




Building a better
working world

How cloud data
warehouses can
give organizations
a boost



Executive summary

Enterprises have been constructing data warehouses for more than 20 years. They've become invaluable assets, helping organizations leverage their data to make better, more educated business decisions. Although traditional data warehouses offer undeniable value, running them within your own data center comes with some unfortunate drawbacks. Most notably, they're expensive to scale and don't excel at handling the raw, unstructured or complex data that is generated in such vast amounts by modern applications.

Fortunately, cloud computing – particularly its virtually unlimited storage and unparalleled scalability – offers an enticing alternative, just like it has for many other critical enterprise technologies.

Cloud data warehouses (CDWs) are databases delivered in a public cloud as a managed service. They're optimized for analytics, ease of use and scale. They also make it possible for you to set up the optimal security configuration to meet your needs by fine-tuning a blend of public, private and hybrid cloud environments. All of these factors make them ideal replacements for on-premises installations.

Organizations that make the switch to the cloud can simplify and accelerate the development of their data warehouses, reducing up-front IT expenditures and the total cost of ownership. This is very timely because quickly transforming and analyzing large amounts of data is becoming a pivotal prerequisite for enabling enterprise digital strategies. Business intelligence tools are adept at exploiting raw data stored in CDWs to generate actionable business insights.

Despite all the benefits that come from adopting CDWs, these types of digital transformations are not easy. Enterprises that make the transition are discovering that they need extensive assistance with vital tasks such as setting up the warehouse, administering it, and performing data modeling, transformation and migration responsibilities.

Ernst & Young LLP has the industry knowledge and a proven track record of assisting enterprises in overcoming these challenges to achieve a successful journey to a CDW. In this article, we describe core traits shared by successful CDW projects, explain our methodology and cite three examples of thriving customer engagements.

Objectives for a CDW initiative

We have conducted dozens of CDW transformations and have found that the best outcomes have these characteristics:

- ▶ **Highly scalable.** A well-designed CDW should be able to keep pace with evolving business demands. Consider a small company that initially deploys a relatively small CDW. As transaction volumes grow, it's critical that the CDW effortlessly adjust to the new realities. Additionally, it's becoming increasingly routine for organizations to employ CDWs from different vendors. Scalable architectures designed to integrate new services and effectively synchronize across these platforms represent the best way to provide sufficient performance in these kinds of heterogeneous environments.
- ▶ **Prepared for change.** Transitioning to a new CDW usually means increasing your ecosystem's complexity, reshaping your employee culture to adapt to the shift from on-premises to cloud and imposing operational changes on your data consumers. In preparation, you should first assess your operating model well in advance to see whether it's ready for change management and be primed to realign it to avoid potential disruption to business processes. Transparent communication channels – including extensive end-user training – are a big contributor to furthering adoption of the new technology.
- ▶ **Cost aware.** CDW pricing models can be very different from those presented by traditional on-premises data centers. For instance, most service providers offer hybrid pricing models based on various factors that include usage, performance and services. Since unexpectedly high on-demand CDW activity may dramatically increase your costs, it's vital to prioritize your functional requirements and accurately forecast your anticipated workloads. It's also smart to recognize that there are significant disparities between the cloud and on-premises cost models in terms of up-front and ongoing operational expenses. Finally, there can be large variations between how much time is needed to acquire on-premises infrastructure vs. deploying a CDW.
- ▶ **Comprehensive security and governance.** Each CDW vendor offers robust, built-in security functions and related advanced features, such as distributed denial-of-service protection, on-demand data masking and tokenization. Some cloud providers may also supply their customers with specifically tailored services aimed at satisfying regulatory compliance obligations, such as anti-money laundering monitoring. Despite these protections, the shared responsibility model imposed by CDW suppliers – whereby they assume the job of protecting their infrastructure and networks while you safeguard your resources – means that you're never totally free of carrying out your security tasks. Additionally, if your organization operates different management tools and security protocols, it's in danger of jeopardizing vital information. For example, the inherent lack of coordination among disparate clouds in a multi-vendor environment can magnify damage when an attack occurs. Adopting an enterprise-wide governance framework to orchestrate different services goes a long way toward boosting your overall security and regulatory compliance.





How we can help

We blend well-defined processes and proven technologies to deliver our CDW approach. Our clients benefit from the resulting connected, streamlined and customized migration pathway. We follow a time-tested, multiphase approach when engaging with a client on an enterprise-grade CDW engagement. Major steps include:

Phase 1 | Discover and define

We kick things off by understanding your vision and intentions for the future target state. At this early date, we're also assessing the current data landscape to identify gaps and optimization opportunities.

Phase 2 | Architecture design

For maximum clarity and consistency, we take the time to lay out the nomenclature that we'll be using throughout the whole CDW undertaking. In preparation for later stages, we may also need to enhance the existing data model.

Phase 3 | Migration strategy

To guarantee the most streamlined experience, we define how we will transform your infrastructure and data, including testing the results. We also introduce plans to retire any impacted legacy systems.

Phase 4 | Data security

We turn our attention to strengthening your information protection. We establish role-based data access controls, including tokenization and identity access management enhancement. We also determine how best to store and safeguard any personally identifiable information while promoting privacy and regulatory compliance.

Phase 5 | Implement and deliver

We're now ready to develop and deploy the infrastructure that will underpin your CDW. Testing and validating performance and key functional domains are a major part of these responsibilities.

Phase 6 | Pilot programs

Defining a minimal viable product helps promote the new platform while gathering essential stakeholder feedback. We also migrate pilot program data sources.

Phase 7 | Migration

We migrate your mass data sources and activate the consumption and semantic layers of the new CDW. With the replacement system in place, we can deactivate your legacy sources.

Phase 8 | Unlock next-generation capabilities

Since CDWs evolve and improve over time, we actively seek ways to leverage your new data model to explore additional enterprise analytics possibilities. We're also likely to enrich your existing reporting capabilities with real-time and streamlined processing features. This is also a good time to enable any advanced artificial intelligence or machine learning solutions you may want to incorporate.

Three examples of successful CDWs

Although each CDW mission is unique, applying a reliable methodology goes a long way toward delivering the kind of outcomes that our clients desire. Here are high-level summaries of three very different engagements:

Case study No. 1: using data to fuel business transformation

A credit union launched a strategic endeavor aimed at helping it become a more agile organization and better prepared to accelerate its growth. Leveraging data and deep insights driven by machine learning were to be major ingredients in this undertaking.

We configured a Snowflake implementation and associated user access services designed for seamless connectivity with other cloud-native resources. This also meant designing and implementing an integrated, cross-business domain data model, along with enabling automation via continuous integration/continuous deployment processes.

The client's new, cost-optimized cloud environment – bolstered by assets such as cloud readiness assessments, leading practices from the client's CDW vendor, and extensive dashboards and reports – was a major catalyst for the project's positive outcome.

Case study No. 2: optimizing information management responsibilities

A financial services organization sought to streamline its data ingestion processes. The enhanced procedures would need to operate individually as well as in concert with others. The client also wanted to encourage standardization while strengthening its security protocols.

We designed and developed a scalable, multi-tenant platform that employed next-generation, metadata-driven technologies. The new approach featured data isolation with expanded information quality capabilities designed to quickly detect anomalies. We combined this with fine-grained security controls, including authenticating traffic and restricting data access based on business-driven policies for masking and data sharing.

The client greatly sped up the process of onboarding tenants and activating data management capabilities. Previously, setting up a new customer required between one and three business days to complete. The new CDW platform slashed this to less than an hour.



Case study No. 3: establishing an enterprise data hub

A leading US bank with primary services in digital banking, mortgage loans and auto finance wanted to construct a single, central enterprise data hub. This would facilitate more consistent cross-channel customer identity while also improving timeliness and accuracy for critical enterprise responsibilities, including financial reporting and demand forecasting.

We began by performing a cloud readiness assessment, which included examining the client's data infrastructure design, tools and governance obligations. This research was instrumental when we then created a cost-optimized cloud environment and migrated the information to it.

With the data now stored in the new platform, our client was able to model more than 3.5 million of its customers using deterministic and probabilistic identity resolution to help improve personalization. We also provided the client with statistical methods to enhance data quality and accuracy by more than 30% for its information management dashboards.

Conclusion

CDWs offer irrefutable advantages compared with on-premises installations. Enterprises that make the transition can put their systems into production more quickly yet still reap significant rewards from the cloud's scalability and data safeguards.

However, it's important to never lose sight of the fundamental challenges that must be overcome when launching a CDW initiative. These include possible high costs due to incorrect configurations, a lack of trained staff wielding essential skills, daunting cultural adjustments for current employees, governance mandates and security vulnerabilities.

To improve your likelihood of success, it's wise to select and then adhere to a proven methodology that recognizes the importance of delineating overall goals and objectives, establishing a solid roadmap and planning for continual evolution. We've found this to be the case for the dozens of successful CDW projects that we've conducted, and we're happy to share what we've learned with you and discuss your own initiatives. You can reach us at the email addresses to the right.

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