



CUSTOMER SUCCESS STORIES

The USDA Forest Service modernizes its tech stack and moves to EDB Postgres Advanced Server





CUSTOMER: USDA FOREST SERVICE

EDB customer since July 2021

John Lovato

Database Architect, USDA Forest Service

CHALLENGE: The Forest Service has traditionally used Oracle database schemas to store mission-critical ESRI geodatabases, which individual Forest Service units rely heavily on to do their daily work. When ESRI stopped supporting this way of managing geodatabases several years ago, it became necessary to migrate these workloads to a fully supported platform, with minimal impact to the business and at the lowest possible cost.

EDB SOLUTION: EDB Postgres Advanced Service (EPAS) support.

RESULTS: The Forest Service was able to beat the migration deadline and estimates a 70% improvement in performance at less than 30% of the cost. (ACS) group.



OVERVIEW

EDB made it easy for the USDA Forest Service to migrate a massive geodatabase from Oracle to Postgres. The result? 70% improvement in performance at less than 30% of the cost.

The USDA Forest Service, which stewards more than 600 million acres of US forestland, relies on [EDB Postgres Advanced Server \(EPAS\)](#) to manage its geodatabase workloads. For decades, the agency stored its geospatial data in an Oracle system, until they were faced with an urgent need to migrate. That’s when USDA Forest Service Database Architect John Lovato made the call to go with EDB and Postgres.

John first worked for the Forest Service in 1991 while completing his degree at the University of New Mexico. Upon graduating, he became the Forest Service’s first GIS (geographic information system) coordinator for the Tonto National Forest in Arizona, the largest contiguous national forest in the US.



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John Lovato
Database Architect,
USDA Forest Service

“We were still using Data General minicomputers with the green terminals,” he recalls. His job was to build and maintain GIS databases – using Oracle version 7. “I became a pretty proficient SQL developer, and that’s about the time Esri started making noises about what it called a geodatabase, which is basically a layer of abstraction on top of an RDBMS where you can store your geospatial data.”

Lovato added Esri’s new geodatabase to his Oracle database system and used it for years – until he left the Forest Service to work in private industry, only to return to the agency in 2012 and become a Database Architect in the Forest Service’s Chief Technology Office. Oracle’s RDBMS was still in place. But that default solution was disrupted in 2018, when Esri made a surprising announcement.



Facing a Hard Deadline

The Forest service stored its Esri geodatabases inside of Oracle schema. But in 2018, Esri announced it would no longer support that model in its ArcGIS geodatabase beyond version 10.6.x.

"That really broke us," says Lovato. "That broke our model, because we offer what's called 'geodatabase as a service'. When you have your own schema in Oracle, it's easy to do that, and the customers became accustomed to managing their own data." But Esri had set a hard deadline after which it would no longer support ArcGIS versions prior to 10.7: December 1, 2023.

"We had to make a choice," Lovato recalls. "We took the opportunity to modernize and to move to something lower cost -- and a lot more performant than what we were getting with Oracle." As program lead for geodatabase and geospatial branch, Lovato was the main driver of the migration, working with a small core of engineers.

Lovato didn't waste any time. "I just took the leap," he says. "I got buy-in and made the case for moving now, because unless somebody starts off this process, nobody's going to move, they're just going to get stuck there." He began the search for a new, fully-supported platform that would have minimal impact on customers, who relied heavily on his databases to do their work.

That evaluation process surfaced a number of frustrations with Oracle. "We were seeing how much we were paying Oracle and it was just incredibly high," recalls Lovato. "It seemed to be going up 10 to 15% per year." Moreover, he says, "we had a bunch of Oracle engineers who were just sick of dealing with Oracle."

Embracing EDB Postgres Advanced Server

Postgres was the obvious choice for two reasons: its deep compatibility with Oracle and ArcGIS' support for storing geodatabases inside of Postgres schema through the [PostGis](#) extension. Lovato needed a replacement that could reuse hundreds of thousands, even millions of lines of existing PL SQL code in his databases and "move that stuff to a landing spot where we could modernize it."

[EDB Postgres Advanced Server \(EPAS\)](#) offered all that compatibility and potential plus the full support Lovato needed. "What really impressed me about this whole exercise was the availability of tools and the compatibility of the target system," he says. "The EDB migration toolkit, the migration portal along with other tools, makes this possible. Without those tools I would not have had proper insight into the Oracle database and into the actual level of effort that might be required to migrate certain sizes, blocks of code, and certain different types of data objects."

Ultimately, Lovato and his team beat the migration deadline easily. "It was an actual, triumphant success," he says.





Celebrating the Results

How successful? Lovato offers a back-of the envelope calculation: “Over time, we will probably experience a greater than 70% improvement in performance at less than 30% of the cost.” Of course, this milestone is part of the USDA Forest Service’s larger effort to prepare to leave Oracle once their current licenses expire. The migration will not realize it’s full savings until that transition is complete.

He adds that he’s amazed at EPAS’s superior performance with fewer resources. “The Linux servers are so much smaller,” he says, “and there are fewer of them to support the same workload that we supported on Oracle. It just boggles my mind that EPAS is able to support all of these users on these relatively tiny servers.” He estimates that geoprocessing tasks, for example, now take 25% of the time that they did on Oracle.

One upshot, says Lovato, is that “we don’t have people exporting data to work with it locally because it’s so slow anymore. People were taking these workaround measures. They don’t have to do that now.” That has a big impact, he says, particularly on the network during the day.

Lovato offers free advice to those considering migrations similar to his own journey from Oracle to EPAS. “Even if you have hundreds of thousands or millions of lines of PL SQL code, don’t let that deter you,” he says, “because the migration portal is your friend and it’s going to fix a lot of that stuff for you.” He adds that he hasn’t found any Oracle code yet that’s too sophisticated for his team to functionally replicate in EPAS.

The entire endeavor is lower risk than potential migrants might think. “The cost to at least explore EPAS is very minimal,” he observes. “It’s cheap enough to build yourself a replica of your Oracle system now – and you can cancel subscriptions anytime you want, which makes it really nice.” He also extols the value of the up-front developer support delivered by EDB.

“This whole exercise has sort of empowered me, emboldened me to take on other Oracle past challenges,” Lovato says. He sums up his recommendation to others who are thinking about ditching Oracle in favor of EPAS in three words: “Don’t be afraid.”



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