

ITS Strategic Roadmap FY16

Data Center and Environmental

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Background

Since the first mainframes were introduced into the Metro Government's finance department in 1973, the Information Technology Services department (then *Data Processing and Computer Services*), has been responsible for the management of the primary Metro general government data center and backup data site.

Metro's Primary Data Center, which came into service in 2010, is the Metro Government's only modern, sizeable Tier 3 Data Center. The Tier 3 designation is an industry specification that designates a level of availability, redundancy, and security. Due to the significant investment to bring the site to a Tier 3 level, the Metro construction philosophy is to replace substandard data rooms in Metro facilities as they are upgraded or replaced unless a critical business need is identified.

The Primary Data Center includes:

- 14,400 of developed space;
- supports 5 diverse network carriers;
- fault tolerance for dual city-wide network paths;
- redundant power from Nashville Electric Service (NES);
- four 225kVA UPS;
- 1.5mW paralleled emergency power; and
- N+1 parallel redundancy power and cooling systems.

ITS also manages the Metro Backup Data Site. In 2012, an analysis was completed by the Sigma 7 group in a collaborative spirit with all Metro departments and agencies that currently operate data centers to support an shared, modern backup data center to be shared across Metro departments and agencies. This project has not been funded.

Several departments and agencies of the Metropolitan Government continue to operate data centers and are not hosted at Metro Primary Data Center:

- Metro Nashville Police Department,
- Metro Nashville Public Schools - primary and backup,
- Metro Transit Authority,
- Davidson County Sheriff's Office.

Services offered through the data center have extended through the years to management of critical component infrastructure for all sites where ITS equipment is housed. Environmental support services include design, installation, and maintenance of equipment necessary to provide IT equipment rooms



and other spaces with clean uninterrupted power, monitoring of proper temperature and humidity, plus alert and event monitoring via remote communications.

Current Strategic Drivers

1. **Continuing Demand for Metro Construction Projects** (Game changing) – Presently the ITS department supports IT services within the general government in 265 separate locations. The drive for new facilities and upgrades to existing facilities continues, though there is uncertainty associated with the priorities of a new administration.
2. **Customer Demand: High Availability** (High) – Customers and the citizens they serve demand extremely high availability of data center services to meet the business-critical and, for some departmental customers, life and death responsibilities they hold.
3. **Demand for Secure Government Facilities and Systems** (High) – With massive data breaches in the news on seemingly a daily basis, we must strive at all times to protect the security, availability and integrity of all systems and facilities entrusted to our management.
4. **Consolidated Service vs. Multiple Duplicative Implementations** (High) – There are management and cost benefits from a single Metro Government solution for this service. This must be balanced with the cost-benefit equation when considering conversion of existing systems to roll into the enterprise solution.
5. **Customer Demand: Department Control** (High) – For many times what are political reasons, customers state the need for “control” of what are at many Federal, state and local government levels, enterprise services.
6. **Customer Demand: Non-Traditional IT Equipment Protection** (High) – Departments, understanding the need for high availability, increasingly demand power and environmental protection for Video Servers, Security Cameras, and associated recording equipment in non-traditional IT settings.
7. **Customer Demand: Relocate MNPD and JIS backup Storage Area Networks (SANs) to Metro Primary Data Center** (High) – This project has been requested and approved.
8. **Cloud Services** (High) – The widespread public acceptance of cloud for services that employees and citizens use every day, along with the potential for positive financial impact and increasingly effective cloud vendor security stance make a hybrid model a potential direction.
9. **Disaster Recovery** (High) – Considering that connectivity is the basis of both disaster remediation and business recovery activities, as seen in the 2010 Nashville flood, a focus on disaster recovery readiness is critical.

On the Horizon Strategic Drivers

1. **Primary Data Center Utilities Shortfall** (High) – Recent increases of hosted equipment will tax the capacity of the electrical and air conditioning utilities.
2. **Technology End of Life: Batteries** (High) – This is separate from the smaller, single phase units listed below. This is for the larger 3 phase units that service entire building IT needs, (i.e.) MDF and all IDF's.



3. **Technology End of Life: UPS (High)** – We are approaching the end of the life cycle for the UPS systems that were installed when we first began installing VoIP technology and POE equipment in Metro. This will significantly increase the amount of replacements required in a normal year.
4. **Pending Moves to MTA Data Center (Medium)** – The complete list of who and when is not yet known.
5. **New Backup Data Center Project (Low)** – In discussion stage, no planning.

Short Term Goals (0-6 months)

#	Goal/Objective	Est. Start	Est. Duration
1	Have UPS & Environmental Equipment installed at New Construction sites within the time frames set for each project. Capital funds required.	7/15	18 Months
2	Properly protect the Tier 1, 2, & 3 equipment used to replace the current SONET Technology. Capital funds are required.	7/15	6 Months
3	Work with the system & physical security groups to ensure proper protection of the equipment used for building and network security.	7/15	6 Months
4	Work with all stakeholders to ensure most efficient, cost-effective solutions are used for selection of hosting sites.	7/15	6 Months
5	Add electrical circuits, rack grounding, and fiber conduit to support relocation of MNPD & JIS backup storage area networks (SAN). Capital funds will be required.	7/15	2 Months

Medium Term Goals (6-18 months)

#	Goal/Objective	Est. Start	Est. Duration
1	Continue to provide N+1 redundancy for the Data Center HVAC by installing the 6 th CRAH unit in the AC configuration. Capital funds are required.	1/16	3 Months
2	Work with the BCDR group to ensure all current infrastructures are documented & a recovery scenario is kept up to date.	1/16	12 Months
3	Keep proper protection of ITS & MNPD equipment by replacing End-of-Life Batteries in UPS systems at the Primary Data Center, Police Precincts at Hermitage, South, North, and West. Capital funds will be required.	1/16	18 Months
4	Replace EOL UPS Systems at Water Services north campus and Sheriff's south campus. Capital funds will be required.	4/16	6 Months
5	Work with General Services, Engineers, and other stakeholders on backup Data Center Design, pending approval. Capital funds required.	9/16	6 Months



Long Term Goals (18-36 months)

#	Goal/Objective	Est. Start	Est. Duration
1	Managed our Data Center resources in a way that keeps us equal or better than industry averages for Power Utilization Efficiency (PUE) and Data Center Infrastructure Efficiency (DCiE), to ensure we are competitive with privately run data centers.	1/17	12 Months
2	Maintain Data Center Uptime requirements that meet or exceed SOC2 Standards.	1/17	12 Months

Related Roadmaps

- Enterprise Server
- Server Infrastructure
- Network Infrastructure
- Network Security
- Physical Security

