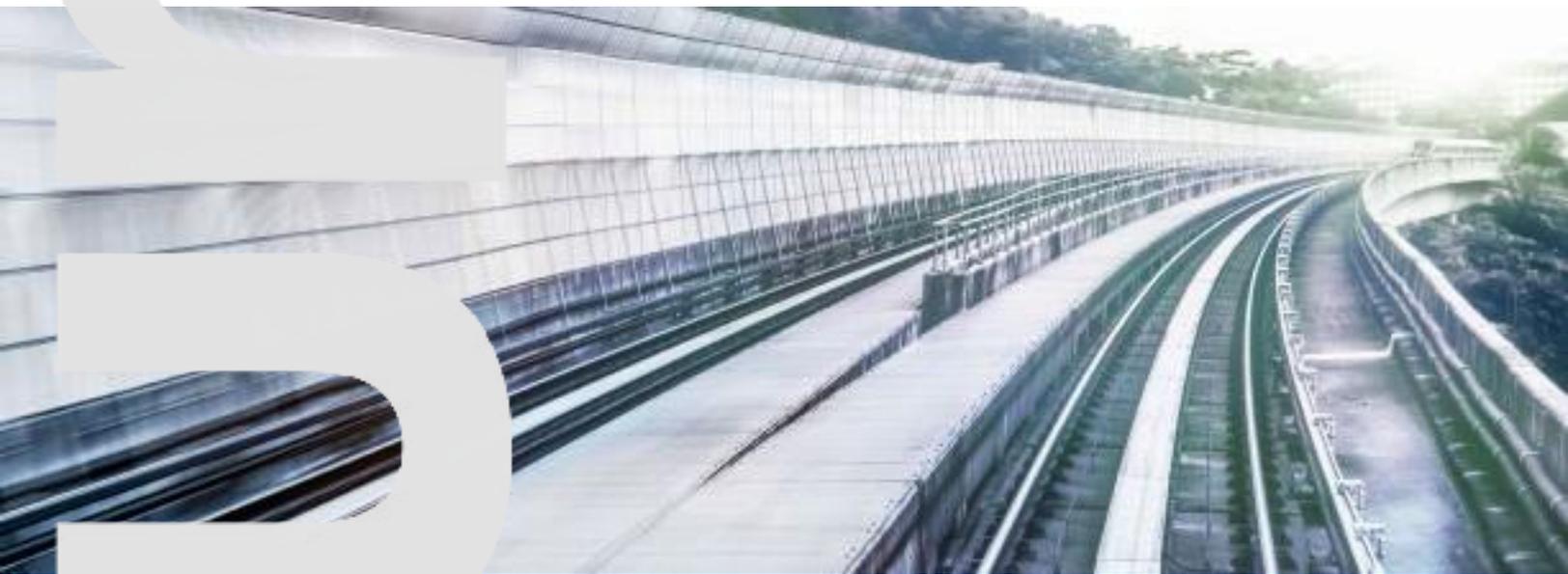# AURO Enterprise Cloud
Best Practices for Cloud Computing Onboarding

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Introduction

Over the past decade, senior technology executives have witnessed groundbreaking changes in both business and technology and it is becoming a growing IT infrastructure challenge. Managing a typical business application has evolved from desktop installations to client/server solutions, and in more recent years, businesses began working with web services, service orientation architecture and much more. With each progressive step forward in technology, IT departments face new challenges and opportunities with their business partners. Virtualization solutions are becoming widely accepted to reduce operational costs. Coupled with an unprecedented acceleration in the development of tech innovation and new products, these changes have radically changed the way the business market operates and led the way into the newest technology challenge of **cloud computing**.

Overview

Cloud computing builds upon all the previous IT advances in recent years and provides an opportunity for businesses to reduce costs and time by sharing computing, storage and networking. Cloud onboarding and migration may seem like a complicated and high-risk project. To make the process of moving into AURO easier to understand, we've provided an in-depth explanation of some of the work AURO can do for your business. This document will:

- **Provide a detailed breakdown of what needs to be considered before and during a cloud migration**

- **Help you understand how to recognize and leverage application workloads when planning for a migration to the cloud**

- **Deliver insight into cloud migration best practices and methodologies when on-boarding enterprise business applications**

Cloud Onboarding

No IT department wants to launch itself into a cloud migration project without feeling confident that the switchover into a new cloud environment will be a smooth and trouble-free experience. Papers and articles selling the benefits of cloud computing may gloss over the whole issue of onboarding, as if 'forklifting' applications into a cloud environment is as easy as flicking a switch

(as long as you use their solution). Clearly it isn't, even for applications regarded as being relatively 'easy to migrate' to a cloud environment.

The complexity of on-boarding is a big part of why enterprises may hesitate to move ahead with cloud projects, despite being sold on the CAPEX and OPEX benefits of the cloud. Whether you're after business agility, lower capital commitments, more efficient use of IT resources, or any other benefit of cloud computing, a lot rides on getting the migration right and finding a partner qualified to lead that process. AURO Enterprise Cloud (AURO) has spent the last seventeen years delivering infrastructure services and have developed comprehensive processes to ensure any move to the AURO Cloud is a smooth one.

What Does Onboarding Mean?

In the context of migration to a cloud environment, 'onboarding' refers to the deployment of applications and/or data to the AURO Cloud infrastructure (public, private or hybrid). It is essentially the final stage of the migration process - the equivalent of the transition from one network/infrastructure to another in a network/infrastructure migration project. As with any network migration project, this final stage of the process is supposed to happen smoothly and quickly. If everything has been properly prepared beforehand, there's no reason why it shouldn't. Successful onboarding is all about prior planning and preparation.

Who is this document for?

This document focuses on migration paths that move or 'forklift' applications (or virtual machines and the applications that run on them) into AURO's private cloud or public cloud environment, without the need for major refactoring or rebuilding. With any decision, it is critical for your IT decision-makers to understand the process and to ensure that any move is both beneficial to your business and to end users. The first part of this paper explains why application onboarding may seem to be a challenge and introduces some key concepts and considerations. The second part introduces the steps of onboarding and the three critical areas of preparation that are necessary to ensure successful negotiation of those steps to AURO.

Application Workloads

When talking about cloud migration or onboarding, it is common to talk about 'application workloads' rather than just 'applications'. This is because applications don't typically operate in isolation, and the 'workload' concept captures the notion of all the work being done by a system

when your application(s) is running. As an example, here is a common application setup running in the AURO Cloud:
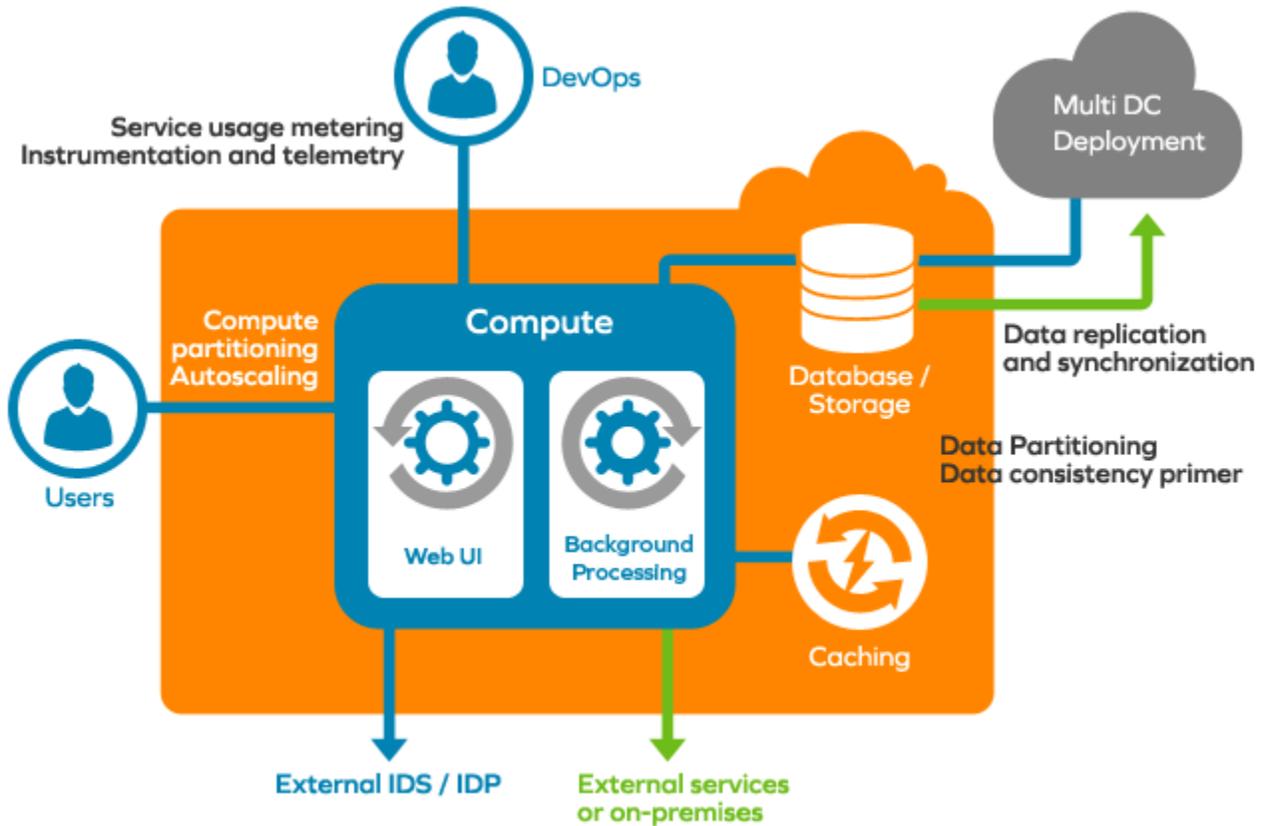
An application workload can therefore be thought of as a logical container(s) that includes all of the components that are required for the proper performance of an application. It includes the CPU processing power used directly by the application, the storage being read from and written to, the network connectivity being used, and the application's interactions with additional add-on services, like monitoring and management tools, security services, database/storage services, authentication services such as Keystone, LDAP, Active Directory, and other relevant services.

Challenges with "Enterprise" Application Workloads

When you're migrating an application to a cloud environment, some of the described elements may not need to be migrated with the application. Or if you are moving away from a legacy IT environment, some of the previously used services may no longer be required. As an example, it's common for some of our enterprise customers to maintain their Active Directory domain controller in-house, while some of the applications it controls may reside in AURO's cloud

computing environment. Enterprise applications also usually interact with one another. While most companies want to create the world's biggest apps, most enterprise application workloads are not like the cloud applications built by companies like Facebook, Zynga or Netflix, which are essentially run as 'stand-alone' dedicated applications, separate from general business functions and running at a much larger scale than enterprise applications.

Cross-platform interactions are a big part of the complexity of enterprise application onboarding, even for workloads perceived as 'cloudy' or 'cloud-friendly'. It's also one of the reasons that enterprises may look to start with private cloud deployments versus moving directly into a public cloud. Oftentimes, enterprises feel that in a private cloud environment, they can control the cross-platform interactions and environment of their cloud applications more easily than in a public cloud environment. We typically see this when a customer wants to move to a cloud but is coming from an outdated perspective of cloud computing. They are often too focused on potential restrictions and forget the benefits a cloud service has to offer.

Are you Cloud Friendly?

It's hardly surprising that most enterprises choose to start their forays into cloud computing with application workloads that minimize the complexity of onboarding.

Examples include:

- Test and development: because applications under development are relatively 'stand-alone' in terms of the level of interaction with other applications and services.
- Collaboration and web applications: because their native architecture is already compatible with running on multiple computing and storage nodes.

For most enterprise applications, there's more work to do in preparing them for a cloud environment because they're not natively designed for it. Whether off the shelf or made to order, their applications are designed to run on a single server, end-user machine, or on a cluster of front-end and application server nodes backed by a database. In most cases, it is easy to assume that their application will be running on infrastructure designed for reliability, so hardware failure is taken to be an unlikely exception that requires special backup and disaster recovery procedures. This is quite different from a cloud environment that has built-in redundancies, and multi-site failover capabilities where the infrastructure design includes 'expected' failures and respond to it by switching resources seamlessly.

Because of the work required to prepare traditional enterprise workloads for highly virtualized and AURO's standardized cloud environment, the most likely early candidates tend to be those already running in a virtualized environment, but these are often the low hanging fruit. Companies have an opportunity to taking their traditional IT/apps and significantly lowering their expenditures from a capital and operational standpoint.

Public/Private Clouds & Hybrid Clouds are the 'New Reality'

Today, many AURO customers are leveraging two or more cloud environments, also known as AURO Cloud for Business or Hybrid Clouds. Hybrid cloud environments, by definition, are the integration of two or more different cloud environments – this is emerging as one of the dominant model for enterprises. However, not everyone needs a hybrid cloud and this can be determined during any cloud consultation with AURO's Cloud Engineers. Described below is a common hybrid model that leverages AURO's cloud and standard certified infrastructure deployments that allow customers to utilize several unique benefits:
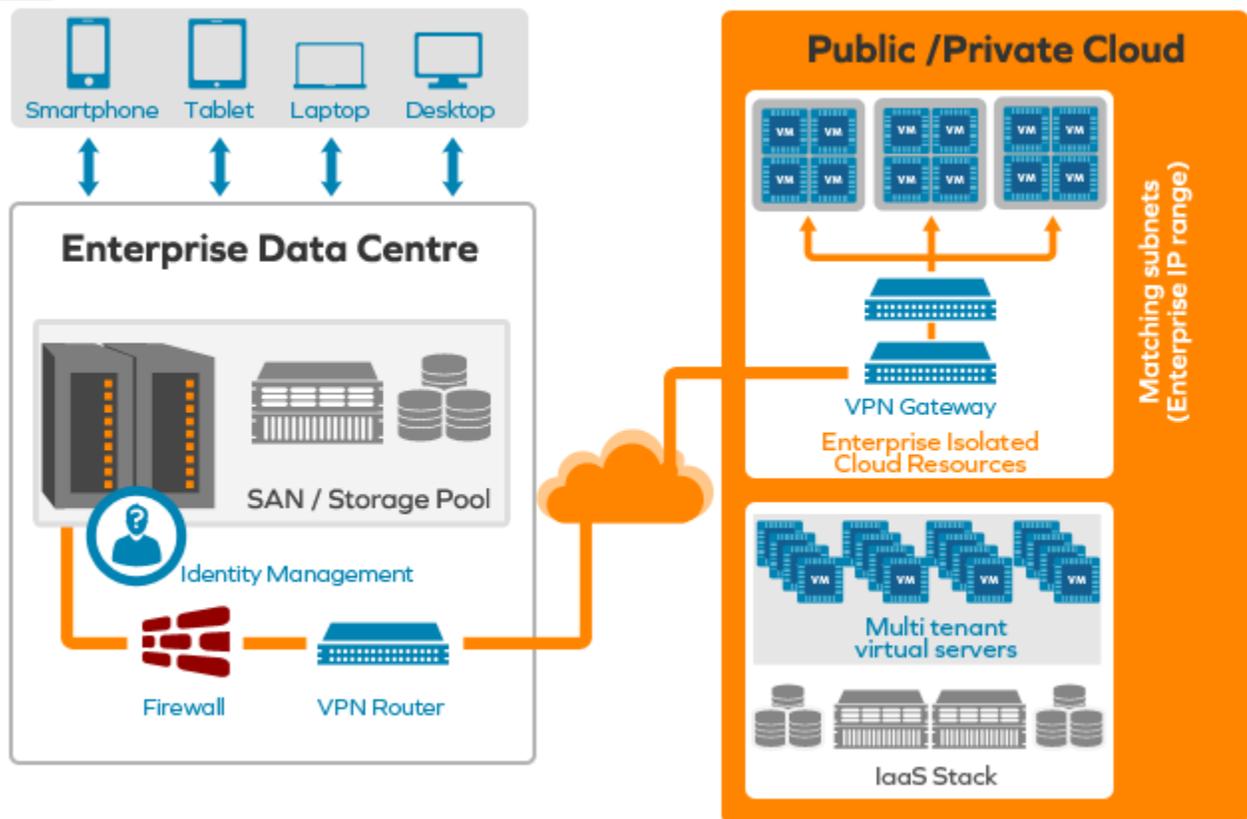
- Cloud bursting (on-demand extension of the data centre to a cloud environment based on pre-defined policies and monitoring of loads, quality of service, and so on) is a way for enterprises to explore and trial cloud services when they have concerns about the security, stability or performance of the cloud environment.
- Avoidance of long-term investment in unused capacity to handle demand spikes. It's an attractive solution for enterprises facing periods of system overload and not wanting to over-provision their infrastructure.
- Migrating an executing workload from one environment to another, based on resource use and performance.

Onboarding in this Hybrid Cloud World

- To make the most of cloud environments, enterprises need a well-understood and secure way to onboard workloads and then maintain a two-way connectivity with their internal data centre.
- AURO has a proven and well-defined process to help clients move off of existing legacy IT environments to ensure minimal interruptions and high customer satisfaction.
- AURO has onboarded many customers over the years and will work with you individually to ensure alignment with your requirements.

APPLICATION ONBOARDING: The Basics

The actual process of onboarding ('forklifting' workloads) can be broken up into seven relatively easy steps. Utilizing these processes will significantly improve your cloud experience. Here are some of the steps AURO's team will use when evaluating your onboarding into the cloud. With any migration, defining the workload is all about careful planning and preparation including:

- Deploying the workload
- Workload analysis
- Ensuring seamless two-way access with appropriate candidate workloads for cloud migration and understanding their requirements for onboarding
- Testing and validating
- Getting the application cloud-ready
- Discontinuing the old service as the application will perform as required on the target cloud architecture.
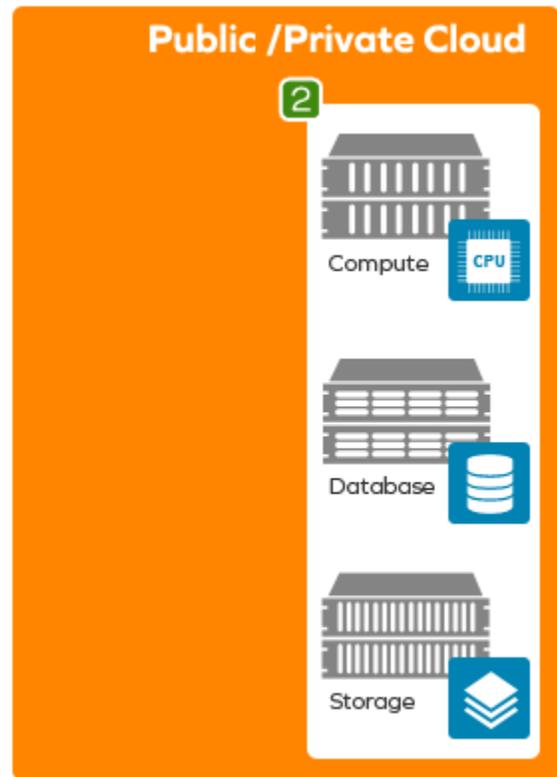
- Working with AURO Enterprise Cloud and determining the target cloud environment to enable both sides to outline the implications for onboarding support.

Described below are the seven (7) steps that briefly demonstrate the onboarding process:
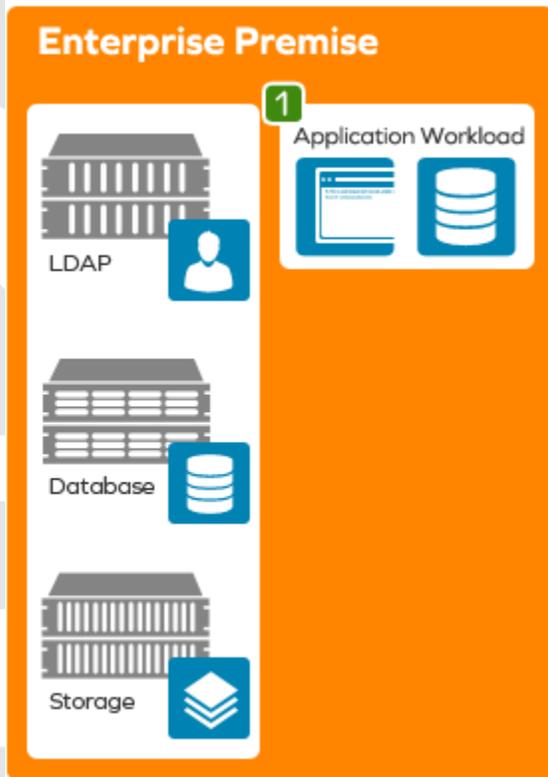
Steps 1 & 2

When defining the workload, the number and type of cloud servers required for migration will depend on the nature and scale of your application workload and the way it interacts with software and services not being migrated. When ready, you can use AURO's self-service interface cloud dashboard for the creation of your account and purchasing/deployment of the cloud services that you need (e.g., servers, storage, network).

Smooth integration is required between the cloud workload and services not migrated, and you need to be able to monitor and manage the application as well as the cloud infrastructure. Here are some of the items we verify during these steps:

- Prepare and test prior to deployment -- there are usually surprises.
- Has everything been transferred correctly?
- Do network, storage, compute and database configurations remain intact?
- Can you see and manage the cloud environment properly?
- Does your cloud backup process work?
- After confirming that everything is working well, you can then give access to users and decommission the enterprise service.

Steps 3 & 4
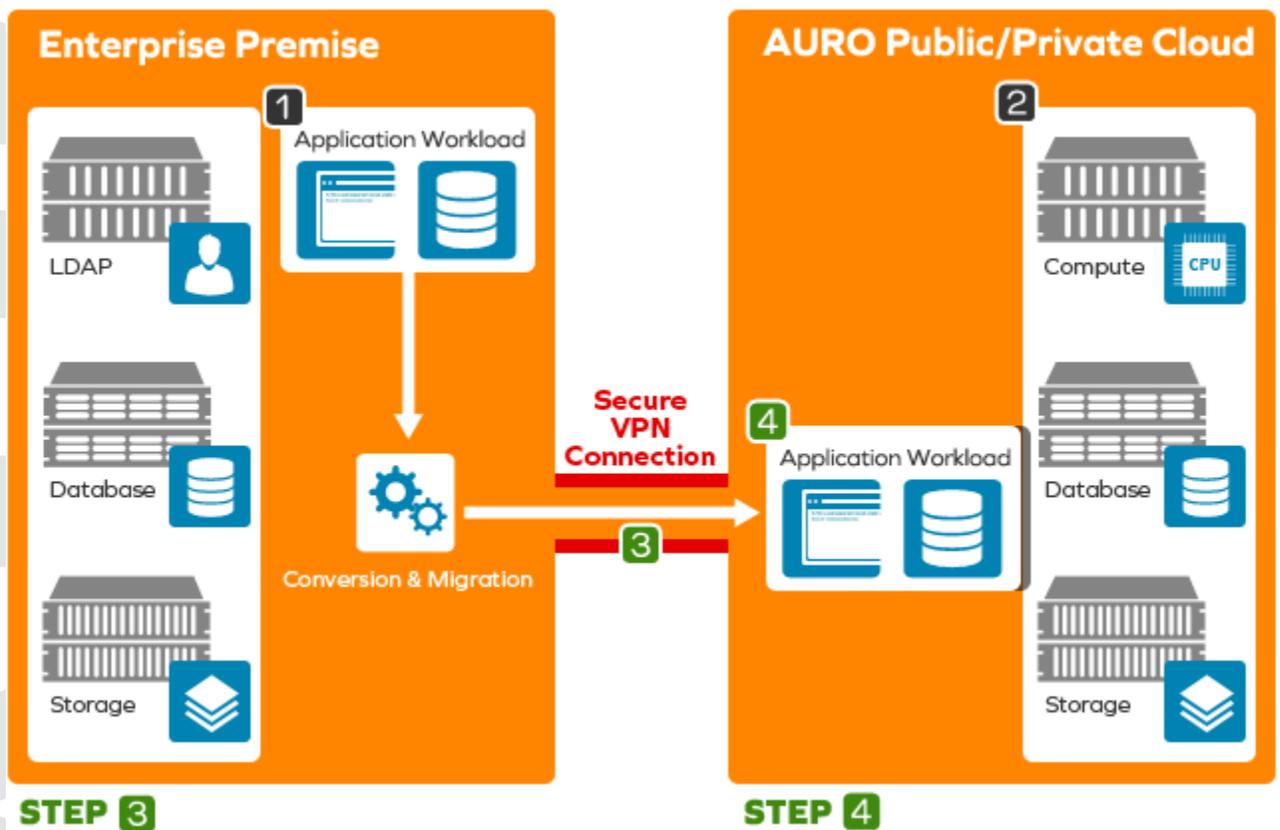
Establish a Secure VPN Connection.

Secure and transparent bi-directional connectivity, usually through an internet VPN, may be required between your existing IT infrastructure and the cloud, both for the migration itself and for cross-platform application interactions after migration. When ready, deploy the workload. Your cloud servers can be configured and connected to services remaining behind, followed by the transfer of the application and any associated databases, software and services being migrated. This action can be performed by customers IT team, or AURO can provide migration assistance.

Step 5, 6 & 7

Ensure seamless two-way access.
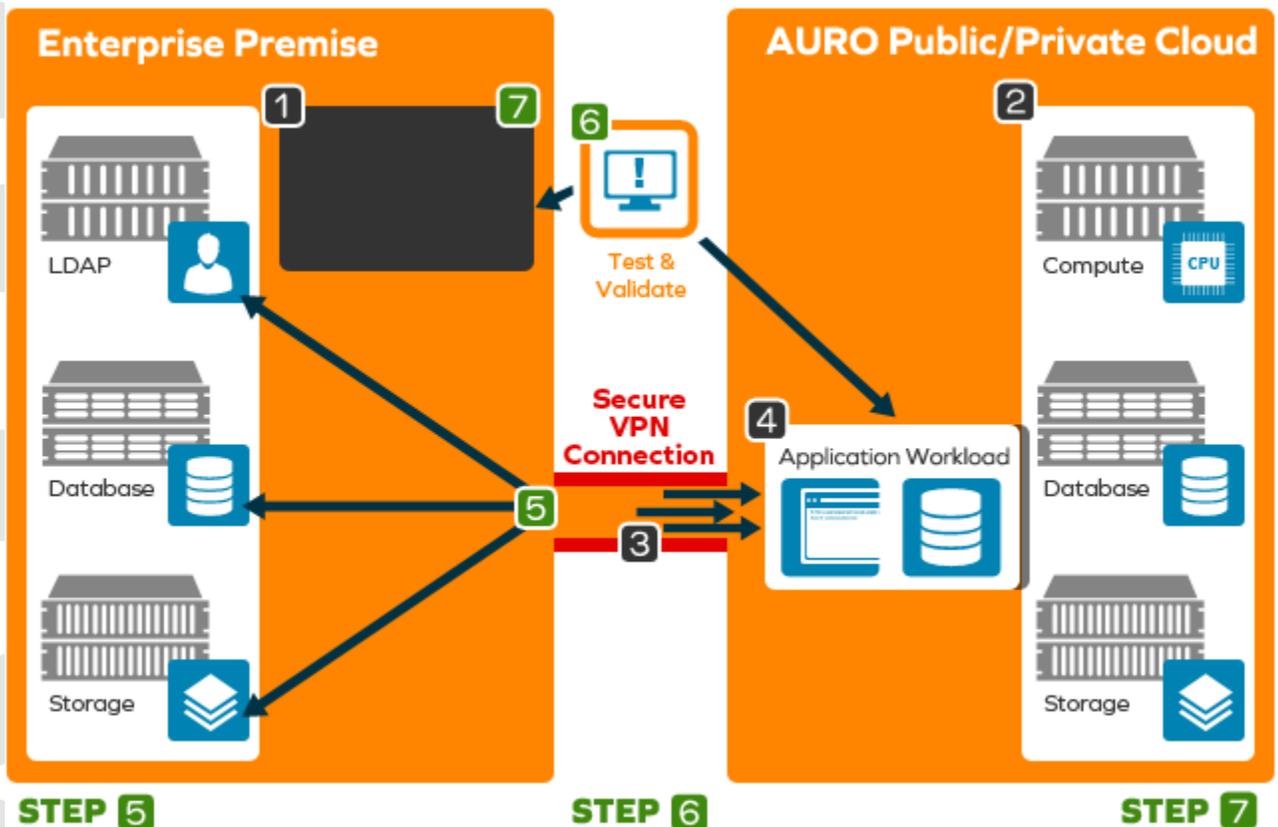
Things to Consider: Workload Analysis

What should you consider in during the analysis phase of your migration? This workload assessment checklist will help:

Business impact:

- How business-critical is the workload?
- Where does the workload fit in the application lifecycle?
- What does that mean for its cloud environment requirements?

Business requirements:

- Given the workload's business use, what are the implications for required service levels, transaction rates, response times, number of simultaneous users to be supported, or other relevant availability and performance-related measures?
- What supporting service requirements does the workload require (e.g., in terms of backup, disaster recovery, monitoring) and what are the implications for cloud deployment?
- Are there any specific security and compliance requirements (e.g. encryption, isolation, data privacy) and what does that mean for cloud deployment?

Application architecture:

- Is the application architecture built for the cloud in any way (for example, is the application horizontally scalable in the way that native cloud applications are, or only vertically scalable as traditional enterprise applications tend to be)?
- If not, what's involved in refactoring/retooling the application for AURO's cloud environment?
- Are the time and costs acceptable when weighed against the benefits?

Computing resources and dependencies:

- What OS, databases and application servers are being used and how hard are they to migrate to the cloud?
- What are the CPU, memory, network and storage requirements and what will it cost to provide these in AURO's cloud environment?
- What other software supports the workload? What are the dependencies or integration touch points with other workloads?

Overview of AURO
Onboarding

Operational and support requirements:

- How many hours/people are required to support the workload and what do they cost?
- What are the costs of licensing?
- What are the operational costs for space, power and cooling?
- For these and other operational and support costs: will anything be saved by migration to a cloud environment?

Because workloads differ in terms of their importance and cost to your business, a thorough workload analysis is critical to a successful onboarding process. A highly optimized application may be relatively easy to migrate to the cloud, but the move may offer little or no additional benefit for the effort. Choosing a workload that is both critical and complex to migrate is a big risk, but the potential cost savings or other benefits may outweigh the risk. Working with AURO, our workload analysis helps you identify and prioritize the best candidate workloads for migration, and should therefore combine business and technical factors.

Workload analysis can also be used to inform decisions about the most appropriate cloud migration path as defined by *Gartner*. These include re-hosting on IaaS, refactoring for PaaS, revising for IaaS or PaaS, rebuilding on PaaS, or replacement with SaaS, and the most appropriate AURO cloud environment for applications (public, private, and hybrid).

As well as helping you identify and prioritize potential workloads for cloud migration, workload analysis, an in-depth assessment will help you detail the requirements for onboarding of those applications that you migrate. It will help you specify all the elements that make up the application workload and the number and types of virtual machines (VMs) that need to be migrated.

Last Things to Consider: AURO Enterprise Cloud

Now that you have an idea of what it takes to move to the cloud, there are a few additional questions your business needs to consider when understanding why choosing a partner like AURO provides the best path forward.

Migration:

- AURO delivers migration services that can help you avoid a steep learning curve and meet your budget and time constraints for onboarding. Unlike AURO, other large public

cloud platforms are hands off and require you to engage in other 3rd party systems integrators or other service providers for help.

Application architecture:

- AURO is an enterprise grade service and was built with the highest standards and services that are well suited for enterprise workloads and management services.

Network architecture:

- AURO can isolate your workloads from those of other customers appropriate to your needs and to your policies on network isolation.

Ease of use:

- AURO has integrated Highly Available orchestration services, including the ability to self-service provision, manage, and scale as rapidly as you need.

Commercials and billing:

- AURO delivers flexible billing options, including usage-based, reserved and long-term options.

Performance guarantees:

- AURO service levels guarantee 99.95% uptime and gives you a clear visibility of performance, usage, and costs.

Security:

- AURO utilizes a comprehensive security program incorporating a defense-in-depth approach to protect all facets of the cloud and allows different application workloads to talk to one another, while maintaining security accreditations and compliance.

Business continuity:

- AURO's Enterprise Cloud is resilient and incorporates business continuity and disaster recovery into every aspect of its service.

Governance:

- AURO has a robust compliance program and can help clients meet and exceed their governance objectives, including their SSAE 16 Type II SOC 2 certification and Canadian data privacy laws.

Support:

- AURO's 24/7 customer service delivers the industry's most comprehensive support services with more than seventeen years of experience and on-demand managed and professional services.

Future:

- AURO is built on OpenStack's Cloud Operating System and guarantees that there is no vendor lock-in. AURO is an open cloud that is designed to help clients meet their current and future cloud requirements, including open API's, compatibility with other large public clouds and continued rollout of new services to help clients meet their development and application needs.

Next Steps

Please contact AURO if you're looking for advice or assistance with a cloud migration project or if you have plans to move your business into the cloud. AURO's team of cloud experts can help you every step of the way. The first step is to discuss your needs impartially and introduce you to the available services that align with your business requirements. To get started, simply visit www.auro.io/start or call us at +1.855.226.4678.