

2015 Technology Innovation Showcase

Georgia Department of Revenue: Exadata Project

The Georgia Department of Revenue (DOR) initiated its Exadata Project to meet the strategic goal of providing an integrated database environment with improved reliability, performance, support, scalability and security. Georgia now rates in the top 5 percent in performance when compared with other states using the GenTax application.

Exadata is an end-to-end data-management solution in which software and hardware are engineered together to provide a high-performing, high-availability platform. The architecture includes two half racks, the ZFS disk storage appliance and the SL3000 tape library. DOR initially implemented Exadata for its ITsv9 databases. Partnering with DOR were IBM, Oracle, Mythics and the Georgia Technology Authority.

- It boasts zero data loss during transmission and Remote Direct Memory Access, which reduces the amount of CPU needed to transfer data across the network.
- The system uses PCI flash cards to store frequently used data, which improves database I/O speed by an order of magnitude over spinning disks.
- It features an integrated backup solution, which reduced backup time by 90 percent and recovery time by 80 percent.
- The system provides real-time monitoring and automatically creates trouble tickets when hardware and software issues are detected. It also emails notifications if malicious activities are detected in the database or operating system.

Before Exadata, DOR's database servers frequently experienced stability issues for which a root cause could never be identified. In addition, database auditing and reporting were cited as needing improvement to meet IRS standards. After Exadata, no issues have occurred that affect the stability of the database, and DOR is experiencing excellent reliability. With Audit Vault, DOR can comply with IRS-mandated security auditing and reporting requirements.

DOR processes about 8 million tax returns annually. With Exadata, nightly batch performance times have improved by more than 50 percent, which has reduced work hours for DOR staff who previously monitored nightly batch jobs into the morning hours during tax season.

The architecture makes it easy for DOR operational teams to add more Exadata machines, database nodes, storage and storage racks. As a result, DOR has improved its ability to implement new databases when required by applications. The agency has also increased its ability to keep databases from different functional areas in one appliance.