WHITE PAPER

Optimizing Google Cloud Platform to fit your environment

How an integrated solution helps you facilitate cloud migration and maximize your GCP investment

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Summary

The Google Cloud Platform (GCP) offers scalable compute resources and an extensive portfolio of services for its clients to build and run applications without the traditional limitations of on-premises data centers using the same future-proof infrastructure that returns billions of search results in milliseconds, serves 6 billion hours of YouTube video per month, and provides storage for 1 billion Gmail users. GCP enables its clients to cost-effectively and efficiently tackle massive, data-heavy workloads often associated with SAP environments and other data analytics solutions.

To benefit from the incredible workload performance and security provided by GCP, an organization must address the challenges of the cloud journey that still remain—such as moving production applications, where to locate workloads, a shortage of cloud expertise, complexity, and costs—before moving to GCP.

Read on to learn about the advantages of GCP and see how the Lumen® Center of Excellence for Google Cloud can help you accelerate next-gen business, overcome cloud journey challenges, and fully realize the benefits of a GCP integrated cloud environment.

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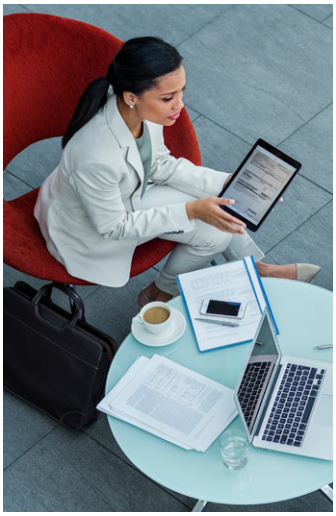

Common challenges of cloud migration

Regardless of cloud platform, anyone looking to migrate workloads to the cloud will contend with these challenges:

1. Having to decide which workloads belong where

A public cloud environment may be sufficient for a particular workload, but would a private cloud or hybrid architecture yield better performance, optimize cost, and provide tighter security? And what about the geographical location of the data center where a workload resides? Is there a data center closer to those using the data that would provide lower latency? Which workloads are better off being on premises as opposed to the cloud, and vice versa?

Before you can appropriately answer these questions, you must be able to accurately assess the specific needs of your workloads and gain a holistic overview of your current architecture.

2. Cloud skills that come up short

If an environment isn't architected properly, data-intensive workloads may not perform any better in the cloud than they would on premises. Cloud expertise isn't a subset of an existing IT discipline; it's a discipline in its own right. In-house IT talent may be proficient and highly skilled in many areas, but it's not uncommon for internal teams to lack the kind of deep, expansive knowledge necessary to utilize the various tools and technologies that optimize cloud workload performance.

For successful cloud migration and long-term management of cloud environments, cloud expertise is essential.

3. The labor, costs, and complexities of migration

A "lift and shift" approach may not work for all workloads you want to move to the cloud. Some data sets and services may require rearchitecting or redevelopment to ensure proper integration and security, which can be a time-consuming and labor-intensive process. Regulatory demands and time requirements can also rule out migrating data and applications over public internet, which can be costly, slow, and less secure than other connections.

The time commitment, cost, and complexity of migration can add up quickly, which is why intuitive migration tools that streamline the process are needed.

What an integrated solution does—and why it's important for GCP users

An integrated solution works across all seven technology layers, and it ensures that GCP users overcome the common challenges of cloud migration by taking a holistic, expert-led approach.

For example, if an enterprise has on-premises, mission-critical systems that rely on SAP HANA workloads being run on GCP, then an integrated solution should offer dedicated direct connections with high fidelity.

Companies deploying hybrid cloud with direct connections and managed cloud services have achieved up to **24% faster connections**.[1]

In other words, integrated solutions are built around the path data takes as it moves across environments and network layers—as opposed to being built around a cloud platform, which is ultimately a single destination point.

With an integrated solution working across all seven technology layers, GCP users are able to make the most out of their cloud investment and get the best possible performance out of their data-intensive workloads.

Realizing the benefits of GCP with an integrated solution

Optimizing big data workloads

Clients needing to ingest terabytes and petabytes of data for analytics or run data-intensive applications greatly benefit from GCP's variety of services and the underlying network transport options Lumen has integrated into a single environment. GCP and Lumen give companies the flexibility to store, ingest, and consume their data in ways that ensure their workloads meet fluctuating performance needs and SLA demands.

One service GCP offers to optimize the running of production workloads is Google BigQuery, which can analyze data sets containing several terabytes in seconds. Google Bigtable—a high-throughput, low-latency, and scalable NoSQL database—is another well-suited option for analytical and operational workloads.

And when it comes to the tasks surrounding the running of production workloads, GCP has simplified the creation of schemas, loading of data, generating queries, and exporting data.

Clients can also rely on GCP for availability and comprehensive security. Production workloads can run on GCP persistent-memory virtual machines (VMS) for low-latency response and fast access to large data sets. Both Lumen and Google have global high-speed private networks that provide seamless availability for your apps and data around the globe, backed by a 99.9% uptime SLA.

Lumen® Managed Security Services proactively protect you from downtime and other damages resulting from lost access, lost data, and security breaches 24/7/365. GCP is managed by the same experts and security systems Google uses to safeguard its own network of offerings, including Gmail and Google Search.

Through the breadth of services available from GCP and Lumen, enterprises can achieve a high level of customization when running their production workloads on GCP. And, by incorporating managed services across the entire architecture via an integrated solution, enterprises can further streamline complexities, control costs, and optimize performance.

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For those looking to utilize GCP’s ability to handle data-heavy SAP workloads and various other ERP tasks, an integrated solution can provide a fast network and a powerful analytics engine with AI and machine learning capabilities. With the right integrated solution and agile platform in place, GCP clients can modernize high-performance core ERP applications.

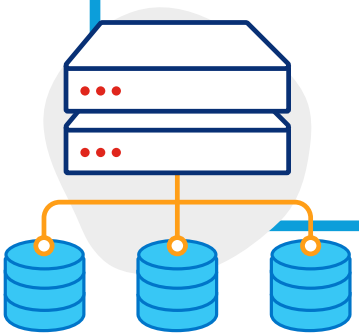
Automating deployment and virtualizing workloads

Users can also look to GCP to help smooth the transition to cloud-native app development. GCP automates the deployment of modern, multi-faceted applications by offering containers as a service (CaaS) in the form of the Google Kubernetes Engine (GKE). This means developers can focus on code instead of worrying about deployments and integration across on-premises or cloud environments.

Companies are achieving up to a **22% increase** in app releases/updates per year, fewer escaped defects, and fewer failed code merges/integrations.[1]

With modernization tools such as Google Anthos, a container management platform, companies can modernize existing apps, build new ones, and run them securely in hybrid environments. But, depending on requirements, they still need the underlying network integrated from their data center, on-premises storage, or private cloud to connect to the public cloud.

Additionally, not all production workloads are compatible with container platforms. To be most efficient, companies need to rearchitect and virtualize applications to make the move across the network from on-premises to cloud platform efficient and cost effective with minimal or no downtime. In these instances, an integrated solution can help GCP users rearchitect and virtualize workloads—SAP workloads, for example—that can't be deployed in containers.



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Cost-savings

Google has put in place several financial incentives for its GCP users. For example, Google tracks all of its cloud resources in use—processing power, database queries, data storage, network connectivity—and implements a per-second payment model versus the per-month model adopted by other cloud platform providers. When a client's services on GCP are used heavily by their end-users and certain resource thresholds are met and sustained over a long-term period, Google lowers the per-second rate it uses to charge its clients. This is especially beneficial to clients running resource-hungry big data production workloads.

Essentially, the more sustained, customized, and committed a client's use of GCP is, the greater their ROI. An integrated solution that manages the underlying network can improve ROI even more by providing real-time dedicated connectivity across on-premises and cloud workloads, ensuring better end-user experiences and reduced infrastructure maintenance costs.

Companies are realizing up to **18% savings on their annual IT budgets** with hybrid clouds.[1]

Using an integrated solution for consolidation

The workloads within a single enterprise can be dynamic—the data sets used in one workload may have to comply with more stringent government regulations than the data sets found in another. For instance, a financial services company may be required to consider the physical location of a cloud datacenter when storing sensitive account information. Or, a healthcare provider may have to ingest patient records in a specific way to remain compliant with HIPAA and other healthcare laws.

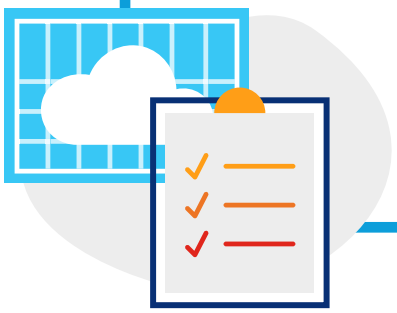
By consolidating the control of GCP services together with network and managed services, clients can run big data workloads with high-performance demands on the cloud—such as the types of workloads running in SAP S/4HANA—while keeping other workloads on premises where they may be better suited due to regulatory concerns, performance needs, or other specific circumstances without getting lost in the complexities of a hybrid environment that would otherwise dampen efficiency.

An integrated cloud services solution is also the linchpin that has in many ways replaced the rigid and immobile structure of monolithic architectures with the flexibility and unified control needed for the modern service mesh architecture. By taking an integrated approach, clients gain cohesiveness across their on-premises, private, and GCP environments. Walls between disparate systems within a hybrid infrastructure are removed, and clients can seamlessly integrate whichever GCP solutions are needed across different environments, workloads, processes, and microservices.

Additional considerations before making the move to GCP

Is the right talent in place?

Perhaps the very first consideration should be whether or not GCP migration—and long-term management—can be handled by in-house staff, or whether companies need to bring in an experienced partner to augment their skillset. An enterprise will need experts capable of avoiding common migration pitfalls when moving workloads to GCP. But beyond the initial migration, the enterprise will also need qualified teams to manage those workloads once they get there.



> **“Some enterprises forge ahead regardless, attempting to cultivate an internal center of excellence as best they can with existing resources. The reality is, however, that this tactic can result in lackluster results.”**

If an enterprise is new to cloud, its architects and IT specialists may lack the proper qualifications and experience to take charge of the cloud journey; building and transitioning to cloud environments take a different set of skills than that required to build and manage on-premises data centers. Some enterprises forge ahead regardless, attempting to cultivate an internal center of excellence as best they can with existing resources. The reality is, however, that this tactic can result in lackluster results; nearly two thirds of companies that opt for this approach do not achieve the desired cloud benefits.[2]

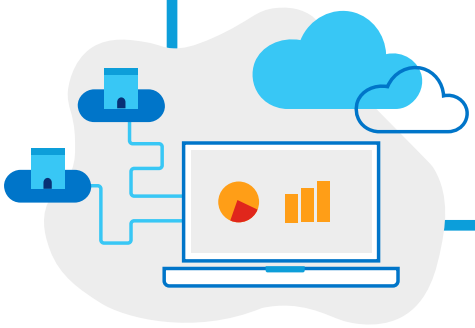
Currently, 86% of enterprises have a skills shortage in cloud disciplines.[3] So, the chances are high that an enterprise will have to search beyond its in-house talent to recruit these four key positions vital to successful GCP migration:

- A dedicated cloud infrastructure architect—someone with firsthand experience and knowledge of GCP
- A migration architect—someone who understands that moving workloads to the cloud doesn’t mean matching environments server for server
- A security architect—someone who can understand and explain how an enterprise’s security profile will change, how its threat landscape may expand, and how to adapt
- An application architect—someone who can help prepare and move legacy apps to GCP and assist the enterprise in adopting cloud-native application development.

Technical requirements and regulatory demands

What is the required level of latency performance between cloud environments and end-users? How much bandwidth is needed to move potentially large data sets between points within an acceptable range of time? Many enterprises expand outward from on-premises data centers to cloud environments—but they lack efficient and optimized connectivity between them. Keeping disparate environments in their own silos within a hybrid architecture nullifies the benefits of cloud adoption that an enterprise would otherwise gain.

Providing the right expertise and meeting the latency, bandwidth, and network demands of cloud adoption are critical requirements of any modernization initiative. Along with ensuring workloads remain compliant to various regulations across hybrid environments, these are other tasks that can be simplified and streamlined with an integrated solution.



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An overview of GCP migration

No two enterprises start their migration journey at the same point. For many, an important first step is data discovery. The enterprise must understand its current IT footprint and what kinds of data sets reside where. Then, the enterprise must understand the data itself. What are the interactions between data sets? How are the data sets being used by apps and users?

Once an enterprise has an accurate view over its architecture and data, a strategy must be developed. There is no one-strategy-suits-all approach; it boils down to what a specific enterprise needs out of GCP. Some will use GCP for secondary workloads—keeping heavily regulated data sets on premises, for example—while others could plan a full migration.

Strategy creation requires an expert-level knowledge of cloud—and, ideally, GCP—to avoid common migration missteps, both small and large. But a strategy is only as sound as the execution that follows. A well-crafted plan that accounts for the nuances of cloud migration requires experts who can fully implement it.

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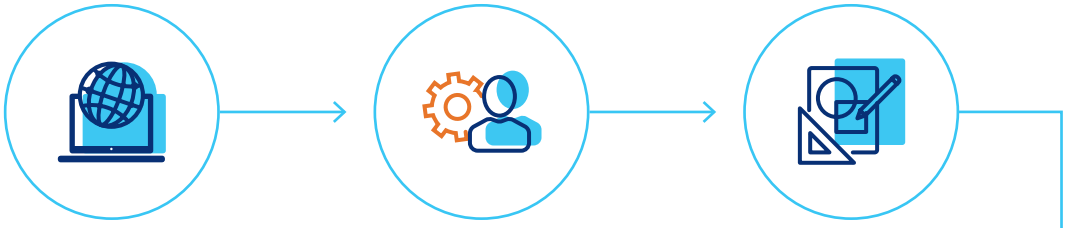
Taking an integrated approach with Lumen

The Lumen Center of Excellence for Google Cloud offers a comprehensive portfolio of integrated solutions for every step of the cloud journey. We partner with GCP users to help them:

- Avoid time-wasting reworks through expert-led orchestration, the creation of standards, and adherence to governance policies and best practices
- Eliminate barriers between IT teams
- Optimize GCP services for SAP and non-SAP workloads

Our process at a glance



Discover

We use automated tools, physical audits, and workshops to understand your IT footprint and the specific needs of your workloads.

Analyze

We determine a baseline for your technical requirements and any optimization or consolidation needs.

Design

We use the information gathered from our discovery and analyze phases to create a Target State Architecture strategy.

Migrate

We execute the migration of workloads according to the strategy we develop, tracking the migration using transparent project management.

Educate

We transfer all knowledge and insights gathered throughout the process to you, so you understand every aspect of the project.

Manage

We maintain the level of ongoing management and guidance you deem necessary.

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Overcoming the challenges of cloud migration with Lumen

Make the right moves

We work alongside you to assess your IT footprint. We gain a deep understanding of your unique technical requirements to determine where workloads should reside and how they should be architected in order to achieve optimal performance.

Bring in cloud expertise

Our dedicated team of GCP experts have extensive cross-functional skillsets and over 35 Google cloud certifications. They complement your existing in-house talent and fill in any skill gaps you may have. This includes providing dedicated cloud infrastructure, migration, security, and application architects.

Execute seamless, efficient migration

Our GCP-certified engineers work with you to evaluate all requirements, estimate costs, and execute cloud migrations for SAP and other workloads. We leverage Google Cloud's suite of migration and application management tools for virtualized and containerized applications across hybrid and multi-cloud environments to enable users in their cloud transformation journey. We also enable our customers to provision secure, dynamic connections for migrations and data transfers to GCP using Cloud Connect Dynamic Connections.

Lumen: a trusted GCP partner with a dedicated network

Lumen offers a predictable, consistent experience through a complete integrated solution that combines adaptive networking, connected security, collaboration, and management services.

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While our experts help you migrate to the cloud and manage your hybrid environments, our network provides dedicated direct connections to GCP to help ensure the low-latency performance, high bandwidth capacity, and availability needed to run big data workloads. GCP can be leveraged for high-performance applications, workloads and data can be moved as needed, and security is built directly into the network and platform.

We help to digitally transform businesses, using digital technologies to modify existing processes to drive greater efficiencies, enhance data security, and maintain market differentiation. By partnering with Lumen, enterprises can create truly hybrid IT models that are flexible and responsive across on-premises data centers and GCP environments—on the fastest, most secure network platform for next-generation business applications and data.

How prepared are you for your cloud migration journey? Meet with our Solution Specialist Overlay team to find out.

Footnotes

1. IDG, "The Enterprise Guide to Improving Business Outcomes with Hybrid Cloud, Cloud Connections, and Managed Cloud Services"
2. Accenture, "Perspective on Cloud Outcomes: Expectation vs. Reality", 2019
3. 451 Research, "Cloud Transformation & Managed Services: 2020 Preview", February 4, 2019.

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Why Lumen?

As one of only three enterprise cloud service providers certified for deployment to VMWare, Azure and AWS enterprise clouds and direct access to 2,200+ public and private data centers and 1000s of successful integrations, it's no wonder we've been recognized for two years running by Frost and Sullivan for cloud management excellence.

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