

- b. Workstations & servers shall not exceed 50% CPU and memory utilization.
- c. Only be comprised of hardware that is Enterprise Class.
- d. Be accessible from anywhere on the network via a Web Browser
- e. Include two 24" LCD display monitors, keyboard and mouse at the desk in addition to a 42" Auxiliary LCD display
- f. Enable one to view the entire network from a single location displaying status information, forwarding alert information and performing diagnostic procedures.
- g. Enable monitoring, reporting, controlling and optimization of system resources.
- h. Enable maintenance of the operational parameters of the infrastructure components and end-user devices.
- i. Utilize Simple Network Management Protocol (SNMP).
- j. Exhibit a Hierarchical Design making it easy to drill down to details.
- k. Exhibit audible and visual alarms.
- l. Capable of sending alarms and notifications via email and text messages to select users (configurable by the system administrator).
- m. Display real-time call activity, channel usage, radio traffic activity and historical radio usage statistics.
- n. Be able to limit user access and set user privileges.
- o. Be located at both 2nd & Wyoming "Voter Room" and 1234 Market St with respective workstations. ~~Additional workstations shall be located at following locations; Wyoming Ave Help Desk, 1234 Market St 13th Floor, Market East Server Room~~ See Drawing ES-1000-6, Table 4 for quantities and ten (10) laptops for remote use.
- p. The Contractor shall provide ~~a quantity of ten (10)~~ Remote Portable Test Units (RPTU). These shall be Panasonic Toughbook CF-54 minimum configuration: i5-6300U 2.4Ghz with 8 GB of ram, 1T SSD, backlit keyboard, serial port, Microsoft Office Professional. See Drawing ES-1000-6, Table 4 for quantities. RPTU's shall be preconfigured with all software and hardware required for maintenance and troubleshooting of the radio system. The devices shall be provided with Microsoft Office Professional suite for generating reports and analyzing and tracking events. All original disks to re-install software and required licensing keys shall be included.
- q. The network management System shall be accessible at all remote simulcast sites via Contractor-provided Remote Portable Test Units.

6. System Administration Management - The Radio System shall include a central administration system with remote access using a standard Web Browser. The central administration system shall:

H. Consist of a High Availability Server loaded with the OEM System Administration Application.

- a. Be a secure partitioned database that allows SEPTA to administer its users and talkgroups and automatically propagate changes throughout the network.
 - b. Allow administrators to manage the configurations of networks and devices in the Astro 25 system.
 - c. Allow for provisioning of subscriber radios, consoles and other devices requiring access to the system.
 - d. Only be comprised of hardware that is Enterprise Class.
 - e. Include a 24" LCD display keyboard and mouse.
 - f. Be accessible from anywhere on the network via a Web Browser.
 - g. The central administration servers shall be located with the Astro 25 Core servers at Wyoming Ave & 1234 Market St locations.
 - h. Remote terminals shall be provided by the Contractor at: 1234 Market St. 13th floor, Wyoming Dispatcher Desk, Wyoming Radio Room and Market East Server Room. See Drawing ES-1000-6, Table 4 for quantities
 - i. Be accessible via Contractor provided Remote Portable Test Units.
7. **Alarm System** - The Astro 25 Network Architecture shall incorporate an Alarm System which shall support all the Radio System equipment using SNMP traps and be capable of a minimum of 32 binary external alarms and/or analog points to monitor other SEPTA site equipment.

- a. The Alarm System at each site shall:
 - Collect internal alarms and activity from the site equipment including but not limited to base stations, switches, routers and gateways etc.
 - Collect external alarms (SEPTA equipment) and activity from the site.
 - Forward alarms to the Network Manager.
 - Forward activity to the System Manager.
 - Maintain a Database of the Site Configuration.