

New Broadband Service Prompts Fort Collins Cloud Migration

Fort Collins, Colo., gains flexibility and scalability with a cloud infrastructure for critical databases

There's a new internet provider in Fort Collins, Colo.: the city itself. In August 2019, Fort Collins joined the growing list of municipalities that deliver broadband Internet as a utility service. Named the Fort Collins Connexion, the new offering was authorized in 2017 by voters frustrated with commercial internet providers.

As the city began its journey to becoming an internet provider, Fort Collins Utilities realized its existing customer information system (CIS) couldn't support a broadband service or the necessary integrations. Additionally, Fort Collins Utilities wanted a CIS that could integrate billing for all utility services.

After a review of CIS options, Fort Collins chose a third-party solution that runs on the Oracle database platform. Although the city already had an on-premises Oracle infrastructure, growth over time meant it had become a complex sprawl of servers, Oracle database appliances and software. It became clear this traditional model couldn't deliver the availability, scalability, disaster recovery and licensing flexibility the new CIS needed. It also wouldn't allow Fort Collins IT staff to

easily consolidate database workloads for other applications and departments.

"A processor-based licensing model makes it expensive to grow as needed, especially when you're trying to consolidate workloads onto servers with different combinations of licenses," says Anthony Sanchez, IT architect for the city. "For the new CIS, we would need to configure multiple hardware units to support the on-premises database licenses."

The city's IT team considered a move to cloud to consolidate server infrastructure for reduced costs, dynamic scalability and simpler management. The new CIS proved to be a good first system to implement a new server and storage infrastructure using a hybrid cloud design.

Combining On-Premises and Cloud Resources

The Oracle Exadata Cloud at Customer solution now hosts the CIS in the city's on-premises data center, using a private cloud to support Oracle environments in a multitenant configuration. The process involved configuring server and network resources on the Oracle Cloud, then installing and configuring production and development/testing clusters of the onsite

Exadata Database Machine hardware. Today, all Connexion databases are running in this system and separate clusters support the city's other Oracle databases.

As the public segment of the cloud design, Fort Collins will use Oracle Cloud Infrastructure (OCI) server and data storage resources for disaster recovery. These resources, located in another state, will run the CIS and other critical databases if the city's data center experiences an outage. A site-to-site virtual private network link will connect the Fort Collins data center to Oracle cloud, where the Oracle Database Cloud Services Extreme Edition will match the database capabilities of the on-premises infrastructure.

Fort Collins Connexion Solution Elements

- Oracle Exadata Cloud at Customer
- Oracle Cloud Infrastructure
- Open International CIS
- Oracle and Arisant for cloud design and development of TCO model

Calculating Long-Term Cloud Value

Working collaboratively, the Fort Collins IT team and consultants from Arisant (a consulting firm that helps companies solve business and technology challenges using Oracle solutions) and Oracle created two critical planning tools. The first was an in-depth technical assessment of the city's current server and database environment. The second tool was a total cost of ownership (TCO) model to calculate and compare hardware and licensing expenses over a five-year period. This financial analysis was based on using Oracle cloud solutions to eventually move all the city's Oracle workloads.

"At first, the cloud seemed more expensive," says Sanchez. "But in comparison to the cost of hardware creep, especially for the annual hardware maintenance and license fees, the five-year TCO for cloud was much better."

Hybrid Cloud Brings Simplicity and Flexibility

Fort Collins has already gained several qualitative benefits from its new cloud infrastructure:

Support for a multitenant design.

By obtaining the servers and other hardware elements as part of the cloud subscription, IT staff no longer need to deal with complex license tracking or predict annual support costs. Virtualization and multitenant capabilities in the Oracle cloud solution allow IT to easily separate workloads and allocate expenses by department.

The multitenant cloud design simplifies the management of multiple Oracle environments and speeds routine tasks. For example, Sanchez indicates an en-

vironment refresh that previously took hours now takes less than five minutes.

"When you're implementing a big system, you need to move databases and change the environment almost daily," says Sanchez. "If we had stayed with traditional licensing, we wouldn't have been able to afford a multitenant model. But in the cloud, everything we need for multitenant is included in the subscription."

Time savings. Since the cloud subscription includes access to all database features, administrators don't need to search for a server that has the right licenses to run a specific workload. Server teams also save time because much of the hardware management and software patching is streamlined by the Oracle cloud solutions.

Easy scalability. The flexibility to scale server and storage capacity in the cloud will benefit the city as it migrates other business systems in the future. This scalability would be difficult in an on-premises infrastructure because of licensing restrictions and costs.

Tips for a Successful Cloud Migration

Sanchez offers three tips for governments planning to transition a core business system to a cloud infrastructure.

First, expect a steep learning curve when implementing a new system, server infrastructure and database environment together. Fine-tuning the many details of the implementation will take time and careful consideration.

Second, prepare a TCO analysis and a technical assessment collaboratively with the vendor and a systems

Snapshot: Fort Collins Utilities Connexion¹

+ **1,000 miles** of fiber cable laid across the city

+ **62,000** business and residential premises connected

+ **28%** signup rate needed to make the service financially viable

consultant. The diverse knowledge and perspectives of these parties will help identify all important considerations.

Finally, provide database administrators, server teams and application developers training and time to learn how to work within the cloud environment. Consider running a proof-of-concept project and augmenting staff with consultants to obtain additional insights and experience.

A New IT Foundation for a New Utility Service

The Fort Collins IT team had a tight timeline to implement the new CIS and supporting cloud infrastructure. The simplicity and flexibility of the Oracle cloud solutions were key to meeting their tight schedule.

"Our citizens are excited about having a new choice for internet service, and now we have the technology resources we need to support the underlying databases and information systems," says Sanchez.

1. Fort Collins Coloradoan, February 28, 2019: <https://www.coloradoan.com/story/news/2019/02/28/fort-collins-municipal-broadband-utility-connexion-laying-fiber-optic-network/3015213002/>



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