The CIO's Guide to Operational Resiliency in Financial Services

A 3-Step Approach to Strengthen Your Database

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Introduction

In today's rapidly evolving, data-driven world, C-level executives in banking, financial services, and insurance (BFSI) are under tremendous pressure to ensure that their database systems are operating as they should be. Some of the issues CIOs face are unique to their companies, but in our work with BFSI organizations, we've found that these four major challenges are the ones most likely to keep CIOs awake at night:

✓ **The need for technological innovation and optimized user experience**

✓ **The need for performant systems**

✓ **The need for data protection and security**

✓ **The need for stability and resilience in existing systems**

Read on to see how database stability and resiliency are helping CIOs overcome their challenges and sleep more soundly.

What is operational resiliency and why is it important?

The digital landscape is rapidly changing, and all organizations need to change with it to succeed. Not only are new threats—such as bad actors and malware—evolving on a daily basis, but your users' expectations are constantly growing. With all of the transformative options at their disposal, customers expect you to handle their financial and personal data efficiently; store it securely; and provide them with applications, solutions, and services that effectively meet their needs.

That's why your business needs to prioritize operational resiliency in every single one of your endeavors and initiatives. The responsibility for this rests on the shoulders of your CIO.

Operational resiliency is defined as the ability to prevent, identify, respond to, and overcome adverse circumstances during operation to avoid financial loss and a disruption of business services. Having a strategy for operational resiliency enables you to safeguard against unplanned outages, maintain system health, and ensure seamless continuity of operations.

For BFSI firms dealing with sensitive financial data on a daily basis, operational resiliency is nonnegotiable.

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> *"Banks have made progress in enhancing operational resilience in recent years, including through their response to the challenges posed by the COVID-19 pandemic.... However, more work remains to be done to ensure that banks are resilient to potential operational disruptions from all hazards, including severe but plausible cybersecurity incidents, which could pose risks to the wider financial system."*

– Board of Governors of the Financial Reserve System

CIOs anticipate their involvement to increase in the following areas: cybersecurity (70%), data analysis (55%), data privacy (55%), AI/machine learning (55%), and customer experience (53%).[1]

[1] 2023 State of the CIO Study

Safety and operational resiliency: Two sides of the same coin

Security is always top of mind, as the safety of financial information is critical to individual firms and to the stability of the financial system as a whole. Financial service providers can't risk the reputational damage or loss of revenue that comes with a sustained outage. Yet operational resiliency is equally important—even though it gets less air time—as it's a de facto expectation today.

Your database is where these two crucial concerns merge.

In the last few years, Postgres has established itself as the leading database management system (DBMS) for those looking to innovate at a low cost while adhering to diverse regulatory practices and leveraging their applications and assets to the fullest degree. The extreme high-availability solution for Postgres keeps business- and mission-critical applications running and protects against planned and unplanned outages.

Read on to learn how to harness the total power of Postgres to ensure that you achieve full operational resiliency in three steps:

1. **Enhance data security and protection**
2. **Safeguard against planned and unplanned outages**
3. **Support and maintain database performance and efficiency**

3 steps to achieving operational resiliency

Step #1: Enhance data security and protection

In a world where bad actors are constantly finding new ways to infiltrate the databases of even the most secure organizations—whether they be banks or government agencies—security and data protection is the highest priority.

Not only does your ability to secure your data govern the efficacy of your applications, it determines your reputation with your users. How enterprises manage and share cybersecurity risks and maintain the highest levels of operational resiliency has been the impetus for a range of new regulations, including the EU's Digital Operational Resilience Act (DORA), passed in 2022.
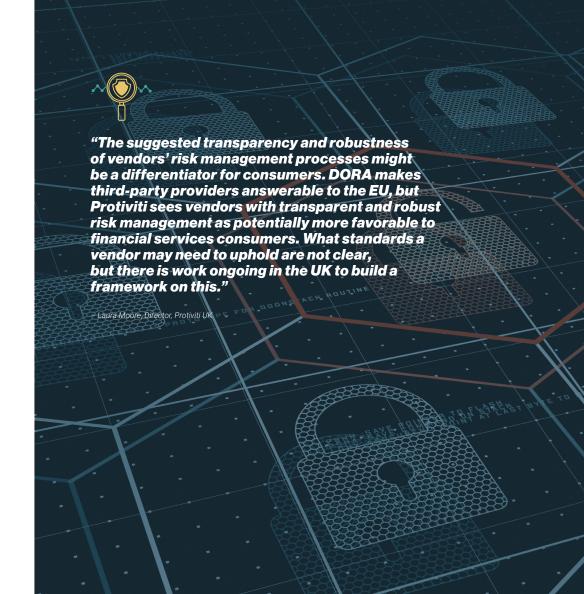
DORA 101

The UK's new Digital Operational Resilience Act (DORA) aims to ensure that the financial sector in Europe is able to stay resilient through a severe operational disruption. This new regulation requires financial institutions to manage all components of operational resilience and follow rules for the protection, detection, containment, recovery, and repair capabilities against ICT-related incidents. With plans for enforcement starting in 2025, EU financial services firms need to work to ensure that their systems are operationally resilient now.

"In our modern world of cyberattacks, we're in a war zone."

– Martin Buckley, CIO, Barclays Europe

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"The suggested transparency and robustness of vendors' risk management processes might be a differentiator for consumers. DORA makes third-party providers answerable to the EU, but Protiviti sees vendors with transparent and robust risk management as potentially more favorable to financial services consumers. What standards a vendor may need to uphold are not clear, but there is work ongoing in the UK to build a framework on this."

– Laura Moore, Director, Protiviti UK

That's why so many organizations choose Postgres, bolstered and supported by EDB. With EDB, businesses have a range of options to build out their database security with break/fix support and Transparent Data Encryption (TDE).

TDE encrypts:

• Files underlying tables, sequences, and indexes, including TOAST tables and system catalogs —including all forks. These files are known as data files.

• Write-ahead log (WAL) files.

• Temporary files for query processing and database system operation.

With TDE, you can prevent unauthorized viewing of data in operating system files on the database server and on backup storage. Data becomes unintelligible for unauthorized users if it's stolen or misplaced, which is critical for highly sensitive financial data. Data encryption and decryption are managed by the database and do not require application changes or updated client drivers.

EDB Postgres Advanced Server and EDB Postgres Extended Server provide SQL injection protection, data redaction, enhanced auditing, and enhanced RBAC granularity with VPD in EPAS.

Step #2: Safeguard against planned and unplanned outages

For a number of years, Postgres has offered some resiliency in the event of failures, but over the last five years, the definition of high availability (HA) has changed. HA used to refer to technology protecting users from hardware failures, network glitches, and software faults. Today, HA technology ensures that software services are always on—365 days a year, 24 hours a day. HA products still protect users from failures, but as hardware, networks, power supplies, and storage devices have become much more reliable, near-zero downtime maintenance and management have moved to the forefront of the HA debate. Near-zero downtime, or "Always On," has become a must-have for successful digital transformation in a global economy.

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Planned vs. unplanned downtime: Are you ready for both?

Downtime can occur because of a planned database migration, major version upgrade, or database maintenance operations. It can also occur unexpectedly, due to a lack of database maintenance, configuration changes that require a restart, or a cyberattack. Either way, the end result is the same. Critical and noncritical data isn't available, which can seriously impact BFSI processes and customers.

Seeing these sea changes, EDB wanted to take HA to the next level. Why settle for high availability when you can have extreme high availability?

We define extreme high availability as five 9s of uptime—i.e., your database is online 99.999% of the time. As we've discussed in previous blogs, this amounts to less than five and a half minutes of downtime per year.

That's the promise of EDB Postgres Distributed (PGD), the industry-leading solution for Postgres high availability. With its "Always On" architecture, PGD now enables customers to use Postgres for 99.999% EHA solutions, entering a domain that was traditionally reserved for a few select commercial database products.

Step #3: Support and maintain database performance and efficiency

The final component of true operational resiliency is the agility of your database. In highly regulated industries such as financial services, you need expert 24/7 support with defined SLOs. Community and user group support can be helpful but doesn't include Tier 1 and Tier 2 application-level support response times.

EDB is proud to provide independent technical support services and operational staff augmentation designed to help businesses of all sizes fill the gaps in their support infrastructure and embark on a new journey with reduced risk, lower costs, and a focus on what matters most.

Offerings such as EDB's Remote DBA Service (RDBA) help businesses of all sizes complete or expand their support team when expert, certified Postgres DBAs can't be found or are too expensive. Plus RDBA provides 24/7 monitoring of your systems so issues can be resolved before problems actually occur. Technical Support including EDB Community 360 offers a 24/7 follow-the-sun model for Severity 1 and 2 issues, with response times as short as 15 minutes for critical issues. Leveraging Postgres experts is a much more efficient and cost-effective approach than self-support to get the Postgres expertise and coverage you need while enabling the reallocation of current resources to more strategic projects.

In addition to these robust support options, EDB offers Postgres Enterprise Manager (PEM), a browser-based console that combines managing, monitoring, and tuning Postgres clusters. PEM provides you with all the tools you need to expand, scale, and optimize your Postgres database, ensuring that—no matter your data volume or operational needs—the DBMS that you and your users rely on is up, is fast, and is working to your standards.

Operational resiliency is the key to business sustainability

Operational resiliency and extreme high availability are business critical to highly transactional databases. They ensure that your users can access what they need when they need it, and that you can leverage your data as efficiently as possible. And they're important for staying compliant with BFSI regulations for protecting customer data.

Throughout these pages, you've seen the many ways in which Postgres facilitates the fundamentals of operational resiliency, as well as the ways in which EDB builds upon Postgres' remarkable capabilities to create an even more flexible, agile, and secure DBMS experience.

This is why we created the EDB Standard Plan. The Standard Plan offers open source Postgres with enterprise-grade tools to strengthen and extend PostgreSQL security, resilience, and reliability. CIOs can feel confident that their database is optimized for growth and minimized disruption. They can assure their CEO that their DBMS can operate at scale and ensure high availability.

But the benefits don't stop there. With the EDB Standard Plan, you get the best of the open source Postgres community and the best of EDB innovation. Your organization can leverage the power of open source Postgres, open source tools, and the community knowledge base while getting EDB-enhanced enterprise tools, extensions, and expert support. In fact, you get everything we discussed in this e-book, with:

Extreme high availability (up to five nines) with EDB Postgres Distributed

EDB 24/7 follow-the-sun expert support

Enhanced security with Transparent Data Encryption (TDE)

Self-managed Postgres with your choice of deployment, or fully managed in the cloud with EDB Postgres AI Cloud Service

EDB extensions including EDB Advanced Storage Pack

Integration with various cloud architectures and configurations

A comprehensive database design and tuning system with Postgres Enterprise Manager (PEM)
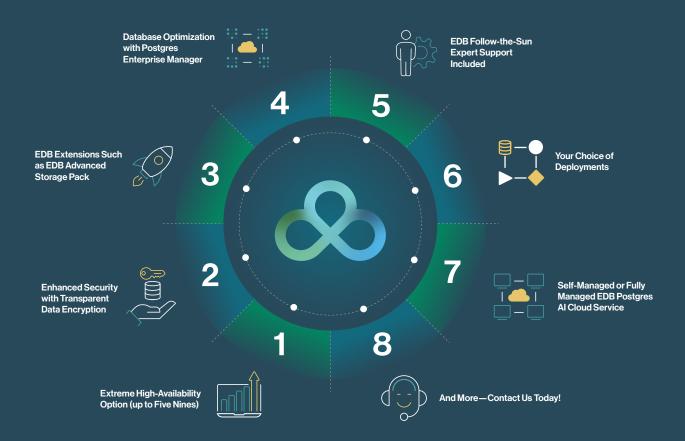
Auto-tune and storage packs with EDB Extensions

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EDB Standard Plan

Database Optimization with Postgres Enterprise Manager

EDB Follow-the-Sun Expert Support Included

EDB Extensions Such as EDB Advanced Storage Pack

Your Choice of Deployments

Enhanced Security with Transparent Data Encryption

Self-Managed or Fully Managed EDB Postgres AI Cloud Service

Extreme High-Availability Option (up to Five Nines)

And More—Contact Us Today!

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EDB offers a spectrum of options to implement and maintain operational resiliency, and we're here to help you find the right solution for your needs.

For CIOs looking to ensure the longevity of their business and user base, operational resiliency must be top of mind. And the best way to ensure that is with a database partner that understands the value of innovation, security, high availability, and ongoing growth.

That's why BFSI leaders choose Postgres and EDB.

Learn how the EDB Standard Plan helps BFSI organizations like yours achieve operational resiliency.

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About EDB

EDB provides a data and AI platform that enables organizations to harness the full power of Postgres for transactional, analytical, and AI workloads across any cloud, anywhere. EDB empowers enterprises to control risk, manage costs and scale efficiently for a data and AI-led world. Serving more than 1,500 customers globally and as the leading contributor to the vibrant and fast-growing PostgreSQL community, EDB supports major government organizations, financial services, media and information technology companies. EDB's data-driven solutions enable customers to modernize legacy systems and break data silos while leveraging enterprise-grade open source technologies. EDB delivers the confidence of up to 99.999% high availability with mission-critical capabilities built in such as security, compliance controls, and observability. For more information, visit www.enterprisedb.com.