Effective:** 6/24/2019

**Revised:** 3/10/2020

**Reviewed:** 6/24/2019
<table>
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<tbody>
<tr>
<td>2370</td>
<td>Electronic Commerce – Electronic Signature</td>
<td>KRS 369.101 to 369.120 -Uniform Electronic Transactions Act (UETA as enacted by the 2000 General Assembly). IETF (Internet Engineering Task Force) X.509 Public Key Infrastructure (PKI latest version for digital certificates) Interoperates and fully supports critical enterprise infrastructure services and applications such as network protocols, desktop operating systems, e-mail, web servers, database management software, firewalls and directory services. Symmetric encryption algorithms required for securing content: U.S. Data Encryption Standard (DES) in accordance with U.S. FIPS PUB 46-2 and ANSI X3.92 and Triple-DES in accordance with ANSI X9.52 Also refer to the KY Department of Libraries and Archives “Understanding Records Management: Electronic Records” web page. Under the “Guidance” heading select “Electronic Signature Recordkeeping guidelines”.</td>
<td>A02.029.341</td>
<td>Application Components &gt; Security Controls &gt; Digital Signature</td>
<td>Software to use and manage electronic signatures to support. • Entrust suite of PKI enabled products for digital signature technology and securing e-mail transport of content and attachments. • Microsoft Forefront Identity Manager 2010 • Silanis e-Sign Desktop provides a solution for electronically signing documents and routing for approval via workflow. • DocuSign • Adobe Acrobat Reader or Kofax (formerly Nuance) PDF Converter Enterprise – These PDF tools can be used for applying electronic signature to documents. These tools also provide the ability to apply digital signatures if used in combination with a digital certificate from a certificate authority (CA).</td>
<td>Effective: 7/1/1997 Revised: 4/7/2020 Reviewed: 3/1/2018</td>
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<td>EAS Code</td>
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</table>
| 2400     | Database Management Software | ANSI SQL-92 | A02.021.226 | Application Components > Data Management > Database Management System | Software that supports the storage, modification, extraction, and search for information within a database. | Enterprise Database Servers:  
• SQL Server – on Windows  
• Oracle – on Linux  
• IBM DB2 - on z/OS  
• IBM DB2 – LUW  
• IBM IMS Hierarchical database – on z/OS (for legacy applications only)  
• MySQL **  
• Cloudera Enterprise – for Big Data **  
** Agency Advisory – MySQL and Cloudera are currently NOT supported by the Commonwealth Office of Technology (COT). Agencies must take this under advisement when considering use for Enterprise Applications and/or critical data.  
Desktop Databases:  
NOTE: The development and use of desktop databases is discouraged because of the stated architectural direction to share data on common server platforms. COT does NOT support desktop databases.  
• FileMaker Pro  
• IBM DB2 Personal Edition - For development use only:  
• Microsoft Access  
• Microsoft SQL Server Developer  
• Microsoft SQL Server Express  
• Oracle Database Express Edition (XE) | Effective: 7/1/1997  
Revised: 10/7/2020  
Reviewed: 10/7/2020 |
| 2450     | Data search, analysis and visualization software | Software that searches, analyzes and visualizes data | A02.021.KYO01 | Application Components > Data Management > Data Search, Data Analysis, Data Visualization | Software that searches, analyzes and visualizes data | • Elastic Stack  
• Copernic Search Server | Effective: 8/16/2017  
Revised: 3/1/2018  
Reviewed: 3/1/2018 |
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<tr>
<td>2515</td>
<td>Financial Audit Management Software</td>
<td></td>
<td>A01.004.023</td>
<td>System &gt; Financial Management &gt; Financial Audit</td>
<td>Software used to track and manage financial audits.</td>
<td>• ACL Analytics</td>
<td>Effective: 10/25/2017 Revised: 10/25/2017 Reviewed: 10/25/2017</td>
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<td>2520</td>
<td>Procurement</td>
<td></td>
<td>A01.001.002</td>
<td>System &gt; Acquisition Management &gt; Procurement</td>
<td>Software used in the acquisition of goods or services and management of the contracts.</td>
<td>• SpendMap</td>
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<td></td>
<td>Software</td>
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<td>7/28/2017</td>
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<td>7/28/2017</td>
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<td></td>
<td>7/28/2017</td>
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<tr>
<td>2530</td>
<td>Grants</td>
<td></td>
<td>A01.005.KYO00</td>
<td>System &gt; Grants Management &gt; Grants Management</td>
<td>Software that support various grants management business processes.</td>
<td>• IntelliGrants by Agate Software - SaaS approved for Education and Workforce Development Cabinet and KYTC use.</td>
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<td></td>
<td>Management</td>
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<td>3/23/2017</td>
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<td>Software</td>
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<td>4/26/2019</td>
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<td>4/26/2019</td>
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<td>2540</td>
<td>Facilities</td>
<td></td>
<td>A01.010.060</td>
<td>System &gt; Property and Asset Management &gt; Facilities</td>
<td>Software that supports facilities management including the maintenance, administration, certification, and operation of office buildings that are possessions of the government.</td>
<td>• ARCHIBUS&lt;br&gt;• FMWorks&lt;br&gt;• Key Systems GFMS (keystorage.com) - Approved for Dept. of Corrections use&lt;br&gt;• Keystone - Approved for Dept. of Corrections use</td>
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<td>Management</td>
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<td>2/19/2018</td>
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<td>Systems</td>
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<td>8/10/2020</td>
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<td>2/19/2018</td>
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<td>2600</td>
<td>Electronic Mail, Messaging and Collaboration</td>
<td></td>
<td>A02.030.361</td>
<td>Application Components &gt; Unified Communications and Collaboration &gt; Email</td>
<td>Software that supports the transmission of memos and messages over a network.</td>
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<td></td>
<td>Messaging Application Programming Interface (MAPI)</td>
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<td>Client Software:</td>
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<tr>
<td></td>
<td>Simple Mail Transport Protocol (SMTP)</td>
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<td>• Microsoft Outlook:</td>
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<td></td>
<td>Also see category for Recordkeeping – Electronic Mail.</td>
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<td></td>
<td></td>
<td>- 2016 version.</td>
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<td></td>
<td>• Messaging Application Programming Interface (MAPI)</td>
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<td></td>
<td>- Microsoft Outlook 2013 version will be allowed under a special exception until 6/3/2018. This is to allow for application testing and upgrades to be released in order to reach Office 2016 compatibility.</td>
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<td></td>
<td>• Simple Mail Transport Protocol (SMTP)</td>
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<td></td>
<td>- Microsoft Outlook 2010 version: Office 365 compatibility is very limited. Recommend any users of Outlook/Office 2010 and earlier use webmail for email client.</td>
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<td></td>
<td>Also see category for Recordkeeping – Electronic Mail.</td>
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<td></td>
<td>- Office 365 Message Encryption is the recommended option for encrypting email messages</td>
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<td></td>
<td>• Messaging Application Programming Interface (MAPI)</td>
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<td>• RPost - Outlook add-on for certified delivery</td>
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<td></td>
<td>• Simple Mail Transport Protocol (SMTP)</td>
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<td>• Microsoft Teams</td>
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<td>Also see category for Recordkeeping – Electronic Mail.</td>
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<td>• Messaging Application Programming Interface (MAPI)</td>
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<td>• Simple Mail Transport Protocol (SMTP)</td>
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<td>Also see category for Recordkeeping – Electronic Mail.</td>
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<td>2610</td>
<td>Fax Software</td>
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<td>A02.030.KY04</td>
<td>Application Components &gt; Unified Communications and Collaboration &gt; Fax Software</td>
<td>Software used for sending Fax from Outlook (Exchange) Email.</td>
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<td>Client/server fax software fully integrated with Microsoft Exchange and Outlook client software.</td>
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<td>• Avaya Unified Messaging: CallPilot</td>
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<td>• eCopy (Nuance)</td>
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<td>• Cleo Stream Fax</td>
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<td>• RightFax (OpenText) - for integration with Healthcare software</td>
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Effective: 7/1/1997
Revised: 7/27/2020
Reviewed: 6/15/2017

Effective: 7/1/1997
Revised: 7/15/2020
Reviewed: 6/30/2017
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</thead>
<tbody>
<tr>
<td>2640</td>
<td>FTP and Secure FTP Server</td>
<td>Any FTP of classified data must be performed utilizing either ftps or sftp. This category only applies to Windows servers. See also the category for Data Classification.</td>
<td>A03.040.011</td>
<td>Interface &gt; Application Interface &gt; FTP</td>
<td>Standard network protocol used to transfer files from one host to another host over a TCP-based network, such as the Internet. File Transfer Protocol (FTP) is built on a client-server architecture and uses separate control and data connections between the client and server.</td>
<td>• MoveIT DMZ • WS_FTP (Ipswitch)</td>
<td>Effective: 11/18/2009 Revised: 6/17/2015 Reviewed: 6/17/2015</td>
</tr>
<tr>
<td>2650</td>
<td>FTP Client and Secure FTP Client Software</td>
<td>Any FTP of classified data must be performed utilizing either ftps or sftp. Software for use as Client only, Server use requires an Exception request. Clients need to be FIPS compliant for Secure FTP options. See also the category for Data Classification.</td>
<td>A03.040.011</td>
<td>Interface &gt; Application Interface &gt; FTP</td>
<td>Standard network protocol used to transfer files from one host to another host over a TCP-based network, such as the Internet. File Transfer Protocol (FTP) is built on a client-server architecture and uses separate control and data connections between the client and server.</td>
<td>• Cygwin • FileZilla • FireFTP • PuTTY • WS_FTP (Ipswitch) • Axway Secure Client • SecureCRT</td>
<td>Effective: 11/3/2009 Revised: 2/24/2017 Reviewed: 2/24/2017</td>
</tr>
<tr>
<td>2680</td>
<td>Emergency Notification Software</td>
<td>Software that enables designated individuals to send out emergency notification information to emergency responders, management and individuals across multiple devices / channels.</td>
<td>A01.003.016</td>
<td>System &gt; Emergency Management &gt; Emergency Notification</td>
<td>Software that enables designated individuals to communicate critical information to many individuals across multiple devices.</td>
<td>• Rave Panic Button app • Rave Alert Mass Notification System</td>
<td>Effective: 3/7/2018 Revised: 3/7/2018 Reviewed: 3/7/2018</td>
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<td>EAS Code</td>
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<td>2700</td>
<td>Publishing – Desktop</td>
<td>A02.028.KY002</td>
<td>Application Components &gt; Productivity &gt; Desktop Publishing</td>
<td>Software used for the creation of documents using page layout skills on a personal computer. Desktop publishing software can generate layouts and produce typographic quality text and images comparable to traditional typography and printing. This technology allows individuals, businesses, and other organizations to self-publish a wide range of printed matter (Ref: Wikipedia).</td>
<td>Adobe Creative Suite, Microsoft Publisher: - 2016 Version - 2013 version will be allowed under a special exception until 6/3/2018. This is to allow for application testing and upgrades to be released in order to reach Office 2016 compatibility. - 2010 version: COT support will end on 6/30/2017 and any applications that require Office/Publisher 2010 will need to be upgraded to be compatible with Office/Publisher 2016.</td>
<td>Effective: 7/1/1997 Revised: 4/3/2020 Reviewed: 3/27/2017</td>
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See also Application Development category.
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| 2710     | Advanced Drawing – Computer Aided Drafting | CAD/CADD software generally comes with component libraries, or has component libraries available from third party sources. These component representations must meet the standards applicable to the particular discipline (i.e., IEEE, etc.). In addition, AutoCAD has developed drawing file formats (DXF and DWG) that have become the de facto standards for CADD systems. | A02.031.383 | Application Components > Visualization > Computer Aided Design (CAD) | Software that supports the use of computer technology for the process of design and design-documentation and includes software or environments which provide the user with input-tools for the purpose of streamlining design processes; drafting, documentation, and manufacturing processes. | • Entry Level: AutoCAD LT  
• Full-CADD: AutoCAD (latest version released) | Effective: 7/1/1997  
Revised: 6/1/2006  
6/1/2006  
7/1/1997 |
| 2720     | Advanced Drawing / Illustration / Diagramming | | A02.028.330 | Application Components > Productivity > Drawing | Software used to create or edit a graphical object. | • Adobe Creative Suite  
• CorelDraw  
• Microsoft Visio for Diagramming | Effective: 7/1/1997  
Revised: 1/19/2011  
1/19/2011  
6/17/2015 |
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| 2730     | Engineering Software | Software used for engineering tasks. | A02.028.KY03 | Application Components > Productivity > Engineering Software | Software used for engineering design tasks. | • StructurePoint spColumn  
• Bluebeam Revu  
• McTrans HCS 2010 - Highway Capacity Software  
• Intellight MaxView - Advanced Traffic Management System  
• MOVES (Motor Vehicle Emission Simulator)  
• GeoHECRAS - CivilGEO Engineering Software  
• Retain Pro v10 - Retaining Wall Structural Design software  
• CAMx (Comprehensive Air Quality Model with Extensions) - Software for modeling air quality / air pollution  
• AERMOD - atmospheric dispersion modeling system  
• GuideSIGN - Software for Highway road sign design  
• AutoTURN Pro - vehicle swept path analysis tool  
• MDX Software - Curved & Straight Steel Bridge Design & Rating  
• ROAM (Remote Operations Asset Management) - Software to control luminaires in highway interchanges  
• Carlson Software for Land Development and Mining  
• PEEK Traffic Software products  
• ITS (Intelligent Transportation System) by SwRI | Effective: 9/21/2016  
Revised: 4/9/2020  
Reviewed: 2/25/2019 |

| 2740     | Screen / Video Capture and Editing Software | Software that enables a person to manipulate static, animated or video visual images on a computer. | A02.031.387 | Application Components > Visualization > Graphics | • Snagit  
• Camtasia Studio  
• Paint.NET | Effective: 10/26/2016  
Revised: 3/26/2019  
Reviewed: 3/26/2019 |
<table>
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<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>KitS Domain &gt; Area &gt; Category</th>
<th>KitS Description</th>
<th>Approved Products</th>
</tr>
</thead>
</table>
| 2750     | Multimedia   | Application Components > Visualization > Multimedia | Software to manage, develop and manipulate content from a combination of different content forms such as text, audio, still images, animation, video, or interactivity. | - Microsoft Windows Media Player  
- VLC Media Player  
- Prezi  
- PowToon - To create videos and slide shows with animations and voice over (Approved for KDLA use).  
- Mentimeter - To create interactive presentations with real-time feedback  
- Silhouette Software - To create designs and cut it out using Silhouette machine  
- WavePad Sound Editor - For audio editing  
- Audacity - (ver 2.4.2 or above) - For audio editing |
| 2760     | Biosciences  | Application Components > Productivity > Biosciences Software | Software used for biosciences and bioinformatics tasks. | - BioNumerics  
- Wiley Registry Mass Spectral Library  
- Microbial GX Pro - used in State Lab  
- TView 7.0 PC interface software - used for TV2 temperature and humidity monitors / sensors |
| 2770     | Law & Justice| System > Legal > Law & Justice Information Management | Software used for information management in the Law & Justice business area | - Leica Geosystem Incident Mapping Suite  
- PowerDMS - Approved for DOGJT use  
- OpenFox Mobile Messenger |

Effective: 6/13/2016  
Revised: 8/21/2020  
Reviewed: 9/21/2017  
Effective: 6/14/2017  
Revised: 9/8/2020  
Reviewed: 6/14/2017  
Effective: 3/1/2018  
Revised: 10/2/2020  
Reviewed: 5/21/2019
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<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
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</thead>
</table>
| 2780     | Healthcare Software |          | A02.028.KY006 | Application Components > Productivity > Healthcare Software | Software used in the Healthcare line of business for delivery of services.       | • PointClickCare PLUS - Cloud based electronic health record system for nursing facilities  
• KPMG Compu-Max Medicare cost reporting software tools  
• RALS Notebook and Software  
• cobas IT - for Point of Care device / system management  
• Remote configuration software for hearing aid programming, for brands - Oticon, Phonak, Cochlear, ReSound | Effective: 6/8/2018  
Revised: 7/1/2020  
Reviewed: 6/19/2019 |
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<th>EAS Code</th>
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<th>Date</th>
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</table>
| 2790     | Miscellaneous Productivity Tools and Utility software | A02.028.KY0 04 | Application Components > Productivity > Miscellaneous Productivity Tools and Utility software | Software used for miscellaneous productivity and utility tasks. | • AMYUNI PDF Converter Desktop Edition  
• Lexmark Document Producer  
• Dragon Professional Individual  
For Transcription assistance:  
• WAVPedal  
For Electronic Healthcare Data:  
• 7EDIT - for HL7 messages  
• eOMIS Offline  
For Analyzing Molecular Sequencing:  
• MicrobeTrace  
For Address formatting:  
• Satori Bulk Mailer Pro  
For creating genogram (family and social relationships, medical history) diagrams:  
• Genogram Analytics  
For creating customized surveys  
• SurveyMonkey  
• Qualtrics  
For EDI:  
• EDI Notepad v8  
For File and Folder Comparison:  
• ExamDiff  
• Beyond Compare 4  
For creating interactive timeline diagrams:  
• Timeline Maker Pro  
• DiffEngineX - Excel spreadsheet comparison tool  
For File Compression:  
• 7-Zip (Version 16.x or above)  
For screen reading to assist visually impaired: | Effective: 9/19/2016  
Revised: 9/2/2020  
Reviewed: 6/18/2019 | Friday, October 23, 2020 |
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<tr>
<td>2790</td>
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<td></td>
<td></td>
<td>Approved Products:</td>
<td>JAWS (Job Access With Speech)</td>
<td>9/19/2016</td>
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<td></td>
<td>FSReader</td>
<td></td>
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<td></td>
<td>Fusion Magnification and Screen Reading Software</td>
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<td>Text to Speech Software:</td>
<td>Kurzweil 3000</td>
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<td>Assistive technology software to assist with writing:</td>
<td>WordQ</td>
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<td>Reference Materials Management Software</td>
<td>Zotero - Open Source tool to manage bibliographic data and research materials</td>
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<td>Library Management Software for small libraries</td>
<td>LIBRARYSOFT</td>
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<td>Software that checks text for grammar, punctuation, style etc.:</td>
<td>Grammarly Premium</td>
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<td>Software to teach touch typing:</td>
<td>Mavis Beacon Teaches Typing</td>
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<td>Computer Lab / Classroom Management Software:</td>
<td>Faronics Insight</td>
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<td>Classroom Test Generator Software:</td>
<td>ExamView - Approved for Energy and Environment Cabinet use</td>
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<td>Classroom / Training session live polling software:</td>
<td>TurningPoint Polling Software</td>
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<td>Live Event Presentation &amp; Production software:</td>
<td>ProPresenter</td>
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<td>Video wall software:</td>
<td>Hiperwall</td>
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<td>iOS device administration software:</td>
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<tr>
<td>2800</td>
<td>Geographic Information Systems (GIS) – Server Software</td>
<td>Compatible with the approved server operating systems.</td>
<td>A02.024.382</td>
<td>Application Components &gt; Geospatial Information &gt; Collection and Manipulation of Satellite and Aerial Photographs</td>
<td>Software which supports the modification or analysis of imagery information.</td>
<td>ArcGIS Server (Server-based GIS), and ArcSDE (Enterprise-class Geospatial Storage Environment) and its ancillary modules for the Windows Server Environment, from ESRI.</td>
<td>9/19/2016</td>
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<tr>
<td>2800</td>
<td>Geographic Information Systems (GIS) – Server Software</td>
<td>Compatible with the approved server operating systems.</td>
<td>A02.024.385</td>
<td>Application Components &gt; Geospatial Information &gt; Geospatial Data Analysis</td>
<td>Supports the application of statistical analysis and other informational techniques to geographically based data.</td>
<td>ArcGIS Server (Server-based GIS), and ArcSDE (Enterprise-class Geospatial Storage Environment) and its ancillary modules for the Windows Server Environment, from ESRI.</td>
<td>7/1/1997</td>
</tr>
</tbody>
</table>

- iTunes
- AcuRite Connect - weather station software (Approved for Dvm of Forestry use)
- Altova MissionKit 2017 Enterprise Edition
- ASAP Utilities - Excel add-in
- Roxio Easy CD/DVD Burning
- SoftPerfect RAM Disk for Windows
<table>
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<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
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</table>
| 2810     | Geographic Information Systems (GIS) – Desktop Software | Compatible with approved desktop operating systems. Windows 7 Professional 64-bit is strongly recommended. | A02.024.380 | Application Components > Geospatial Information > Cartography | Software that supports the creation of maps. | • ArcGIS Desktop and its ancillary modules (from ESRI). Metadata authoring is carried out using the ArcCatalog module within ArcGIS Desktop.  
• LF360 by GeoCue for LiDAR data.  
• ERDAS Imagine for processing images.  
• Pictometry Imagery  
• DeedRunner  
• Google Earth Pro  
• GeoSync GO Desktop  
• Pix4D - Professional drone mapping and photogrammetry software  
• GlobalMapper 20 and GlobalMapper 20 LiDAR module  
• DNRGPS - Software to transfer data between handheld GPS units and GIS Software  
• Garmin Express - Software Tool to manage Garmin GPS device  
• QGIS - Cross platform open source desktop GIS software | | Effective: 7/1/1997  
Revised: 8/3/2020  
Reviewed: 2/25/2020 |
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<td>Geographic Information Systems (GIS) – Desktop Software</td>
<td>Compatible with approved desktop operating systems. Windows 7 Professional 64-bit is strongly recommended.</td>
<td>A02.024.382</td>
<td>Application Components &gt; Geospatial Information &gt; Collection and Manipulation of Satellite and Aerial Photographs</td>
<td>Software which supports the modification or analysis of imagery information.</td>
<td>ArcGIS Desktop and its ancillary modules (from ESRI). Metadata authoring is carried out using the ArcCatalog module within ArcGIS Desktop.</td>
<td>Effective: 7/1/1997</td>
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<td>LP360 by GeoCue for LiDAR data.</td>
<td>Reviewed: 2/25/2020</td>
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<td>ERDAS Imagine for processing images.</td>
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<td>Pictometry Imagery</td>
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<td>Google Earth Pro</td>
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<td>GeoSync GO Desktop</td>
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<td>Pix4D - Professional drone mapping and photogrammetry software</td>
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<td>GlobalMapper 20 and GlobalMapper 20 LiDAR module</td>
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<td>DNRGPS - Software to transfer data between handheld GPS units and GIS Software</td>
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<td>Garmin Express - Software Tool to manage Garmin GPS device</td>
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<td>QGIS - Cross platform open source desktop GIS software</td>
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<tr>
<td>2810</td>
<td>Geographic Information Systems (GIS) – Desktop Software</td>
<td>Compatible with approved desktop operating systems. Windows 7 Professional 64-bit is strongly recommended.</td>
<td>A02.024.389</td>
<td>Application Components &gt; Geospatial Information &gt; Imagery</td>
<td>Software that supports the collection of information via satellite and aerial photography. • ArcGIS Desktop and its ancillary modules (from ESRI). Metadata authoring is carried out using the ArcCatalog module within ArcGIS Desktop. • LP360 by GeoCue for LiDAR data. • ERDAS Imagine for processing images. • Pictometry Imagery • DeedRunner • Google Earth Pro • GeoSync GO Desktop • Pix4D - Professional drone mapping and photogrammetry software • GlobalMapper 20 and GlobalMapper 20 LiDAR module • DNRGPS - Software to transfer data between handheld GPS units and GIS Software • Garmin Express - Software Tool to manage Garmin GPS device • QGIS - Cross platform open source desktop GIS software</td>
<td>7/1/1997</td>
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Effective: 7/1/1997
Revised: 8/3/2020
Reviewed: 2/25/2020
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<tr>
<td>2810</td>
<td>Geographic Information Systems (GIS) – Desktop Software</td>
<td>Compatible with approved desktop operating systems. Windows 7 Professional 64-bit is strongly recommended.</td>
<td>A02.024.386</td>
<td>Application Components &gt; Geospatial Information &gt; Geospatial Data Collection</td>
<td>Software that supports the collection or management of geospatial information.</td>
<td>• ArcGIS Desktop and its ancillary modules (from ESRI). Metadata authoring is carried out using the ArcCatalog module within ArcGIS Desktop. • LF360 by GeoCue for LiDAR data. • ERDAS Imagine for processing images. • Pictometry Imagery • DeedRunner • Google Earth Pro • GeoSync GO Desktop • Pix4D - Professional drone mapping and photogrammetry software • GlobalMapper 20 and GlobalMapper 20 LiDAR module • DNRGPS - Software to transfer data between handheld GPS units and GIS Software • Garmin Express - Software Tool to manage Garmin GPS device • QGIS - Cross platform open source desktop GIS software</td>
<td>Effective: 7/1/1997 Revised: 8/3/2020 Reviewed: 2/25/2020</td>
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<td>2810</td>
<td>Geographic Information Systems (GIS) – Desktop Software</td>
<td>Standard</td>
<td>KITS Domain &gt; Area &gt; Category</td>
<td>Supports the application of statistical analysis and other informational techniques to geographically based data.</td>
<td>• ArcGIS Desktop and its ancillary modules (from ESRI). Metadata authoring is carried out using the ArcCatalog module within ArcGIS Desktop. • LP360 by GeoCue for LiDAR data. • ERDAS Imagine for processing images. • Pictometry Imagery • DeedRunner • Google Earth Pro • GeoSync GO Desktop • Pix4D – Professional drone mapping and photogrammetry software • GlobalMapper 20 and GlobalMapper 20 LiDAR module • DNRGPS – Software to transfer data between handheld GPS units and GIS Software • Garmin Express – Software Tool to manage Garmin GPS device • QGIS - Cross platform open source desktop GIS software</td>
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<td>2850</td>
<td>Imaging Solution - OCR/ICR Software</td>
<td>Standard</td>
<td>Application Components &gt; Geospatial Information &gt; Geospatial Data Analysis</td>
<td>Software that supports the document scanning and the interpretation of images into text.</td>
<td>• OmniPage for standalone OCR. • OCR software supplied with approved multifunction products is permitted. • OnBase by Hyland Software.</td>
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Effective: 7/1/1997
Revised: 8/3/2020
Reviewed: 2/25/2020

Effective: 7/1/1997
Revised: 8/3/2020
Reviewed: 3/3/2020
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<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
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</table>
| 2860    | Imaging     | Workflow | A02.023.260   | Application Components > Document and Content Management > Document Imaging and OCR | Software that supports the document scanning and the interpretation of images into text. | • OnBase by Hyland Software  
• FileNet  
• KnowledgeLake  
• Nintex | Effective: 7/1/1997  
Revised: 8/3/2020  
Reviewed: 3/3/2020 |
| 2870    | Imaging     | Control  | A02.023.260   | Application Components > Document and Content Management > Document Imaging and OCR | Software that supports the document scanning and the interpretation of images into text. | • OnBase by Hyland Software  
• FileNet  
• KnowledgeLake | Effective: 7/1/1997  
Revised: 8/3/2020  
Reviewed: 3/3/2020 |
| 2910    | Content     | Management | A02.023.262   | Application Components > Document and Content Management > Document Management System | Software used to track, store and retrieve electronic documents and/or images of paper documents. It is usually capable of keeping track of the different versions created by different users (history tracking). | • OnBase by Hyland Software  
• OpenText ApplicationXtender (permitted only for DOCJT use to maintain existing content management solution) | Effective: 11/30/2017  
Revised: 11/13/2019  
Reviewed: 11/13/2019 |
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| 2920    | Web Content Management Software | Web Content Accessibility Guidelines (WCAGs) - Priority 1 and Priority 2 published by the World Wide Web Consortium (W3C)  
Hypertext Markup Language - HTML 4.01  
Extensible Hypertext Markup Language - XHTML 1.0  
Cascading Style Sheet - CSS Levels 1 & 2  
Document Object Model - DOM Level 1  
Synchronized Multimedia Integration Language - SMIL 2.0  
JavaScript & Dynamic HTML – DHTML  
Simple Object Access Protocol (SOAP)  
Also, see standard category for Internet/WWW Design and Publishing. | A02.023.266 | Application Components >  
Document and Content Management >  
Web Content Management | Software that provides content authoring, content review and approval, tagging and aggregation, content publishing and delivery, and syndication management.  
• Microsoft Office SharePoint  
- 2013 version extended support ends 04/11/2023  
- 2010 version extended support ends 10/13/2020  
- 2007 version extended support ends 10/10/2017  
• Sharegate | Effective: 6/1/2006  
Revised: 7/14/2017  
Reviewed: 7/14/2017 |
| 2930    | E-Learning Software | E-learning software capable of producing rich e-learning content, able to access and integrate content from a diverse range of sources used in commonwealth e-learning applications, capable of supporting student and instructor collaboration, and capable of efficiently delivering content across the Internet. | A01.007.042 | System > Human Resource Management > Education / Training | Software that supports the design, development, and implementation of a comprehensive employee development and training approach to ensure that agency employees have the right competencies.  
• SumTotal Learn for corporate and academic e-learning requirements (eLMS).  
• Blackboard Academic Suite from Blackboard, Inc. for legacy academic and corporate e-learning requirements (which includes Elluminate).  
• Articulate eLearning Software  
• PassAssured Pharmacy Tech Software  
• Adobe Presenter  
• TestOut (online labs)  
• WIN Career Readiness System | Effective: 4/7/2006  
Revised: 9/12/2018  
Reviewed: 9/12/2018 |
| 2940    | Help Desk Software | Must support IT Service Management and ITIL processes and provide compatibility with a wide range of products used in supporting IT infrastructure. | A01.002.010 | System > Customer Service > Call Center / Help Desk | Software that supports the management of a service center to respond to government and contract employees’ technical and administrative questions.  
• ITSM from Front Range Solutions USA, Inc.  
• HEAT from Front Range Solutions USA, Inc.  
• Symantec Service Desk | Effective: 6/1/2006  
Revised: 6/17/2015  
Reviewed: 6/17/2015 |
2950  Server Virtualization Software

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<th>EAS Code</th>
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<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
</table>
| 2950     | Server       |          | I01.002.202   | Platform > Operating System > Server – Midrange | A midrange computer operating system is, in simplest terms, a collection of programs that manage a computer system's internal workings - its memory, processors, devices, and file system. Midrange computers are almost universally known as servers to recognize that they often "serve" applications to end users at "client" computers, that they use a client/server computing model. | For the Wintel server environment:  
• Microsoft Windows Server 2019  
• Microsoft Windows Server 2016  
• Microsoft Windows Server 2012  
• Microsoft Windows Server 2008 R2 Extended support slated to end 7/9/2018.  
• Microsoft Windows Server 2008 R2 Virtualization with Hyper-V. Extended support slated to end 7/9/2018.  
• Microsoft Virtual Server 2005 R2 SP1  
• VMware from EMC Corp. | Effective: 6/1/2006  
Revised: 10/16/2020  
Reviewed: 2/20/2020 |

2960  Business Rules Management Software

<table>
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<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
</table>
| 2960     | Business     |          | A02.027.312   | Application Components > Process Automation and Management > Business Rule Management | Software used to define, deploy, execute, monitor and maintain the variety and complexity of decision logic that is used by operational systems within an organization or enterprise. This logic, also referred to as business rules, includes policies, requirements, and conditional statements that are used to determine the tactical actions that take place in applications and systems. | • Corticon Business Rules Server  
• Corticon Business Rules Studio  
• FICO Blaze Advisor (Approved for DORIS project use) | Effective: 10/26/2016  
Revised: 3/10/2020  
Reviewed: 10/26/2016 |

2970  Case Management Software

<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
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</thead>
</table>
| 2970     | Case         |          | A02.027.313   | Application Components > Process Automation and Management > Case Management | Software that manages the life cycle of a particular claim or investigation within an organization to include creating, routing, tracing, assignment and closing of a case as well as collaboration among case handlers. | • Column Case Management | Effective: 9/4/2019  
Revised: 9/4/2019  
Reviewed: 9/4/2019 |
<table>
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<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
</table>
| 2980     | Workflow     |          | A02.027.KY001 | Application Components > Process Automation and Management > Workflow Management | Software used to manage workflows. | • K2 Blackpearl  
• Nintex | Effective: 10/26/2016  
Revised: 1/24/2018  
Reviewed: 1/24/2018 |
| 3100     | Cable Plant  |          | I02.003.302   | Network > Infrastructure > Transmission Medium | Transmission medium is the material and/or technology that carries signal from one location to another. | Systimax products with Corning fiber:  
• Category 6, unshielded twisted pair (UTP) copper cable;  
• OR 8.3/125 Single mode fiber cable;  
• OR 50/125 Multimode fiber optic cable. | Effective: 7/1/1997  
Revised: 12/1/2008  
Reviewed: 6/17/2015 |
Cable plant installation based on current industry standards. The following are applicable:

- TIA/EIA-568-B.1-7 Commercial Building Telecommunications Wiring Standard and its appendix and all addendums
- TIA/EIA-568-B.2-11 Commercial Building Telecommunications Wiring Standard and its appendix and all addendums
- TIA/EIA-569-B Commercial Building Standard for Telecommunications Pathways and Spaces
- TIA/EIA-570-B Residential and Light Commercial Telecommunications Wiring Standard
- TIA/EIA-606 Administrative Standard for the Telecommunications Infrastructure of Commercial Building
- J-STD-607-A Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
- TIA/EIA-758-A Customer Owned Outside Plant Telecommunications Infrastructure Standard
- TIA/EIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
- TIA/EIA-526-14-A Optical Power Loss Measurements of Install Multimode fiber Cable Plant
- TIA/EIA-568-3-3.1 Optical Fiber Cabling Components Standard
- TIA/EIA-598-C Optical fiber Cable Color Code
- TIA-758-A Customer Owned Outside Plant Telecommunications Infrastructure
- National Electric Code
- National Electric Safety Code
- ASTM E814 Fire Stopping
- ISO/IEC 11801:2002/AMD 1
- TSB 162 Telecommunications Cabling Guidelines for Wireless Access Points
- TIA-942 Telecommunications Infrastructure Standard for Data Centers
- IEEE 802.3 Ethernet
- IEEE 802.11 b/g/n WLAN
- IEEE 802.16 WiMax
- TIA-1003 Requirements for a Wireless LAN Based IP Telephony Endpoint
<table>
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<tr>
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<th>KITS Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>3200</td>
<td>Network Protocols</td>
<td>TCP/IP - the only protocol supported by the Commonwealth Office of Technology after December 31, 1998. For details, see the Agency Contact Memo at Agency Contact Memo 9707-01 Ethernet - LAN topology</td>
<td>I02.004.409</td>
<td>Transmission Protocol</td>
<td>Transmission Protocol is a category that allows grouping and identification of various transmission standards, at a basic level in the OSI stack.</td>
<td>6/17/2015</td>
<td>Effective: 7/1/1997, Revised: 12/1/2008, Reviewed: 6/17/2015</td>
</tr>
<tr>
<td>3300</td>
<td>Network Hardware Components: Routers, Hubs, Remote Access, CSU/DSU, NICS, Modems</td>
<td>• SNMP compliant • Modems: 56 Kbps v.92, International Telecommunications Union (ITU) data transmission standard • Ethernet NIC cards at 100Mbps/1Gbps/10Gbps • Wireless LAN installations must adhere to Enterprise IT Policy CIO-078 (Wireless LAN Policy).</td>
<td>I02.003.301</td>
<td>Infrastructure &gt; Hardware and Software</td>
<td>Specifically for Networks, Hardware and Software refers to many different kinds of devices and their firmware. These devices provide many things including routing, security, etc. The software included here is the firmware and/or Operating System (OS) associated with specific network devices.</td>
<td>6/17/2015</td>
<td>Effective: 7/1/1997, Revised: 6/17/2015, Reviewed: 6/17/2015</td>
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<tr>
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<tr>
<td>3440</td>
<td>Video</td>
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<tr>
<td></td>
<td>Conferencing</td>
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</tr>
</tbody>
</table>

ITU-T Standards supported:

Video Standards and Protocols, Algorithms and resolutions (pixels x lines):
- ITU-T H.261
- QCIF
- 4SIF
- SVGA
- UXGA
- ITU-T H.263++
- SIF
- FCF
- SXGA
- 720p
- ITU-T H.264
- CIF
- VGA
- WXGA/+  
- 1080p
- Frame rate: 5-30 frames per second
- Audio Resolution:
  - G.711, G.722, G.722.1, 64 bit & 128 bit MPEG4 AAC-LD, AAC-LD Stereo
- Monitor Outputs:
  - S-Video, Composite, HD15, HDMI, Component
- Camera Inputs:
  - S-Video, Composite, HD15, HDMI, Component
- Video format: NTSC
- Broadcast Standards:
  - NTSC
- Audio Conferencing:
  - Omnidirectional pickup; push-to-talk (cardoid/super-cardoid) or omnidirectional, automatic microphone level adjustment; full duplex audio, full duplex, adaptive acoustic echo canceling

Communications Protocols:
- ITU-T H.221
- Interfaces:  
  - 10/100/1000 Full Duplex Ethernet
- Transmission Rates:
  - 384 Kbps

Videoconferencing is the conduct of a videoconference (also known as a video conference or video teleconference) by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions. It has also been called 'visual collaboration' and is a type of groupware.

- Cisco TelePresence (formerly Tandberg)
  - DX80 23" monitor desktop
  - BFCP dual stream WiFi Android OS- 1080p cam
  - Touch screen interface

- DX70 14" monitor desktop
- BFCP dual stream WiFi
- Android OS w/ 8mp cam
- Touch screen interface

- SX80 1080P@60 fps 4x or 20x camera. Avail w/ speaker tracking dual cameras and 10" touch screen control
- SX20 1080p with 3 camera options
- SX10 economy unit with 5x camera

- Polycom

RealPresence Group system 300/500 Small Room system

- HDX7000 720p with 12x Camera

See also Category for Desktop Video Conferencing.

Effective: 10/21/2009
Revised: 6/17/2015
Reviewed: 6/17/2015
<table>
<thead>
<tr>
<th>EAS Code</th>
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</thead>
<tbody>
<tr>
<td>3450</td>
<td>Desktop Video Conferencing</td>
<td>ITU-T Standards supported: • G.711, G.722, G.728, H221, H261, H263 Video Standards and Protocols, Algorithms and resolutions (pixels x lines): • T.120 standard for data collaboration Video Decoding: • up to 30 fps (frames per second) Video Encoding: • up to 22 fps Interfaces: • ISDN or IP (H.323 or SIP)</td>
<td>I02.004.405</td>
<td>Network &gt; Transmission Type &gt; Video Conferencing</td>
<td>Videoconferencing is the conduct of a videoconference (also known as a video conference or video teleconference) by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions. It has also been called 'visual collaboration' and is a type of groupware.</td>
<td>Cisco TelePresence (formerly Tandberg): • Movi Microsoft Lync - 2010 Version: Mainstream support slated to end 4/12/2016; Extended support slated to end 4/13/2021. Office Communications Server (OCS) 2007 Mainstream support slated to end 1/8/2013; Extended support slated to end 1/9/2018.</td>
<td>Effective: 7/1/1997 Revised: 6/17/2015 Reviewed: 6/17/2015</td>
</tr>
<tr>
<td>3460</td>
<td>Web Video / Audio Conferencing / Collaboration</td>
<td>Network &gt; Transmission Type &gt; Web Conferencing</td>
<td>I02.004.404</td>
<td>Web conferencing refers to a service that allows conferencing events to be shared with remote locations. In general the service is made possible by Internet technologies, particularly on TCP/IP connections. The service allows real-time point-to-point communications as well as multicast communications from one sender to many receivers. It offers information of text-based messages, voice and video chat to be shared simultaneously, across geographically dispersed locations. Applications for web conferencing include meetings, training events, lectures, or short presentations from any computer.</td>
<td>• Citrix (GoToMeeting, GoToWebinar, GoToTraining) • Elluminate • iLinc • Microsoft Lync 2010 version: Mainstream support slated to end 4/12/2016; Extended support slated to end 4/13/2021. Office Communications Server (OCS) 2007 • Adobe Connect • Zoom • BlueJeans Video Conferencing • Dolby Conference Phone • Vsee HIPAA Compliant Messenger for Healthcare business domain • Webex</td>
<td>Effective: 12/11/2009 Revised: 3/27/2020 Reviewed: 6/18/2019</td>
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<td>EAS Code</td>
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<td>3505</td>
<td>Network Services – Electronic Commerce and Payments</td>
<td>eMARS ePay (via the Link-to-Gov contract) is the approved enterprise electronic commerce facility for credit card payments via the internet. This full service facility includes account creation, merchant bank services, secure transactions, processing of credit card payments, authorization and settlement. Agency Contact Memo 9903-03 describes the pilot, contract and the e-commerce workflow.</td>
<td>A01.004.021</td>
<td>System &gt; Financial Management &gt; Accounts Receivable</td>
<td>Software that supports collections and receivables, including deposits, fund transfers, and receipts for sales or service.</td>
<td>All approved web browser products that support SSL encryption</td>
<td>Effective: 6/1/1999 Revised: 6/17/2015 Reviewed: 6/17/2015</td>
</tr>
</tbody>
</table>
| 3510     | Network Services – Internet/Intranet Web Server | World Wide Web Consortium (W3C) standards | I01.002.202 | Platform > Operating System > Server – Midrange | A midrange computer operating system is, in simplest terms, a collection of programs that manage a computer system's internal workings - its memory, processors, devices, and file system. Midrange computers are almost universally known as servers to recognize that they often "serve" applications to end users at "client" computers, that they use a client/server computing model. | • Apache HTTP Server  
• Apache Tomcat  
• Microsoft Internet Information Server (version 7 or later)  
• Microsoft URL Rewrite IIS extension  
<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
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<th>KITS Description</th>
<th>Approved Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>3520</td>
<td>Network Services – Mainframe Access</td>
<td></td>
<td>A03.040.010</td>
<td>Interface &gt; Application Interface &gt; API</td>
<td>Source code based specification intended to be used as an interface by software components to communicate with each other. An application programming interface (API) may include specifications for routines, data structures, object classes, and variables (e.g., per Wikipedia).</td>
<td>Effective: 7/1/1997&lt;br&gt;Revised: 6/19/2019&lt;br&gt;Reviewed: 6/19/2019</td>
</tr>
</tbody>
</table>

- **Microsoft Internet Explorer:**
  - IE 11
- **Microsoft Edge:**
  - On Windows 10 Devices.
- **Mozilla Firefox:**
  - For maximum security, and to take advantage of advanced client software and web site functions and features, the latest browser release should be installed and used. Selecting the setting to automatically install updates is recommended.
- **Google Chrome**
  - For maximum security, and to take advantage of advanced client software and web site functions and features, the latest browser release should be installed and used. Selecting the setting to automatically install updates is recommended.
- **Respondus LockDown Browser**

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**DOS and Windows workstations:**
- BlueZone by Rocket Software
- MochaSoft
- IBM Personal Communications
- IBM WebSphere Host On-Demand
- Reflection Desktop (by Micro Focus)

**Mainframe File Transfer:**
- BlueZone by Rocket Software
- MochaSoft

**NOTE:** AttachMate is no longer supported.
### 3550 Network Services – Storage Area Networks

<table>
<thead>
<tr>
<th>Code</th>
<th>Category</th>
<th>Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
</table>
| 3550  | I01.005.503 Platform > Virtualization > Storage | Storage virtualization applies virtualization concepts to enable better functionality and more advanced features within the storage system. Storage systems use special hardware and software along with disk drives in order to provide very fast and reliable storage for computing and data processing. | • Dell/EMC VxBlock  
• HP  
• IBM  
• Netapp  
• Pure Storage Array | Effective: 12/20/1999  
Revised: 10/16/2020  
Reviewed: 2/20/2020 |

### 3600 Network Management

<table>
<thead>
<tr>
<th>Code</th>
<th>Category</th>
<th>Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
</table>
| 3600  | A01.012.080 System > Systems Management > Fault management | Software that detects, isolates, and corrects malfunctions in a telecommunications network and compensates for environmental changes. This includes maintaining and examining error logs, accepting and acting on error detection notifications, tracing and identifying faults, carrying out sequences of diagnostics tests, correcting faults, reporting error conditions, and localizing and tracing faults by examining and manipulating database information. For UNIX and Windows:  
• Avaya Unified Communications Management (UCM)  
• BMC ProactiveNet Performance Management Solution  
• Cacti  
• HP Network Management System  
• Microsoft System Center Operations Manager (SCOM)  
• Nagios  
• What’s Up Gold (Ipswitch) | | Effective: 7/1/1997  
Revised: 2/15/2012  
Reviewed: 6/17/2015 |
### 3650 Content Delivery Network

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<tr>
<th>EAS Code</th>
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<th>KITS Description</th>
<th>Approved Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>3650</td>
<td>Content Delivery Network</td>
<td>Support forward and reverse proxy of the following IP protocols: • HTTP • FTP over HTTP • FTP over TCP • FTPS (for mainframe file transfer) • HTTPS (secure transport) • NNTP • MMS • TSPard • ICAP</td>
<td>Communications Hardware &gt; Network Interface Device</td>
<td>For the purposes of the IRM, a Network Interface Device is a broad term that includes devices that serve as a demarcation point between the carrier’s local loop and the customer’s on-premises wiring, where the data wires end and a customer’s premise wiring starts, and network interface controllers (also known as a network interface card, network adapter, LAN adapter and by similar terms) which may be internal or external to a piece of computer hardware.</td>
<td>• Network Appliance • Microsoft Forefront Threat Management Gateway (formerly Microsoft Internet Security and Acceleration (ISA) Server) – replaces Microsoft Proxy Server. A software-based solution that runs on approved Microsoft server OS platforms only.</td>
<td>Effective: 10/1/2003 Revised: 1/19/2011 Reviewed: 6/17/2015</td>
</tr>
</tbody>
</table>

Support for a variety of streaming media formats including MMS (Microsoft Windows Media) and RTSP (RealNetworks Media streaming) Authentication using Active Directory Flexibility that offers server-based or appliance solutions

### 4025 Extensible Markup Language

<p>| Extensible Markup Language | Extensible Markup Language (XML) is an open standard for describing data from the World Wide Web Consortium (W3C) – a meta-language. XML is a simplified version of Standard Generalized Markup Language (SGML). It is used for defining data elements on a Web page and business-to-business documents. It uses a similar tag structure as HTML; however, whereas HTML defines how elements are displayed, XML defines what those elements contain. HTML uses predefined tags, but XML allows tags to be defined by the developer. There are four principle components that enable XML applications to process an XML document: the XML Document, Document Type Definitions (DTD) or Schemas, Processors and Parsers, and Style Sheets. XML provides a mechanism to label sets of data that can be shared between other systems. The importance of this feature is realized when sharing data between two systems that are operating with different software XML offers state agencies many potential benefits: provide for self-described transactions; enhance workflow and document management functions; interface with legacy systems; reiterate the use of object-based documents and support the implementation of e-government initiatives that must pass data. Approved Standard(s): - XML version 1.0 standard from the World Wide Web Consortium (W3C) - Legal XML standard |
| A03.040.014 | Interface &gt; Application Interface &gt; XML | Extensible Markup Language (XML) defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. It is defined in the XML 1.0 Specification produced by the World Wide Web Consortium (W3C), and several other related specifications, all gratis open standards. | • Altova XML Spy • Oxygen XML Editor - Approved for use at KY Historical Society. The utilization of this software for specific business functions must be approved by the Commonwealth Office of Technology on a case by case basis. | Effective: 5/10/2000 Revised: 2/4/2019 Reviewed: 2/4/2019 |</p>
<table>
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<tr>
<th>EAS Code</th>
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<tbody>
<tr>
<td>4030</td>
<td>Geographical Information Systems – Shapefile</td>
<td>The ESRI Shapefile is a popular geospatial vector data format for geographic information systems software. An ESRI shapefile consists of a main file, an index file, and a dBASE table. The main file is a direct access, variable-record-length file in which each record describes a shape with a list of its vertices. In the index file, each record contains the offset of the corresponding main file record from the beginning of the main file. The dBASE table contains feature attributes with one record per feature. The one-to-one relationship between geometry and attributes is based on record number. Attribute records in the dBASE file must be in the same order as records in the main file. Approved Standard(s): • Spatial Data Transfer Standard (SDTS), known FIPS 173 for exchange of data created by GIS - Federal Geographic Data Committee (FGDC) Metadata Standard, Sections 1 and 7</td>
<td>A02.024.380</td>
<td>Application Components &gt; Geospatial Information &gt; Cartography</td>
<td>Software that supports the creation of maps.</td>
<td>The ArcGIS suite of products which includes Desktop GIS, Server GIS and Mobile GIS and Online GIS components.</td>
<td>Effective: 7/1/1997 Revised: 6/10/2020 Reviewed: 2/25/2020</td>
</tr>
<tr>
<td>4035</td>
<td>Geographical Information Systems – Geodatabases</td>
<td>The geodatabase is a data storage format that is utilized within the ArcGIS suite of software. There are two primary types of geodatabases: file-based and multi-user (enterprise). A file-based geodatabase is stored as binary in a GDB directory structure and can be created using any of the ArcGIS products: ArcView, ArcEditor or ArcGIS Advanced. A multi-user geodatabase is stored in a more powerful relational database management system (RDBMS) like Oracle, Informix, SQL Server or DB2 and must be interfaced with ArcSDE software. Data from a multi-user geodatabase can be read using any of the ArcGIS products, but can only be edited using ArcEditor or ArcGIS Advanced.</td>
<td>A02.024.380</td>
<td>Application Components &gt; Geospatial Information &gt; Cartography</td>
<td>Software that supports the creation of maps.</td>
<td>ArcGIS suite of products - ArcView, ArcEditor or ArcGIS Advanced. ArcSDE.</td>
<td>Effective: 7/1/1997 Revised: 6/10/2020 Reviewed: 2/25/2020</td>
</tr>
</tbody>
</table>
A public record is recorded information made or received in conjunction with official agency business that is kept as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the government. Statutory definition: “Public record or record” means all books, papers, maps, photographs, cards, tapes, disks, diskettes, recordings, and other documentary materials, regardless of physical form or characteristics, which are prepared, owned, used, in the possession of or retained by a public agency. (KRS 171.410, PDF)

Approved Standard(s):

- Department of Defense (DoD) standard 5015.2 defines baseline records management requirements for electronic systems, based on operational, legislative and legal needs of Federal agencies. This standard has been endorsed by the National Archives and Records Administration.
- Records schedules approved by the State Archives and Records Commission reflect known operational, legal, audit, and historical recordkeeping requirements. Agencies must maintain up-to-date and accurate schedules and create and manage records within their framework, in order to fulfill this standard.
- Kentucky IT Standards for Electronic Documents – Final Version for Distribution and High Volume Scanners – Digital Imaging specify use of PDF and CCITT III and IV file formats, for non-alterable electronic documents and image files respectively. Other recommended or de facto standard file formats are described in the Kentucky Department for Libraries and Archives' online publication, Electronic Records Management Guidelines - File Formats.
The Preservation of Long-term Records Table represents the digital formats that KDLA has recognized and is encouraging agencies to use when transferring records to the archives. These formats may also be used by agencies when maintaining records with long-term retention (retention period of more than 20 years) in-house. The formats, and corresponding confidence levels, represent KDLA’s preferences for long-term preservation. Agencies are free to use other formats (including those not listed) for active business use as long as they meet with state approved standards and architecture. However, systems employed by agencies should support these formats or be able to export records to these formats.

The risk levels identified in the table below are ranked from low (most conducive for long-term preservation) to high (least conducive for long-term preservation.) The risk levels are determined by a combination of sustainability factors including:

1. Documentation. Degree to which complete specifications and tools for validating technical integrity exist and are accessible to those creating and sustaining digital content. Non-proprietary, open standards are usually more fully documented and more likely to be supported by tools for validation than proprietary formats. However, what is most significant for this sustainability factor is not approval by a recognized standards body, but the existence of complete documentation, preferably subject to external expert evaluation.

2. Adoption. Degree to which the format is already used by the primary creators, disseminators, or users of information resources. This includes use as a master format, for delivery to end users, and as a means of interchange between systems. If a format is widely adopted, it is less likely to become obsolete rapidly, and tools for migration and emulation are more likely to emerge.

3. Compression. Many digital formats used for disseminating content employ compression. However, for practical reasons, some digital audio, images, and video may never be stored in an uncompressed form, even when created. Content should be compressed using publicly disclosed and widely adopted algorithms that are either lossless or have a degree of loss compression that is acceptable to the creator, publisher, or primary user as a master version.

4. External Dependencies. Degree to which a particular format depends on particular hardware, operating system, or software for rendering or use and the predicted complexity of dealing with those dependencies in future technical environments.

5. Technical Protection Mechanisms. To preserve digital content and provide service to users and designated communities decades hence, KDLA must be able to replicate the content on new media, migrate and
normalize it in the face of changing technology, and disseminate it to
users at a resolution consistent with network bandwidth constraints.
Content for which KDLA takes long-term responsibility must not be
protected by technical mechanisms such as encryption, implemented in
ways that prevent custodians from taking appropriate steps to preserve
the digital content and make it accessible to future generations. These
controls may be necessary for business reasons while the data is in
active use in the agency but should be removed upon transfer to the
archive.

The low and medium risk levels represent the formats that KDLA feels
are the most sustainable over time. Agencies should avoid using formats
listed in high risk column, or make sure that the records in question can
be converted to the formats in the Medium and/or Low risk columns.

View the Preservation of Long-term Records Table.
Electronic mail (email) messages are any communication supported by email systems for the conduct of official agency business internally, between other state, local, and federal agencies, and with constituents, voters, vendors, clients, citizens, and others. This definition applies equally to the contents of the communication, the transactional information associated with each message, and any attachments to the body of the message.

The email environment in Kentucky state government has a current transaction volume that exceeds eighty million messages a month. This figure dramatically illustrates the extent of agency use and reliance on email services to conduct state business. Two existing Enterprise policies, (1) Status of Electronic Mail as a Public Record, and (2) Internet and Electronic Mail Acceptable Use Policy, CIO-060, have emphasized that electronic mail is statutorily defined as a public record and set broad parameters for the management and acceptable use of email in the executive branch of state government. This standard clarifies agency responsibilities.

**Approved Standard(s):**

- **KRS sections 061.870 (Open Records) and 171.410 (State Archives and Records)** define “public record” to mean all books, papers, maps, photographs, cards, tapes, disks, diskettes, records, and other documentation / documentary materials, regardless of physical form or characteristics, which are prepared, owned, used, in the possession of, or retained by a public agency. Being public record under these terms, electronic mail must be managed to provide appropriate, reliable, and cost-effective evidence of the business activities it supports, relates to, or documents. Its integrity, completeness, retrievability, public accessibility, and retention all should respond to agency or Enterprise business requirements.

- **Agencies establish recordkeeping rules** that are appropriate to the business functions they normally perform. These rules reflect best recordkeeping practices associated with the specific business processes agencies are engaged in, as well as any explicit legal, audit, or archival requirements that have been established. Agencies must apply these recordkeeping rules to the administration of electronic mail as it relates to the same business functions. *The Kentucky Department for Libraries and Archives and the State Archives and Records Commission have statutory authority to establish records management requirements for public agencies of the Commonwealth, and agency recordkeeping practice should conform to standards, schedules, or guidelines developed by them.*

The following general requirements must be met by agencies in managing email:

**See standard for Electronic Mail, Messaging and Collaboration**
• The integrity, reliability, and authenticity of email messages must be protected through compliance with all security and data management requirements established in the Enterprise Architecture and Standards.
• Per the acceptable use policy referenced above, agencies must instruct employees and take steps to ensure that non-business related email messages are regularly deleted from email stores (inboxes and personal folders). Transitory messages, which are defined as messages that are for informational and reference purposes only and do not set policy, establish guidelines or procedures, certify a transaction, or become a receipt, must also be routinely disposed of.
• Retention periods for email messages vary according to the functions they are associated with. It is the responsibility of the agency to codify retention practices through development of records schedules in cooperation with the Kentucky Department for Libraries and Archives. Retention requirements cannot be met through routine agency backups, and agency staff must be made fully aware of this and the appropriate schedules that must be created and adhered to.
• EAS Appendix G, Guidelines for Managing E-Mail in Kentucky State Government, promulgated by the Department for Libraries and Archives, provides agencies with further guidance on the implementation of this standard.

4065 Data Governance – Data Stewardship

The fundamental building block of Information Technology Architecture and Standards is data. Data is a critical asset and must be managed as such. To assure that maximum benefit is derived from the sharing, integration and utilization of data for both program level tactical applications and multiagency strategic predictive planning, decisions regarding data must be made at the enterprise level in consultation with the Chief Data Officer and the Chief Information Officer.

Approved Standard(s): Executive branch agencies are responsible for assigning data stewardship responsibilities to designated staff, to facilitate the proper management of data as a strategic resource for the enterprise in accordance with state and Federal laws.

Refers to the overall management of the availability, usability, integrity, and security of the data employed in an enterprise.

IBM InfoSphere Information Governance Catalog
IBM Watson Knowledge Catalog
IBM Glossary Anywhere

Effective: 1/1/2008
Revised: 11/6/2019
Reviewed: 11/6/2019
<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
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<th>KITS Description</th>
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<tr>
<td>4070</td>
<td>Common Data Definitions</td>
<td>A core set of common data definitions, formats, type, and size and code values for enterprise data elements. A unique identifier for both individuals and organizations that associates data to a single entity is a critical element of the data definition. Approved Standard(s): • The Enterprise Common Data Definitions related to individual and organizational identity only, are fully described in the documentation on the Enterprise Common Data Model Framework.</td>
<td>B10.811.604</td>
<td>General Government &gt; Information sharing &gt; Meta Data Management</td>
<td>Support the maintenance and administration of data that describes data.</td>
<td>IBM InfoSphere Information Governance Catalog IBM Glossary Anywhere CA - ERwin IBM InfoSphere Data Architect</td>
<td>Effective: 1/1/2008 Revised: 2/18/2020 Reviewed: 10/5/2018</td>
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</table>

| 4080     | Data Classification Standard | This standard establishes the criteria for classifying data and information into three categories: Open, Internal and Confidential. This classification matrix does not supersede the Open Records Act requirements of State Government (KRS 61.870 to 61.884). Classification is important because it determines the level of security to be applied to the data, any application that processes the data, and the environment which houses/stores the data. Internal and Confidential data require more stringent security while Open data requires very little security (only controls over the integrity and availability of the data may be necessary). All Commonwealth data must be appropriately reviewed to determine its classification. This classification will be used for, but is not limited to, determining limitations on the use, protection and storage of the data. If data is interdependent with other data that is classified with a higher level of sensitivity, the classification that requires the most stringent controls should be used. Details of the enterprise data classification levels can be found at "https://technology.ky.gov/policy/Documents/ENT%20Documents/ENT-101%20Enterprise%20Data%20Classification%20Standard.pdf". Details of the enterprise data classification process can be found at "https://technology.ky.gov/policy/Documents/ENT%20Documents/ENT-102%20Enterprise%20Data%20Classification%20Process.pdf". | S01.001.001 | Purpose > Regulatory Conditions > Executive Branch Directives | Executive Orders, Memoranda, security directives regarding classification and protection of federal information or other security goals. See FIPS 200, NIST SP 800-53, NIST SP 800-53A, NIST SP 800-37, and CNSI-4009. | Effective: 9/16/2009 Revised: 8/29/2019 Reviewed: 8/29/2019 |
Data integration is the process of combining data residing at different sources to provide a unified view of these data. Data integration can be classified in four different types of integration based on the characteristics of the data movement.

### Enterprise Application Integration (EAI)
- **Characteristics of EAI:** Transaction based data; Data is usually structured (file layouts); Messaging transport is used (MSMQ, MQ, File, etc.); Low transformation of the data; Translation of data is usually performed; Usually associated with Process Integration; Commonly event driven and/or real time processing.
- **Common architectures:** Web Services (Point to Point)/Service Interface (IMS/CICS); IBM MQ/MSMQ; ESB (IBM Message Broker, MS BizTalk); Remote Procedure Call (RPC)
- **Data Replication**
- **Federation**

### Extract-Transform-Load (ETL)
- **Characteristics of ETL:** Record based data; Usually derived data; High volume; Movement of data from store to store; Structured or Semi-structured data; Usually associated with Process Integration; Batch based (right time)
- **Common architectures:** ETL Tools (SAS, IBM DataStage/QualityStage); Custom extract programs (batch); Ad-Hoc query tools Microsoft Excel, etc

### Data Replication
- **Characteristics of Data Replication:** Data store to data store copy; Structured data; Low transformation of the data; Used when high availability is necessary; Usually associated with Analytical Systems
- **Common architectures:** Database vendor tools (IBM ReplicationServer); Compuware File-Aid (IMS, DB2, etc.); Third party database tools

### Federation
- **Characteristics of Federation:** Query based; Usually multiple data sources; Structured/Semi-structured data; Moderate transformation; Wrappers are utilized to provide consistency of data; Real time – need the most current data; Usually associated with Analytical Systems; Medium to high volume.
- **Common architectures:** IBM Classic Federation (z/os data stores – IMS, VSAM, QSAM, etc.); IBM Federate Server (distributed data stores)
### EAS Code | EAS Category | Standard | KITS Category | KITS Domain > Area > Category | KITS Description | Approved Products | Date |
--- | --- | --- | --- | --- | --- | --- | --- |
4100 | Middleware | | | | Software used for designing and implementing the interaction and communication between mutually interacting software applications in Service Oriented Architecture (SOA). | • BizTalk 2010  • AppFabric  • Orion Health™ Rhapsody® Integration Engine - For Healthcare IT system integration  • Mulesoft | 10/26/2016 |
885 | Electronic Commerce – Electronic Data Interchange (EDI) | | | | Electronic data interchange (EDI) is the secure electronic communication of business transactions, such as purchase orders, confirmations, invoices, and other data between organizations. EDI may be used to submit data to a state agency in a standard, prescribed format, with translation software required to complete the communication. Value added networks (VANS) act as third parties to provide EDI services that enable organizations with different equipment to connect. The EDI format chosen must provide proper security controls to protect the Confidentiality and integrity of the data during transmission. The two approved standards are:  ANSI ASC X12  UN/EDIFACT | 7/1/1997 |
4350 | General Government > Information sharing > Data Exchange | B10.811.601 | Government > Information sharing > Data Exchange | Supports the interchange of information between multiple systems and applications; includes verification that transmitted data was received unaltered. |  | Effective: 7/1/1997  Revised: 6/17/2015  Reviewed: 6/17/2015 |
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<tr>
<td>5010</td>
<td>Intrusion Detection and Prevention</td>
<td>Products must support approved Enterprise standards in the following categories: Operating systems—specific Unix operating systems (OSs), MS Windows, Linux • Network topologies—Ethernet, T1/E1 • Switched networks • Protocols—TCP/IP, UDP • Applications—FTP, HTTP, Telnet • Firewalls All tools within this category have the ability to appear to network defense mechanisms as reconnaissance or attack activity. To ensure that the scanning activities are effective, able to complete uninterrupted, and do not raise unnecessary alarm all provisions in CIO-082 Critical Systems Vulnerability Assessments must apply.</td>
<td>A01.011.073</td>
<td>System &gt; Security Management &gt; Intrusion Detection</td>
<td>Hardware or software products that gather and analyze information from various areas within a computer or a network to identify possible security breaches, which include both intrusions (attacks from outside the organizations) and misuse (attacks from within the organizations.) Top Layer Products: • IBM ISS Proventia • Symantec Complete Endpoint Defense (with SEP) • Snort-SourceFire • Suricata • HP TippingPoint Internet Security Systems Products: • RealSecure Server Sensor • RealSecure Site Protector • Retina Network Security Scanner • Symantec Security Monitoring Services • Dell Secureworks Network Monitoring Service • Symantec DeepSight Security Operations Products: • Nmap, Zenmap ver 7.8 • Oracle VM Virtual Box 5.0.4 • WinPing 1.6.4104 • Wireshark Ver 3.2.1 • Encase Forensics Version 7.10.00 and 6.19 • Encase Enterprise&gt;eDiscovery Version 5.10.05 • Net Analysis Version 1.5</td>
<td>Effective: 6/1/2003 Revised: 10/16/2020 Reviewed: 2/20/2020</td>
<td></td>
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<tr>
<td>5050</td>
<td>Event and Log Management</td>
<td>Software that supports the set of capabilities to support the identification and monitoring of activities within an application, system, or network.</td>
<td>A01.011.070</td>
<td>System &gt; Security Management &gt; Audit Trail and Capture</td>
<td>• Exabeam SIEM • IBM Qradar</td>
<td>Effective: 8/17/2016 Revised: 9/27/2019 Reviewed: 2/10/2020</td>
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</tbody>
</table>
### Approved Products

- The Entrust suite of PKI enabled products
- Office 365 Message Encryption - for encrypting email messages

### Effective:

7/1/1997

### Revised:

6/15/2017

### Reviewed:

2/10/2020

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<tr>
<td>S100</td>
<td>Encryption</td>
<td>A02.029.342</td>
<td>Application</td>
<td>Components</td>
<td>&gt; Encryption</td>
<td>Software to convert plaintext to ciphertext through the use of a cryptographic algorithm.</td>
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<td>5100</td>
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<td>Key recovery</td>
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<td></td>
<td>Destruction of revoked or expired keys</td>
<td>2/10/2020</td>
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5110 Endpoint Storage Device Encryption
Encryption is required by CIO-092 for any portable storage device when it will contain data defined as Sensitive or above according to the Kentucky Data Classification Matrix.

| A02.029.342 | Application Components > Security Controls > Encryption | Software to convert plaintext to ciphertext through the use of a cryptographic algorithm. | Symantec Complete Endpoint Defense (with SEP) bitlocker for Microsoft Surface Pro Note: we would like to prevent any new installs of Checkpoint Pointsec |

5120 Encrypted Flash Drive
An encrypted flash drive is required by CIO-092 when it will contain data defined as sensitive or confidential according to the Kentucky Data Classification Matrix. The encryption will use Federal Information Processing Standard (FIPS) 140-2 approved algorithms as outlined in National Institute of Standards and Technology (NIST) 800-57, part 3, Revision 1 for encrypting sensitive and confidential data.

| I01.001.107 | Platform > Hardware > Removable Storage Media | Removable storage media is any type of storage device that can be removed from a computer while the system is running. | Any product that utilizes (FIPS) 140-2 approved algorithms as outlined in National Institute of Standards and Technology (NIST) 800-57, part 3, Revision 1 for encrypting sensitive and confidential data. |

5400 Authentication and Authorization
Software that supports obtaining information about parties attempting to log on to a system or application for security purposes and the validation of those users.

| A02.029.340 | Application Components > Security Controls > Authentication and Authorization | For generating Soft tokens: Symantec VIP Access For privileged credential management: One Identity Safeguard |

Effective: 2/4/2010
Revised: 6/17/2015
Reviewed: 2/10/2020
### S03.002.002 Controls > Control Categories > Operational

**The security controls (i.e., safeguards or countermeasures) for an information system that are primarily implemented and executed by people, as opposed to executed by systems. See FIPS 200.**

**Approved products and mechanisms for rendering data inaccessible depend on the type of media being used and the disposition of the device or media. Further discussion is provided under Technical and Implementation Considerations. Recommended Products:**

**Disks:**
- WipeDrive
- Active@KillDisk

**Files:**
- Darik’s Boot and Nuke (DBAN)
- SecureClean (included with WipeDrive now)

**Degausser Equipment:**
- HD-1T Chamber Degausser (Data Security, Inc.)

**Physical Destruction:**
- Disk/Tape Shredder
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| S515    | Secure Transport | Transport Layer Security (TLS)1.2 or greater encryption is required if data needs to be secured during transmission over inherently unsecure protocols such as FTP, HTTP, SMTP, NNTP, or XMPP (unless the data is encrypted prior to transmission). Secure Shell (SSH) is a Unix/Linux-based command interface and protocol for securely accessing a remote computer. This protocol can be used for remote access as well as secure data transport through SFTP and SCP. All electronic payments (credit card, EFT, etc) and the collection of personally identifiable information must be secured during transport (see Category for Network Services - Electronic Commerce and Payments). Strong encryption (256-bit or greater) is recommended and may be required for certain applications, particularly personal and health-related information as prescribed in federal law or required regulatory compliance. Examples include, but are not limited to PCI (Payment Card Industry) compliance, FISMA (Federal Information Security Management Act), HIPAA (Health Insurance Portability and Accountability Act), FERPA (Family Educational Rights and Privacy Act) and IRS Publication 1075. WS (Web Service) security protocols should be used whenever web services are designed and implemented. To authenticate and secure the web server, a server certificate (digital ID), available from Entrust, must be assigned to the web server. This includes secure servers operated under contract, although any server certificate software may be used in those instances. | S03.002.003 Controls > Control Categories > Technical | The security controls (i.e., safeguards or countermeasures) for an information system that are primarily implemented and executed by the information system through mechanisms contained in the hardware, software, or firmware components of the system. See FIPS 200. | Entrust.net Transport Layer Security (TLS 1.2) server certificates | Effective: 6/1/1999
Revised: 6/17/2015
Reviewed: 2/10/2020 | 5/5/2020
6/17/2015
6/1/1999 |
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| SS30     | Virus Scanning | • All desktops, laptops and servers shall have antivirus/malware protection installed  
• All systems shall undergo at least a monthly full system scan for viruses and malware  
• Where possible, portable devices shall also have antivirus protection  
• Antivirus/anti-malware shall be centrally managed with ongoing updates and reports  
• End users shall not be able to disable the antivirus/anti-malware software on their systems  
• Scans should be scheduled to occur automatically | A02.029.343 | Application Components > Security Controls > Virus Protection | Software used to prevent, detect, and remove self-replicating programs that run and spread by modifying other programs or files. | Windows Server OS:  
• Symantec Endpoint Protection  
• OPSWAT Metadefender  
• Endgame (Elastic)  
Windows Desktop OS:  
• Symantec Complete Endpoint Defense (with SEP)  
Linux OS:  
• Symantec Complete Endpoint Defense (with SEP)  
Microsoft Exchange:  
• Symantec Complete Endpoint Defense (with SEP)  
Microsoft Sharepoint:  
• Symantec Complete Endpoint Defense (with SEP)  
NetWare:  
• McAfee Endpoint Protection – Advanced Suite | Effective: 7/1/1997  
Revised: 10/16/2020  
Reviewed: 2/20/2020 |
| SS45     | Spam Filtering | Support for all approved hardware platforms, operating systems software and applications.  
Ability to detect an unsolicited or inappropriate email and deliver to a separate inbox for review before delivery to the addressee. | A02.029.343 | Application Components > Security Controls > Virus Protection | Software used to prevent, detect, and remove self-replicating programs that run and spread by modifying other programs or files. | McAfee Email Gateway  
McAfee Total Protection for Internet Gateways | Effective: 8/21/2008  
Revised: 1/19/2011  
Reviewed: 2/10/2020 |
5550  Web Filtering
- Must be able to analyze domain name
- Must be able to break down and analyze web traffic to accurately pinpoint portions of a web page which should not be allowed into the internal network
- Must be able to block based on content
- Must be able to be centrally managed

A02.029.343  Application Components > Security Controls > Virus Protection
Software used to prevent, detect, and remove self-replicating programs that run and spread by modifying other programs or files.
- CyBlock (Wavecrest)
- McAfee Secure Web Gateway

5700  Firewall
- International Computer Security Association (ICSA) - ICSA Labs® Certification for firewall products
- Firewall Product Developers Consortium (FPDC) Product Certification Criteria
- Internet Protocol Security Protocol Working Group (IPsec), part of the Internet Engineering Task Force (IETF)
- National Institute of Standards and Technology (NIST) Firewall Protection Profile
- Support all Internet Protocol (IP) stacks
- Approved application servers and operating system (OS)
- Integration with internetworking hardware and software from Nortel Networks

Based on the enterprise policy CIO-076, COT shall manage all enterprise and intranet firewall and VPN services that utilize the KIH infrastructure. Agencies may manage agency-level Tier II firewall services under certain stipulations and with COT network visibility to the firewall. It is imperative that network services for all agencies within the KIH are protected and that the integrity of the KIH is protected to insure that enterprise services are not compromised. The administration of firewalls and virtual private networks (VPN) is a critical component in securing the KIH infrastructure and computing systems.

- Internet and Extranet (business relationships) VPN connections must be managed to maintain enterprise security and reduce security risks. For this reason, COT shall be the approving authority for access to KIH computing resources. Agencies using the Internet to communicate and share data must use the COT-managed VPN service.
- Intranet VPN connections shall be managed by COT to maintain enterprise security and network routing efficiencies. Agencies wanting to create Intranet VPN’s must use COT VPN approved services.

Check Point is the approved product standard for Tier I firewall services. Tier I classification includes all services and/or systems that are considered an enterprise resource. Enterprise resources should be located at the Commonwealth’s Data Center (CDC) in order to maximize security benefits and network efficiency. Enterprise resources located at CDC benefit from additional security technologies in place there.

Avaya VPN Router firewall product is the enterprise standard for Tier II firewall services. Tier II classification includes all services and/or systems that are agency-specific but available for the enterprise. Agency-specific applications and services would be suitable for Tier II firewall services. Tier II firewall services may not be interoperable with other enterprise security platforms.

NOTE: Agencies are encouraged to review the COT security offering for firewall services.
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| 5710     | Desktop / Laptop Firewall Software | • All state-owned laptop computers must have desktop/laptop firewall software installed on them.  
• All VPN-connected and dial-up connected workstations that remotely connect to the state's network must have desktop/laptop firewall software installed on them. | S03.002.003 Controls > Control Categories > Technical | The security controls (i.e., safeguards or countermeasures) for an information system that are primarily implemented and executed by the information system through mechanisms contained in the hardware, software, or firmware components of the system. See FIPS 200. | The current approved and supported enterprise standards for individual computers connecting to the Commonwealth's Intranet are:  
• Symantec Complete Endpoint Defense (with SEP)  
• Microsoft Windows Firewall  
• Symantec - Norton Personal Firewall  
• Zone Labs: Zone Alarm (free for home use); Zone Alarm Plus; Zone Alarm Pro; Zone Labs' enterprise solution includes Zone Labs Integrity, Zone Labs Integrity Desktop, and Integrity Desktop Manager (simple deployment tool). | Effective: 12/5/2003  
Revised: 2/10/2020  
Reviewed: 2/10/2020 |
| 6100     | Backup and Recovery | Compatible with approved server and desktop workstation operating systems, network protocols, network topology and database management software. | A02.021.220 Application Components > Data Management > Data Backup and Recovery | Software that creates copies of data which may be used to restore the original after a data loss event or to restore and stabilize data sets to a consistent, desired state. | • Computer Associates BrightStor (formerly ARCServe) Enterprise and Workgroup editions (includes software products formerly available as ARCServe, ARCServeIT)  
• EMC Avamar  
• IBM Tivoli Storage Manager (TSM) - shared services network backup/restore services offered by COT  
• Microsoft Data Protection Manager (DPM)  
• Simpana (Commvault)  
• Symantec - Veritas Backup Exec and NetBackup - workgroup editions | Effective: 7/1/1997  
Revised: 6/17/2015  
Reviewed: 6/17/2015 |
| 6540     | Inventory and Distribution | Compatible with existing network protocols, server OS and desktop computer OS. | A01.012.083 System > Systems Management > Software Distribution | Software that supports distribution of software, propagation, installation and upgrade of written computer programs, applications and components. | • System Center Configuration Manager | Effective: 7/1/1997  
Revised: 6/17/2015  
Reviewed: 6/17/2015 |
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| 6600     | Mobile Device Management | A01.012.KY001 | System > Systems Management > Mobile Device Management | Solution that provides the ability to enroll, track, configure and update mobile devices in an enterprise environment. Security policies and compliance can be enforced and secure mobile access to corporate resources can be provided. | • Microsoft Intune | | Effective: 3/8/2017  
Revised: 3/8/2017  
Reviewed: 3/8/2017 |

| 7005     | Naming Conventions | B10.811.339 | General Government > Information sharing > Information Mapping / Taxonomy / Categorization | Information Mapping/ Taxonomy/ Categorization defines the set of capabilities to support the creation and maintenance of relationships between data entities, naming standards and categorization and allow classification of data and information into specific layers or types to support an organization. | | | Effective: 5/10/1999  
Revised: 12/11/2015  
Reviewed: 12/11/2015 |
Jurisdiction of the Internet .GOV domain is available to federal, state and local governments as well as Native Sovereign Nations (NSNs). As required by the U.S. General Services Administration (GSA) for second-level domain registration, states “must register the full state name or clearly indicate the State postal code within the name.”

The Commonwealth Office of Technology is the authoritative source for registration of the second-, third-, and fourth-level .GOV domain for state agencies. (Domain Name System (DNS) Request form) The suffix .kentucky.gov is reserved for use only on the state home page and certain directly associated pages. Both .ky.gov and .state.ky.us are second-level domains that are reserved and approved for Kentucky state government. (Note that name .state.ky.us is scheduled for obsolescence in use for public display based on sunset dates.)

At the third level, agencies are permitted to use agency names or program names. If multiple domain names are created, one of the names should be considered primary, used to promote the site and any others should redirect to that name.

The following naming conventions are approved:
agency_name or program name.ky.gov
Examples: Transportation.ky.gov, KYTransportation.ky.gov
Examples: taxamnesty.revenue.ky.gov, taxamnesty.ky.gov, 511.ky.gov
The agency name can be a cabinet, department, or division name, in whatever format the agency chooses - acronym, full name, natural words, etc. Agency names can include ky or k as a prefix, although this redundant usage is not recommended.
For additional information related to this standard, please see the suggested “Best Practice” document at "https://cgp.ky.gov/sites/COTPUBDOCS/Standards/InternetDomainNamingBestPractice.pdf"
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<tr>
<td>7015</td>
<td>Electronic Mail Address Naming Convention</td>
<td>For state government e-mail accounts, the following e-mail naming convention is approved for primary addresses: <a href="mailto:firstname.lastname@ky.gov">firstname.lastname@ky.gov</a> <a href="mailto:distribution_listname@ky.gov">distribution_listname@ky.gov</a> Agency distribution listings which allow a search on the Global Address Book to provide a listing of all persons within that agency. Formats: <a href="mailto:AgencyName@ky.gov">AgencyName@ky.gov</a>, <a href="mailto:Agency.distribution_name@ky.gov">Agency.distribution_name@ky.gov</a> As the state's domain name registrar and shared services provider of enterprise e-mail, COT will manage and authorize the assignment of ky.gov e-mail addressing. To maintain e-mail domain name integrity, eligibility for ky.gov-based e-mail addresses is limited to qualified state government organizations. Non-unique name combinations will be handled through combinations of initials that render names unique and distinguishable.</td>
<td>B10.813.659</td>
<td>General Government &gt; Support delivery of state services &gt; Email</td>
<td>Defines the set of capabilities to support the transmission of communications over a network. Includes instant messaging</td>
<td>• Microsoft Exchange Server • Microsoft Outlook Client</td>
<td>Effective: 10/1/2003</td>
</tr>
</tbody>
</table>
Web technologies considered current standards include most current version per W3C:
- Hypertext Markup Language - HTML
- Extensible Hypertext Markup Language - XHTML
- Cascading Style Sheet - CSS
- Document Object Model - DOM
- Synchronized Multimedia Integration Language - SMIL
- JavaScript & Dynamic HTML – DHTML.

Web Page Construction: The Enterprise Web Design Template and supporting style sheets are provided as a starting point for use in creation of all externally-presented entity pages (exclusive of online applications), and for the replacement of existing pages. Template and supporting style sheets may be found at KY Enterprise Web Design Template.

Note: The use of other technologies (e.g., Java, Flash) and other document formats (e.g., Adobe Acrobat PDF, Microsoft Word) is permissible when used with the above-referenced design template.

External Links: Links to Internet resources external to State Government are encouraged, where appropriate. COT Agency Contact Memo 9805-05 - Policy, Procedures and Guidelines for Approving External Internet Links. GSA guidelines relating to link changes that direct .gov site users to non-.gov sites require all such links to include explicit notification of such re-direction, either within text accompanying the links or as a splash page.

Banner Ads: The placement of banner ads and Web site advertising are currently prohibited, as communicated in the CIO policy directive, May 22, 2000, “Moratorium on Banner Advertising on State Web sites.” In this memorandum it is noted that while opportunities may appear very desirable on the surface, there are complex policy issues associated with accepting vendor-sponsored web advertising. GSA guidelines referenced immediately above also forbid such advertising.

Metadata: Specific tags are required to meet accessibility requirements, and these are to be defined in a subsequent standard (702x). Government Information Locator Services (GILS) metatags have been adopted by the Kentucky Department for Libraries and Archives GILS program, although agency participation in this program is not currently required.
The Commonwealth of Kentucky incorporates into its Web Accessibility Standard (WAS) all applicable federal and state laws, including Section 508 of the Federal Rehabilitation Act (1986) (see http://www.access-board.gov/508.htm and http://www.section508.gov), and the World Wide Web Consortium (W3C), Web Accessibility Initiative (WAI), Web Content Accessibility Guidelines (WCAG) 1.0, Conformance Level Double-A.

New web pages and major updates to existing web pages will abide by these standards and guidelines effective immediately upon the adoption of the standard. All existing web pages produced by Commonwealth of Kentucky agencies should already meet these standards, since the compliance level has not changed since 2001. The standard applies to all web pages created by Commonwealth of Kentucky agencies. In addition, Kentucky is taking the following steps to ensure accessibility of web pages provided by third-party developers:

- informing third-party developers of Kentucky’s Web Accessibility Standard;
- providing information and resources on implementing Kentucky’s Web Accessibility Standard;
- monitoring and providing feedback on inaccessible third-party web pages created for the Commonwealth of Kentucky;
- seeking alternative third-party developers where the original developers continue to produce inaccessible web pages.

All Commonwealth of Kentucky Government web pages will contain a link to this policy. This policy will be reviewed and updated as changes occur in the laws, standards or technologies.

Software tools that check web pages for accessibility and syntactical correctness of code.

KY Enterprise Web Design Template

For design products, review the standard on recommended authoring tools, Enterprise Standard for HTML Authoring and Web Publishing. Recommended graphics tools are provided in Standard for Advanced Drawing – Drawing / Illustration / Diagramming. For automatic accessibility validators, no tool can validate all the requirements necessary. There are a number of subjective requirements that a tool cannot test. For example, Section 508(c) states, “Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.” No tool can verify this. It is up to the agency to verify that this requirement and other subjective requirements are met. There are numerous online sites that can validate a page, and various tools can be used to validate an entire site. While the online tools are beneficial during development of a site, it is necessary to do a thorough validation of an entire site prior to production release. Validation documentation should be kept with a site’s project documentation. Compliance Sheriff is available as an Enterprise-wide validation tool for testing and reporting accessibility, privacy, search ability and usability standard.

Approved Products:
- Compliance Sheriff (HiSoftware)
- InFocus (SSB BART Group)
- Rational Policy Tester Accessibility Edition (IBM)

Effective: 5/2/2002
Revised: 6/17/2015
Reviewed: 6/17/2015
<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>7360</td>
<td>EAS</td>
<td>Electronic Commerce – Magnetic Stripe Card and Reader</td>
<td>ISO (International Organization for Standardization) approved standard for encoding magnetic stripe data is required to interface with standard readers and the bankcard network for online transaction processing. ISO compliant stripe card readers are required.</td>
<td>I01.004.402</td>
<td>Platform &gt; Peripheral &gt; Computer Input Device</td>
<td>Inputs are the signals or data received by the system, and outputs are the signals or data sent from it. For the purposes of the IRM, computer input devices are those that provide data to the machine/application combination for further processing or for manipulation by users through the human-computer interface devices.</td>
<td>Effective: 7/1/1997</td>
</tr>
</tbody>
</table>

| 7400     | ISO        | PBX – Telephone Public Exchange | The Commonwealth of Kentucky has adopted a standard of two manufacturers of Telephony PBX systems, Avaya and Tadiran. This standard has been established to reduce expenditures in maintaining replacement/repair inventory and in training costs of personnel and associated expenditures. | I01.003.KY0 03 | Platform > Communications Hardware > PBX (Private Branch Exchange) | A PBX (Private Branch Exchange) is a telephone system within an enterprise that switches calls between enterprise users on local lines while allowing all users to share a certain number of external phone lines. Approved Avaya products are:  
• Business Communications Manager (BCM) Series,  
• Communication Server (CS) 1000 Series, CS2100,  
• and related survivable Gateways. Approved Tadiran products are:  
• Coral  
Octel is approved for existing replacement only. | Effective: 7/1/1997 | Reviewed: 6/17/2015 |
Voice Mail (VM) Services

All implementation and usage of Voice Mail systems must adhere to the following minimum acceptable standard. This standard represents acceptable usage and should not adversely affect technology costs. Adherence to this standard is expected regardless of the specific product installed.

Effective with issuance of this standard, any and all voice mail system must adhere to this standard. Any exception will be reviewed on a case by case basis.

VM equipment currently in place may continue to be used and maintained. When it has reached the end of its useful life and the cost of repair or upgrade exceeds its value, replacement should be considered.

The “press 0” option must be announced within the first 15 seconds of the recorded greeting.

Staff should also receive training on the proper way to leave greetings and messages in voice mail.

All Agency Telephone Coordinators will be trained on proper installation and configuration of these systems. This training can be coordinated through the COT’s Telecommunication Branch.

Please see the suggested “Best Practice” document at "https://cgp.ky.gov/sites/COT PUBDOCS/Standards/VoiceMailBestPractice.pdf"

Approved products are:
- Avaya
- Octel

These systems are currently bundled with both Voice Mail and Auto Attendant.

For best results, the Voice Mail product must be compatible with the currently installed voice system.

When it is determined that Voice Mail is required, configuration and consulting assistance may be obtained from COT by submitting a request to the
Commonwealthservicedesk@ky.gov or call 502-564-7576

Approved Products

- Avaya
- Octel

Effective: 3/1/2001
Revised: 11/25/2015
Reviewed: 11/25/2015
**EAS Code**: 7415  
**EAS Category**: Enterprise & Desktop Voice Services  

<table>
<thead>
<tr>
<th>Standard Features</th>
<th>KITS Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard features for all office workers entitled to a phone:</td>
<td>I01.003.302</td>
<td>Platform &gt; Communications Hardware &gt; Telephony Handset</td>
<td>Approved products are:</td>
<td>Effective: 7/1/2000</td>
</tr>
<tr>
<td>• Re-dial</td>
<td></td>
<td></td>
<td>• Avaya</td>
<td>Revised: 2/16/2011</td>
</tr>
<tr>
<td>• Analog single-line Phone</td>
<td></td>
<td></td>
<td>• Tadiran</td>
<td>Reviewed: 6/17/2015</td>
</tr>
<tr>
<td>• Hold</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Individual extension/number</td>
<td></td>
<td>A telephony handset is a device the user holds to the ear to hear the audio sound, usually containing the phone’s microphone.</td>
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<td></td>
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<tr>
<td>• Volume control</td>
<td></td>
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<td></td>
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<tr>
<td>• Call Transfer</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>• Touch Tone (where available)</td>
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<tr>
<td>• Standardized color-Black</td>
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<tr>
<td>• Accessibility to Voice Mail</td>
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<tr>
<td>• Simple documented instructions on how to use features</td>
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<tr>
<td>Available features if needed for ADA compliance:</td>
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<tr>
<td>• Digital, Programmable Display Phone</td>
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<tr>
<td>• Caller ID (where available and policy allows)</td>
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<tr>
<td>• Intercom calling</td>
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<tr>
<td>• Call Forwarding</td>
<td></td>
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<tr>
<td>• Availability of ADA compliant instruments where needed</td>
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<tr>
<td>• Multi-line</td>
<td></td>
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<tr>
<td>• Speaker Phone</td>
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<tr>
<td>• Call Pick-up</td>
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<tr>
<td>• Call Parking</td>
<td></td>
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<td></td>
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<tr>
<td>• Headsets</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>• Remote access to voice mail</td>
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<tr>
<td>• Waiting voice mail notification through a stutter dial tone or flashing light.</td>
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<tr>
<td>Additional features available to operators/help desk/call center attendants:</td>
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<tr>
<td>• Headsets</td>
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<tr>
<td>• Direct Station selection (multi-button instrument)</td>
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<tr>
<td>• Busy Display</td>
<td></td>
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<td></td>
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<tr>
<td>• Call Management Tools</td>
<td></td>
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<tr>
<td>Standard enterprise features available for all offices:</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>• 800/888 services (part of KIH)</td>
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<tr>
<td>• 900 services</td>
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<tr>
<td>• 911 services (NENA guidelines prevail)</td>
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<tr>
<td>• Access and account codes</td>
<td></td>
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<tr>
<td>• ACD</td>
<td></td>
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<tr>
<td>• Auto Attendant</td>
<td></td>
<td></td>
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<tr>
<td>• Lobby and common areas (Local and 800 calls only)</td>
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<tr>
<td>• Elevators (controlled by the elevator company)</td>
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<tr>
<td>• Conference rooms (full access except 900 services &amp; International calling)</td>
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<tr>
<td>• Conference speaker phones</td>
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</tr>
</tbody>
</table>
7415

- Common labels on all phone buttons
- Music on hold (MUZAC or recorded announcements such as what the agency offers, business hours etc.)
- Single number to call for service 502-564-7576 for moves adds or changes

Long distance (LD) use is restricted to government business (employees should use personal calling cards or personal cell phones).

Please see the suggested "Best Practice" document at "https://cgp.ky.gov/sites/COTPUBDOCS/Standards/EnterpriseDesktopVoiceServicesBestPractice.pdf"

7/1/2000

7420

Automated Attendant Systems

All implementation and usage of Automated Attendant systems must adhere to the following, minimum acceptable standard. This standard represents acceptable usage and should not adversely affect technology costs. Adherence to this standard is expected regardless of specific products installed.

- Adherence to all ADA requirements will be required for the use of special devices such as the TTY/TDD.
- All Agency Telephone Coordinators will be trained on proper installation and configuration of these systems. This training can be coordinated through the COT’s Telecommunication Branch.

See the suggested "Best Practice" document at "https://cgp.ky.gov/sites/COTPUBDOCS/Standards/AutoAttendantSystemsBestPractice.pdf".

Approved products are:
- Avaya
- Octel

These systems are currently bundled with both Voice Mail and Auto Attendant. For best results, the Voice Mail product must be compatible with the currently installed voice system. When it is determined that an Automated Attendant is required, configuration and consulting assistance may be obtained from COT by email the Commonwealthservicedesk@ky.gov or calling 502-564-7576

3/1/2001

Friday, October 23, 2020
### 7425 Automated Call Distribution Systems (ACD)

All implementation and usage of an ACD system must adhere to the following, minimum acceptable standard. This standard represents acceptable usage and should not adversely affect technology costs. Adherence to this standard is expected regardless of specific products installed.

- Equipment currently in place can continue to be used and maintained. When it has reached the end of its useful life and the cost of repair or upgrade exceeds its value, replacement should be considered.
- An ACD should only be placed upon incoming customer lines. These lines frequently come into a call center or help desk environment.
- If the ACD is used in conjunction with an Automated Attendant, all standards for that product must also be followed.

See the suggested "Best Practice" document at "https://cgp.ky.gov/sites/COTPUBDOCS/Standards/AutomatedCallDistributionSystemsBestPractice.pdf"

**Approved Products:**
- Avaya: Contact Center 6.0 (CC6) or higher
- Tadiran: Coral Call Center Jet

<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>7425</td>
<td>EAS</td>
<td></td>
<td>A02.030.KY002</td>
<td>Application Components &gt; Unified Communications and Collaboration &gt; Automated Call Distribution Systems (ACD)</td>
<td>Automated call distribution system, is a device or system that distributes incoming calls to a specific group of terminals or agents based on customer need, type, and agent skill set. It is often part of a computer telephony integration (CTI) system.</td>
<td>Approved products are: • Avaya: Contact Center 6.0 (CC6) or higher • Tadiran: Coral Call Center Jet</td>
</tr>
</tbody>
</table>

### 7430 Interactive Voice Response (IVR) Services

All implementation and usage of IVR systems must adhere to the following, minimum acceptable standard. This standard represents acceptable usage and should not adversely affect technology costs. Adherence to this standard is expected regardless of specific products installed.

- Equipment currently in place can continue to be used and maintained as long as it continues to be compatible with the switch platform. When it has reached the end of its useful life and the cost of repair or upgrade exceeds its value, replacement should be considered.
- Adherence to all accessibility and ADA requirements will be required for the use of special devices such as the TTY/TDD.
- If required, IVR systems must be programmed to interface with appropriate relational database management software product standards defined in KITS.

Configuration and consulting assistance must be obtained from COT's Division of Communication Services, Network Engineering Branch, for these systems.

See the suggested "Best Practice" document at "https://cgp.ky.gov/sites/COTPUBDOCS/Standards/IVR_BestPractice.pdf"

**Approved Products:**
- Anexsys
- GovConnect

<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>7430</td>
<td>EAS</td>
<td></td>
<td>A02.030.KY006</td>
<td>Application Components &gt; Unified Communications and Collaboration &gt; Interactive Voice Response (IVR) Services</td>
<td>Interactive voice response (IVR) is a technology that allows a computer to interact with humans through the use of voice and DTMF tones input via keypad.</td>
<td>There are two vendors approved to provide outsourced IVR consulting, applications development, integration, implementation and operational support services. These are: • Anexsys • GovConnect</td>
</tr>
</tbody>
</table>

**Effective:** 3/1/2001  
**Revised:** 6/17/2015  
**Reviewed:** 6/17/2015
<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
</table>
| 7435     | Computer and Telephone Integration (CTI) Systems | All implementation and usage of CTI systems must adhere to the following, minimum acceptable standard. This standard represents acceptable usage and should not adversely affect technology costs. Adherence to this standard is expected regardless of specific products installed.  
- Equipment currently in place can continue to be used and maintained. When it has reached the end of its useful life and the cost of repair or upgrade exceeds its value, replacement should be considered.  
- Some CTI applications can be very proprietary, requiring specialized equipment and telephones. These systems must be avoided in favor of "open" systems and architectures that can function with Web interfaces and other newer technologies that may become available.  
- CTI systems must be compliant with existing database standards as defined in the Commonwealth of Kentucky IT Enterprise Architecture and Standards documents.  
- Sensitivity and security need to be considered when phrasing the questions and gathering the data during one of these sessions. The data collected and stored in a database must adhere to existing security and privacy standards adopted by the Commonwealth. (Reference Web site: Chief Information Security Officer - Services)  
- When these systems are used to conduct e-Business by buying products, authorizing payments, etc., care should be taken as it relates to security and privacy issues. (Reference standard 5515 "Secure Transport".)  
- Adherence to all ADA requirements will be required for the use of special devices such as the TTY/TDD. | I01.005.KYO 01 | Platform > Virtualization > Computer and Telephone Integration (CTI) Systems | Computer and Telephone Integration (CTI) Systems allow interactions on a telephone and a computer to be integrated or coordinated. | Approved products are:  
- Alcatel-Lucent  
- Avaya | Effective: 3/1/2001  
Revised: 6/17/2015  
Reviewed: 6/17/2015 |
<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440</td>
<td>VoIP</td>
<td></td>
<td></td>
<td>VoIP must be delivered in a secure environment. Category 5 Cabling infrastructure is the minimum requirement. The agencies network switches and data circuitry must be able to accommodate the VoIP application. POE must be available. The VoIP solution must be able to interface with all applications in the related categories. See VoIP IT Standard General Requirements document at &quot;<a href="https://cgp.ky.gov/sites/COTPUBDOCS/Standards/VOIP_GeneralRequirements.pdf">https://cgp.ky.gov/sites/COTPUBDOCS/Standards/VOIP_GeneralRequirements.pdf</a>&quot; for: • Switch Acceptance • Network Event Analysis</td>
<td>I02.004.401 Network &gt; Transmission Type &gt; Voice over IP (VoIP)</td>
<td>Voice over IP (VoIP, or Voice over Internet Protocol) commonly refers to the communication protocols, technologies, methodologies, and transmission techniques involved in the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet. Other terms commonly associated with VoIP are IP telephony, Internet telephony, Voice over Broadband (VoBB), broadband telephony, IP communications, and broadband phone. Internet telephony refers to communications services — voice, fax, SMS, and/or voice-messaging applications — that are transported via the Internet, rather than the Public Switched Telephone Network (PSTN). The steps involved in originating a VoIP telephone call are signaling and media channel setup, digitization of the analog voice signal, encoding, packetization, and transmission as Internet Protocol (IP) packets over a packet-switched network. On the receiving side, similar steps (usually in the reverse order) such as reception of the IP packets, decoding of the packets and digital-to-analog conversion reproduce the original voice stream. Even though IP Telephony and VoIP are terms that are used interchangeably, they are actually different; IP telephony has to do with digital telephony systems that use IP protocols for voice communication, while VoIP is actually a subset of IP Telephony. VoIP is a technology used by IP telephony as a means of transporting phone calls.</td>
</tr>
<tr>
<td>EAS Code</td>
<td>EAS Category</td>
<td>Standard</td>
<td>KITS Category</td>
<td>KITS Domain &gt; Area &gt; Category</td>
<td>KITS Description</td>
<td>Approved Products</td>
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<tr>
<td>7445</td>
<td>VoIP softphone</td>
<td>VoIP must be delivered in a secure environment. The agencies network must be able to accommodate the VoIP application. The VoIP solution must be able to interface with all applications in the related categories. The softphone is a software application loaded on a desktop or laptop computer that enables the employee to utilize the computer keyboard, microphone, and speakers to make and receive calls. Operation is dependent on version of computer hardware/software.</td>
<td>A02.030.363</td>
<td>Application Components &gt; Unified Communications and Collaboration &gt; Instant Messaging</td>
<td>Software that supports text, voice and/or video communications between two or more users. Approved products are: • Avaya i2050</td>
<td></td>
</tr>
</tbody>
</table>

<p>| 7450     | Desktop Unified Messaging / Faxing | Desktop messaging will be available on employee’s desktop computer with the correct version of computer operating software and correct version of Microsoft Outlook. Manufacturer specifications will need to be adhered to in compliance with approved standards for operating systems and email. | A02.030.363 | Application Components &gt; Unified Communications and Collaboration &gt; Instant Messaging | Software that supports text, voice and/or video communications between two or more users. Approved products are: • Avaya | | Effective: 4/15/2009 Revised: 2/16/2011 Reviewed: 6/17/2015 |</p>
<table>
<thead>
<tr>
<th>EAS Code</th>
<th>EAS Category</th>
<th>Standard</th>
<th>KITS Category</th>
<th>KITS Domain &gt; Area &gt; Category</th>
<th>KITS Description</th>
<th>Approved Products</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>7560</td>
<td>Enterprise Directory Services</td>
<td>Single primary forest multiple domain architecture with cabinets as domains or organizational units (OU) and agencies designated as organizational units (OU). Requests for separate Cabinet Level forests are required. • Enabled for Lightweight Directory Access Protocol (LDAP); LDAP version 2 and LDAP version 3. • IP based Domain Naming System (see Category 4005). • Support for X.400 messaging protocol. • Compatible with Enterprise Standards product(s) in Category 2600 - Electronic Mail. • Compatible with Enterprise Standards product(s) in Category 3300 - Router and Category 5700 - Firewall. • Multiple platform server support: Approved Windows products in Enterprise Standards Category 2110 – Operating System Server. • Multiple desktop client operating systems support Windows products in Category 2100 – Operating System (O/S) – Desktop and Laptop/Notebook. • Active Directory Federated Services - WSFED\SAML 2.0 \OATH ADFS 4.0 - Windows Server 2016</td>
<td>KITS 029.340</td>
<td>Application Components &gt; Security Controls &gt; Authentication and Authorization</td>
<td>Software that supports obtaining information about parties attempting to log on to a system or application for security purposes and the validation of those users. Approved products are: • Microsoft Active Directory</td>
<td>Effective: 2/1/2000</td>
<td>Revised: 10/16/2020</td>
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<tr>
<td>Code</td>
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<tr>
<td>B10.813.326</td>
<td>IT System Development / Integration Support includes the software services enabling elements of distributed business applications to interoperate and the software development necessary to facilitate such integration. These elements can share function, content, and communications across heterogeneous computing environments.</td>
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**Application Development Methodology and Software**

**Structured Analysis & Design - Commonwealth Office of Technology's Systems Development Life Cycle (SDLC) Methodology (COT-140)**

**RUP: Rational Unified Processing: Implementing Features from RUP AND UML BASED design and analysis**

**OOAD: Object Oriented Analysis and Design**

**Design/Analysis/Data Modeling:**
- Design Tools:
  - Microsoft - Excel
  - Microsoft - Visio
  - Microsoft - Word
  - Rational Software Architect
- Data Modeling:
  - CA - ERwin Data Modeler Analysis/Design/Modeling Library:
    - Docushare *Not for new installations.
    - Microsoft Visual SourceSafe *Not for new installations. Mainstream support slated to end 7/10/2012; Extended Support slated to end 7/11/2017
  - Microsoft Team Foundation Server
- Design Patterns:
  - GoF (Gang of Four) Patterns Extensibility Frameworks
- Developer Productivity Tool:
  - ReSharper - Visual Studio Extension
  - StoriesOnBoard - Story mapping tool for agile software projects
  - Axure RP - For creating UI mockup
  - Balsamiq - UI Wireframing tool

**Effective:** 7/1/1997

**Revised:** 4/16/2020

**Reviewed:** 2/8/2019
<table>
<thead>
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<th>KITS Description</th>
<th>Approved Products</th>
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<tbody>
<tr>
<td>8200</td>
<td>Application Development Platform</td>
<td></td>
<td></td>
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<td></td>
<td>Software that provides comprehensive facilities to computer programmers for software development.</td>
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</table>

The Commonwealth of Kentucky has adopted a standard which mandates that every state agency developing or purchasing new departmental or enterprise applications must utilize one of the six application development platforms described below. Four of the platforms address legacy and traditional applications, while the final two platforms address applications intended for wireless and mobile platforms.

Applications that will be accessed primarily via desktop or laptop computers must utilize one of the following five application development platforms, or a combination thereof.

1. Windows DNA/COM+ Platform (not for new installations) (Distributed interNet Applications Architecture) Microsoft combined its Component Object Model + (COM+) Technologies into a single overarching platform called Windows DNA. The platform provides an overall architecture that includes Microsoft’s formerly separate ActiveX, COM/DCOM, and other Microsoft component technologies. Classic ASP Applications Using IIS 5.0 below.

2. Microsoft .NET Platform - the most recent topology of applications prescribed by Microsoft and implemented in most Microsoft development tools and runtime middleware. .NET includes the .NET Framework, a runtime multi-language application platform, and COM+, a transaction integrity extension to the Framework. .NET supports multiple programming models, including XML Web services, WebForms, WinForms and others:

   a. Biztalk
   b. IBM z/OS Platform (the z/OS and earlier MVS platforms were characterized by applications written in COBOL, or Telon, executing under one of the following environments, while possibly accessing VSAM, IMS/DB or DB2 for data access)

   a. Batch Execution Environment – This environment is characterized by executing under control of JES (Job Entry Subsystem) with JCL (Job Control Language). These jobs are usually scheduled with CA-Scheduler. Programs execute as steps within these jobs and are developed with various languages (including Enterprise COBOL, HASM, SAS, etc.) that usually run under LE (Language Environment).

   b. IMS Subsystem – The IMS sub-system is a transaction monitor that executes programs as transaction within specified IMS transaction regions. Programs execute as transactions or subprograms and are developed with various languages (including Enterprise COBOL, HASM, etc.) that run under LE (Language Environment). Development in this environment is deprecated.

   c. CICS Subsystem – The CICS subsystem is a transaction monitor that executes programs as transactions. Programs execute as transactions or

For the .NET development environment:

- .NET Framework 4.8
- .NET Framework 4.7.2
- .NET Framework 4.7.1
- .NET Framework 4.6.1

** .NET frameworks 4, 4.5, and 4.5.1 are not supported by Microsoft after Jan 12, 2016. So these are not permitted to be used **

Comprehensive development suite for the .NET development environment:

- Telerik DevCraft DevTools
- GhostDoc Pro - Visual Studio Extension for code documentation
- Infragistics Controls
- Hibernate - object-relational mapper for the .NET framework
- LinqConnect - ORM solution
- WiX (Windows Installer XML) Toolset (v3.10 and above)
- Zxing.NET (Zebra Crossing) - library which supports decoding and generating of barcodes
- Node.js
- PM2 Process Manager
- Backbone.js
- AngularJS
- Microsoft Visual Studio .NET, including:
  - Professional 2010, 2008, 2005, & 2003*

For the z/OS, UNIX, & J2EE environments:

- Eclipse
- Hiperstation
- Interactive Productivity Services Facility (ISPFC)
- Rational Application Developer
- Rational Developer for z
- Rational Software Architect for WebSphere Software
- Rational Team Concert
- Rational UrbanCode
- Syncsort

** 8200 Application Development Platform**

A02.022.240 Application Components > Development Environment and Tools > Integrated Development Environment

Product Name: Microsoft Visual Studio 2010

Windows DNA/COM+ Platform:

- Distributed interNet Applications Architecture (DNA)
- Version 5.0
- ActiveX, COM, DCOM

Microsoft .NET Platform:

- .NET Framework
- Windows DNA

IBM z/OS Platform:

- Batch Execution Environment
- IMS Subsystem
- IMS/DB, DB2
- COBOL, Telon

Microsoft .NET Framework 4.8:

- Windows DNA
- ActiveX, COM, DCOM
- Classic ASP Applications

Microsoft .NET Framework 4.7.2:

- Windows DNA
- ActiveX, COM, DCOM
- Classic ASP Applications

Microsoft .NET Framework 4.7.1:

- Windows DNA
- ActiveX, COM, DCOM
- Classic ASP Applications

Microsoft .NET Framework 4.6.1:

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- Rational Team Concert
- Rational UrbanCode
- Syncsort

Effective: 2/18/2009
Revised: 8/3/2020
Reviewed: 3/3/2020
subprograms and are developed with various languages (including Enterprise COBOL, HASM, etc.) that run under LE (Language Environment). Development in this environment is deprecated.

d. IBM Message Broker platform – This is the IBM Message Broker platform that runs with IBM WebSphere Application Server. This serves as an Enterprise Service Bus and acts as a broker for application integration. Software is developed using IBM Message Broker Toolkit within the Rational Application Developer Suite.

4. UNIX Platform (the traditional UNIX platform is characterized by applications written in C or C++, executing on SUN or IBM UNIX servers, while accessing data stored in Oracle databases)

5. Java 2 Platform, Enterprise Edition (Java EE) – a Sun Microsystems-sponsored architecture specification that prescribes application architecture for Java-based business applications. Java EE is implemented by multiple vendors and includes a J EE application server combined with Java EE message-oriented middleware. Programming models of Java EE include Java Server Pages, servlets, Session EJB and entity JavaBeans.

State agencies developing or purchasing new, wireless departmental or enterprise applications that will be accessed primarily via wireless phones and PDAs must utilize one of the following two application development platforms:

1. Microsoft .NET Compact Framework - provides tools for developing mobile applications on Pocket PC devices and the Microsoft Smartphone.

2. Java 2 Platform, Micro Edition (J2ME) - a version of Java that is defined by Sun Microsystems for use in devices such as mobile phones. J2ME is part of a set of related Java technologies that includes definitions of profiles and configurations for application developers.
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<th>EAS Code</th>
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<th>Standard</th>
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<td>2/18/2009</td>
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- SQL Server Management Studio
- Redgate SQL Toolbelt
- Redgate SQL Prompt Pro
- Progress DataDirect Shadow (DB2)
- Query Management Facility (DB2)
- SPUFI (DB2)
- Squirrel (DB2)
- TOAD (Oracle)
- VSAM Assist (VSAM)
- DBF Commander Professional (FoxPro)
- dbForge SQL Complete

Reporting Tools
- See 2310 – Business Intelligence Software
- IBM SPSS
- Report Distribution System (RDS)

Developer Support Tools:
- EditPlus
- Gimp (graphics editor)
- IBM Redbooks
- Librarian
- Microsoft Developer Network
- Microsoft TechNet
- Microsoft Visual SourceSafe Classic for (Microsoft Legacy Applications) CA-Librarian (z/OS)
- Microsoft Windows Software Development Kit
- Notepad++
- UltraEdit
- Notepad XML
- Xsd2code++
- PCO (Production Cutover)
- Rational ClearCase (Source Control)
- Junit
- Log4J
- Textpad
- Toad-for-Oracle
- Redgate Deployment Suite for Oracle

Agile software development tools:
- JIRA
- Build, Test, Deployment Automation tools:
  - Jenkins Automation Server
  - Apache Maven (Approved for DOR's DORIS project use)
  - Apache ANT - version 1.10.8 or above should be used
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**Rapid Application Development:**
- Oracle Application Express (APEX) - a low-code development platform using which developers can build (using SQL & PL/SQL) scalable, secure enterprise apps, with best features, that can be deployed in Oracle database
- Other Tools:
  - Abend-Aid (Error Analysis)
  - CA Platinum
  - Compuware File-AID (z/ps)
  - Compuware Xpediter (z/ps debugging)
  - CSLA (.net Framework)
  - DataFlux
  - DB2 for z/ps (Database Manager)
  - DCD III (COBOL Cross Ref/Documenter)
  - Dollar Universe
  - JAMS Primary Scheduler and JAMS Agent (Approved for DORIS project use)
  - DynamicPDF Generator.NET
  - Aspose.Pdf for .NET API
  - Ghostscript - for converting and printing PDF files
  - Dynamsoft Dynamic Web TWAIN SDK
  - File-AID
  - FileMaker Pro
  - FoCOP (code walkthrough Microsoft)
  - IBM QMF/SPUFI
  - InSync
  - JCL Check (JCL Verification/Standardization)
  - Metalogix StoragePoint
  - NUnit (unit Test Microsoft)
  - PHIN MS
  - Program Analyzer (COBOL Source Analysis)
  - Qbase
  - Query Management Facility (QMF)
  - Rational Rhapsody
  - Resource Access and Control Facility (RACF) (System Security)
  - Spool Display Sysout Facility (SDSF) (Job Queue Access)
  - SPUFI
  - Strobe/Strobe (Z/OS Profiler)
  - ULS Viewer
  - VSAM Assist
  - AgilePoint NX
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- ASP.NET (C# or VB)
- Jquery
- Microsoft Silverlight SDK
- Karamasoft Silverlight Spell Checker
- Bouncy Castle cryptographic APIs for Java and C#
- ELMAH (Error Logging Modules and Handlers) - debugging tool for ASP.NET web services
- Git Hub (Bash/GUI) - distributed version-control platform
- Newtonsoft.Json - JSON framework for .NET
- Keyoti SearchUnit - Search Engine for ASP.NET web apps
- Agent Ransack
- Google Maps API
- TensorFlow - library for machine learning (Version 2.0 or newer is approved)
- Keras - Neural network library

2/18/2009

Friday, October 23, 2020
<table>
<thead>
<tr>
<th>Code</th>
<th>Application Development Quality Management Software</th>
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</table>
| 8300  | Application Development Quality Management Software tools provide features to assist in testing activities such as: load/stress testing, functional/regression testing, requirements traceability and security assessments. Need a limited product set for: economies-of-scale with respect to procurement, skills transferability required by a mobile workforce, data interchange between state government agencies, skills requirements for a competency team development environment. Approved Standards:  
  - International Organization for Standardization (ISO)  
  - Compliance with Section 502, WCAG 1.0, WCAG 2.0, CLF, XAG Standards. Technical and Implementation Considerations: The advent of service-oriented architecture (SOA), increasing complexity and more regulations are renewing the focus on raising quality efforts, through more-effective approaches. This increases the need for solutions that are well-integrated across the application life cycle, not only during the development cycle but also into production. Emerging Trends and Architectural Directions: Requirements for testing products have changed from testing the product in isolation to integrating the testing with the rest of the product’s life cycle, and to support collaboration across the QA team and among the entire project team. Therefore, IT organizations should focus on testing workflow and quality management issues across the organization when selecting a set of tools. |
| A02.022.245 | Application Components > Development Environment and Tools > Validation Tools Software tools that check web pages for accessibility and syntactical correctness of code. |

**Approved Standards:**
- International Organization for Standardization (ISO)
- Compliance with Section 502, WCAG 1.0, WCAG 2.0, CLF, XAG Standards

**Technical and Implementation Considerations:**
The advent of service-oriented architecture (SOA), increasing complexity and more regulations are renewing the focus on raising quality efforts, through more-effective approaches. This increases the need for solutions that are well-integrated across the application life cycle, not only during the development cycle but also into production.

**Emerging Trends and Architectural Directions:**
Requirements for testing products have changed from testing the product in isolation to integrating the testing with the rest of the product’s life cycle, and to support collaboration across the QA team and among the entire project team. Therefore, IT organizations should focus on testing workflow and quality management issues across the organization when selecting a set of tools.

**Approved Products:**
- Automated Load/Stress Testing:
  - Mercury LoadRunner (Hewlett Packard)
- Requirements Management/Traceability:
  - HP Quality Center ver 12.0
  - Defects Tracking:
    - Mercury Quality Center (Hewlett Packard)
  - Seapine Software TestTrack Professional
- Team Foundation Suite
  - Visual Studio Team Suite
- Accessibility Validation and Repair:
  - HiSoftware AccRepair
  - HiSoftware AccVerify
  - HiSoftware Compliance Sheriff
- Application Security Assessments:
  - Hewlett Packard WebInspect
- Static Application Security Testing (SAST) tool:
  - Micro Focus Fortify
- REST and SOAP Testing:
  - SoapUI
- Web debugging:
  - Fiddler
- Browser Testing:
  - Multi Browser Viewer ver 1.1.0.0 by TWD Solutions Pte. Ltd.
  - Website link checking:
    - Xenu’s Link Sleuth
- Tool to manage software code quality
  - SonarQube
- Email Testing tool:
  - MailHog

**Effective:** 2/18/2009
**Revised:** 9/2/2020
**Reviewed:** 7/19/2017
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<tr>
<td>9994</td>
<td>Vulnerability Scanning and Detection</td>
<td>A01.011.KY01</td>
<td>System &gt; Security Management &gt; Vulnerability Scanning and Detection</td>
<td>Software that scans for vulnerabilities and detects configuration issues</td>
<td>• AppDetective • AppSpider Pro</td>
<td>Effective: 10/19/2015 Revised: 3/20/2017 Reviewed: 3/20/2017</td>
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<tr>
<td>9995</td>
<td>Modeling</td>
<td>A02.025.285</td>
<td>Application Components &gt; Knowledge and Discovery Management &gt; Modeling</td>
<td>Software to develop descriptions that adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.</td>
<td>• IBM Rational System Architect • Orbus iServer</td>
<td>Effective: 8/21/2015 Revised: 10/27/2015 Reviewed: 10/27/2015</td>
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<td>9996</td>
<td>Risk Management</td>
<td>A02.027.322</td>
<td>Application Components &gt; Process Automation and Management &gt; Risk Management</td>
<td>Software that allows planners to explicitly address uncertainty by identifying and generating metrics, setting parameters, prioritizing, and developing mitigations, and tracking risk.</td>
<td>• TeamMate AM - Audit Management • RSA Archer Policy Management • RSA Archer Risk Management • RSA Archer Compliance Management • eRIMS2 - Risk Insurance Management System</td>
<td>Effective: 7/23/2015 Revised: 6/15/2017 Reviewed: 6/15/2017</td>
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<tr>
<td>9997</td>
<td>Low to Medium (1500/4000 pages per day max) Volume Scanners – Digital Imaging</td>
<td>I01.004.402</td>
<td>Platform &gt; Peripheral &gt; Computer Input Device</td>
<td>Inputs are the signals or data received by the system, and outputs are the signals or data sent from it. For the purposes of the IRM, computer input devices are those that provide data to the machine/application combination for further processing or for manipulation by users through the human-computer interface devices.</td>
<td>• Xerox MPS <a href="http://www.ky-mps.com">www.ky-mps.com</a> • FUJITSU Document Scanner fi-7160 - For use at County Clerk Offices for Motor Vehicle Registration. • FUJITSU ScanSnap ix1500 Document Scanner. • FUJITSU fi Series Document Scanners - For use with OnBase</td>
<td>Effective: 6/17/2015 Revised: 12/5/2019 Reviewed: 6/10/2019</td>
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| 10005    | Project      | Management Framework | B10.813.538 | General Government > Support delivery of state services > Program / Project Management | Defines the set of capabilities to manage and control a particular effort of an organization. This includes intra-agency work. |  | Effective: 9/15/2003  
Revised: 11/21/2018  
Reviewed: 11/21/2018 |
| 10100    | Project      | Management Software | A02.027.319 | Application Components > Process Automation and Management > Project Management | Software that provides capabilities for cost estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration, communication, quality management and documentation or administration systems, which are used to deal with the complexity of large projects. | • Microsoft Project  
• Microsoft Project Online  
• Open Workbench |  | Effective: 9/15/2003  
Revised: 7/5/2018  
Reviewed: 7/5/2018 |
| 10200    | Project      | Management Information System | A02.027.319 | Application Components > Process Automation and Management > Project Management | Software that provides capabilities for cost estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration, communication, quality management and documentation or administration systems, which are used to deal with the complexity of large projects. | • Clarity  
• Microsoft Project Server  
• Microsoft Project Online |  | Effective: 9/15/2003  
Revised: 7/5/2018  
Reviewed: 7/5/2018 |