

## **Dallas Area Rapid Transit – Information Technology Overview**

### **List of applications:**

DART has three enterprise class application suites:

- Lawson – Used in Finance, Payroll, Procurement and Human Resources
- Trapeze – Used for service planning and transportation operations
- SPEAR - Used for maintenance scheduling, work orders, and materials management.

DART also has a number of other business systems that support the agency or in some cases individual departments. These include:

- MS Access Applications (including OCC Log)
- FileNet / Encapture (document archive, records management)
- Labor Tracking
- TeleStaff (Police department personnel tracking and timekeeping)
- Rail Program Development (RPD) applications support (including CMS – Contract Management System)
- POS (Point-of-Sale for Marketing)
- TVM (Ticket Vending Machines)
- Farebox
- Ripplestone / Crystal Reports
- Fleetwatch (fleet fueling and fluids consumption)
- EPC (Electronic Parts Catalog)
- GAR (Guide-a-Ride)

Finally, there are over 100 workflow applications developed in-house under the DARTNet intra net umbrella, replacing most transaction paperwork with on-line requests and approvals.

Example include work requests of various departments, employee performance appraisal forms, new hire and termination workflows, electronic purchase requests and many more.

### **Operating systems:**

All enterprise class systems and most departmental systems run on the HP UNIX platform. There are some smaller or specialized systems that run on Windows 2010 or Windows 2007.

### **List of databases:**

All the enterprise class systems run on Oracle, which is the preferred standard DBMS. A small number of other systems run on SQL (e.g. Telestaff), but SQL is not used for development and its use is curtailed.

### **List of key interfaces:**

There are hundreds of interfaces. The major ones are between almost all systems and Lawson; including from Telestaff, Trapeze and Spear. Lawson is the “single source of truth” for most employee data, with interfaces to Active Directory, DARTNet workflows for approval

hierarchies, Spear for materials item master definitions and suppliers and others. Telestaff and Trapeze interface to Lawson with timekeeping data for payroll processing.

**Key hardware, servers, etc.:**

The major server hardware platform is HP, deploying an HP C7000 chassis with 24 blade servers per chassis running UNIX and hosting up to 200 virtual servers. These servers host the terminal services for delivery of virtual applications to the desktop.

Storage is on HP EVA SAN equipment, complemented by some network attached storage. There are some Windows servers, also manufactured by HP.

**Network diagram / schematic:**

All major sites are connected via an AT&T leased fiber MPLS network, with dual connectivity to the primary data center (PDC) at 1401 Pacific Avenue and the secondary data center (SDC) in Plano. The SDC and PDC are connected via a dedicated leased fiber Gigamon link from AT&T, for real time data synchronization. See appendix #1 for network diagram.

There are T1 circuits between larger sites for voice traffic, from remote PBXs to the central master PBX in 1401 Pacific, which manages four digit dialing and hosts the centralized voice mail system. This voice network is in the process of being replaced with a voice over IP (VoIP) system that will use the MPLS network.

The LAN infrastructure within each building uses Ethernet over copper to IDF closets on each floor hosting Enterasys switches and routers.

**System development life cycle & production change control policies & procedures**

There is no formal SDLC employed, as most development is iterative web based and most applications are purchased not built. However, there is a formal project management process deployed, with all projects planned and tracked in Clarizen.

There is a Change Approval Board (CAB) which meets weekly to assess and approve, or not, changes to production systems. The criteria to be considered for changes are presented to the CAB by the project manager.

**Disaster recovery plan(s) and/or business continuity plan(s):**

Data for all important systems, including enterprise class applications, departmental applications and DARTNet workflows, is replicated in real time between the PDC and the SDC. Servers in the SDC are loaded with copies of production system software and are on hot standby for activation in the event of a disaster. See appendix #2 for an outline of the business recovery plan.

Application systems have been categorized as Tier 1 (mission critical), Tier 2 (important) and Tier 3 (tertiary). The DR plan recovery time objectives (RTO) calls for Tier 1 systems to be back on line in four hours, Tier 2 in four hours to seven days, and Tier 3 in seven to 30 days.

There is an agency-wide continuity of operations plan (COOP) that is compiled and maintained by the DART Police department and registered with the appropriate federal agencies. It describes alternate work locations, responsibilities of individuals (by job title) in the event of a disaster and priorities for maintaining or resuming public transit services. The IT DR plan is referenced as part of the COOP.

**List of outsourced IT providers, hosts, and ASPs (if applicable):**

There are only three externally hosted systems.

One is used by the Risk Management department to handle claims on behalf of and against DART by third parties.

The second is Clarizen, the project management tool used initially by IT but now in use in Marketing, Procurement and Human Capital departments.

The third is the email, calendaring and contacts system for all agency personnel with an email account hosted by Microsoft Outlook.

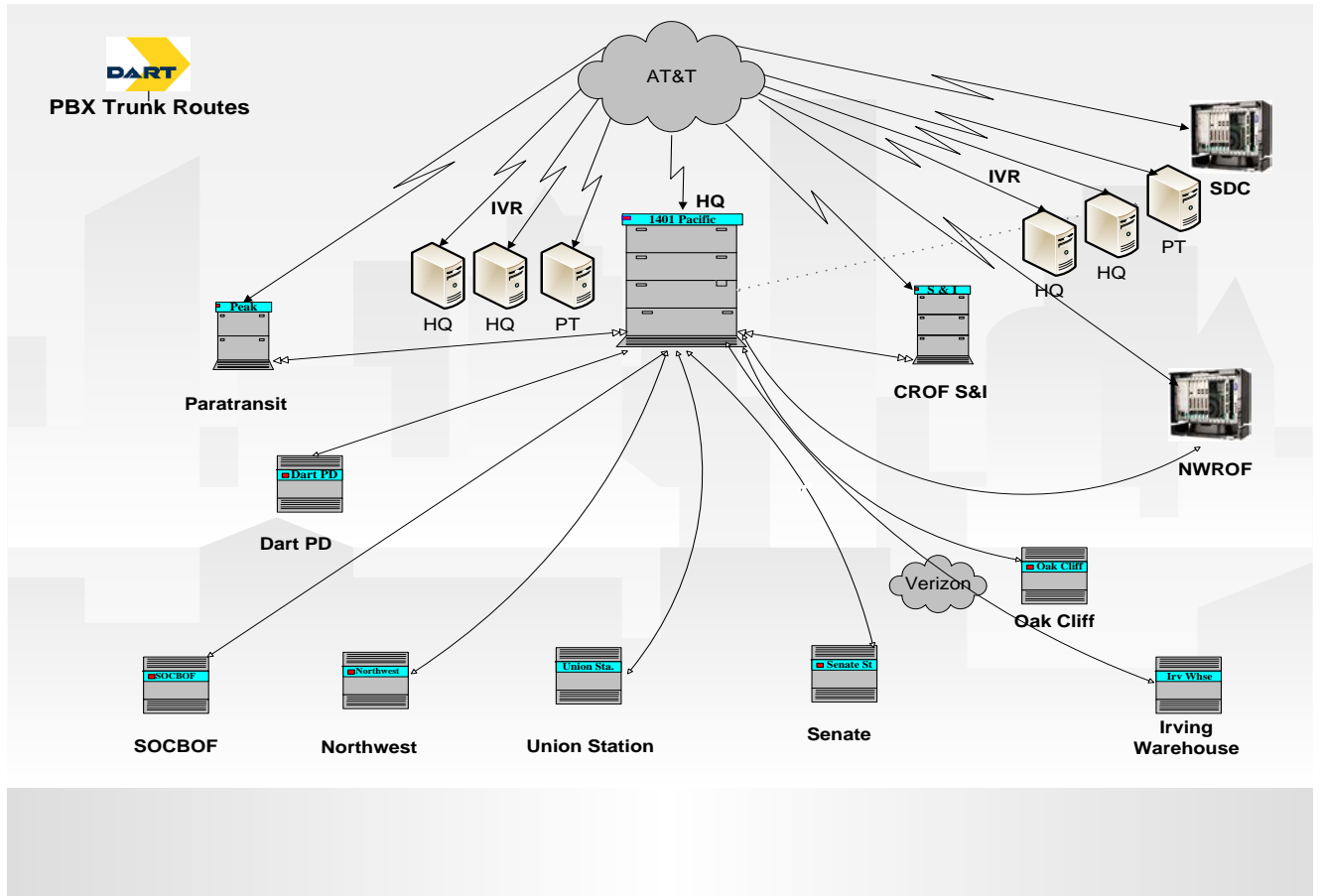
Additionally, IT has recently signed a multi-year contract with Critical Start to provide IT managed security services.

**Number of stand-alone data centers and locations:**

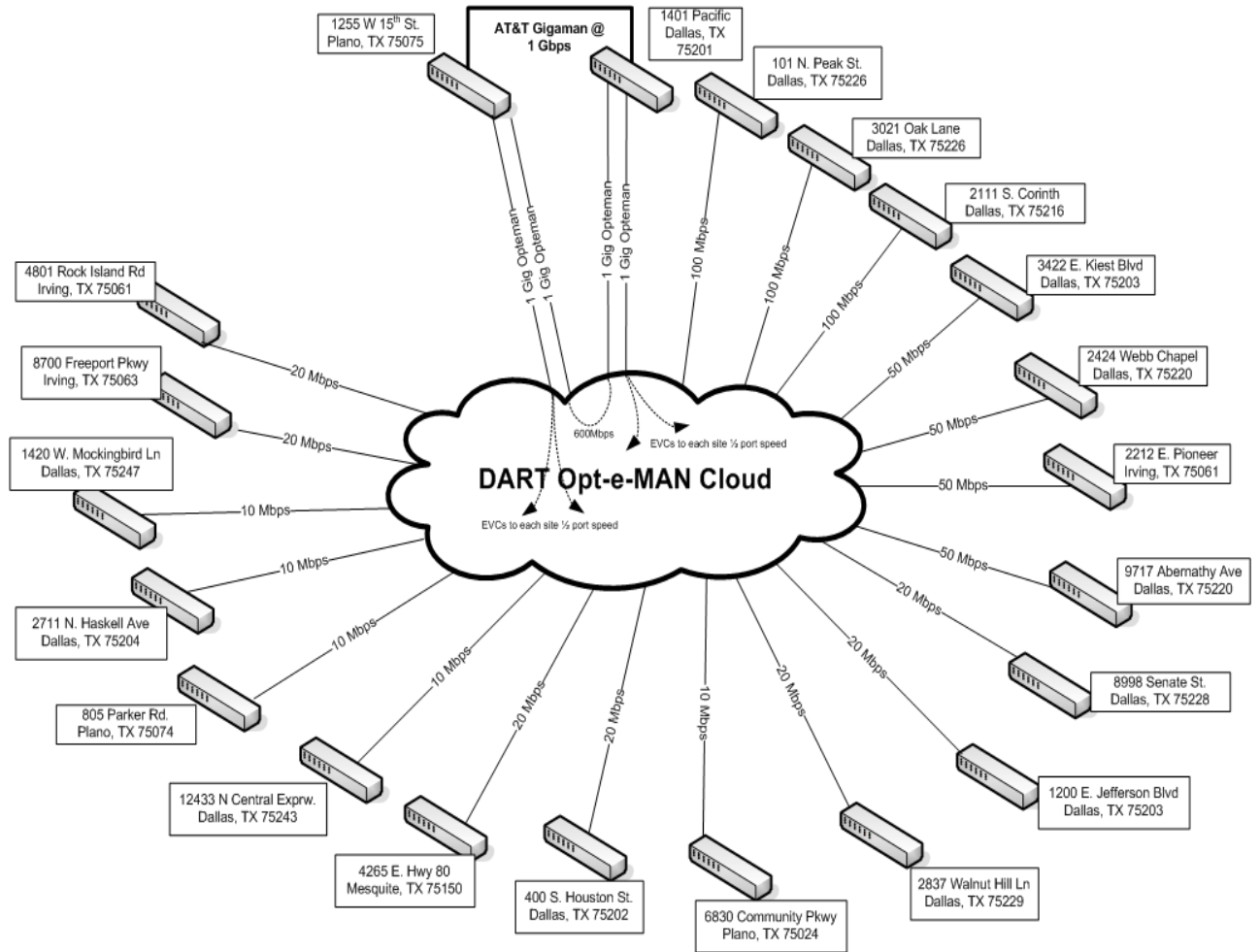
Two, as described above, the PDC in 1401 and the SDC in Plano. There remain a few servers for specialized purposes in conditioned closets in some DART facilities, but these are being consolidated into the PDC as time and resources permit.

## Appendix 1 – Network Diagrams

# Voice Network



# Wide Area Data Network



## Appendix 2 – Disaster Recovery

### Design Criteria

- Designed for the loss of the primary data center (PDC) in 1401 only
  - Fire, sabotage, quarantine etc.
- Systems and services not hosted in the PDC are not included
- It is impractical and unaffordable to have all systems and services immediately available after the loss of the primary data center
  - Applications and services classified into one of three tiers based on criticality (next page)
- Brief manual intervention required for network re-routing
- All recovery and restart procedures documented in detail
- SDC DR is a sub-set of the Agency continuity of operations plan (COOP)
  - COOP will address where and how people work after a disaster

### Differences Between Tiers

Tier 1 – Recovery time objective (RTO) less than 4 hours

- Data is replicated in real time – no loss
- Applications are already loaded at the SDC ready for fail over
- Failover is essentially automatic once PDC equipment is unavailable

Tier 2 – RTO >4 hours <7 days

- Most data are replicated in real time
- Some data will need to be recovered from backups (usually night before)
- Applications software will be loaded onto cold stand-by servers
- Services brought on-line in a predetermined priority sequence

Tier 3 – RTO >7 days <30 days

- Hardware brought in using emergency response with contracted vendor
- Hardware configured and loaded with O/S, applications and data
- Data recovery as in Tier 2

# Tier 1 and Tier 2 Applications and Services

## Tier 1 – No data loss, <4 hour RTO

- Network connectivity and internet
- Phone system (10 digit dialing)
- DARTNet/DART.org
- File Servers (L; M drives etc.)
- GroupWise (except archive)
- Lawson
- Spear & MM2 (Enigma)
- Trapeze
- Expedition/Contract Mngmnt files
- FileNet
- Southern software (Police)
- Radius
- Telestaff (Police)
- IT Ops Management systems

## Tier 2 – RTO > 4 hours < 7 days

- OCC Logs (bus and rail)
- Fleetwatch
- RPD systems (ACT 21; Contract Mngr, DART-Eng, etc.)
- FTP Server
- CasePoint (Legal)
- Ripplestone/Crystal reports
- Secure Perfect
- Bus Stop Manager

All other applications are Tier 3