WHITEPAPER

Propelling the Navy to a modern, open source data foundation

> 'Information Superiority is delivering the right information to the right hands, ready to observe, orient, decide, and act faster than the adversary. It provides freedom of action within the Information Environment for friendly forces and prevents interference by the opposing force.'
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> – Department of the Navy Information Superiority Vision, February 2020

The advent of information warfare, propelled by the rapid advancement and convergence of technology, is transforming military operations as we know it. Understanding this, the Navy is pursuing a bold, new approach to getting its information house in order. Known as "Compile to Combat in 24 Hours" (C2C24), this effort aims to employ industry open standards, best practices, and capabilities to fundamentally change how the Navy develops, exchanges, and uses data across the naval enterprise for warfighting advantages.

As they advance along their modernization journeys, Navy and Marine Corps IT teams have many objectives in mind. These include:

- Reducing costs of IT systems and infrastructure
- Adopting agile and secure development practices, such as DevSecOps
- Deploying solutions that integrate well with existing heterogeneous infrastructures
- Transitioning away from proprietary products and solutions that lock in vendors and impede interoperability

Many Navy and Marine Corps organizations have adopted a proven and effective approach to meet these many modernization objectives. Specifically, they have deployed open source database management systems such as PostgreSQL, also known as Postgres.

By transitioning to PostgreSQL, Department of Navy (DoN) organizations are able to modernize their IT data centers, both ashore and afloat, so their data management infrastructures are highly scalable, flexible, secure, and reliable, as well as considerably less expensive to maintain and operate.

PostgreSQL allows Navy organizations to move away from proprietary relational database management systems (RDBMSs), such as Oracle and Microsoft SQL Server, and free themselves of high license fees, maintenance costs, and the constraints of vendor lock-in. Thanks to a vibrant open source community, PostgreSQL today is a highly robust, reliable, and secure open source option that meets the diverse needs of large, complex enterprises. And it does so while dramatically reducing cost of ownership and offering functional flexibilities not possible with proprietary alternatives.

EDB meets the Navy's enterprise data needs

A lack of understanding of the infrastructure requirements is one of the biggest issues organizations face. When determining which capabilities are "mission-critical," it's important for organizations to make distinctions based on their particular needs. For instance, having an unreliable common operational picture because one vessel is not able to replicate data across an aircraft carrier strike group is a different problem than having to expedite a parts shipment to bring a weapon system up to mission-ready status. While both tasks rely on high-availability databases, unplanned downtime may be caused by different problems. It is important to define the specific functionality that must remain available at all times to assemble the right hardware, network, and software solutions.

Any range of availability — from 99.9 percent to 99.999 percent — requires a different investment in hardware and software. For example, if an organization wants high availability, they need an offsite replica that can be brought online quickly in the event of catastrophic data loss. Planning for this sort of infrastructure requirement requires a fundamental understanding of your database needs to achieve the desired amount of uptime.

Use cases

Across the DoN and the wider Defense Department (DoD), organizations are employing the EDB PostgreSQL Advanced Server for a wide variety of use cases, including:

- Shipboard battlespace awareness and planning applications
- Intelligence applications
- Satellite communications systems
- Transitioning away from legacy database management systems, such as Oracle and Microsoft SQL Server

EDB features and value

Flexibility: EDB can be used in many systems where Oracle or SQL Server is used. And, because it is multi-model, it offers a lot of flexibility in how and where it is used. Customers, for example, can develop new applications, modernize existing applications, replace legacy DBMSs, and support cloud initiatives. The EDB PostgreSQL Advanced Server can be deployed to a wide range of infrastructure options from virtualized and container environments to public, private, and hybrid clouds. EDB can run anywhere — on a laptop at the tactical edge, shipboard systems, a U.S. based data center, or a hybrid architecture, including FedRAMP-approved cloud providers.

Integration: For DoN organizations, IT products need to easily integrate with existing systems and heterogeneous infrastructures. PostgreSQL is a universal data platform that can connect to most other data platforms and port applications to and from the cloud, as needed. Moreover, EDB PostgreSQL Advanced Server's Oracle compatibility features provide the ability to transition many Oracle workloads to EDB Postgres Advanced Server.

Cost impact and ROI: With over 300 successful customers migrated, EDB has the knowledge and expertise to help Navy and Marine Corps organizations reduce costs, mitigate risks of migration, and accelerate time to value. Research by the market intelligence firm IDC shows that, on average, EDB customers can save up to 42 percent over three years in operating costs and up to 65 percent on database-related costs.[1] By comparison, with Oracle's complex pricing structure, renewal costs typically go up, not down, especially with Unlimited Licensing Agreements (ULAs).

EDB customers have also been shown to achieve an ROI of 168 percent on average, with breakeven occurring within about four months, according to IDC.[2] These cost benefits are realized in database maintenance, consulting related to deployment, and IT staff time spent on deploying, configuring, and administering EDB PostgreSQL environments.

Ease of deployment and management: EDB services all environments for the enterprise: on-prem, cloud, hybrid cloud, and virtualized. And EDB provides customers with the tool sets necessary to deploy, quickly and easily, and manage their PostgreSQL environments. EDB customer organizations required 15 percent less DBA staff time on average over three years to deploy, configure, maintain, and administer their PostgreSQL environments than they experienced with previous or alternative database platforms, according to IDC.[3]

Enhanced security: EDB Postgres Advanced Server offers an array of other database security enhancements that are stronger than the PostgreSQL community offering. Our platform comes with Defense Information Systems Agency (DISA)-certified Security Technical Implementation Guides (STIGs), DoN Application and Database Management System (DADMS) validation, FIPS 140-2 certification, and Authorization to Operate (ATOs) across numerous U.S. Navy programs.

Top-level support: EDB offers a wide array of professional and consulting services, training, 24/7 support, and RemoteDBA services to ensure enterprise customer success.

[1] Matthew Marden and Carl W. Olofson, The Economic and Business Advantages of EDB Postgres Database Solutions, IDC white paper, August 2016: http://info.enterprisedb.com/rs/069-ALB-339/images/idc-edb-economic-business-advantages-Q32016.pdf?_ga=2.255866187.1732932654.1604929510-1502745246.1603218117

[2] Ibid.

[3] Ibid.

Valuable DevSecOps features: EDB Products and Services ideally suit dynamic Navy DevSecOps environments and requirements. EDB Postgres Advanced Server is fully capable of integrating into CI/CD deployment processes. Its multi-model architecture and support of JSON and ORM means that systems can be quickly prototyped without the need for a detailed schema. Developers can ensure consistent infrastructure configurations across the entire application lifecycle by introducing Infrastructure-as-Code recipes and playbooks using Chef, Ansible, Puppet, or many other infrastructure automation platforms.

Moreover, PostgreSQL fully supports the use of containers and microservices that are at the heart of today's modular, distributed app architectures. PostgreSQL has been ranked in surveys as the third most popular technology run in Docker containers.[4] Containerized databases separate storage from compute, meaning storage performance and capacity can be scaled independently of compute resources. As a result, development teams can approach the database as an on-demand utility so that each application has its own dedicated database that can be spun up as needed. PostgreSQL is also highly portable, making it easy to replicate instances for development, testing, and staging purposes.

EDB product suite's DevSecOps features enable Navy organizations to streamline their ATO processes. It also supports the ability to use shared architectures, such as the Consolidated Afloat Networks and Enterprise Services (CANES) platform, and comply with standardized data strategies that enable data reuse and more efficient use of bandwidth.

[4] Datadog, 8 Surprising Facts About Real Docker Adoption, June 2018: https://www.datadoghq.com/docker-adoption/ and 11 Facts About Real-World Container Use, November 2020: https://www.datadoghq.com/container-report/

Why EDB

For more than a decade, the U.S. Navy has selected EDB to deliver the capabilities that push PostgreSQL further. We support numerous Navy missions, including Naval Surface Warfare Center (NSWC) programs, acoustics research, oceanographic data collection/processing, and global tactical command and control systems of record.

In the United States alone, more than 150 federal Civilian, Defense, and intelligence agencies have deployed EDB Postgres Advanced Server. These include many in the Department of Defense (DoD), such as the Defense Information Systems Agency (DISA), as well as the Army, Navy, and Air Force. Our accessibility (available on Navy DADMS), affirmed security (we are the only PostgreSQL provider with approved DISA-certified STIGs for both Windows & Linux), flexible deployment and use case options, ability to support Navy C2C24 and DevSecOps objectives, and robust support services have made EDB a clear choice for many Navy and Marine Corps organizations.

Also, EDB is a deeply committed partner within the PostgreSQL community and are one of its biggest, most tireless contributors. We share the PostgreSQL community's goal of constantly improving and building upon the software. EDB has contributed to PostgreSQL every year since 2006, and some of our team members have been involved with the project since its inception in 1996 and continue to play a key role in shaping its future.

For more information about the EDB or to download a free 60-day trial, go to www.edbpostgres.com.

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