

# Technology Standards Directory



**City of Portland, Oregon  
Bureau of Technology Services**

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# Introduction

## Standards

Standards provide a consistent set of tools for the development and efficient maintenance of the City of Portland's Information Technology infrastructure.

A well-defined set of standards can reduce support costs and provide economies of scale while at the same time allowing the needed level of flexibility. Support costs can be minimized by setting standards for hardware, software, networks and backup technologies. Training costs can be reduced substantially by standardizing on certain applications that will have widespread use. Security risks can be reduced by ensuring products remain supported by the manufacturer for security related patches and fixes.

Technology Standards are maintained by the BTS Infrastructure Board with input from content experts in other BTS divisions and City bureaus. These standards reflect industry best practices as applicable to the requirements of the City of Portland. Minimum configurations reflect the hardware requirements necessary to easily use the applications included in the standard productivity suite. Bureaus may exceed the minimum configuration as specific work requirements dictate upon BTS review.

Standards related to certain Information Security services and capabilities are not publicly listed as a precaution against malicious use of, or exploitations against, City systems and networks.

These standards shall be posted on the [City of Portland's web site](#), on the [BTS Technology Standards page](#), updated as necessary and reviewed in accordance with the cycles established herein.

## Security

In addition to providing a reliable and manageable set of tools, software standards meet base protections for City data. Each technology presents opportunities to provide services, as well as introducing risks, based on those services. City technologies must meet or align with BTS Administrative Rules and the National Institute of Standards and Technology (NIST) federal best practice requirements. The City is accountable for several federal standards depending on in-scope systems and data. Examples include: Protected Healthcare Information (PHI) as part of HIPAA, Cardholder data defined by the Payment Cardholder Institute (PCI), Criminal Justice data in the Criminal Justice Information System (CJIS), and IRS tax data as part of Federal Tax Information (FTI). Applicable laws for Personally Identifiable Information (PII), data retention, and data disclosure also introduce State-level requirements for our technology selection use and the protection of confidential information.

When leveraging a technology, there are also requirements in how we use the tools and protect data. Not following security requirements increases City cyber and liability risk and can cause significant monetary loss and legal issues. An example of legal exposure is the use of unlicensed software. These requirements must be understood and managed by the Bureaus utilizing each technology. Compliance and legal examples above are not inclusive of all requirements. In addition, all City workers have a responsibility to keep the City network, assets

and data safe. City software standards meet a common, understandable base level of security controls.

## Exception to Standards

All technology requests that do not conform to the technology standards established in this document will require approval as an exception. BTS customers must work with their [BTS Technology Business Consultant](#) to submit an exception request. Business Consultant involvement is important to assist the customer in considering standard alternatives.

The exception review process consists of validation of compatibility with, and review of technical risks to, the existing City standard infrastructure. The process may also recommend evaluation of existing products already in use by the City. Additionally, agreement documents such as Terms of Service, Terms and Conditions, End-user License Agreements, Privacy Policy, and associated documents are also reviewed for technical, legal, and business risk. Exception requests are reviewed by the BTS Enterprise Architecture team in coordination with the City Attorney's Office, Information Security, and other BTS teams as necessary.

By City Code 3.15.090(A), the Chief Technology Officer of the City may grant exemptions to Standards and the exception process. BTS Administrative Rule 1.01 specifically exempts Water Bureau and BES SCADA systems, and PBOT traffic management systems.

Products allowed via the exception process are generally not supported by BTS. BTS may bill for installation and configuration work on a Time and Materials basis. They require security reviews which may lead to additional security controls to fulfill the original intent within the standard. Utilizing standard technologies ensures easier and less expensive maintenance of City requirements. City Code requires review of software license and/or terms of service documents by the Attorney's Office prior to approval of the exception.

## Standard Classification

This document classifies Technology Standards as follows.

Classification	Description
<b>Standard</b>	This classification represents the current accepted technology for general installation within the City technology environment. Technologies in this classification are supported in the Enterprise and should be adopted at the earliest opportunity.
<b>Bureau</b>	This classification represents technology that has been adopted and approved for extensive use across a bureau. These technologies will typically be Bureau/Vendor supported (see <a href="#">Support Model</a> below)
<b>Allowed</b>	Not a standard, but allowed in the environment without an exception.
<b>Legacy</b>	This classification represents technologies that are legacy standards, previous releases or versions. These are typically outdated technologies that are approaching or at end of life, but are still in active use within the City's technology environment. These technologies will be eliminated from the environment through attrition or specific projects. New installation using a technology in this classification requires a clear business justification and may require an Exception.
<b>Exception Required</b>	Technology requests that do not conform to the Technology Standards established in the Standards Directory will require approval as an exception. Some are listed in this document for clarity.

**Note:** Definition as a standard does not guarantee that BTS is providing technical support (via rates, time and materials or best effort) for the technology unless specifically noted in the support model.

## Support Model

BTS has established five standardized support models:

Support Model	Description
<b>Full Support</b>	BTS fully supports the product including ordering, provisioning, installation, information security, configuration, troubleshooting, patching, de-installation and disposal.
<b>Vertical Apps Support</b>	BTS Vertical Applications team supports the product including installation, configuration, troubleshooting, patching (as requested by the customer bureau), bug fixes for in-house developed software, and disposal.
<b>Limited Support</b>	BTS supports the product including ordering, provisioning, installation, information security, de-installation and disposal. All other work is billable.
<b>Bureau / Vendor Support</b>	BTS does not support the product. Support is the responsibility of the customer bureau and/or the vendor. All work by BTS is billable with the exception of disposal.
<b>User Support</b>	BTS will order and/or provision the product and dispose of it only. All other support activity will be the responsibility of the user.

<b>BTS Support Model</b>	<b>Full Support</b>	<b>Vertical Apps Support</b>	<b>Limited Support</b>	<b>Bureau / Vendor Support</b>	<b>User Supported</b>
<b>Support Model Code (used in the tables)</b>	<b>Full</b>	<b>V.Apps</b>	<b>Limited</b>	<b>Bureau</b>	<b>User</b>
<b>Support Services</b>					
<b>Order / provision product</b> – Order the product. In the case of cellular equipment, perform the initial setup (provisioning) of the device.	BTS	No	BTS	BTS	BTS
<b>Install the product</b> (hardware and software) – Install the product on a server or workstation.	BTS	BTS	BTS	Bureau	User No
<b>Security Standards</b> – Evaluate, implement, and periodically review related security standards.	BTS	BTS	BTS	BTS	BTS
<b>Software Install Point</b> – Create a network location to house the software installation package.	BTS	BTS	Negotiated	Negotiated	No
<b>Configure features</b> of the product – Perform standard product configuration steps that are required.	BTS	BTS	Bureau	Bureau	User No
<b>De-install the product</b> – De-install the product, ensuring that remaining interfaces, security, configuration, etc. are intact.	BTS	Bureau	BTS	Bureau	User No
<b>Dispose of the product</b> – Dispose of the product according to approved disposal protocol.	BTS	BTS	BTS	BTS	BTS
<b>Troubleshoot problems</b> – Working with the customer and/or vendor as needed, resolve issues with the product working in the environment.	BTS	BTS	Bureau	Bureau	User No
<b>Track updates and patches</b> to the product – Periodically check for updates and patches, and alert customers about availability.	BTS	Bureau	Bureau	Bureau	User
<b>Facilitate testing of updates and patches</b> – Manage the testing process of updates and patches.	BTS	BTS	Bureau	Bureau	User
<b>Apply updates and patches</b> – Periodically package, distribute and/or implement updates and patches.	BTS	BTS	Bureau	Bureau	User
<b>Lifecycle Management</b> – Manage lifecycle upgrades to the product.	BTS	Bureau	Bureau	Bureau	User
<b>Fix bugs for in-house developed software</b> – BTS will track and fix SW bugs.	N/A	BTS	N/A	Bureau	N/A
<b>Develop software enhancements</b> for in-house SW – BTS will develop and implement new functionality as authorized and funded by the customer.	N/A	BTS	N/A	Bureau	N/A

**Key to Support Model table entries:**

<b>BTS</b>	BTS is responsible for the support service. The service is not billable.
<b>Bureau</b>	The Bureau is responsible or may opt for the support service. Discuss supplemental assistance needs and cost with a Technology Business Consultant.
<b>Negotiated</b>	The Bureau negotiates with BTS for the support service. The service is billable.
<b>No</b>	BTS does not provide the service.
<b>User</b>	BTS orders and provisions the item. All other support is the responsibility of the user.
<b>N/A</b>	Not Applicable

## Energy Efficiency

Energy efficiency is a criterion considered when selecting standards. As standards are selected, energy efficient products that meet the business needs and integrate with other established standards and infrastructure are selected when available.

### Energy Star®

“As available, the City shall procure products that meet or exceed Energy Star® criteria for energy efficiency.” ([City Code 5.33.080 G](#))

Energy Star® applicable products that are included in these Technology Standards shall meet the most current version of the Energy Star® program requirements in effect at the time the product is added to these Technology Standards. Those Bureaus that pursue and are granted an exception to these standards shall continue to seek Energy Star® qualified products.

### EPEAT

As available, for the following types of technology equipment, the City shall purchase EPEAT<sup>1</sup> products registered at the “Bronze” level or higher:

1. Desktop computers
2. Displays (Monitors) – under 60-inch diagonal
3. Laptop computers
4. Tablet computers
5. Servers
6. Mobile Phones
7. Printers
8. Scanners

Any products from the above list that are included in these Technology Standards shall meet the most current version of the EPEAT standard in effect at the time the product is added to these Technology Standards. Those Bureaus that pursue and are granted an exception to these standards shall continue to seek EPEAT compliant products.

Energy Efficiency certification has been added where the information is available. Certified products are indicated by the following icons next to the product name.



## BTS Standard Owner

Each defined standard has an assigned BTS Standard Owner. The owner is responsible for:

- evaluating the products supporting a standard
- monitoring for patches, updates and end-of-life (EOL) model changes
- bringing patch and update projects forward to the IB and BTS management for action and scheduling
- alerting IB to EOL model changes in order to update this standards document

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<sup>1</sup> For reference see <https://greenelectronicscouncil.org/epeat/epeat-overview/>.

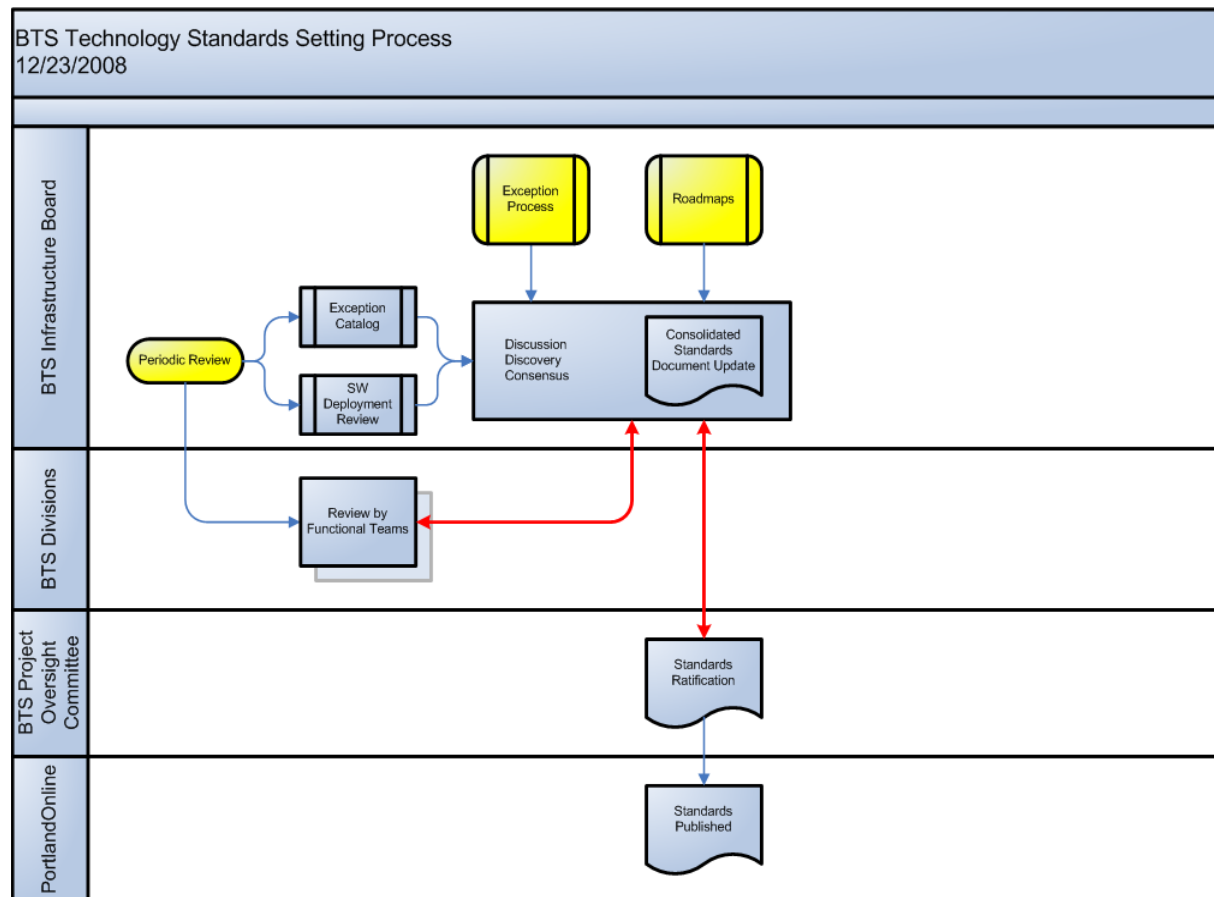
- working collaboratively within BTS to help establish important lifecycle dates and roadmap strategies.
- identifying when items need to be removed from the Legacy status.
- coordinating testing of products unless otherwise designated through a larger project.

The BTS Standard Owner is not necessarily the group within BTS that provides technical support for the standard.

## BTS Standards Setting Process

The following diagram illustrates the BTS standard setting and review process at a high level.

BTS will conduct an annual review of the standards in January/February to capture new releases of hardware and software during the Fall and holiday seasons. During the review, the Exception Catalog will be reviewed for any exceptions that should be included as standards; deployments of standard software will be reviewed; and standards that are prescribed from technology roadmaps will also be reviewed and incorporated as appropriate.



## **ADA Assistive Technologies**















Several products have been included for use as ADA assistive technologies. These products have been identified in the document with the [ADA] tag. These products are also listed under the ADA index entry.

BTS worked with BHR to develop the list. The products were identified through discussion with external agencies such as Oregon Commission for the Blind, and review of products currently in use within the City infrastructure. While not an exhaustive list, it represents products thought to be most commonly used.

By including these products in the BTS Standards Directory, the need to submit an exception is eliminated, thereby streamlining the processes for acquisition.

# Hardware Standards

## 1. Workstation Hardware

Sub-Category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
1.1. Desktop	 	Standard	Full	Support Center / Hardware Standards Panel
	Dell OptiPlex 7010, 7020, 7040, 7050, 7060, 7070	Legacy	Full	
	Apple iMac   <b>Note: Will not be approved as primary workstation. See the <a href="#">City of Portland Apple Computer Compliance</a> document for detailed information.</b>	Exception Required	See referenced document	Support Center
1.2. Monitor	Dell - Flat Panel LCD P1917S 19" standard screen   P2214H 22" widescreen   U2419H 24" widescreen   U2717D 27" widescreen   UP3017 30" widescreen  	Standard	Full	Support Center / Hardware Standards Panel
	Dell P190S 19" standard screen P1913S 19" standard screen P1914S 19" standard screen P2210 22" widescreen P2212H 22" widescreen U2410 24" widescreen U2412M 24" widescreen U2415 24" widescreen U3014 30" widescreen	Legacy	Full	Support Center / Hardware Standards Panel
1.3. Keyboard	USB, 104-key	Standard	Full	Support Center / Hardware Standards Panel
1.4. Mouse	USB, optical wheel	Standard	Full	Support Center / Hardware Standards Panel

Sub-Category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
1.5. <b>[ADA] Braille Display / Terminal</b>	Freedom Scientific (Focus Blue) HumanWare (Brailiant)	Allowed	Limited	Enterprise Architecture

## Workstation and Laptop Hardware Notes:


### Life Cycle Notes:

















- The planned lifecycle replacement (LCR) for desktop workstations and laptop computers is 5 years effective July 2013 through 2019. The LCR cycle will reduce to 4 years beginning in 2020.
- BTS does not recommend cascading workstations where a workstation that has been in use for its lifetime is moved to another desktop for continued use beyond the planned lifecycle. Any such request must be submitted as an exception request.
- LCD panel monitors have a longer life cycle are typically run until failure.

### Portland Building Expectations:




- For Portland Building Occupants, please note that there are restrictions on allowed monitors.
- Please submit questions and comments regarding the Portland Building via the [Project's TrackIT form](#).

## 2. Laptop Hardware

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
2.1. Laptop	 <b>Note: The Hardware Standards Panel classified the entire Dell 5000 series as standard This Directory highlights specific versions recommended for use.</b>	Standard	Full	Support Center Hardware Standards Panel
	Dell Latitude 5410, 5400, 5490, 5480, D6xx, E5440, E5450, E5470, E64xx, E65xx	Legacy	Full	Support Center Hardware Standards Panel

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	Apple Macbook    Note: Will not be approved as primary workstation. See the <a href="#">City of Portland Apple Computer Compliance</a> document for detailed information.	Exception Required	See referenced document	Support Center
PPB	Dell Latitude 5420, Dell Precision 3551 (includes LTE and SmartCard reader) 	Standard	Full	Support Center Hardware Standards Panel
	Dell Latitude 5400, 7490, 7480, E7450, E7470 	Legacy	Full	Support Center Hardware Standards Panel
2.2. Laptop – “Lite”	Dell Latitude 5310   Dell Latitude 5310 2-n-1	Standard	Full	Support Center Hardware Standards Panel
	Dell Latitude 5300, 5300 2-n-1, 7390, D4xx, 7280, E4200, E62xx, E7240, E7250, E7270	Legacy	Full	Support Center Hardware Standards Panel
2.3. Laptop – “Rugged”	GETAC B360  	Standard	Full	Support Center Hardware Standards Panel
	Dell Latitude E64xx XFR, 64xx ATG & XFR, D630 ATG, ATR & XFR GeTac B300	Legacy	Full	Support Center Hardware Standards Panel
PPB PF&R PBEM	GETAC V110 G4   GETAC S400   GETAC S410 G2   Panasonic Toughbook PDRC (dash mounted monitor and wired keyboard)	Standard	Full	Support Center Hardware Standards Panel
	Motorola MW520, Panasonic Toughbook (19,32, 53)	Legacy	Full	Support Center Hardware Standards Panel
2.4. Mobile Data Computer  PF&R	Panasonic Toughbook GETAC B300  	Standard	Full	Support Center Hardware Standards Panel
	Data 911 M6, M6 II, PM2, PM1, ETX-PM1, 19	Legacy	Full	Support Center Hardware Standards Panel

### 3. Tablet Hardware

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>3.1. iOS Based<sup>2</sup></b>	Apple iPad 12.9" Gen 3  , iPad Air Gen 4 (10.5")  , Mini 5  , with Verizon data plan	Standard	Full	Communications Telcom Engineering and Support
	Apple iPad 2, 3, 4, 6, 10.5", iPad Pro 11, iPad Pro 12.9" Gen 2, Mini, Mini 2, 3, 4 Air, Air 2, Air 3	Legacy	Limited	Communications Telcom Engineering and Support
<b>3.2. Windows 10</b>	Dell Latitude 7210	Standard	Full	Support Center Hardware Stds. Panel
	Microsoft Surface Pro 4 (Wi-Fi only)	Standard	Limited	Support Center Hardware Stds. Panel
	Dell Latitude 7200	Legacy	Limited	Support Center Hardware Stds. Panel



#### Tablet Hardware Notes:

- iPads may be purchased without a data plan, however BTS requires that both Wi-Fi and Cellular radios be purchased in the device. This configuration does not require an exception. If a data plan is added at a future date, it must be through cellular services managed by BTS.
- The End User License Agreement (EULA) for the Dictation feature of the iPad states that all dictation content is sent to Apple for processing to text. This content may be stored as audio files. Additionally, your first name and nickname, and similar information including relationship with you (e.g., "my dad") from your address book contents are also sent to Apple. This information is retained and used by Apple as part of the service and may be retained by Apple even if Dictation is returned to an "Off" setting. This content is subject to Oregon Public Records law and City record retention requirements. See State and City Rules Related to Public Recordkeeping Requirements (<https://www.portlandoregon.gov/archives/70031>) on the Auditor's PortlandOregon.gov website. **BTS STRONGLY ADVISES AGAINST USING THIS FEATURE. DICTATION MUST NOT BE USED AS A DATA ENTRY METHOD FOR CONFIDENTIAL OR SENSITIVE DATA.**
- iPads are provisioned from BTS with the Dictation feature turned Off.
- Tablets are not covered by life cycle replacement funding because of the expectation of a relatively short lifecycle.**

<sup>2</sup> Smartphone and Operating System Limited Support: Ordering, initial device provisioning, setup of synchronization with Exchange, Verizon data and voice service.

- Please see the document [Apple Device Support Dates](#) on [PortlandOregon.gov](#) for iPhone and iPad devices that are no longer able to receive iOS updates.

#### 4. Server Hardware

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
4.1. Windows based	Dell, PowerEdge R740, R940 	Standard	Full	Production Services / Server Support
	Dell PowerEdge R620, R630 R720, R730	Legacy	Full	Production Services / Server Support
4.2. Red Hat based	Dell PowerEdge R740, R940 	Standard	Full	Production Services / Server Support
	Dell PowerEdge R620, R630, R720, R730	Legacy	Full	Production Services / Server Support
4.3. AIX based	IBM p-Series / Power 9	Standard	Full	Production Services / Server Support
	IBM p-Series / Power 8	Legacy	Full	Production Services / Server Support

#### Server Hardware Notes:

- The planned lifecycle for server hardware is 5 years.

#### 5. Backup Appliance

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
5.1. Backup Appliance  PPB	Dell DP 4400	Standard	Full	Public Safety Technology

## 6. Data Center Infrastructure

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
6.1. Environmental Monitors	Raritan	Standard	Full	Production Services / Data Center
	APC	Legacy	Full	Production Services / Data Center
6.2. Infrastructure Management Software	Raritan Sunbird PowerIQ, DCIM Raritan Command Console (KVM) Raritan dcTrack	Standard	Full	Production Services / Data Center
	APC StruXureware	Legacy	Full	Production Services / Data Center
6.3. Rack Power Distribution Unit (PDU)	Raritan	Standard	Full	Production Services / Data Center
	APC	Legacy	Full	Production Services / Data Center
6.4. Remote Keyboard Video, Mouse (KVM)	Raritan KVM over IP	Standard	Full	Production Services / Data Center
6.5. Uninterruptible Power Supply (UPS)	APC	Standard	Full	Production Services / Data Center

## 7. Digital Signage

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
7.1. Player	BrightSign  Note: Player must be bundled with software to design the content. See <a href="#">Digital Signage Authoring</a> tools for adopted standards.	Standard	Full	Communications / Video Shop

## 8. Network Protocols

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
8.1. eMail	SMTP, TLS	Standard	Full	Communications / Network Engineering and Support
	Microsoft ActiveSync	Standard	Full	Production Services / Server Support
8.2. Line Negotiation Server	Auto / Auto	Standard	Full	Communications / Network Engineering and Support
8.3. Line Negotiation Workstations	Auto / Auto	Standard	Full	Communications / Network Engineering and Support
8.4. Monitoring	SNMP V2c, SNMP v3, VMI	Standard	Full	Communications / Network Engineering and Support
8.5. Power Over Ethernet (POE)	802.3af, 802.3at	Standard	Full	Communications / Network Engineering and Support
8.6. Routing	OSPF, BGP4	Standard	Full	Communications / Network Engineering and Support
8.7. Transport	TCP / IP (IPv4, IPv6), DWDM, SONET	Standard	Full	Communications / Network Engineering and Support
8.8. Wide Area Network (WAN)	TDM, ISDN, DSL, IEEE802.3, Licensed wireless, Verizon APN, LTE WAN, Metro Ethernet (MOE)	Standard	Full	Communications / Network Engineering and Support
8.9. Wi-Fi Radio	802.11ac 802.11n (2.4 GHz / 5 GHz)	Standard	Full	Communications / Network Engineering and Support
	802.11b/g	Legacy	Full	Communications / Network Engineering and Support

## 9. Network Connectivity

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>9.1. Cabling</b>	<p>Horizontal: UTP Cat 6, Cat 6a, Cat 7 Vertical: Fiber – Single or Multimode OM3 Patch: UTP Cat 6, Cat 6a, Cat 7, Fiber Copper patch cables should be hoodless.</p> <p>Office or Cubicle See additional notes in the <a href="#">Specifications section</a>.</p> <p>New construction: – two Cat 6A or better cables per cubicle. May be used for either voice or data as needed.</p> <p>Remodel – Will be evaluated case by case due to other constraints.</p>	Standard	Full	Communications / Network Engineering and Support
<b>9.2. Optical Network</b>	SONET (STS), DWDM (ITU-T, G.709 & G.975), Cisco 15454, 15310	Standard	Full	Communications / Network Engineering and Support

## 10. Network Routers

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>10.1. Router – Layer 3 Switch</b>	Cisco ME-3400eg, ME-3600X, ISR4321, ISR4331, cat9300, cat9500k, ASR920, ASR1002. Arista 7050, 7280	Standard	Full	Communications / Network Engineering and Support
	Cisco 1841, 1921, 1941, ME-3400e, 3750, 3750-X, 3850, 7206	Legacy	Full	Communications / Network Engineering and Support
<b>10.2. Components</b>	Cisco T1 DSU/CSU WICS, Cisco 9300 and 9500 Uplink Modules	Standard	Full	Communications / Network Engineering and Support

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	4-port Ethernet Card	Legacy	Full	Communications / Network Engineering and Support

## 11. Network Switches

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
11.1. Layer 2 Switch	Arista 7150 Cisco 2960, 3560, 4500-x, cat9200 HPE Aruba 8400, 2530 series Juniper ACX & MX Switch Router Ciena 3916, 3928, 3926m, 5170, 5171	Standard	Full	Communications / Network Engineering and Support
	Cisco 2950 (DC), 2960, 2960C, 3750, 3750-X, ME-3400e	Legacy	Full	Communications / Network Engineering and Support
11.2. Components	SFP connectors, SFP+, QSFP	Standard	Full	Communications / Network Engineering and Support

## 12. Plotters

### Plotter Support Notes:

































BTS has not established standard plotter models due to the diverse needs of the individual uses in each bureau. All plotter orders must go through the exception process. Please contact the Technology Business Consultant for the requesting bureau.

#### Portland Building Expectations:

- For Portland Building Occupants, Bureau-owned plotters can only be placed in the Large Print Room on a bureau's floor. Plotter requirements:
  - Inkjet or toner
  - Up to 7 feet long and 3 feet, 2 inches deep
  - Access on front side only
  - Will replace a multi-function device (copier) in the print room
  - Will not be connected to the enterprise print management system

- Note that no space is available for a separate free-standing paper cutter
- Please submit questions and comments regarding the Portland Building via the [Project's TrackIT form](#).

### 13. Printers

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
13.1. Laser (Network)	<u>Monochrome:</u> HP M404dn   HP M507dn   HP M607dn   HP M608dn   HP M608x   <u>Color:</u> HP M454dn   HP M553dn/x   HP M653dn  	Standard	Full	Support Center Hardware Stds. Panel
	HP 700, 1320, 3505, 4350, 9050, CP3525, CP4525, CP6015, M401, M451, M506dn, M551, M601, M602, M604, M605, M651, P2055, P3015, P4015, M452dn, M402dne	Legacy	Full	Support Center Hardware Stds. Panel
13.2. Large Format Laser – 11x17 (Network)	<u>Monochrome:</u> HP M712dn   <u>Color:</u> HP M751dn   HP M855xh   HP CP5225dn  	Standard	Full	Support Center Hardware Stds. Panel
	CP6015, 9050, HPM750dn	Legacy	Full	Support Center
13.3. Small Multi-Function Laser (Network)	<u>Monochrome:</u> HP M227fdn   HP M426fdn   HP M725dn   <u>Color:</u> HP M479fdn  	Standard	Full	Support Center Hardware Stds. Panel
	HP M225, M425, M475, M476, CM1312, M1522, M1536, CM2320, M2727, M477fdn	Legacy	Full	Support Center Hardware Stds. Panel

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>13.4. Mobile Printers</b>  PPB	Zebra ZQ 520	Bureau	Bureau	PPB
BDS	Brother 763 – Pocket	Bureau	Bureau	BDS
PBOT	Zebra ZQ 510	Bureau	Bureau	PBOT
<b>13.5. Local Printers</b>	See the <a href="#">Locally Connected USB Printers</a> Section			

## Printer Support Notes

### Portland Building Expectations:

- For Portland Building Occupants, please note that desktop printers are not allowed and there are limitations on supported network printers.
- Please submit questions and comments regarding the Portland Building via the [Project's TrackIT form](#).

Printer maintenance support for network laser printers is provided by contract with Pacific Office Automation. The bureau contacts POA directly.









## 14. Radio

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>14.1. Infrastructure</b>	Motorola 800 MHz Astro 7.19 Digital System	Standard	Full	Public Safety Technology Division
<b>14.2. Mobile Radios (hard mount)</b>	Motorola APX 4500, 6500, 7500, 8500	Standard	Full	Public Safety Technology Division
	Motorola XTL 2500, 5000	Legacy	Limited	Public Safety Technology Division
<b>14.3. Portable Radios (hip mount)</b>	Motorola APX 4000, 6000, 7000, 8000	Standard	Full	Public Safety Technology Division
	Motorola XTS 2500, 5000	Legacy	Limited	Public Safety Technology Division

**Infrastructure Notes:**

- The core system is installed at the 911 Call Center. There are 14 other sites that relay radio traffic throughout the city, county, and to neighboring agencies.
- The City is designated by Motorola as a Customer Owned and Maintained (COM) site.

**15. Scanners**

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>15.1. Workstation – Flatbed, Color</b>	HP ScanJet 7500 	Standard	Full	Support Center Hardware Stds. Panel
	HP 8390, HP 8350, HP N8420, HP N8460	Legacy	Full	Support Center Hardware Stds. Panel
<b>15.2. Workstation – Sheet-fed, Color</b>	Canon DR-225C   Canon DR-M160ii  	Standard	Full	Support Center Hardware Stds. Panel
	Canon DR-125C, DR-160, DR-2050C, DR-3080CII, DR-2010C, DR-4010C, DR-6010C	Legacy	Full	Support Center Hardware Stds. Panel
<b>15.3. Workgroup – Flatbed, Color, Network Attached</b>	HP ScanJet Pro 4500  	Standard	Full	Support Center Hardware Stds. Panel
	HP N6350, 7650n	Legacy	Full	Support Center Hardware Stds. Panel
<b>15.4. Large Format – 11x17</b>	Canon DR-6030C 	Standard	Full	Support Center Hardware Stds. Panel
	HP N9120 Canon DR-7090C	Legacy	Full	Support Center Hardware Stds. Panel

**16. Search Appliance**







Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>16.1. Search Appliance</b>	SwiftType SOLR	Standard	Full	Business Solutions / Web Development

## 17. Storage Area Network

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
17.1. Storage Array	Hitachi Gx00 Hitachi HCP for Object Storage	Standard	Full	Production Services / Storage Administration
17.2. SAN Fabric Network	Fiber Channel Switch: Brocade DCX8510 Brocade 6520 Brocade 7840	Standard	Full	Production Services / Storage Administration
17.3. NAS Gateway	Hitachi HNAS	Standard	Full	Production Services / Storage Administration
17.4. NAS file System	CIFS, NFSv3	Standard	Full	Production Services / Storage Administration
17.5. SAN Replication	FCIP IPEX	Standard	Full	Production Services / Storage Administration
17.6. SAN Routing Protocol	FSPF	Standard	Full	Production Services / Storage Administration
17.7. SAN Transport Protocol	Fiber Channel	Standard	Full	Production Services / Storage Administration
17.8. File Sharing	HCP Anywhere – for two specific use cases Files larger than 15 GB Elevated security protocols	Standard	Full	Production Services / Storage Administration

## 18. Telecommunications

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
18.1. [ADA] Compliant Handset	Cap Tel 840i  <b>Note: The captioning device requires a service contract and internet connection</b>	Standard	Full	Support Center / Cellular Support
18.2. Broadband Wireless	Dell 5600 Gobi Mobile Broadband mini-card Verizon JetPack MiFi 8800L	Standard	Full	Support Center / Cellular Support

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	Verizon USB 760 Verizon Aircard (EVDO) Verizon MiFi 4620LE Verizon MiFi MHS291L Verizon MiFi 620L Verizon MiFi 7730L	Legacy	Full	Support Center / Cellular Support
<b>18.3. Cellular Micro Cell</b>	Verizon Network Extender Application	Standard	Full	Support Center / Cellular Support
<b>18.4. Pagers: Emergency</b>	1-Way: USA/Mobility, Cook	Standard	Full	Communication / Telecom Engineering and Support
<b>18.5. Pagers: Non-Emergency</b>	1-Way: USA/Mobility, Cook 2-Way: USA/Mobility	Standard	Full	Communication / Telecom Engineering and Support
<b>18.6. Satellite Phones</b>	Iridium 9555 Associated address book SW will likely be installed on 1 or 2 workstations in a bureau to manage bureau's sat phone fleet	Standard	Full	Communication / Telecom Engineering and Support
<b>18.7. Smartphone <sup>3</sup></b>	iPhone SE 2 <sup>nd</sup> Gen  , X  , XR  , 11  , 11 Pro  , 11 Pro Max 	Standard	Full	Support Center / Cellular Support
	Samsung Galaxy S7	Exception Required	Limited	Support Center / Cellular Support
	Motorola Droid 3, 4 Motorola Droid X2 Motorola Droid RAZR M Motorola Galaxy S5 iPhone 6, 6 Plus, 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, SE 1 <sup>st</sup> Gen  <b>Note: Please see the document <a href="#">Apple Device Support Dates</a> on <a href="#">PortlandOregon.gov</a> for iPhone and iPad devices that are no longer able to receive iOS updates</b>	Legacy	Limited	Support Center / Cellular Support

<sup>3</sup> Smartphone and Operating System Limited Support: Ordering, initial provisioning, setup of synchronization with Exchange, Verizon data and voice service

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>18.8. Basic Cellular Phone</b>	Kyocera Dura LTE LG VN150s Samsung Convoy 3 (Ruggedized) Samsung Intensity III (basic w/slide out keyboard)	Legacy	Full	Communication / Telecom Engineering and Support
<b>18.9. USB Wireless Cellular Data Modem</b>	Verizon 730L	Standard	Full	Communication / Telecom Engineering and Support
	Pantech 290, 295, 620L	Legacy	Full	Communication / Telecom Engineering and Support
<b>18.10. Tablet</b>	See <a href="#">Tablet Hardware</a>			
<b>18.11. Desk Phones</b>	Avaya 9608, 9611, 9641  Note: Please see the notes in the document about <a href="#">Commodity Headsets</a>	Standard	Full	Telecom Engineering and Support
<b>18.12. Media Gateways</b>	Avaya G430, G450, G650	Standard	Full	Telecom Engineering and Support
<b>18.13. Fax Machines</b>	Low volume: Brother IntelliFax 2820	Standard	Limited	Telecom Engineering and Support
<b>18.14. Headsets</b>	See the table of capabilities and notes in the <a href="#">Commodity Headset section</a>			

## 19. Video

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>19.1. Desktop USB Camera</b>	Logitech c925-e Microsoft LifeCam Studio 1080p HD	Standard	Full	Support Center / Hardware Standards Panel
	Logitech QuickCam Pro9000, c910, c920	Legacy	Full	Support Center / Hardware Standards Panel
<b>19.2. Projector: Portable</b>	InFocus IN116xa, IN2128HDx	Standard	Full	Support Center / Hardware Standards Panel
	Dell M209X, M210X, 1510X, 2400mp InFocus IN116, IN116a, IN116x, IN3118HD, HD3138HD, IN3138HDa	Legacy	Full	Support Center / Hardware Standards Panel

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>19.3. Projector: Ceiling Mount</b>	No standard specified  <b>Note:</b> Specific characteristics of the room must be taken into account. Ambient light, screen size, and projector brightness (lumens) must be matched to provide acceptable image quality. See the <a href="#">Video Projector Criteria section</a>	N/A		Communications / Radio and Video Shop  PPB (for all Police Systems)
<b>19.4. Digital Video Recorder (DVR)</b>	PELCO ControlPoint	Standard	Full	Communications / Radio and Video Shop
	PELCO DX8100s, DSSRV-005-US Custom built "white" box supported by BTS Radio and Video Shop.	Legacy	Full	Communications / Radio and Video Shop
<b>PPB</b>	HIKVision DVR	Standard	Full	PPB
<b>19.5. Digital Video Recorder Control Software</b>	PELCO ControlPoint	Standard	Full	Communications / Radio and Video Shop
<b>PPB</b>	Interview Tracker	Standard	Full	PPB

## Projector Support Notes

### Portland Building Expectations:

- For Portland Building Occupants, please note that there are restrictions on allowed projectors and room configurations.
- Please submit questions and comments regarding the Portland Building via the [Project's TrackIT form](#).

# Software and Application Development Standards

## 20. Application Development Tools – Windows Based

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
20.1. Multi-platform	Eclipse IntelliJ Idea Oracle J Developer Visual Studio 2017 Visual Studio Code Visual Studio for Mac	Standard	Full	Business Solutions
	Visual Studio .NET 2003, 2005 Visual Studio 2008/2010/2012	Legacy	Full	Business Solutions
20.2. Mobile	Objective C Swift Visual Studio 2017 (Xamarin) Xcode	Standard	Full	Business Solutions
	Microsoft PowerApps  See Note 8 for <a href="#">PowerApps</a> in Section <a href="#">32. Office 365 Components</a> .	Not Allowed		
20.3. Client / Server	Visual Studio 2017	Standard	Full	Business Solutions
	Access XP Developer PowerBuilder Visual Studio 6.0 VS.NET 2003, 2005, 2008, 2010, 2012	Legacy	Full	Business Solutions
20.4. Workstation Based	Access for Office 365 (see <a href="#">Office 365 Components</a> )			
PPB	Microsoft Access (see <a href="#">Workstation Based Database Standards</a> )			
20.5. Reporting Tools	Actuate Cognos Impromptu ESRI Insights Plotly	Standard	Full	Business Solutions

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	Microsoft Power BI – See <a href="#">Office 365 Components Section</a> SQL Server Reporting Services – See <a href="#">Reporting Services Section</a>			
	Business Objects Enterprise 4.3 Crystal Reports 2013, 2016	Standard	Full	Enterprise Business Solutions
	Crystal Reports 8, 9, 10, 11, 2008, 2011	Legacy	Full	Business Solutions
	Tableau Creator which includes Tableau Desktop and Tableau Prep Tableau Explorer Tableau Viewer Tableau Reader – <b>Note: Reader cannot access information on Tableau Server, Online or Public.</b> Tableau Online  <b>Support Note: As of July 2018 BTS is only able to provide Limited support. Users of Tableau should contact the vendor directly for all support that is not part of Limited support.</b>	Allowed	Limited	<a href="#">Enterprise Business Solutions</a>
	Tableau Public Tableau Bridge – thin client to enable publishing of non-confidential, on-premise, information	Exception Required	User	<a href="#">Enterprise Business Solutions</a>
	Tableau Server	Not Allowed Beyond Current PPB Usage		Public Safety Technology
<b>20.6. OLAP</b>	Cognos SAP BW 7.40 SQL Server OLAP Service	Standard	Full	Business Solutions
<b>20.7. Installer</b>	InstallAware InstallShield Windows Installer	Standard	Full	Business Solutions

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>20.8. Application Testing</b>	Azure DevOps CircleCI Composer JMeter JUnit New Relic LoadUI Resharper SOAPUI	Standard	Full	Business Solutions
<b>20.9. Integration Tools</b>	SQL Server Integration Services – See <a href="#">Integration / ETL Services</a> Section			
<b>20.10. Other Tools</b> <b>PBOT</b>	Paving Repairs (Custom)	Bureau	Bureau	PBOT

## 21. Application Server

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>21.1. Application Server (Java)</b>	Oracle WebLogic 12c Tomcat 8.x, 9x WebSphere	Standard	Full	Production Services / Business Solutions
	ColdFusion Oracle WebLogic 11g Oracle 10g AS	Legacy	Full	Production Services / Business Solutions

## 22. Backup / Recovery Software

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>22.1. Backup Software</b>	CommVault – Windows / Red Hat Linux / AIX	Standard	Full	Production Services / Server Support

## 23. Bar Codes

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>23.1. Asset Tags</b>  PBOT	BarTender	Bureau	Bureau	PBOT

## 24. Collaboration Tools

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>24.1. Online Conferencing</b>	Microsoft Teams – See <a href="#">Office 365 Components</a> Section			
	GoTo Meeting (only as a participant) WebEx	Allowed	Limited	Support Center / Software Standards Panel
	[ADA] Zoom Conferencing	Allowed	Bureau	Support Center / Software Standards Panel
<b>24.2. Conference Recording Playback</b>	WebEx Player (ARF format) WebEx Player (WRF format)	Allowed	Limited	Support Center / Software Standards Panel
	Microsoft Stream – See <a href="#">Office 365 Components</a> Section			
<b>24.3. Group Collaboration</b>	Microsoft Teams, See <a href="#">Office 365 Components</a> Section			
	Figma Jira	Allowed	User	<a href="#">Support Center / Software Standards Panel</a>
	Slack	Allowed	Bureau	<a href="#">Support Center / Software Standards Panel</a>
<b>24.4. Wireless Audience Polling</b>	KeyPoint Interactive (PowerPoint plug-in)	Allowed	Limited	Support Center / Software Standards Panel
<b>24.5. Storage</b>  PBEM	DropBox	Bureau	Bureau	PBEM

## 25. Database Development Tools

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>25.1. Editing/Compiling</b>	Oracle SQL Developer PgAdmin (PostGres Mgt Tools) PLEdit 5.7 PL/SQL Developer 7.1 RazorSQL SQL Server Management Studio – see <a href="#">SQL Server Utilities</a>	Standard	Full	Business Solutions / Vertical Applications
<b>25.2. Query Tool</b>	Golden 5.7 Toad 12	Standard	Full	Business Solutions / Vertical Applications
	Toad 9.1	Legacy	Full	Business Solutions / Vertical Applications
<b>25.3. SQL Server Utilities</b>	Redgate SQL Compare Utilities 9.0 SQL Server Management Studio 16.x, 18.x	Standard	Full	Business Solutions / Vertical Applications
	SQL Server Management Studio 2012, 2014, 2016	Legacy	Full	Business Solutions / Vertical Applications
<b>25.4. Reporting Services</b>	SQL Server Reporting Services 2016, 2019	Standard	Full	Business Solutions / Vertical Applications
	SQL Server Reporting Services 2008R2, 2012, 2014	Legacy	Full	Business Solutions / Vertical Applications
<b>25.5. Integration / ETL Services</b>	SQL Server Integration Services 2016, 2019	Standard	Full	Business Solutions / Vertical Applications
	SQL Server Integration Services 2014	Legacy	Full	Business Solutions / Vertical Applications

## 26. Database Standards

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>26.1. Enterprise Database</b>	Informix 12 Oracle 12c SQL Server 2016 SQL Server 2019 PostgreSQL MySQL	Standard	Full	<b>Oracle</b> Production Services  <b>SQL</b> Production Services / Business Solutions  <b>MySQL</b> Business Solutions
	SQL Server 2008 R2 (only used by INET) SQL Server 2012 SQL Server 2014 Oracle 11g	Legacy	Full	<b>Oracle</b> Production Services  <b>SQL</b> Production Services / Business Solutions
<b>26.2. Enterprise Database Client</b>	Oracle 12c Client	Standard	Full	Production Services
	Oracle 11g client	Legacy	Full	Production Services
<b>26.3. Workstation Based</b>	Access for Office 365 (see <a href="#">Office 365 Components</a> )			
	SQL Lite	Standard	Full	Business Solutions
	SQL Server Express 2016, 2017, 2019	Allowed	Limited	Business Solutions
	<b>Note: Allowed when required by a vendor</b>			
	SQL Server Express 2012, 2014	Legacy	Limited	Business Solutions
	Access 2019 Single-user	Standard	Limited	Business Solutions
	Access 2019 Multi-user	Exception Required	User	Business Solutions
	Access 2013, 2016 Single-user	Legacy	Full	Business Solutions
<b>PPB</b>	Access 2013, 2016 Multi-user	Legacy	User	Business Solutions
	ODBC	Standard	Full	Business Solutions
	OLE DB			
	XML			
<b>26.4. Database Connector Protocol</b>	JDBC			
	ADO			

**Database Operation Notes:**

The BTS Infrastructure Board recommends that primary and shadow copies of databases in production operate on the same version of the database engine. All copies in the production environment should be updated as part of a planned migration when non-production development and testing validate that the application works correctly in the new database version.

**27. Directory Services**

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
27.1. Directory Services	Microsoft Active Directory	Standard	Full	Production Services / Server Support

**28. Document Management**

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
28.1. Electronic Signature	DocuSign	Standard	Full	Vertical Applications

**29. eMail**

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
29.1. Server Software	See <a href="#">Office 365 Components</a>			
PPB	Microsoft Exchange Server 2013	Standard	Full	Production Services / Server Support
29.2. Web Client	Microsoft Office 365 Outlook Web App	Standard	Full	Production Services / Server Support
29.3. eMail: Synchronization	Microsoft Office 365 Exchange Online built-in	Standard	Full	Production Services / Server Support
29.4. eMail Client	See <a href="#">Workstation eMail Client</a>			

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>29.5. Address Book</b>	Global Address Book – Required field: last name, first name, alias, internal and external SMTP address, phone, company, department, office, display name, name (last, first), fax #	Standard	Full	Production Services / Server Support
<b>29.6. Bulk eMail Service</b>	MyEmma	Allowed	Vendor	<a href="#">Support Center / Software Standards Panel</a>
	<a href="#">MailChimp</a>	<a href="#">Legacy</a>	<a href="#">User</a>	<a href="#">Support Center</a>
<b>29.7. eMail Filing Tool</b>	SimplyFile	Allowed	Limited	Support Center

### 30. Fax Solutions

An appropriate fax solution is governed by the type of data being faxed, both sent and received. The table below contains columns identifying the different types of information the City confirmed as important to protect. Additional information about the makeup of these categories can be found in the [Sensitive Information Table](#).

Item	Delivery	Data Types Allowed in Transmission						Minimum Encrypt	Standard Classification	Support Model	BTS Owner
		Unreg	CJI	PHI/ HIPAA	PII	PCI	FTI				
<b>30.1. Fax Machine</b> (See <a href="#">Fax Machines</a> )	Phone Line / T-1	Yes	No	Yes	Yes	No	Yes	A, B	Standard	Full	Telecom Engineering and Support
<b>30.2. Multi-Function Printer</b> (Within a City facility)	Phone Line / T-1	Yes	No	Yes	Yes	No	Yes	A, C	Standard	Full	Telecom Engineering and Support
	Std App	Yes	No	Yes (1)	Yes (1)	No	Yes (1)	256 Bit	Exception Required	Full	Production Services / Server Support
	Fax Forward (3)	Yes	No	No	No	No	No	None	Exception Required	Full	Telecom Engineering and Support

Item	Delivery	Data Types Allowed in Transmission						Minimum Encrypt	Standard Classification	Support Model	BTS Owner
		Unreg	CJI	PHI/HIPAA	PII	PCI	FTI				
<b>30.3. Email Client</b>	AccuRoute	Yes	No	No (2)	No (2)	No	No (2)	None	Allowed	Full	Production Services / Server Support

The City has not yet implemented an enterprise fax solution capable of processing protected data types. This will require funding of a project. The likely solution will be a hosted in the cloud where the vendor is required to maintain all appropriate data handling certifications.

### Notes Legend

1. The printer must encrypt data while at rest and at the minimum encryption level specified in the chart
  2. E-mail is only allowed if the message is guaranteed to be fully encrypted from the beginning to end of transmission and while at rest. The City is currently not able to provide that guarantee.
  3. Line Forwarding moves an incoming message from the designated multi-function printer to another printer. This is done after the message is received by the MFP and therefore must transit the internal network.
- A. Plain old telephone (POT) lines are encoded, not encrypted. Encryption is not possible, but due to their end-to-end connection state, it is still possible for POT lines to be compliant for several data types.
  - B. Faxes are often printed by default. Physical security measures must be put in place to protect hard copy these hard copy reports. Physical security is outside the scope of this document other than to note when it may be required.
  - C. Faxes may be queued for printing. If not, then comment B applies. If queued, the fax may need to be encrypted at rest and the device must be configured to prompt for personal credentials to release the fax.

## 31. Fonts

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>31.1. Standard Fonts</b>	Windows built-in Microsoft Office and Office 365 built-in Open Sans	Standard	Full	Support Center

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>31.2. Allowed Fonts</b>	Adobe Creative Cloud built-in  <b>Note: Fonts available in the Adobe Creative Cloud subscription require the Adobe Cloud Storage feature in order to synchronize with the local workstation.</b>	Allowed	Limited	Support Center
<b>31.3. Non-Standard Fonts</b>	Any font not included in the above sub sections	Exception Required	User	

### Non-Standard Font Guidance:

- All non-standard fonts require an exception.
- **Discuss any non-standard font use case with your BTS Technology Business Consultant.**
- Restrict contractors performing graphic design work to the City standard fonts if possible.
- Check for font availability with publishing services such as the City's PnD or external publishing services.

### Non-Standard Font Impact:

- Using non-standard fonts can affect the printed or viewed content depending on the availability of the font on the viewers workstation, and how the font is used in the content.
- Non-Standard font use as native text in documents or email will not display correctly if the viewer does not also have the font installed. It is possible that some applications, such as Microsoft Word, can embed the font in the document making it available for the viewer **of that document only**.
- Non-Standard font use in documents converted to PDF documents will generally appear as intended to the viewer.
- Non-Standard font use in a graphic image, such as a JPG file, will generally appear as intended to the viewer.
- Non-Standard font use on web pages requires the font to be "known" to the web server.
  - Creating native text content using the web content editor requires the font to be installed on the web server.
  - Files attached to web pages will behave as native documents or PDF files accordingly.
- Fonts may be free or may have a licensing fee. Fonts may be licensed by individual user, or site licensed. There may also be specific licensing rules for the use of the font. Check the licensing terms and allowable uses for any font being considered.
- Fonts may not be automatically installed during a life-cycle replacement of the workstation.

## 32. Geographical Application Tools

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>32.1. GIS Application Development</b>	ArcObjects 10.7 ArcGIS API for JavaScript 3.x / 4.x ArcGIS AppStudio ArcGIS Pro 2.x SDK for .NET ArcGIS Runtime for .NET v100.x Geocortex Workflow Inno Setup 6.x Inno Script Studio Python 2.7 / 3.x Sublime Text Visual Studio 2017 / 2019 VSCode	Standard	Full	Business Solutions
	ArcObjects 10.1 / 10.2/10.3 ArcEngine 10.2 / 10.3 Eclipse Visual Studio .NET 2003 / 2005 / 2008 / 2010 / 2015 XCode	Legacy	Full	Business Solutions
<b>32.2. GIS Desktop Applications</b>	ArcGIS 10.7 ArcGIS Pro 2.x FME 2021.x MapWorks 3.x Survey 123 Connector for ArcGIS	Standard	Full	Business Solutions
	ArcGIS 10.3 ArcGIS Pro 1.x SDK for .NET MapWorks 10.2 / 10.3 FME 2019.x / 2020.x	Legacy	Full	Business Solutions
<b>PBOT</b>	LayerInfo (Custom) StreetInfo (Custom) TDAT Import (Custom) TDAT Query (Custom)	Bureau	Bureau	PBOT

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>32.3. GIS Mobile Applications</b>	ArcGIS AppStudio Player ArcGIS Collector ArcGIS Explorer ArcGIS Field Maps ArcGIS Navigator ArcGIS Quick Capture ArcGIS Survey 123 ArcGIS Workforce	Standard	Full	Business Solutions
	AppStudio Player Classic ArcGIS Collector Classic	Legacy	User	Business Solutions
<b>32.4. GIS Internet Server</b>	ArcGIS Enterprise 10.8 (aka Portal) ArcGIS GeoEvent Server 10.8 ArcGIS Server 10.8 Geocortex Essentials Geocortex Printing Geocortex Reporting Geocortex Web Geocortex Workflow	Standard	Full	Business Solutions
	ArcGIS Server 10.5 / 10.7 ArcGIS GeoEvent Server 10.5	Legacy	Limited	Business Solutions
<b>32.5. Hosted GIS Platforms</b>	ArcGIS Online Geocortex SaaS	Standard	Full	Business Solutions
<b>32.6. Mapping Software</b>	Google Earth Pro (free version)	Standard	Limited	<a href="#">Support Center</a>
<b>PBEM</b>	Terrain Navigator Pro	Bureau	Bureau	PBEM
<b>32.7. Event Tracking PBOT</b>	Crash (Custom)	Bureau	Bureau	PBOT
<b>32.8. Tools PBOT</b>	DMT Lite (Custom) GDB Class Extension ID Editor (Custom) Location Manager (Custom) Table Joiner (Custom)	Bureau	Bureau	PBOT

### 33. Graphic Design Software

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>33.1. Visual Diagramming</b>	Microsoft Visio 2019 Click-to-Run and Perpetual License	Standard	Full	Support Center / Software Standards Panel
	Microsoft Visio 2010, 2013 Microsoft Visio 2016 Click-to-Run and Perpetual License  Note: As of 6/11/2013, BTS adopted a policy to allow owners of 2010 software versions to install and use those versions through their lifecycle	Legacy	Full	Support Center / Software Standards Panel
<b>PBOT</b>	OpenRoads (aka InRoads) Lighting Analyst	Bureau	Bureau	PBOT
<b>33.2. PDF Creation</b>	Adobe Acrobat Standard or Professional DC Microsoft Print to PDF (Windows built-in)  Note: Microsoft Print to PDF does not create accessible output. Use Adobe if the PDF content will be consumed using a screen reader.	Standard	Full	Support Center / Software Standards Panel
	Adobe Acrobat Standard or Professional 9, 10, XI PDFCreator	Legacy	Full	Support Center / Software Standards Panel
	Adobe LiveCycle Designer	Legacy	User	Support Center
<b>33.3. Graphic Design</b>	Adobe Creative Cloud Acrobat Pro, XD, After Effects, Animate, Audition, Character Animator, Dimension, DreamWeaver, Fresco (iOS only), Illustrator, InCopy, InDesign, Lightroom, Lightroom Classic, Media Encoder, Photoshop, Prelude, Premier Pro, Premiere Rush	Allowed	Limited	Support Center / Software Standards Panel
	XnView	Allowed	Limited	Support Center / Software Standards Panel

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	Adobe Flash  <b>Note: Flash is not allowed due to several severe security issues. Adobe is no longer supporting or patching the product.</b>	Not Allowed		
	Adobe Creative Suite 1, 2, 3, 4, 5, 5.5, 6 Microsoft Publisher 2013, 2016	Legacy	Limited	Support Center / Software Standards Panel
<b>PPB</b>	Microsoft Publisher 2016 Sony Vegas 15 Pro	Standard	Full	Public Safety Technology
	Microsoft Publisher 2013	Legacy	Full	Public Safety Technology
<b>33.4. Screen Capture</b>	Camtasia Greenshot Snagit	Allowed	Limited	<a href="#">Support Center / Software Standards Panel</a>
<b>33.5. Computer Aided Design</b>	Bluebeam Revu	Standard	Limited	<a href="#">Support Center / Software Standards Panel</a>
	Sketchup Pro Sketchup Viewer	Allowed	User	<a href="#">Support Center / Software Standards Panel</a>
<b>33.6. Tools</b>  <b>PBEM</b>	Gimp	Bureau	Bureau	PBEM

### Graphic Design Software Note:

Codecs are required to view and edit the Apple's High Efficiency File Formats. These are covered in the Workstation Software section using a [table entry specifically for Codecs](#). Refer there for guidance.

## 34. Internet Domain Naming

BTS recommends bureaus use the format **www.portlandoregon.gov/function** when creating internet domain names for specific functions to be exposed to the public. This format maintains city branding (portlandoregon.gov) and does not incur any additional domain registrar costs provided a security certificate is not required.

Bureaus may also use the format **function.org** or **function.com** as business reasons dictate. If this option is chosen, these new domain names must be created, registered, and maintained by BTS. Bureaus must always consult with and acquire domain names

through BTS to ensure the domain name is known and cataloged centrally. This reduces the chance that a domain name will expire without the City's knowledge.

### 35. Miscellaneous Tools

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>35.1. Archival Tools</b>	Macroplant iExplorer (text capture) SMARSH (text capture)  <b>Note:</b> iMessage must be disabled on iPhones to force text messaging via SMS through the Verizon carrier. Text messaging in iPads via iMessage is not to be used.	Allowed	Limited	Enterprise Architecture
<b>Attorney's Office</b>	PageFreezer	Bureau	Bureau	Attorney's Office
<b>Auditor's Office</b>	TRIM	Bureau	Bureau	Auditor's Office
<b>35.2. Clipboard Manager</b>	Ditto	Allowed	User	Business Solutions
<b>35.3. Digital Signage Authoring</b>	BrightAuthor	Standard	Limited	Video Shop
<b>35.4. Electronic Document Reader</b>	Adobe Digital Editions  <b>Note:</b> In addition to the tasks listed under the Limited Support Model, BTS will also patch Digital Editions	Standard	Limited	Support Center / Software Standards Panel
<b>35.5. Enterprise Paging</b>	OmniTrend PageMaster	Standard	Full	Production Services / Server Support
<b>35.6. FTP Client</b>	<a href="#">FileZilla</a>	Standard	Full	<a href="#">Support Center / Software Standards Panel</a>
	Microsoft Internet Explorer  <b>Note:</b> See <a href="#">Web Tools / Browsers</a>			

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>35.7. Imaging</b>  PBEM	Paint.Net	Bureau	Bureau	PBEM
<b>35.8. Label Creation</b>  PBEM	Smead Viewables	Bureau	Bureau	PBEM
<b>35.9. Log Viewers</b>	Baretail Pro Glogg LogFusion Pro Note the free version <b>IS NOT</b> licensed for government use. LogJoint	Allowed	User	Business Solutions
<b>35.10. Online Training Content Editors</b>  Learning Management System Content Editor	Adobe Captivate uPerform	Standard	Full	Support Center / Software Standards Panel / Enterprise Business Solutions
<b>35.11. Outlook Calendar Publishing</b>	WinCalendar Standard	Allowed	Limited	Support Center / Software Standards Panel
<b>35.12. [ADA] Screen Magnifier</b>	ZoomText MAGic	Allowed	Limited	Enterprise Architecture
<b>35.13. [ADA] Speech-to- Text</b>	Dragon Naturally Speaking	Standard	Limited	Business Solutions
<b>35.14. Statistical Analysis</b>	R R Studio	Allowed	Limited	<a href="#">Support Center / Software Standards Panel</a>
<b>35.15. Survey Applications</b>	Survey Monkey (web application)	Allowed	Vendor	<a href="#">Support Center / Software Standards Panel</a>
<b>35.16. Terminal Emulation</b>	Micro Focus Reflection Desktop 2016 OpenText HostExplorer OpenText Exceed	Allowed	No Support	Production Services / Data Center

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	Reflection 2011 Attachmate Extra Extreme	Legacy	No Support	Production Services / Data Center
35.17. <b>[ADA]</b> Text-to-Speech (Screen-reader)  A	JAWS NVDA	Allowed	Limited	Enterprise Architecture
35.18. <b>Video Capture</b>  PBEM	YouTube Downloader	Bureau	Bureau	PBEM
35.19. <b>[ADA]</b> Video Remote (Language) Interpreter	LanguageLine	Allowed	User	Enterprise Architecture
35.20. <b>[ADA]</b> Video Relay Service	Convo ZVRS SVRS (Sorenson)	Allowed	Limited	Enterprise Architecture
35.21. <b>Wiki</b>	ScrewTurn Wiki TikiWiki	Standard	Full	Business Solutions / Production Services
35.22. <b>XML Editor</b>	NotePad++ 7.x XML Notepad 2007 Oxygen	Standard	Full	Business Solutions / Vertical Applications
35.23. <b>[ADA]</b> Video Caption	Caption and Description Editing Tool (CADET)	Standard	Limited	<a href="#">Support Center / Software Standards Panel</a>

## 36. Office 365 Components

The City licenses use of Office 365 using a unique and secure Microsoft internet location called GCC, or Government Cloud Computing. This environment is specifically configured to handle many types of government data that have strict regulatory requirements. Because of this, some features of Office 365 in the consumer or commercial tenant may not be available or may operate differently in the GCC.

Base Application	Standard Classification	Support Model	Platform Notes (see legend)				BTS Owner
			PC	Web	Mobile	Other	
<b>Exchange Online Plan 2</b> (Email only)	Standard	Full				2	Production Services / Server Support
<b>Office 365 G3 Plan</b>	Standard	Full				3	Support Center / Software Standards Panel
<b>Access Single-user</b>	Standard	Limited	3				Business Solutions
<b>Access Multi-user</b>	Exception Required	User	3				Business Solutions
<b>Authenticator</b>	Standard	Limited			2, 3		Information Security
<b>Bookings</b>	Allowed	User		3		11	Support Center
<b>Calendar</b>	Standard	Full	1	2,3			Support Center
<b>Delve</b>	Allowed	User		3		11	Support Center
<b>Excel</b>	Standard	Full	3	3	3		Support Center
<b>Forms (Use inside the City)</b>	Allowed	User		3		11,14, 15,16	Support Center
<b>Forms (External forms and all other use cases)</b>	Not Allowed					14	
<b>Graph APIs</b>	Not Allowed					8	
<b>Groups</b>	Standard	Full	App Deprecated			7,9	Support Center
<b>Microsoft Store</b>	Not Allowed					8	
<b>My Analytics</b>	Allowed	User		3		11	Support Center
<b>OneDrive</b>	Standard	Full	3	3	3		Support Center
<b>OneNote</b>	Standard	Full	1,3	3	3		Support Center
<b>Outlook</b>	Standard	Full	3	2,3	2,3		Support Center

Base Application	Standard Classification	Support Model	Platform Notes (see legend)				BTS Owner
			PC	Web	Mobile	Other	
<b>People</b>	Standard	Full	1	2,3			Support Center
<b>Planner</b>	Allowed	User		3	3	11	Support Center
<b>PowerPoint</b>	Standard	Full	3	3	3		Support Center
<b>Publisher</b>	Standard	Full	3				Support Center / Software Standards Panel
<b>SharePoint Online</b>	Exception Required	User				9,10	Support Center
<b>Stream</b>	Allowed	Limited		3		10,11	Support Center
<b>Tasks</b>	Standard	Full		3			Support Center
<b>ToDo</b>	Allowed	User		3		11	Support Center
<b>Teams (Core Components)</b>	Standard	Full	3	3	3	4,9,13	Support Center
<b>Teams (Non-core Components)</b>	Not Allowed					4,6,8,13	
<b>Whiteboard</b> (Stylus and/or touchscreen helpful)	Allowed	User		3		11	Support Center
<b>Word</b>	Standard	Full	3	3	3		Support Center
<b>3<sup>rd</sup> Party Connectors and Plug-ins</b>	Not Allowed Beyond Current Usage	User				4,6,8,10	Support Center
<b>Microsoft 365 Audio Conferencing</b> (add-on for Teams)	Standard	Full				6	Support Center
<b>Power BI Desktop</b>	Allowed	User				6	Business Solution
<b>Power BI Pro</b>	Not Allowed After Current License Expires	User				6,10,12	Business Solutions
<b>Power BI Premium</b>	Not Allowed					5,6,10	

Base Application	Standard Classification	Support Model	Platform Notes (see legend)				BTS Owner
			PC	Web	Mobile	Other	
<b>Project Standard/Pro</b>	Standard	Full				6	Support Center
<b>Project Online Essentials</b> <b>Project Online Plan 1</b> (Team member add-on to Project Online Pro/Premium)	Exception Required	User				6	Support Center
<b>Project Online Pro</b> <b>Project Online Plan 3</b>	Exception Required	User				6	Support Center
<b>Project Online Premium</b> <b>Project Online Plan 5</b>	Exception Required	User				6	Support Center
<b>Visio Standard</b> <b>Vision Pro</b>	Standard	Full				6	Support Center / Software Standards Panel
<b>Visio Viewer</b>	Allowed	User					Support Center / Software Standards Panel
<b>Visio Plan 2</b>	Standard	Full				6	Support Center / Software Standards Panel
<b>SharePoint Sites &amp; Lists</b>	Allowed	User	9	9	9		Support Center
<b>PowerApps Platform</b>	Not Allowed					8	Support Center
<b>Dynamics 365 Platform</b>	Not Allowed					4,6	
<b>Power Automate Platform</b> (Formerly Flow)	Not Allowed Beyond Current Usage	User		3		4,6,8, 10	Support Center
<b>FindTime</b> (Outlook Plug-in)	Not Allowed		Not available in the GCC				
<b>InfoPath</b>	Legacy	Limited	Deprecated				Support Center
<b>SharePoint Designer</b>	Not Allowed		Deprecated				
<b>Sway</b>	Not Allowed		Not available in the GCC				

Base Application	Standard Classification	Support Model	Platform Notes (see legend)				BTS Owner
			PC	Web	Mobile	Other	
Staff Hub	Not Allowed		Not available in the GCC				
Yammer	Not Allowed		Not available in the GCC				

## Office 365 Notes

- Some functionality offered within Microsoft applications require additional support of the configuration which may not be available as part of the standard. Refer to Note 9 below.
  - SharePoint Sites: Available in OneDrive for Business, Teams, and Groups
  - Premium Connectors: Available in Power Apps and Power Automate

## Notes Legend

Cell color denotes that product is available on this platform

- Included in Windows 10 base installation
- BTS Standard Email only plan – Exchange Online Plan 2 and components
- BTS Standard Office 365 G3 plan and components
- Approved Microsoft connectors, plug-ins, or webhooks may be free, but additional subscriptions and other costs may be incurred based on connector type, license access, and/or API call limits. Licensing, data transit locations, Terms of Service, Privacy, and Acceptable Use policies will also need to be reviewed by BTS and the City's Attorney's Office.
- Power BI Premium requires substantial additional licensing over Power BI Pro
- Additional subscription or license required
- Office 365 Groups remains an important structure within the Office 365 environment. However, there is no single application for access to a group's components such as email, calendar, files, Planner and OneNote notebooks. These components of a Group are accessed from other applications in the Office 365 suite. Some components can be accessed from multiple applications.
- The City's Office 365 environment is not yet setup for use of these products. BTS will be reviewing the necessary setup requirements and will update availability when ready.
- SharePoint Sites are available in OneDrive for Business, Teams, and Groups. While these applications are standards, the Sites functionality offered within the platform are not supported by BTS at this time. Using Sites for critical work is NOT RECOMMENDED and NOT SUPPORTED by BTS. Bureaus should consult with BTS to find an appropriate solution.
- Exceptions are only being processed for existing implementations of the product to document and understand current use cases. More work licensing and configuring the infrastructure is needed prior to allowing additional usage.
- BTS resource constraints limit support for these products. The constraints are expected to be addresses in a later phase of the Office 365 project implementation.

12. Best practice development procedures are only available using Power BI Premium. Existing licenses will be renewed for that product upon expiration of their current license.
13. BTS supports only the core components of Microsoft Teams. Those include messaging, meetings, calendars, and file sharing. Other functionality is not supported at this time.
14. There are [technical limitations](#) of the product that make using it inappropriate for many use cases.
15. Data storage location may make this product inappropriate for many use cases, including the handling of sensitive data types.
16. There are important considerations for this product to be compliant with [City accessibility guidelines](#) and [ADA Title II requirements](#).

### 37. Operational Support Tools

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>37.1. Asset Inventory</b>	Altiris Asset Management	Standard	Full	Support Center / SET
<b>37.2. Automated Inventory</b>	Altiris Client Management Suite (desktop)	Standard	Full	Support Center / SET
	SNOW License Manager 7 (server)	Standard	Full	Production Services / Server Support
<b>37.3. Monitoring</b>	Toad for Oracle DBA V11	Standard	Full	Production Services / Database Administration
	Oracle OEM/Grid Control ManageEngine OpManager Redgate SQL Monitor Server Studio SQL Server Management Studio – See <a href="#">SQL Server Utilities</a> Section VMware vROPs	Standard	Full	Production Services / Server Support / Database Administration
	Brocade Network Advisor Hitachi Tuning Manager HVSr	Standard	Full	Production Services / Storage Administration
	Grafana GrayLog (syslog) NetDisco OpenNMS Riverbed SteelCentral SolarWinds	Standard	Full	Communications / Network Engineering and Support
	WhatsUp Gold	Standard	Full	Corporate GIS

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	SiteScope	Legacy	Full	Corporate GIS
<b>PPB</b>	PAESSLER PRTG Network Monitoring 21.2	Standard	Full	Public Safety Technology
<b>37.4. Software Distribution</b>	Altiris Client Management Suite	Standard	Full	Support Center / SET
<b>37.5. Work Order Ticketing</b>	Cherwell	Standard	Full	Support Center / SET
	ZenDesk	Exception Required	Bureau	Business Solutions / eGov
<b>37.6. Workstation Remote Control</b>	Bomgar	Standard	Full	Support Center / SET
<b>37.7. Server Remote Control</b>	Microsoft Remote Desktop Service (RDP)	Standard	Full	Production Services / Server Support
<b>37.8. Printer Management</b>	PaperCut Pro	Standard	Full	Production Services / Server Support / Support Center

### 38. Project Management Tools

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>38.1. Project Management Software</b>	Microsoft Project 2019  <b>Note: With Office 365 2016, Microsoft blocks installation of Office 365 2016 simultaneous with the perpetual version of Project 2016 and 2019. If Project 2019 is to be used, the subscription version must be installed. Perpetual licensed versions of Project 2013 may be installed simultaneously.</b>	Standard	Full	Project Management Office
	SmartSheet	Standard	Bureau	Support Center / Software Standards Panel

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	Microsoft Project 2013, 2016  Note: as of 6/11/2013 BTS adopted a policy to allow owners of 2013 versions to install and use those versions through their lifecycle.	Legacy	Full	Project Management Office
<b>PBOT</b>	Sharpe	Bureau	Bureau	PBOT
<b>38.2. Project Portfolio Management (PPM) Software</b>	Plainview PPM Pro (formerly Innotas	Standard	Full	Project Management Office

### 39. Radio / Ham Radio

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>39.1. Communication</b>	FLDIGI Suite MMSSTV SDRUno WinLink Express	Standard	Full	Public Safety Technology Division
<b>39.2. Radio Configuration Tools</b>	FT 8800 Programmer FTM 350 Programmer Icom CS-2820 Icom CS-F3160 / F5060 Icom RS-92 Icom USB-to-Serial VX-170 Programmer CHIRP (Ham Radio) RT Systems	Standard	Full	Public Safety Technology Division

## 40. Server Base Software

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
40.1. Operating System	Windows Server 2022 64-bit Red Hat Enterprise 8.x	Standard	Full	Production Services / Server Support
	Windows Server 64-bit 2012 R2, 2016, 2019 Red Hat Enterprise 6.x, 7.x	Legacy	Full	Production Services / Server Support
40.2. Vizualization Hypervision	VMWare VSphere 6.x IBM VIO 3.x	Standard	Full	Production Services / Server Support

## 41. Source Code Control System

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
41.1. Source Control	Subversion/VisualSVN 2.1.10 TortoiseSVN 1.6.16 AnkhSVN 2.1 Visual SourceSafe Git / GitHub Microsoft Team Foundation Server (TFS)	Standard	Full	Business Solutions
	Visual SourceSafe 6.0	Legacy	No Support	Business Solutions

## 42. Telecommunications

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
42.1. Mobile Operating System	iOS 15.2 iPadOS 15.2	Standard	Limited	Support Center / Cellular Support
	Android 7.0, 8.0, 9.0	Exception Required	Limited	Support Center / Cellular Support
	Blackberry Android 2.3, 4, 5 iOS 14 iPadOS 14 Windows Mobile 5, 6.0, 6.1, 6.5	Legacy	Limited	Support Center / Cellular Support

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>42.2. Core Telephony Software</b>	Avaya Call Manager 8.x Avaya System Manager Avaya Session Boarder Controller Avaya Utility Server Avaya SLA Monitor Avaya Remote Gateway Avaya Advanced Diagnostic Server	Standard	Full	Telecom Engineering and Support
<b>42.3. Voice Mail</b>	Xmedius Call Express 9	Standard	Full	Telecom Engineering and Support
<b>42.4. Music On Hold</b>	Mood	Standard	Full	Telecom Engineering and Support
<b>42.5. Enterprise Call Center Software</b>	Avaya IX Workforce Engagement Avaya Aura Call Center Elite Multichannel Avaya Call Management System	Standard	Full	Telecom Engineering and Support
<b>42.6. Desktop Clients</b>	Avaya One-X Communicator  Note: Please see the notes in this document about <a href="#">Commodity Headsets</a> .	Standard	Full	Telecom Engineering and Support
<b>42.7. Desktop Call Center</b>	Avaya Agent for Desktop Avaya Desktop Wallboard  Note: Please see the notes in this document about <a href="#">Commodity Headsets</a> .	Standard	Full	Telecom Engineering and Support

### 43. Web Tools

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>43.1. Content Management and Page Development Tools</b>	DreamWeaver City Site / Content Management Tool Eclipse Drupal	Standard	Full	Business Solutions
	Cold Fusion Studio	Legacy	Full	Business Solutions
<b>43.2. Site Management Tools</b>	DreamWeaver	Standard	Full	Business Solutions

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
43.3. Runtime Environment Tools	.NET Core .NET Framework Bootstrap	Standard	Full	Business Solutions
	ColdFusion Server MX	Legacy	Full	Business Solutions
43.4. Web Application Development	Visual Studio 2017 Docker / Lando Eclipse Figma Oracle J Developer	Standard	Full	Business Solutions
	WAVE [ADA] Web Accessibility tool	Standard	Limited	Business Solutions
	Cold Fusion Studio	Legacy	Limited	Business Solutions
43.5. HTML Version	HTML 5.x	Standard	Full	Business Solutions
43.6. HTTP Inspectors	Fiddler Postman	Standard	Full	Business Solutions
43.7. Scripting Language	.NET JavaScript Perl PHP PowerShell Python VBScript	Standard	Full	Business Solutions
	ColdFusion	Legacy	Full	Business Solutions
43.8. Video Encoding	Real Producer	Legacy	Full	Business Solutions
43.9. Web Server	Microsoft IIS 10.x Apache/Tomcat 9.x	Standard	Full	Business Solutions
	Microsoft IIS 5.0, 6.0, 7.x, 8.x Apache 7.x, 8.x	Legacy	Full	Business Solutions
43.10. Web Browser	Legacy Edge Modern (Chromium) Edge – <b>Note: This is the preferred browser and the only standard browser suited for editing content on portland.gov</b>	Standard	Full	Support Center
	Chrome (with current updates)	Allowed	Limited	Support Center
	Firefox	Exception Required	Limited	Support Center
	Microsoft Internet Explorer 11	Legacy	Limited	Support Center

## 44. Workstation Software

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>44.1. Operating System</b>	Windows 10 Version 21H1 Windows 10 Long-Term Servicing Branch (LTSM) version 1809 – vCAD computers only  <b>Note: Windows 10 LTSM requires use of perpetual MS Office licensed software.</b>	Standard	Full	Support Center / Software Standards Panel
	Windows 10 Version 20H2	Legacy	Limited	Support Center / Software Standards Panel
	Windows 7 SP1	Exception Required	Limited	Support Center
	MacOS  <b>Note: Will not be approved as primary workstation. See the <a href="#">City of Portland Apple Computer Compliance</a> document for detailed information.</b>	Exception Required	See referenced document	Support Center
<b>44.2. Base Software</b>	Windows Media Player McAfee Endpoint Security 10 (with current update) Microsoft DirectX .NET Framework 3.5 SP1, 4.5.2 or greater depending on the Windows Operating System. Java 8 (with current update)	Standard	Full	Support Center / Software Standards Panel
	Internet Explorer 11 (Primarily for SAP access)	Legacy	Limited	Support Center / Software Standards Panel
	SAP GUI 7.4	Standard	Full	Enterprise Business Solutions
	Cyberlink Power DVD (OEM)	Legacy	Full	Support Center / Software Standards Panel
	Java 7	Exception Required	User	Support Center / Software Standards Panel
<b>44.3. Microsoft Office Suite</b>	See <a href="#">Office 365 Components</a>			

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
	MS Office 365 ProPlus / 64-bit via Office 365 subscription (Note that the 32-bit Office suite is the default standard)	Allowed	Full	Support Center/ Software Standards Panel
	MS Office 2013, MS Office 2016	Legacy	Full	Support Center / Software Standards Panel
<b>PPB</b>	MS Office 2019 / 64 bit	Standard	Full	Public Safety Technology
	MS Office 2013, 2016 / 64 bit	Legacy	Full	Public Safety Technology
<b>44.4. eMail Client</b>	MS Outlook 2019	Standard	Full	Support Center / Software Standards Panel
	MS Outlook 2013, 2016	Legacy	Full	Support Center / Software Standards Panel
<b>PPB</b>	MS Outlook 2019	Standard	Full	Public Safety Technology
	MS Outlook 2013, 2016	Legacy	Full	Public Safety Technology
<b>44.5. Media Player</b>	Windows Media Player	Standard	Full	Support Center / Software Standards Panel
	VLC Client	Allowed	Full	Support Center / Software Standards Panel
<b>44.6. CD/DVD Creation</b>	Windows built-in	Standard	Full	Support Center / Software Standards Panel
<b>44.7. Workstation Database</b>	See <a href="#">Database Standards</a>			
<b>44.8. Firewall</b>	Windows Firewall	Standard	Full	Information Security
<b>44.9. Password Safe</b>	KeePass	Allowed	User	Information Security
<b>PBEM</b>	LastPass	Bureau	Bureau	PBEM
<b>44.10. Zip File Compression</b>	Built-in Windows Zip Utility 7-Zip	Allowed	Limited	Support Center / Software Standards Panel
<b>44.11. Codecs</b>	High Efficiency Image File (HEIF) <ul style="list-style-type: none"> <li>iMazing .heic converter</li> </ul> High Efficiency Video Coding (HEVC) <ul style="list-style-type: none"> <li>Device Manufacturer .hevc converter</li> </ul>	Allowed	Limited	Support Center / Software Standards Panel

# Security Technology Standards

## 45. Authentication

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
45.1. Windows	Kerberos	Standard	Full	Information Security
45.2. Multi-Factor	RSA Secure ID Digital Certificate Azure MFA	Standard	Full	Information Security
	Microsoft Authenticator (mobile app) – Usage is primarily for Office 365	Standard	Limited	Information Security
45.3. Single Sign-On	Active Directory Federated Services (ADFS) Azure Active Directory	Standard	Full	Information Security
PPB	Impivata OneSign	Standard	Full	Information Security
45.4. Wi-Fi	Authentication Protocols EAP-TLS , PEAP Certificate provisioning: Autoenrollment via AD	Standard	Full	Information Security
45.5. RADIUS	Cisco ISE	Standard	Full	Communications / Network Engineering and Support
45.6. Firewall Rules Management	FortiClient – Workstation deployment	Standard	Full	Networking

## 46. Encryption

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
46.1. Data Storage	AES	Standard	Full	Information Security
	3DES	Legacy	Full	Information Security

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>46.2. Web Traffic</b>	TLS 1.2, 1.3 External facing certificates: Verisign, Secure Site, Secure Site Pro Internal facing certificates: Internal Certificate Authority, Verisign	Standard	Full	Information Security
<b>46.3. Secure FTP</b>	SFTP (FTP over SSH)	Standard	Full	Information Security
<b>46.4. Wi-Fi Networks (transport)</b>	WPA2 802.11	Standard	Full	Information Security
<b>46.5. Endpoint Device Storage</b>	BitLocker	Standard	Full	Information Security

## 47. Patch Management

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>47.1. Workstation</b>	Altiris Patch Management Windows Update for Business	Standard	Full	Support Center / SET
<b>47.2. Server</b>	Ivanti Protect	Standard	Full	Production Services / Server Support
	Microsoft System Center Configuration Manager (SCCM)	Standard	Full	Public Safety Technology
<b>47.3. Network</b>	Ansible CATTools	Standard	Full	Communications / Network Engineering and Support

## 48. Remote Network Access

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
<b>48.1. VPN Appliance</b>	Pulse SA (PSA)	Standard	Full	Information Security

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
PF&R BOEC	RadiolP	Standard	Full	Information Security
PPB BOEC	NetMotion	Standard	Full	Public Safety Technology
48.2. Client VPN Software (IPSec)	Pulse Secure Client	Standard	Full	Information Security
PPB BOEC	NetMotion Client	Standard	Full	Public Safety Technology

## 49. Storage Services and Devices

### Storage Service Note:

City restricted and confidential information is strictly forbidden from unsecured storage sites. All City confidential information must be encrypted during collection, transfer, distribution, storage, and disposal

## 50. Virus Protection

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	BTS Owner
50.1. Workstation	McAfee Endpoint Security 10 (with current update) McAfee Advanced Threat Protection (ATP)	Standard	Full	Support Center
50.2. Server	McAfee Security for Email Servers	Standard	Full	Production Services
50.3. Internal Mail	McAfee SonicWall Email Security	Standard	Full	Production Services
50.4. Console	McAfee ePO	Standard	Full	Production Services
50.5. Web Filtering	Web Security Appliance (WSA) Sophos Webroot	Standard	Full	Communications / Network Engineering and Support



# Bureau Standards

## 51. Asset Management

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>51.1. Access Control</b> <b>PBOT</b>	GFMS Key Safe NexGen Security Manager	Bureau	Bureau	PBOT
<b>PBEM</b>	ID Flow	Bureau	Bureau	PBEM
<b>51.2. Certification</b> <b>PBOT</b>	Field Input System (Custom)	Bureau	Bureau	PBOT
<b>51.3. Repairs</b> <b>PBOT</b>	Sidewalk Posting (Custom)	Bureau	Bureau	PBOT
<b>51.4. Signs</b> <b>PBOT</b>	Flexi Software SignLib (Custom)	Bureau	Bureau	PBOT
<b>51.5. Spare Parts</b> <b>PBOT</b>	AssetWorks	Bureau	Bureau	PBOT
<b>51.6. Streets</b> <b>PBOT</b>	StreetSaver	Bureau	Bureau	PBOT
<b>51.7. Transportation</b> <b>PBOT</b>	FleetFocus	Bureau	Bureau	PBOT

## 52. Communication

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>52.1. Smart Devices</b>  PBEM	Zello	Bureau	Bureau	PBEM

## 53. Contact Management

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>53.1. Citizen</b>  PBOT	Local Improvement District (Custom)	Bureau	Bureau	PBOT
<b>53.2. General</b>  PBOT	GoTo Contacts (Custom)	Bureau	Bureau	PBOT

## 54. Contract Management

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>54.1. Right of Way</b>  PBOT	Right-of-way (Custom)	Bureau	Bureau	PBOT
<b>54.2. Road Construction</b>  PBOT	Construction Contract Database (Custom)	Bureau	Bureau	PBOT

## 55. Engineering

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>55.1. Engineering</b>  PBOT	Mach7 (Custom)	Bureau	Bureau	PBOT

## 56. Fleet Management

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>56.1. Tracking</b>  PBOT	NavMan NavMan Interface (Custom)	Bureau	Bureau r	PBOT

## 57. Licensing and Permitting

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>57.1. Drivers License</b>  PBOT	BOMDrive (Custom)	Bureau	Bureau	PBOT
<b>57.2. Sidewalks and Driveways</b>  PBOT	Sidewalk Driveway Permits (Custom)	Bureau	Bureau	PBOT
<b>57.3. Utility Permitting</b>  PBOT	Utility Permits (Custom) Utility Permit Tracking (Custom)	Bureau	Bureau	PBOT
<b>57.4. Vehicle Permitting</b>  PBOT	Overdimensional Insurance Log (Custom)	Bureau	Bureau	PBOT

## 58. Monitoring

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>58.1. Motion Detection</b> PBOT	AXIS Video Motion Detection	Bureau	Bureau	PBOT
<b>58.2. Weight</b> PBOT	OverDrive (Custom)	Bureau	Bureau	PBOT

## 59. Navigation

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>59.1. Radio</b> PBOT	Trimble GPS	Bureau	Bureau	PBOT

## 60. Parking Control

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>60.1. Access Control</b> PBOT	SmartPark Access Cards (Custom)	Bureau	Bureau	PBOT
<b>60.2. Citation</b> PBOT	Politess	Bureau	Bureau	PBOT
<b>60.3. Interface</b> PBOT	Politess Citation and Photo Transfer (Custom)	Bureau	Bureau	PBOT

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>60.4. Parking Meters</b> <b>PBOT</b>	Coin Collection List (Custom) Parking Coin Reconciliation (Custom) Zone Tracker	Bureau	Bureau	PBOT
<b>60.5. Reporting</b> <b>PBOT</b>	Barricade Reports Database (Custom) Parking Enforcement Service Requests (Custom) Cale Web Office	Bureau	Bureau	PBOT
<b>60.6. Towing</b> <b>PBOT</b>	AutoReturn (ARIES)	Bureau	Bureau	PBOT

## 61. Payment Processing

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>61.1. Parking</b> <b>PBOT</b>	Amano McGann Parking Garage	Bureau	Bureau	PBOT

## 62. Personnel Management

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>62.1. Timekeeping</b> <b>PBOT</b>	Mobile Timekeeping (Custom) PRESS (Custom)	Bureau	Bureau	PBOT
<b>62.2. Verification</b> <b>PBOT</b>	I-9 (Custom)	Bureau	Bureau	PBOT

### 63. Safety

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>63.1. Vehicle Abandonment</b> <b>PBOT</b>	Abandoned Autos (Custom) PE for Sale (Custom)	Bureau	Bureau	PBOT
<b>63.2. Weather</b> <b>PBEM</b>	Flare	Bureau	Bureau	PBEM

### 64. Traffic Analysis

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>64.1. Data Analysis</b> <b>PBOT</b>	AutoTURN TRAXPro	Bureau	Bureau	PBOT
<b>64.2. Modeling</b> <b>PBOT</b>	Vissim	Bureau	Bureau	PBOT
<b>64.3. Planning</b> <b>PBOT</b>	RapidPlans	Bureau	Bureau	PBOT
<b>64.4. Simulator</b> <b>PBOT</b>	Synchro Synchro SimTraffic Visum	Bureau	Bureau	PBOT
<b>64.5. Video</b> <b>PBOT</b>	GridSmart	Bureau	Bureau	PBOT

## 65. Work Management

Sub-category Bureau (when needed)	Standard Description	Standard Classification	Support Model	Bureau Owner(s)
<b>65.1. Enterprise</b> <b>PBOT</b>	Maximo 7.x	Bureau	Bureau	PBOT
<b>65.2. Event Tracking</b> <b>PBOT</b>	Sunday Parkways (Custom) Tickler Card (Custom)	Bureau	Bureau	PBOT
<b>65.3. Integration</b> <b>PBOT</b>	Asset Manager (Custom) Maximo Java Class Extensions (Custom) Maximo Visio Work Order Toolbar (Custom) Maximo SAP Interface – Chart of Accounts (Custom) Maximo SAP Interface – GL Summary (Custom) Maximo SAP Interface – Goods Receipt (Custom) Maximo SAP Interface – Invoices (Custom) Maximo SAP Interface – Personnel (Custom) Maximo SAP Interface – Purchase Orders (Custom) Maximo SAP Interface – Vendors (Custom) Maximo SAP Interface – Work Orders (Custom) Street Light Data Access System ADAS (Custom)	Bureau	Bureau	PBOT
<b>PBEM</b>	Reflector3	Bureau	Bureau	PBEM
<b>65.4. Reporting</b> <b>PBOT</b>	IMSQuery (Custom)	Bureau	Bureau	PBOT
<b>65.5. Service Request</b> <b>PBOT</b>	OpLog Viewer (Custom) Service Requests 2 – SR2 (Custom)	Bureau	Bureau	PBOT

# Meeting Space Audio Visual Standards

Information to be added based on The Portland Building standards

# Teleworking and Hoteling Equipment Configuration Standards

BTS published a document resulting from a tremendous collaborative effort between several BTS teams and our customer bureaus. The [Teleworking and Hoteling Equipment Configuration Standards](#) is a guidance to City bureaus for employees that will be teleworking as an ongoing part of their work. Standards are provided for both equipment assigned to employees and configurations for hoteling workspaces within City facilities.

The document is posted on the BTS [Technology Standards](#) web page and will be maintained there as a separate effort.

# Commodity Hardware and Software

This section describes hardware and software that may be purchased directly by City staff from the City's recommended suppliers without intervention from BTS. The exception is purchases made for ADA accommodation. These purchases must be coordinated through the Bureau of Human Resources for proper oversight and funding. Bureaus should contact their [Human Resources Business Partner \(HRBP\)](#) for guidance.

Some items have conditions attached in order for them to function more effectively within the City's infrastructure. While BTS is not strictly enforcing the conditions, it is highly recommended that the conditions be adhered to.

## 66. General USB Device Guidance

- Minimum USB 2.0
- USB cables may not be provided by the vendor and need to be purchased separately.
- See comments related to storage in the [Removable Media](#) section below.

## 67. General Bluetooth Device Guidance

- Bluetooth devices should use native Windows device drivers.
- Bluetooth is not encrypted by default and should not be used to interface with devices that transmit protected information. Examples include keyboards (they transmit user credentials) and storage.
- Headphone / microphone pairings may be an issue if confidential information is shared via a softphone or collaboration application.
- Use of Bluetooth devices in a public setting (e.g. a coffee house, classroom, or convention room) is discouraged.

## 68. Computer Speakers

## 69. Digital Cameras

- Minimal technical support is provided by BTS.
- USB interface required. See General USB Device Guidance above.
- Support from BTS is not part of the SLA and will be billable.
- Any bundled software must be Windows compatible with the ability stay current with releases of the operating environment. There is no support from BTS for bundled software.
- Be careful about what bundled software is loaded by default. Load only what is needed.

## 70. Fax Machines

## 71. Flash / Compact Media Cards

## 72. Headphones

Headphones are devices that connect to your computer and re-direct sound from the computer speakers. Advanced models may also include a microphone. These are most

often used to provide privacy for the user and prevent disruption in the workspace. See security concerns listed in [General Bluetooth Device Guidance](#) above.

## 73. Headsets

Headsets are more advanced versions of headphones, containing both a microphone and speakers. The plug and play capability of Windows should integrate those basic features without the requirement to install device drivers or configure applications.

Use of the feature buttons to perform specific actions (e.g. answer a call, hang up a call, etc.) often requires driver installation. More advanced integration may also require the targeted application configuration to change. Each use case is specific and headset compatibility should be checked with the intended application(s). A specific headset may not be, and likely is not, compatible with every application.

- These recommendations from Telecommunications have been tested with Microsoft Teams, Zoom, and the standard softphone application.

Headset	Platform		Connection (1)		Noise Cancellation
	PC	Mobile	Bluetooth	USB	
Poly Corp. PL-B825	Y	Y	Y		Y
Poly Corp. PL-B8200 (2)	Y	Y	Y		Y
Poly Corp. PL-B5200	Y	Y	Y		
Poly Corp. PL-B4210	Y	Y	Y		
Poly Corp. PL-C5210	Y	Y		Y	
Poly Corp. PL-C5220	Y	Y		Y	

**Note 1:** All Bluetooth and USB headsets can be connected to desk phones by purchasing an additional audio processor (Poly Corp. part # PL-MDA220). Also refer to the [General USB Device Guidance](#) and [General Bluetooth Device Guidance](#) above for security insights.

**Note 2:** [ADA] This is the preferred headset for people with hearing impairment and for those who use hearing aids.

- Other commodity manufacturers for which Telecommunications does not express an opinion include Jabra and Logitech.
- Device drivers for the standard headsets listed above are available via a self-service download package available on the [Symantec Software Portal](#). Any other headset software application or driver will require exception approval.

## 74. Keyboards

- USB Interface. See [General USB Device Guidance](#) above.
- See security concerns listed in [General Bluetooth Device Guidance](#) above

## 75. Laser Printer Toner Cartridges

## 76. Locally Connected USB Printers

- **BTS encourages the use of standard network attached printers rather than locally attached InkJet or Laser printers.**

- BTS has evaluated two different USB connected HP OfficeJet printers for different business needs:
  - OfficeJet 7000 series – Offers color, large format (11x17) capability.
  - OfficeJet Pro 8100 series offers color, standard format (letter / legal) capability, is expandable for scanning, copying, and faxing, and is supported by the City's standard Universal Print Driver from HP.
- USB Interface required. See [General USB Device Guidance](#) above.
- Support from BTS is not part of the service level agreement (SLA) and will be billable. **Note: Installations for Windows computers requires BTS assistance and is billable.**
- This is for locally attached use to a single computer only. BTS will not network these devices.
- **Portland Building Expectations:**
  - Please note that desktop printers are not allowed and there are limitations on supported network printers.
  - Please submit questions and comments regarding the Portland Building via the [Project's TrackIT form](#).

## 77. Mice / Track-balls

- This includes optical, multi-button with scroll wheels, and track balls.
- USB interface. See [General USB Device Guidance](#) above.

## 78. Removeable Media (USB storage devices, CDs, DVDs)

- USB Storage Devices should be used for temporary storage or file transfer and not for long term offline file storage.
- Storage of files on removable media is not compatible with the City's effort to encourage collaboration. Use of Microsoft OneDrive and Teams is more appropriate for these situations.
- USB storage devices can carry computer viruses, both in autorun programs and in the device firmware, and cannot be easily scanned or cleaned since they are offline most of the time.
- Removable media are not appropriate for storing record copies of City records.
- Bureaus are responsible to follow established Administrative Rules regarding the use of removable media. See [ADM-8.12 - Management, Preservation and Storage of Electronic Records and Electronic Mail Correspondence \(E-Mail\)](#).
- Removable storage does not have any standard City protection such as backup and data protection. The media associated with this type of storage is fragile and susceptible to failure.
- This category is generally for devices used with non-sensitive data.
  - Encryption strategies for sensitive data requirements must be discussed with BTS Information Security and adhere to Administrative Rule [BTS-2.15 - Encryption](#).
  - Encryption on USB storage devices, small "thumb" or "jump" drives in particular, is allowed and accomplished using the SanDisk SecureAccess encrypted vault. Additional information is available on [SanDisk's web site](#).
- Devices chosen should operate with standard built-in operating system (Windows) drivers and not require customized drivers.
- USB Interface required. See [General USB Device Guidance](#) above.
- Be aware of potential compatibility problems between CD and DVD media formats.



# Technology Specifications

This section documents the minimum specification used to select the approved standards. Not all standards have associated specifications. This is because some listed standards are documentation of best practice.

## 79. Workstation Standard Criteria

The base component criteria for standard desktop and laptop workstations is as follows.

### 79.1. Standard Desktop Workstation:

- Intel ® 8<sup>th</sup> generation processors(i5), 64-bit
- Memory
  - PPB: 16 GB Optane memory
  - All other bureaus: 8 GB RAM memory
- Local storage
  - PPB : 500 GB HD
  - All other bureaus: 256 GB Solid-State Drive (SSD)
- DVD +/- RW Optical single layer drive
- On-board video card, dual monitor capable
- 104 key keyboard
- Optical wheel mouse
- Minimum 100 Mb/s network interface card
- Mid tower case
- Energy Star 6.0 and EPEAT Bronze compliant
- Intel Standard Management with Active Management Technology (AMT)
- 3 year warranty
- See [current desktop hardware specification](#) on the City website

### 79.2. Standard Laptop Criteria:

Matches desktop workstation criteria as close as possible with the following additions:

- Standard:
  - 14-inch LED HD display
  - WiFi 802.11 ac/a/b/g/n 2x2 Wireless LAN + Bluetooth 4.2, supporting EAP-TLS and WAP2
  - Docking bay
  - Built-in camera and microphone
  - Backlit keyboard
- Lite – Same as the standard laptop with the following modifications:
  - 13.3-inch LED display
- PPB – Same as standard laptop with the following modifications:
  - Built-in LTE
  - Keyboard with integrated fingerprint reader and smartcard reader
- Ruggedized:
  - Weatherproof and shock resistant casing
- Options:
  - Touch screen
  - Built-in 4G LTE
  - Intel i7 processor
  - Additional RAM memory

- Larger hard drive

## **80. Mobile Data Computers (MDC)**

The MDC is a PC that has been physically adapted to a mobile, public safety environment. The recommended minimum hardware specifications are:

- Intel ® processor (i5) 64-bit
- 8 GB DDR3 RAM memory
- Intel ® HD graphics 4600
- 256 GB solid-state drive (SSD)
- DVD +/- RW optical single layer drive
- 13-inch LED display (1024 x 768 minimum) with touch screen
- Fingerprint reader
- Intel ® dual-band AC 7260+ Bluetooth
- Energy Star 6.0 and EPEAT Bronze compliant
- 5-year warranty

Network connectivity is achieved through carrier supplied 3G/4G cellular data networks.

## 81. Network Printer Standard Criteria

Attribute	Small / Medium Workgroup	Larger Workgroup	Large Format
Pages per minute	25 – 30	25 – 50	25 – 50
Minimum duty cycle per month	3,000	15,000	10,000
Network interface	Internal 10/100 MB/sec	Internal 10/100 MB/sec	Internal 10/100 MB/sec
Network address	IPv4	IPv4	IPv4
Page size	Letter 8.5 x 11 Legal 8.5 x 14 #10 Envelope	Letter 8.5 x 11 Legal 8.5 x 14 #10 Envelope	Letter 8.5 x 11 Legal 8.5 x 14 Tabloid 11 x 17 #10 Envelope
Page definition language	PCL 5 / Postscript	PCL 5 / Postscript	PCL 5 / Postscript
Memory	32 MB	96 MB	128 MB
Display	LCD for on-site config	LCD for on-site config	LCD for on-site config
Duplexing	Yes	Yes	Yes
Trays	1 tray 1 Multi-purpose tray	2 trays 1 Multi-purpose tray	2 trays 1 Multi-purpose tray
Envelope Feeder	Optional	Optional	
Compatible with 100% recycled paper	Yes	Yes	Yes
Black and White	Default	Default	Default
Color	Optional	Optional	Optional
Energy Star	Yes	Yes	Yes

**Universal print driver** All printers must be certified to operate with the HP universal print driver. Microsoft certified drivers for installation on Windows servers are found on the [Windows Server Certification Catalog](#) web page.

## 82. Network Printer Specifications (Black and White)

Feature	M404dn	M507dn	M607dn	M608dn/x	M712dn High volume Large Format
Print Speed Black (ppm pages / min)	40	45	55	65	40
Resolution (dpi: dots per inch)	1200 x 1200	1200 x 1200	1200 x 1200	1200 x 1200	1200 x 1200
Monthly duty cycle (pages)	80,000	150,000	250,000	275,000	100,000
Recommended monthly duty cycle (pages)	750-4,000	2,000-7,500	5,000-20,000	5,000-25,000	5,000-20,000
Memory: Standard	256 MB	512 MB	512 MB	512 MB	512 MB
Memory: Max	256 MB	1.5 GB	1.5 GB	1.5 GB	1 GB
Paper trays: Std	2	2	2	dn:2 x:3	3
Paper trays: Max	3	5	6	6	6
Duplex printing	Auto / Std	Auto / Std	Auto / Std	Auto / Std	Auto / Std
11x17 (Large Format)	No	No	No	No	Yes
Energy Star / EPEAT	Yes / Silver	Yes / Silver	Yes / Silver	Yes / Silver	Yes / Silver
HP ePrint	Yes	Yes	Yes	Yes	Yes

## 83. Network Printer Specifications (Black and White Multi-Function)

Feature	M227fdn	M426fdn	M725dn Large Format		
Print Speed Black (ppm pages / min)	40	45	55		
Resolution (dpi: dots per inch)	1200 x 1200	1200 x 1200	1200 x 1200		
Monthly duty cycle (pages)	80,000	150,000	250,000		
Recommended monthly duty cycle (pages)	750-4,000	2,000-7,500	5,000-20,000		
Memory: Standard	256 MB	512 MB	512 MB		
Memory: Max	256 MB	1.5 GB	1.5 GB		
Paper trays: Std	2	2	2		
Paper trays: Max	3	5	6		
Duplex printing	Auto / Std	Auto / Std	Auto / Std		
11x17 (Large Format)	No	No	No		
Energy Star / EPEAT	Yes / Silver	Yes / Silver	Yes / Silver		
HP ePrint	Yes	Yes	Yes		
Scanner Type	Flatbed with auto doc feed	Flatbed with auto doc feed	Flatbed with auto doc feed		
Scan Resolution (dpi): Max	1,200	1,200	600		
Scan speed: black and white (ppm)	12	26 ppm / 47 ipmr	49 ppm / 19 ipm		
Scan speed: color (ppm)	n/a	21 ppm / 30 ipm	30 ppm / 14 ipm		
Scan size	8.5 x 11.7 flat 8.5 x 14 ADF	8.5 x 11.7 flat 8.5 x 14 ADF	11 x 17		
Copy speed (cpm)	30	40			
Copy resolution	600 x 600	600 x 600	600 x 600		
Copy reduction / enlargement	25 – 400%	25 – 400%	25 – 400%		
Fax resolution	300 x 300	300 x 300	300 x 300		

## 84. Network Printer Specifications (Color)

Feature	M454dn	CP5225dn Large Format	M553dn/x	M653dn	M751dn Large Format
Print Speed Black / color (ppm pages / min normal quality)	28 / 28	20 / 20	40 / 40	60 / 60	30 / 30
Resolution (dpi: dots per inch)	600 x 600	HP ImageREt – 3600	HP ImageREt – 3600	HP ImageREt – 3600	600 x 600
Monthly duty cycle (pages)	50,000	75,000	80,000	120,000	120,000
Recommended monthly duty cycle (pages)	750 – 4,000	1,500 – 5,000	2,000 – 6,000	2,000 – 17,000	2,500 – 13,000
Memory: Standard	256 MB	192 MB	1 GB	1 GB	1 GB
Memory: Max	512 MB	448 MB	2 GB	2 GB	1 GB
Paper trays: Std	2	2	dn: 22 x:3	2	3
Paper trays: Max	3	3	5	5	6
Duplex printing	Auto / Std	Auto / Std	Auto / Std	Auto / Std	Auto / Std
11x17 (Large Format)	No	Yes	No	No	Yes
Energy Star / EPEAT	Yes / Silver	Yes / Silver	Yes / Silver	Yes / Silver	Yes / Silver
HP ePrint	Yes	No	Yes	Yes	Yes

Feature	M855xh Large Format				
Print Speed Black / color (ppm pages / min normal quality)	45 / 45				
Resolution (dpi: dots per inch)	1200 x 1200				
Monthly duty cycle (pages)	175,000				
Recommended monthly duty cycle (pages)	4,000 – 17,000				
Memory: Standard	1 GB				
Memory: Max	1 GB				
Paper trays: Std	5				
Paper trays: Max	5				
Duplex printing	Auto / Std				
11x17 (Large Format)	Yes				
Energy Star / EPEAT	Yes /				
HP ePrint					

## 85. Network Printer Specifications (Color, Multi-Function)

Feature	M479fdn				
Print Speed Black / color (ppm pages / min normal quality)	28 / 28				
Resolution (dpi: dots per inch)	600 / 600 HP ImageREt – 3600				
Monthly duty cycle (pages)	50,000				
Recommended monthly duty cycle (pages)	750-4,000				
Memory: Standard	512 MB				
Memory: Max	512 MB				
Paper trays: Std	2				
Paper trays: Max	3				
Duplex printing	Auto / Std				
11x17 (Large Format)	No				
Energy Star / EPEAT	Yes / No				
HP ePrint	Yes				
Scanner Type	Flatbed with auto doc feed				
Scan Resolution (dpi): Max	1,200				
Scan speed: black and white (ppm)	26 ppm / 47 ipm				
Scan speed: color (ppm)	21 ppm / 30 ipm				
Scan size	8.5 x 11.7 flat 8.5 x 14 ADF				
Copy speed (cpm)	28				
Copy resolution	600 x 600				
Copy reduction / enlargement	25 – 400%				
Fax resolution	300 x 300				

## 86. Scanner Standard Criteria

Scanner criteria are based on the needs of image scanning as specified by the SAP implementation project.

Type	Native Resolution	Speed (B & W)	Max Scan Size	Connectivity	Type	Doc Feed
Low Volume	300 x 300 dpi	10 ppm	8.5 x 14	USB 2.0	Flatbed or ADF	Std 50 sheet
Medium Volume	300 x 300 dpi	20 ppm 40 ipm duplex	8.5 x 14	USB 2.0	Flatbed or ADF	Std 50 sheet

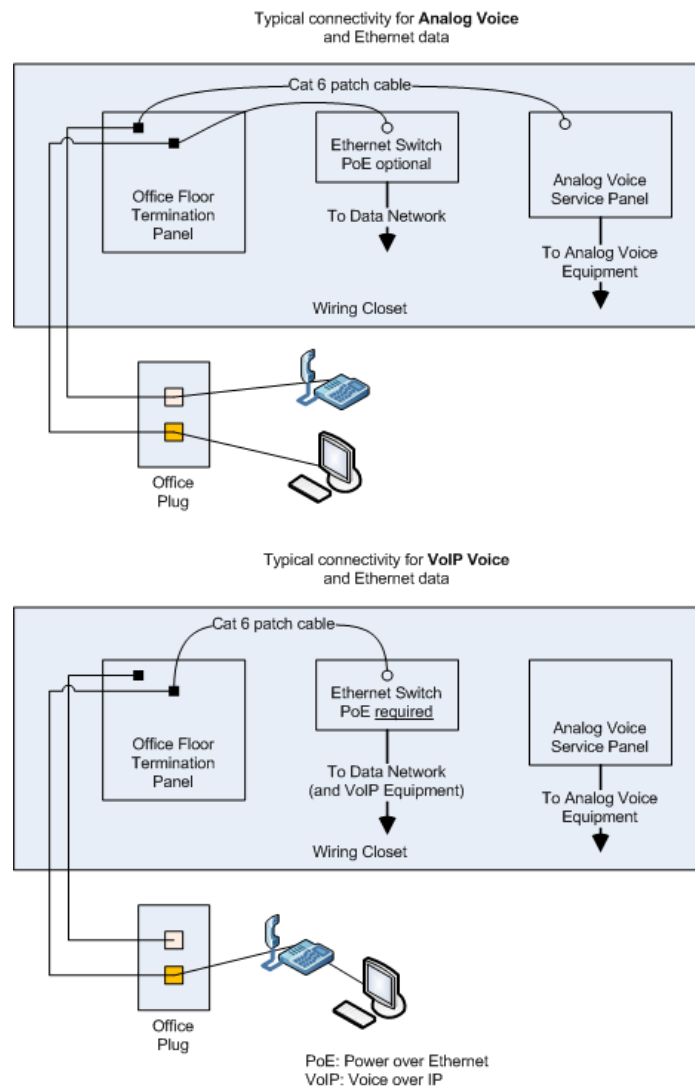
## 87. Cabling Specification

### New Construction

In new construction scenarios, BTS has determined that installing two (2) Category 6 cables are generally sufficient to connect typical computer and telephone equipment found in an office or cubicle. Wiring closet configuration will generally conform to the following block diagram.

### Remodel

In remodel scenarios, BTS will evaluate the existing cabling and wiring closets in order to determine and recommend the most cost-effective method of cabling the remodeled space that meets the customer business need while preserving maintainability of the underlying infrastructure in the wiring closet. This may not always result in a reduced cable count to the office or cubicle.



## 88. Video Projector Criteria

Attribute	Ultra Portable	Portable	Ceiling Mount
Resolution	1024 x 768 (XGA / HDMI)	1024 x 768 (XGA / HDMI)	1024 x 768 (XGA / HDMI)
Brightness	2,500 lumens minimum	2,500 lumens minimum	100 lumens / sq. foot of screen minimum
Remote Control	Optional	Optional	Required
Zoom Lens	Yes	Yes	Yes
Focus Control	Manual	Manual	Remote Control
Video Input	VGA	VGA	VGA
Color Spread	16.7 million	16.7 million	16.7 million
Weight	4 pounds or less (light as possible)		

### Considerations for Ceiling Mounted Projectors

When mounting a projector to the ceiling, the projector, screen size and ambient room light must be considered together. The Brightness for a Ceiling Mounted projector is expressed as a minimum lumens per square foot of screen area, where lumens is the rated lumen output of the projector. The higher the value, the easier the image will be to see. On a reflective screen, 100 lumens / sq ft will yield an image that is visible in standard windowless conference room lighting. Uncovered windows or projecting on other surfaces such as a wall may require a higher value of lumens per square foot. A value of 125 lumens / sq ft should be considered.

Care must also be taken with the placement of the screen in relationship to ceiling lights and windows. A ceiling light directly over the screen will wash out the image regardless of its brightness. Electrical modifications may be necessary in order to turn “problematic” lights off when projecting. Similarly, window light can also wash out the screen image and blinds may be necessary to achieve acceptable viewing.

# Appendix A

## Web Site References

City of Portland web site

<https://PortlandOregon.gov>

BTS Technology Standards page

<http://www.portlandonline.com/omf/index.cfm?c=46940>

BTS Technology Business Consultant

<https://www.portlandoregon.gov/bts/index.cfm?&a=53999>

Portland Building Project's TrackIT form

<https://www.portlandoregon.gov/omf/index.cfm?&c=70798>

State and City Rules Related to Public Recordkeeping Requirements

<https://www.portlandoregon.gov/archives/70031>

Apple Device Support Dates

<https://www.portlandoregon.gov/bts/article/660950>

ADM-8.12 - Management, Preservation and Storage of Electronic Records and Electronic Mail Correspondence (E-Mail)

<https://www.portlandoregon.gov/citycode/article/262374>

SanDisk's web site

[https://kb.sandisk.com/app/answers/detail/a\\_id/2399/~/\\_sandisk-secureaccess-3.02-support-information-and-download-page](https://kb.sandisk.com/app/answers/detail/a_id/2399/~/_sandisk-secureaccess-3.02-support-information-and-download-page)

Current desktop hardware specification

<https://www.portlandoregon.gov/bts/60679>

Windows Server Certification Catalog

<http://www.windowsservercatalog.com/ready.aspx>

City Code 5.33.080 Environmentally Preferable Procurement

<https://www.portlandoregon.gov/citycode/article/552961>

Teleworking and Hoteling Equipment Configuration Standards

<https://www.portlandoregon.gov/bts/article/780907>

Microsoft Forms Questions, Responses, and Limitations

<https://support.microsoft.com/en-us/office/form-question-response-and-character-limits-in-microsoft-forms-ec15323d-92a4-4c33-bf88-3fdb9e5b5fea>

City of Portland ADA Page

<https://www.portland.gov/transportation/engineering/ada-page>

ADA Title II Regulations

[https://www.ada.gov/regs2010/titleII\\_2010/titleII\\_2010\\_regulations.htm](https://www.ada.gov/regs2010/titleII_2010/titleII_2010_regulations.htm)

# Appendix B

## Bureau Acronyms and Their Meaning

Acronym	Translation / Meaning
BOEC	Bureau of Emergency Communication
PBOT	Portland Bureau of Transportation
PF&R	Portland Fire and Rescue
PPB	Portland Police Bureau

# Appendix C

## Change Log

Changes to the document since last adoption.

Date	Item	Standard Description	Standard Classification / Support Model
5/25/2021		Begin editing and review of Spring 2021 changes by IB.  Summary of changes tracked in a separate document titled Standards Directory Change Log.	
7/6/2021		Changes approved by IB. Move forward for approval by BLT	
9/14/2021		Adoption ratified by BLT and document posted on IB website.	
9/20/2021	18.8 <a href="#">Basic Cell Phone</a>	Update required by the EMM project: Classified the entire section as Legacy with Limited support. Updated the Standard Owner to Support Center. Kyocera Dura LTE is the only affected device	Legacy / Limited
9/20/2021	32 <a href="#">Geographical Application Tools</a>		
9/20/2021	36 <a href="#">Office 365 Components</a>	Consolidated Stream to a single line item classified as Allowed with Limited support	Allowed / Limited
9/20/2021	42.1 <a href="#">Mobile Operating System</a>	Updated iOS and iPadOS to version from 14.4 to 14.7. Note that 14.8 has been released.	
9/20/2021	24.1 <a href="#">Online Conferencing</a> 36 <a href="#">Office 365 Components</a>	Skype for Business is deprecated and no longer available for use. Removed from these sections	
9/28/2021	42.1 <a href="#">Mobile Operating System</a>	Updated iOS and iPadOS to version 14.8	

Date	Item	Standard Description	Standard Classification / Support Model
9/28/2021	36 <a href="#">Office 365 Components</a>	Updated MS Forms into internal and external use cases with unique classifications and footnotes	
10/1/2021	42.1 <a href="#">Mobile Operating System</a>	Updated iOS and iPadOS to version 15.0 via email approval, Moved version 14 to Legacy and retired all versions prior to 14	
10/12/2021	36 <a href="#">Office 365 Components</a> 45.2 <a href="#">Multifactor Authentication</a>	Added Microsoft Authenticator as a City standard for Office 365	Standard / Limited
10/12/2021	40.1 <a href="#">Server Based Operating System</a>	Updated Windows Server version to 2022. Moved 2019 to Legacy	Standard / Full
10/12/2021	33.5 <a href="#">Computer Aided Design</a>	BTS Stores requested BlueBeam Revu be updated to Limited support. This change should have made in the annual review.	Standard / Limited
10/26/2021	32.2 <a href="#">GIS Desktop Applications</a> 32.3 <a href="#">GIS Mobile Applications</a>	Added all ArcGIS mobile applications that were pending license review from the 9/28 IB meeting.	Standard / Limited
10/26/2021	44.1 <a href="#">Operating System</a>	Updated Windows 10 to version 21H1. Moved 20H2 to Legacy	Standard / Full
10/26/2021	35.4 <a href="#">Electronic Document Reader</a>	Added new section with Adobe Digital Editions as the initial entry	Standard / Limited
1/18/2022	36 <a href="#">Office 365 Components</a>	Updated Whiteboard to Allowed and User support to match operational settings in our tenant.	Allowed / User
1/18/2022	42.1 <a href="#">Mobile Operating System</a>	Updated iOS and iPadOS from version 15.0 to version 15.2	

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