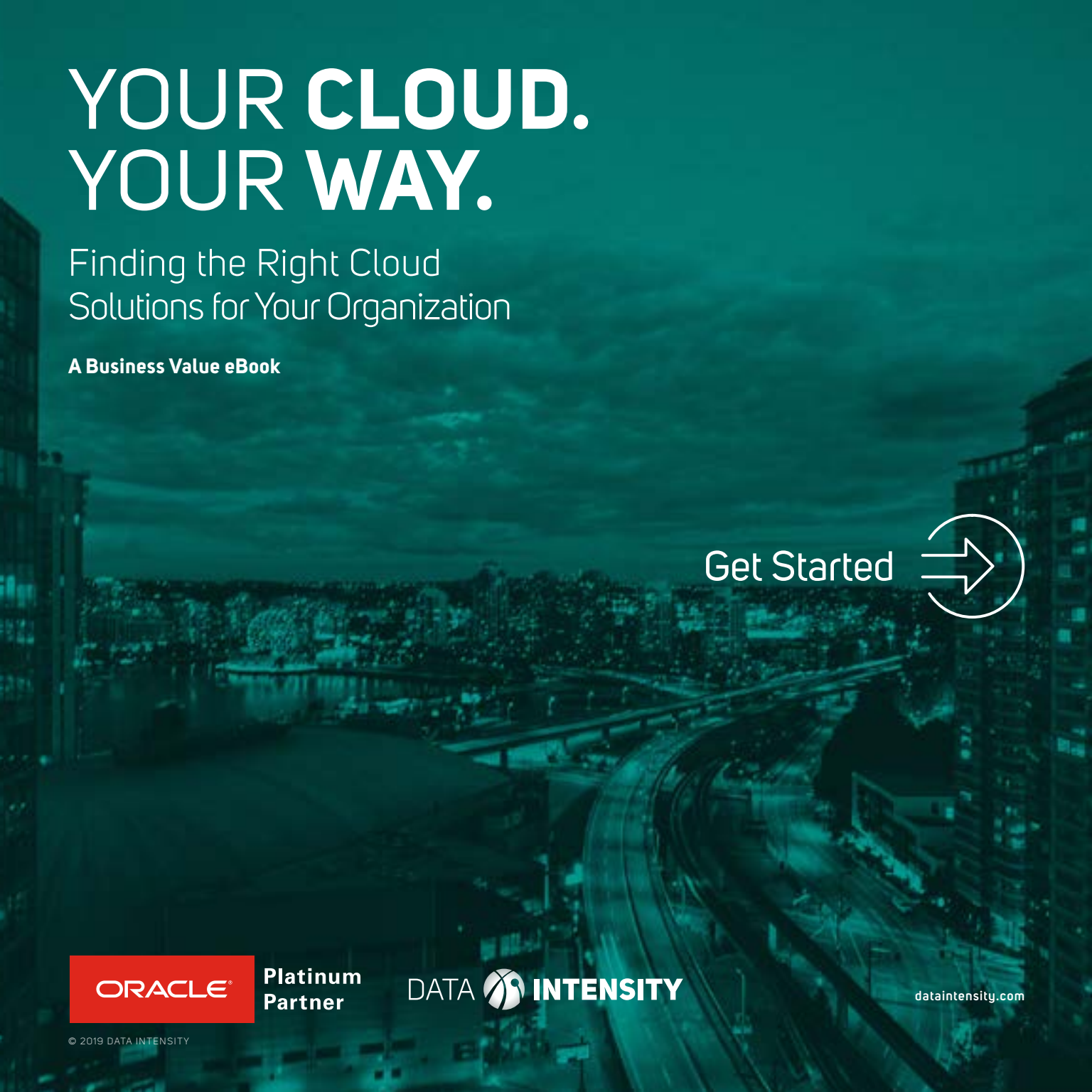
YOUR **CLOUD.** YOUR **WAY.**

Finding the Right Cloud Solutions for Your Organization

A Business Value eBook



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Executive Summary

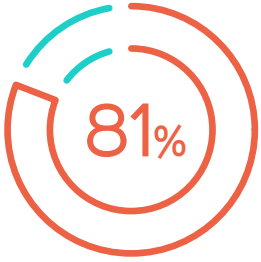
Cloud computing is the most underutilized part of the Digital Transformation journey. While cloud already helps organizations reduce their costs and accelerate their time-to-market, **many organizations are failing to maximize the value of cloud.** Even worse, they neglect to address issues like security, compliance, scalability, automation, and cost control.

IT will become a broker of infrastructure, application, and information services. To realize that vision, IT executives will need to bring together technology, people, and process. IT infrastructure will turn into a dynamic mix of traditional IT, private cloud, and public cloud. Executives will need to translate those components into service-level agreements that advance their business.

This guide helps you take the first steps in the research and discovery process for your cloud computing plans. We recognize the complexity of these initiatives and offer this guidance to help you build the foundation for a long-term, sustainable strategy.

By 2020, $216B in IT spend will be redirected from on-premises technology to the cloud. It's no longer "if" organizations will adopt a multi-cloud strategy, but rather "how."

Source: Gartner



81% of enterprises are adopting a multi-cloud strategy.

Most organizations pursue a best-of-breed strategy for each application deployment, leading to multi-cloud architectures. Nearly **9 in 10** respondents reported using multiple clouds **(87%)**, with **56%** saying cloud decisions are made on a per-application basis.

Source: https://www.helpnetsecurity.com/2018/01/18/digital-transformation-modern-enterprise/

Cloud users underestimate the amount of wasted cloud spend. Respondents estimate 30% waste, while RightScale has measured actual waste at 35%.

Enterprises with a hybrid strategy (combining public and private clouds) fell from **58%** in 2017 to **51%** in 2018, while organizations with an approach of multiple public clouds or multiple private clouds grew slightly.

Source: https://www.rightscale.com/blog/cloud-industry-insights/cloud-computing-trends-2018-state-cloud-survey

Next-Generation IT

The Implications for IT with Cloud Strategies

Cloud promises services at the right place, the right time, and at the right cost. However, the impact of cloud on traditional IT environments and the number of technology choices can be overwhelming. Organizations will evolve from a "lift and shift" approach — moving applications and operations to the cloud — to a full transformational strategy — embracing cloud-native design and continuous integration processes.

There are many things to consider when moving to the cloud. What types of applications are best suited for traditional environments, hybrid cloud, and public cloud? What are the risks and how could they affect the business? Can you uniformly manage, secure, and govern this new IT "mix" across traditional and cloud services? How quickly should investment shift to externally supplied services? Which suppliers can be strategic? How much latitude should you give the lines of business?

Each enterprise will adopt a different mix of traditional and cloud services to achieve its goals. The right hybrid delivery environment delivers useful services with flexibility, speed, and efficiency. Organizations then must match the platform to the types of services and each unit's business requirements. Each service has its own performance, security, control, and availability requirements. For example, DevOps initiatives need to match quotas with role-based access for bill-back capabilities. The HR department's SaaS application will focus on security and compliance governance.

By 2020, more than **80%** of application and infrastructure operations will be resolved autonomously.

Through 2022, at least **95%** of cloud security failures will be the customer's fault.

Source: Oracle: https://www.oracle.com/assets/2018-cloud-predictions-4242085.pdf?intcmp=ocom-hp-apac-0118

Nearly three in four (74%) respondents declare the use of automation in the operation of IT infrastructure to be "somewhat" or "very" important.

The majority **(70%)** are using automation to realize leaner IT with the goal of reducing OpEx, while over half (51%) are looking to scale to meet demand.

Source: https://www.helpnetsecurity.com/2018/01/18/digital-transformation-modern-enterprise/

In 2018, 60% of enterprises that implement appropriate cloud visibility and control tools will experience 1/3 fewer security failures.

Through 2020, public cloud Infrastructure-as-a-Service (IaaS) workloads will suffer at least **60%** fewer security incidents than those in traditional data centers.

Source: Gartner: https://www.gartner.com/smarterwithgartner/is-the-cloud-secure/

Experience from the Field

Typical Challenges That Enterprises Face When Moving to Cloud Solutions

While every enterprise is different, we've found a set of challenges common to all organizations.

Limitations of Virtual Infrastructure

What we see in the field: Cloud platforms must deliver services rapidly. Many businesses have service components like applications running on virtual machines in a three-tier architecture while other components, such as databases, run on physical servers. Since many tools can automate only virtual machine provisioning, it takes manual effort to deploy the full application. This results in reduced speed, longer time-to-service, and increased complexity.

Our perspective: Virtual infrastructure investments must be extended to automate provisioning and monitoring of application and physical infrastructure, providing end-to-end life-cycle service management and security across applications — both virtual and physical. Service Orchestration is required to build the right templates for more comprehensive service provisioning and policy management to scale the support and operations functions.

Closed Environments

What we see in the field: Cloud must be elastic and scalable. "Cloud in a box" solutions offer siloed approaches that just can't scale beyond the box. Your choice of applications, operating systems, databases, and hypervisors is limited by your vendor, and once capacity limits are reached, you can no longer scale up or out.

Our perspective: Enterprises require a unified architecture that brings legacy investments forward, is open to any application, and can scale resources elastically from the best source — inside or outside the data center. With so many options that can abstract the underlying technology delivery that powers applications, there are many technology alternatives in the market to evaluate. What's best for your application and workload can range from virtualized cloud infrastructure to containers to bare-metal resources. The key to the evaluation process begins with a statement of the business goals mapped to the criticality of the workload.

Cloud Sprawl

What we see in the field: "Cloud sprawl" is very common. Multiple internal and external cloud platforms come with different (siloed) management tools and processes that introduce risks to the business and can quickly consume resources needed for innovation. It's no secret that organizations are spending more on cloud resources at the line-of-business level because of the ease of consumption and rapid time-to-benefit. Shadow IT, the decentralization of compute/network/storage/security/governance, is creating more risk and higher total cost of technology spend in operational expense models. Often, the CFO will get involved only after operational expenses have become a visible issue that the business needs to control.

Our perspective: CIOs need to embrace a standard approach to guarantee security, governance, and compliance to protect data, reduce risk, and ensure service quality at the right levels for various business functions. The changing role of CIOs can be embraced to the extent that there is a much stronger alignment with the line-of-business organizations to understand the business requirements. Then, the CIO becomes the broker of the services to ensure proper governance, performance, security, and cost control through show-backs/bill-back methods using tagging technologies. In this regard, IT can be run more like a service provider back to the business show-backs/bill-back methods using tagging technologies. In this regard, IT can be run more like a service provider back to the business.

Security

What we see in the field: Cloud computing has not been spared from the volume and complexity of security threats that continue to escalate. Most enterprises cite security and privacy as top reasons for not adopting cloud computing. In the world of providing security services within organizations, it's no secret that a proper model employs multiple layers ranging from physical security to informational security to network security to data security and so on. There is much research to suggest that base-level security postures of public cloud providers have overtaken the efficacy of traditional IT organizations. However, providing security services to meet the needs of the business to protect its' assets, customers, and employees requires coordinated disciplines at the web/app/DB tiers to mitigate the threats and impacts of breaches.

Our perspective: Security in the cloud era should be information-centric, built-in, adaptive, and risk-based, with a blend of reactive measures and proactive controls. Complete elimination of risk is largely not possible in today's spy vs. spy battles, but it becomes a formula based on investments vs. rewards. Organizations need to ensure that their security focus is on the workloads and information traversing private and public networks. Securing the perimeter defenses is mostly table stakes; however, defending against the growing list of daily viruses, vulnerabilities, ransom-ware attacks, the weaponization of AI, etc. can all be a matter of having the right architecture in place with the right tools to detect, defend against, and mitigate impacts.

Second-generation cloud providers will offer 100% data-center replacement.

80% of all enterprise (and mission-critical) workloads will move to the cloud.

All applications will incorporate AI — further distancing themselves from legacy applications.

AI (and emerging technologies) will double our productivity.

70% of customer interactions will be automated.

The developer community will expand 10× and productivity will increase by 400%.

More than 50% of data will be managed autonomously.

90% of enterprises will use a single identity platform that bridges premises and the cloud.

The number of security events will increase 100×, and automation will become the most reliable way of preventing, detecting, and mitigating threats.

70% of IT functions will be completely automated.

Source: http://www.oracle.com/us/solutions/cloud/oracle-cloud-predictions-2019-5244106.pdf

The New Cloud Journey

Mastering a Hybrid and Multi-Cloud Strategy

The financial savings and the agility provided by moving business applications into the cloud are no longer theoretical — just look at the successes proven by AWS, Azure, and Oracle. Organizations have seen the benefits of IaaS, PaaS, and SaaS. Now, with the proliferation of development tools and platforms, they are delivering capabilities that customers have come to expect as part of the digital revolution.

If organizations are going to innovate and operate at the speed of business, they need to shift their focus to managing across and innovating within the hybrid and multi-cloud ecosystem: understanding, planning for, and having visibility across all cloud and data center asset management structures. They will need a strategy that allows them to migrate and integrate services and workloads across these new environments to accelerate innovation.

What should be targeted for migration? A successful multi-cloud strategy depends on knowing what can be migrated from the data center into the cloud.

The Hybrid and Multi-Cloud Strategy Checklist

If an application can be migrated, then what are the potential financial impacts?

- ☐ Will it increase CapEx savings? How will this impact software vendor licensing? What are the trade-offs to reduce capital expense and depreciation considerations?
- ☐ What will be the impact on operational expense profiles?

How will this impact the current model of application support and operations?

Is the consideration for the workload migration merely a cost-savings exercise associated with running the business or will the migration offer new grow-the-business capabilities?

How does this impact your staffing requirements and skill sets needed to design, implement, support, and operate these new platforms and technologies?

Does the migration benefit the application's end users and/or your customers?

- ☐ Will migrating the application make it easier for them to interact with and use the business service?
- ☐ Will it help attract new customers?
- ☐ Will it help retain current customers?

How rapidly can new features and capabilities be rolled out?

Will it provide a competitive advantage for your company?

While it's not a comprehensive list, answering these questions will narrow down and prioritize the candidates and provide the basis for building a business case for your multi-cloud journey. Based on the answers to this list, organizations can take the next steps in making sure that the architecture and the resources have been identified, planned for, and have a strategy for monitoring and managing these new environments into the future.

The Management Challenge

Managing Hosted Applications and Environments across Multi-Cloud Infrastructure

Whether you are considering a multi-cloud strategy or dealing with cloud sprawl and "shadow IT," the target is the same — simplification. Each application, service, and platform needs to be reviewed based on the value of its return to the business.

From there, understanding the architectural considerations and matching them to the right mix of deployment options provides refined, prioritized lists of target workloads mapped to target platforms. If done correctly, there will most likely not be a single cloud deployment architecture and platform to serve the diverse needs of your business services and the variety of your applications. The simple stratification of IaaS, PaaS, SaaS, and other "aaS" offerings will provide a range of benefits including consumption, ease of use, cost control, configurability vs. customization, and time-to-benefit. When the analysis is complete, there will surely be a mix of consumption models and technology architectures that will satisfy the CFO's cost-control and revenue-supporting requirements. In the end, deploying the new strategy successfully will require a host of new capabilities to manage the complexity that will accompany the new approach.

Just as with any other environment, you need to wrap an integrated service management framework around your multi-cloud hosted services and environments. Your technology and operational skill sets will need to adapt. Your philosophy on controlling services and platforms vs. brokering them for the needs of the business will need to change. **What will you need?**

- ☑ A service desk, which can also be hosted in the cloud.
- ☑ An ability to monitor and manage the automatically generated incidents.
- ☑ A change-management process that spans the multiple providers in the hybrid and multi-cloud ecosystem.
- ☑ Orchestration platforms to ebb and flow with the rapid needs of the business.
- ☑ A command-and-control visualization platform to know what applications are running where and how those applications and services communicate with one another via APIs and network services.

Addressing compliance and regulatory requirements is critical. The General Data Protection Regulation will drive efforts to make sure that data at rest, in transit, and during processing is protected and secure. The entire application development lifecycle, in each phase, will need to have any vulnerabilities identified and remediated, with the effort front-loaded so that issues are caught in the coding and testing phases, and production systems are as tight as possible. This, by the way, is not the responsibility of the cloud providers; the accountability lies with the company's IT organization.

Starting Your Hybrid & Multi-Cloud Strategy

You now have your list of target applications, you know that you must manage your multi-cloud environments, and you know that you must look at your processes and embed them within the different support groups. So, what is your first step?

- Document candidates for application migration using the "Hybrid and Multi-Cloud Strategy Checklist."
- Rigorously analyze workloads and the performance characteristics of the operating environment, and create an evaluation matrix mapping the workload to your target environments.
- Prioritize cloud migrations.
- Develop an overall governing strategy and identify key stakeholders.
- Engage a qualified management services provider.

Case Study: Data Intensity – OCI

Customer Benefits

- 30% Reduction in Infrastructure Usage Cost
- 10 Times Faster Deployment
- Able to Run 200 Reports in Seconds vs. Hours
- Complete IaaS and PaaS Portfolio

Solutions – Data Intensity

- Cloud Migration
- Managed Services

Solutions – Oracle

- Oracle Cloud Infrastructure Compute/Block Volumes/File Storage/Load Balancer/ Database
- Oracle Autonomous Data Warehouse Cloud Service
- Oracle Analytics Cloud Service
- Oracle Identity Cloud Service

Key Metrics Realized

- Gain **cost savings** by migrating nonproduction and disaster recovery environments to OCI.
- Still delivering the **highly reliable and performant services** that their customers demand.
- Leverage Oracle's highly scalable File Storage Service for shared file systems during deployments to **help optimize capacity consumption.**

DATA INTENSITY

"We moved to Oracle Cloud Infrastructure because our very business model depends on having the most cost-effective yet best-performing infrastructure available to run Oracle workloads."

James Anthony
Chief Technology Officer

Case Study: Cavanti Software – OCI

Customer Benefits

- 100% Uptime
- Faster Time-to-Value
- Scalability and Flexibility
- Access to Features That Aren't Available with AWS

Solutions – Data Intensity

- Cloud Migration
- Managed Services
- Solutions – Oracle
- Oracle Cloud Infrastructure
- Oracle VM
- Oracle DBCS

Key Metrics Realized

- The Oracle Cloud has **matured considerably** over recent years.
- We got **everything we wanted** that was not feasible with AWS.
- Pricing was extremely competitive and offered **massive savings** over running VMs on AWS.
- We can **scale up as needed** with no upfront costs — great for a still-growing business.

cavanti

"We migrated our production instance of Oracle from Amazon RDS to the Oracle Cloud with minimal downtime. Our experience with Data Intensity has been fantastic! We have been live now for 17 months with 100% uptime! The combination of Data Intensity and Oracle Cloud is perfect. We always receive excellent service and support from Data Intensity, who do a great job managing our environment!"

Gemma Wood
Cofounder

Case Study: Data Intensity – ADWC

Customer Benefits

- Consolidated Disparate Data Sources into a Single Source of Truth
- Scalability and Flexibility
- Cost Savings to Add More Users without Adding Licenses
- Real-Time, On-Demand Access to Data on Any Device

Solutions – Data Intensity

- Cloud Migration
- Managed Services

Solutions – Oracle

- Oracle Autonomous Data Warehouse Cloud
- Oracle Analytics Cloud
- Oracle E-Business Suite

Key Metrics Realized

- **10x faster deployment time,** 10x faster time-to-benefit.
- 200 reports generated in **seconds vs. days.**
- 10x user-base increase for **better business decisions.**
- **$225,000 cost savings** over three years.
- **Zero downtime, zero admin effort.**
- **3–4x faster performance** with fewer resources than on-premises solution.

DATA INTENSITY

"The Oracle Cloud Solution has allowed our executives and business users to mine and synthesize rich data from EBS and other sources, putting critical financial data and custom reports at their fingertips on any device wherever they are in the world."

Andrew Heath
Senior Manager
Global Finance Planning & Analysis

About Data Intensity

Data Intensity is the largest independent multi-cloud managed services provider focused on mission-critical applications and managed services in a hybrid cloud world. Our purpose-built solutions and services focus on the technologies and platforms that power our customers' business processes, from front-end strategy and design to implementation and migration to ongoing upgrades and support — **all from a single vendor.** Customers choose and stay with us because working with Data Intensity allows them to focus on their critical business needs while we focus on their applications and multi-cloud investments to drive greater system availability, performance, flexibility, and scalability.

About Oracle

Emerging technologies are disrupting old paradigms and unleashing new opportunities. Oracle has embedded innovative technologies in every aspect of our cloud, enabling companies to reimagine their businesses, processes, and experiences. With the introduction of Oracle Autonomous Database, the industry's only self-driving, self-securing, and self-repairing database, Oracle is again revolutionizing how data is managed. Oracle is the #1 provider of business software, with a broad portfolio of solutions for companies of all sizes. Today, 430,000 customers in 175 countries use Oracle technologies to seize business opportunities and solve real, tangible challenges.

Oracle Cloud Infrastructure: Built for Enterprise

Oracle set an ambitious goal in building its second-generation cloud infrastructure: to create an infrastructure that matches and surpasses the performance, control, and governance of enterprise data centers, while delivering the scale, elasticity, and cost savings of public clouds. The result, Oracle Cloud Infrastructure, is built from the ground up to be an Enterprise Cloud, equally capable of running traditional multi-tiered enterprise applications, high-performance workloads, and modern serverless and container-based architectures.

Take Your Next Step with Multi-Cloud with Data Intensity & Oracle

You need a partner that has the experience to know which service models are right for your business and how best to source, build, deliver, and manage them.

Data Intensity is a long-time member of the **Oracle Partner Network,** focused on supporting mission-critical applications and delivering managed services in a hybrid cloud world. With over 17 years of industry experience, 650 customers served, and 15,000 managed environments under our belt, we specialize in delivering purpose-built solutions as well as design, implementation, migration, maintenance, and support services for the technologies and platforms that power our customers' business processes.

Data Intensity's core business depends on having a mission-critical enterprise cloud infrastructure that enables the delivery of high availability, performance, flexibility, security, and scalability that customers need for their business-critical workloads. We're ready!

Get Started

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