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Scalable and Secure Cloud Infrastructure from Your Idea to Reality Delivered in Hours, Not Months

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ABSTRACT

Today, clients expect their solution environments are rapidly up, available and elastic. Implementation time shouldn't be extended by months due to purchase and deployment of hardware. Done correctly and efficiently, environments should be available in hours or days and should be able to adjust and meet different capacity requirements in near real time.

This presentation covers the processes and methodologies Zencos uses when working with our hosted solutions. The goal is to show, at a high level, how we take out time-consuming processes and replace them with automated services.

INTRODUCTION

Zencos has been delivering analytical solutions to its customers for 20 years and typically these solutions have either been on-premises or hosted but not necessarily cloud enabled. It was not unusual for the time to deliver a solution to be elongated by months because of the time to acquire and deploy physical hardware.

Today, our customers will not wait extra months to get ROI from the software they've already paid for. Their expectation, rightfully, is access to their business solution in no more time than it takes to install and have a successful deployment.

While a good deal of our business is still on-premises, the tide has turned. Zencos now hosts "as a service" solutions and our customers are demanding our cloud experts design and deploy in their cloud provider of choice. Using the processes and methodologies outlined in this paper, the time to production deployment has almost no dependency on time to deploy hardware.

THE FIVE PILLARS OF A SUCCESSFUL CLOUD FRAMEWORK

A proper implementation of a cloud environment means incorporating a broad array of infrastructure and software services. When applied correctly, your organization can explore new avenues of operational efficiency and faster response times to your needs.

Once you create an account with a cloud provider, you can take your business pretty far with a little bit of knowledge and a few clicks. At first, your new environment may seem to work. However, by following these five pillars of an effective cloud framework, you can ensure you have a cloud system that's functional as well as secure, stable, and responsive to your needs.

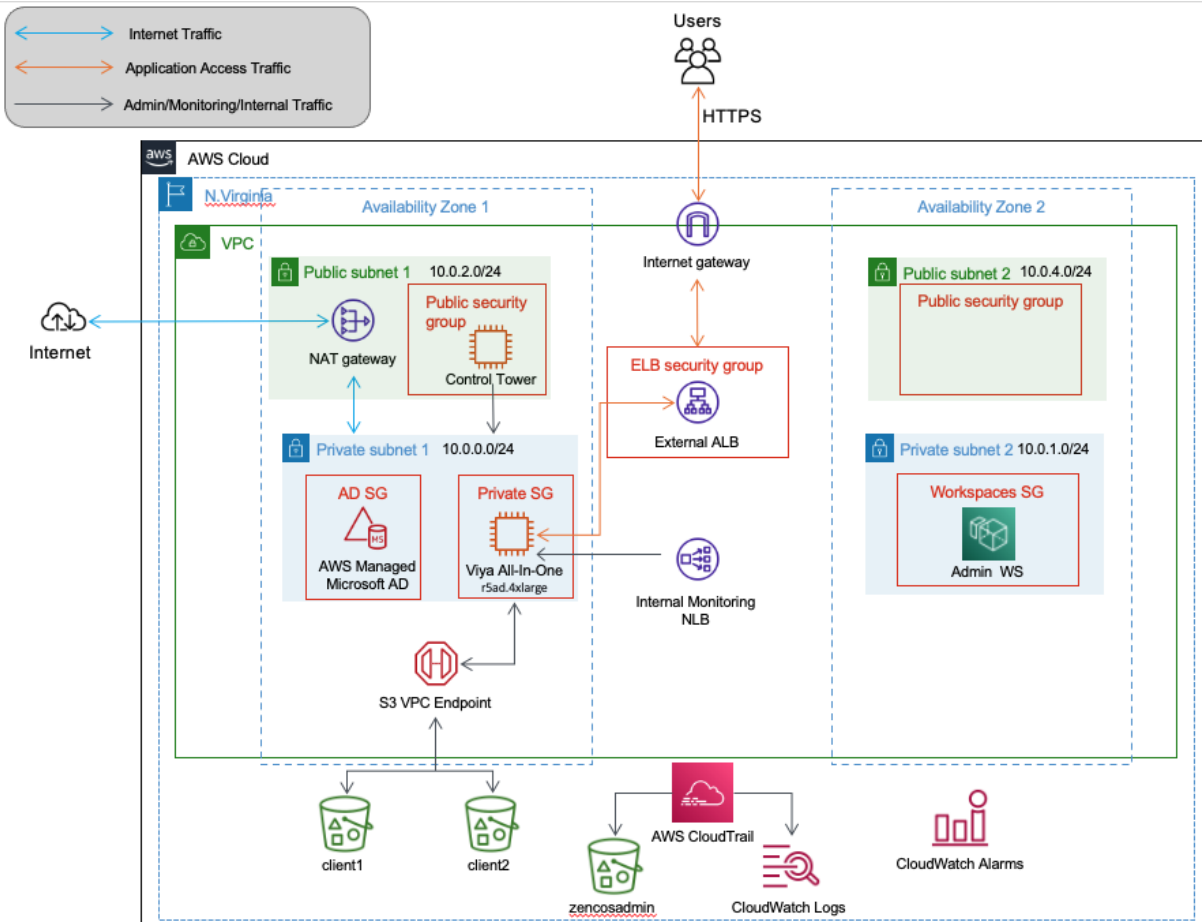


Figure 1 Sample Design

OPERATIONAL EXCELLENCE

A successful cloud implementation looks beyond the technological components. To run effectively and allow for continuous improvement, a cloud program requires organizational support. As the needs of your business and its customers evolve, you must ensure that your operations teams are prepared to respond to those changes.

Operational best practices should follow a few key principles, some of which are drawn from software engineering. Where possible, your teams should **use automated scripts** to make changes to your infrastructure to reduce the possibility of human error. Plus, by ensuring your teams implement small reversible changes on a consistent basis, you limit the need to troubleshoot the impact of multiple changes deployed at once.

Your operations teams should prioritize consistent improvement for your cloud environment and remain vigilant for areas vulnerable to failure. And, when system issues occur, the insights gained should be shared across your organization.

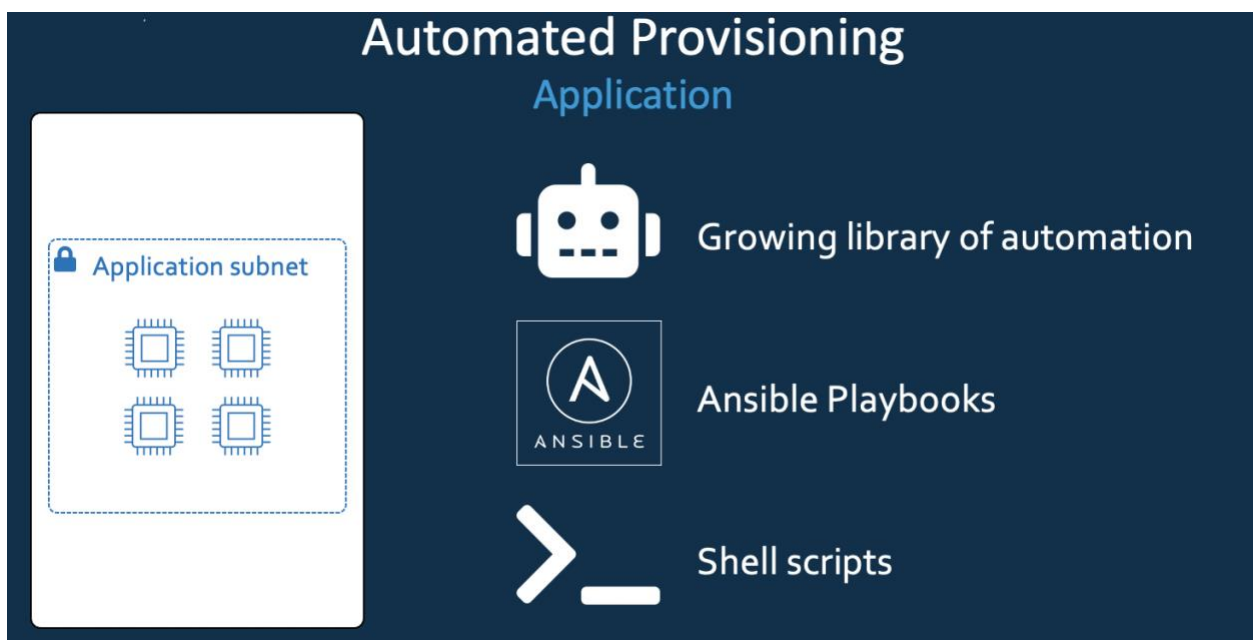


Figure 2 Automated Scripts

SECURITY

A cloud platform allows you to take multiple steps to protect your organization's data. When a network connections and firewalls are configured properly, your critical information is less vulnerable to outside attacks.

While there are multiple best practices available to ensure your cloud environment is secure, you should **automate software-based security tools** that are scalable and cost-effective. You should use encryption and access controls to classify the sensitivity levels of your data and allow for changes to your environment to be logged and traceable.

Along with working to limit the amount of access to sensitive information required by your internal teams to perform their work, you should remain prepared for security incidents.

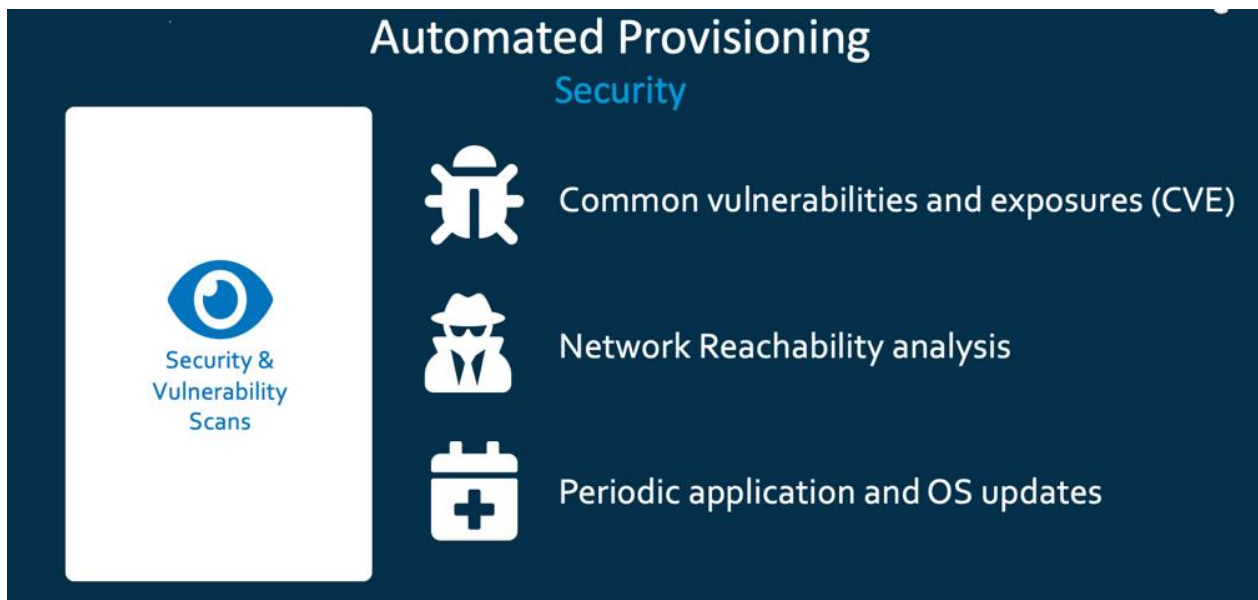


Figure 3 Security

RELIABILITY

To prevent system failures, your team must configure your cloud environment to handle any changes in workload and demand your organization requires. Before you design the architecture of your system, you have to understand and anticipate your needs to ensure stability.

By establishing KPIs for your system's workload, you can **program automated solutions** to resolve instances where system demands exceed your forecasted thresholds. As a result, you can anticipate and prevent slowdowns or failures before they occur. Scaling your cloud environment horizontally can also eliminate potential outages caused by a shared point of failure. Instead of using one large resource, you replace it with multiple smaller resources.

The cloud also allows you to monitor the demands on your system and adjust resources to your needs. Unlike on-prem, you aren't bound by the physical resources you have on hand.

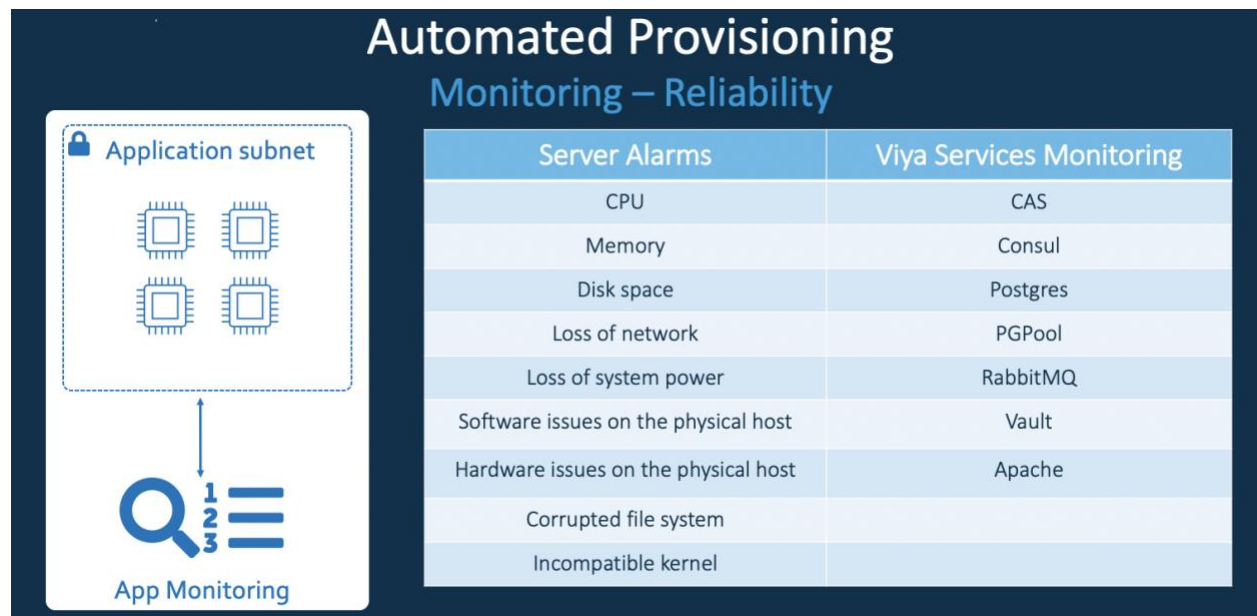


Figure 4 Reliability

PERFORMANCE EFFICIENCY

The flexibility of the cloud allows you to adjust to resources to prevent system failures. At the same time, it also allows you to ensure your environment runs smoothly. You may encounter shifts in demand and technological capabilities. The cloud has the ability to evolve with you.

With cloud platforms, you can implement new technologies as part of the services offered through your provider. Instead of requiring your IT team to learn or install a new feature such as machine learning, it's already at your disposal. Plus, through **serverless infrastructure**, you no longer have to perform maintenance on your physical infrastructure.

A cloud environment also allows you to easily test different configurations to determine what best supports your business needs. Plus, as demand changes, you can expand or contract accordingly to keep your system running smoothly.

COST OPTIMIZATION

On-prem computing requires you to purchase storage capacity and processing power based on peak estimates. By contract, cloud environments allow your business to pay for the resources you use.

In addition, you can decrease your usage depending on your business needs. If your development environments are typically only needed during working hours, you can limit expenses by **disabling these resources when they're not in use**. Instead of managing the day-to-day operations of multiple physical servers, your cloud provider handles these tasks to allow you to focus on your business.

With the cloud, you can better recognize the resources your data and analytics efforts require. As a result, the return on investment from your cloud platform grows.

TREAT YOUR INFRASTRUCTURE LIKE CODE

Prior to the cloud, your teams managed data servers using a blend of automation and manual processes. When you leverage cloud services across your organization, you can follow a process that's grounded in software development best practices.

In a continuation of the operational excellence component of a successful cloud framework, cloud providers supply services to manage your infrastructure. By following a DevOps methodology, these tools allow **for deployment and maintenance in a way that's repeatable, reliable, safer, and much faster.**

For example, AWS CloudFormation and Azure Resource Manager, VM extensions, and Automation **allow your development teams to create new resources safely and securely.**

Instead of implementing large-scale updates, your teams iterate through smaller changes, test the results, and move forward. As the process repeats, you steadily refine your environment while remaining in touch with how the changes will impact your resources.

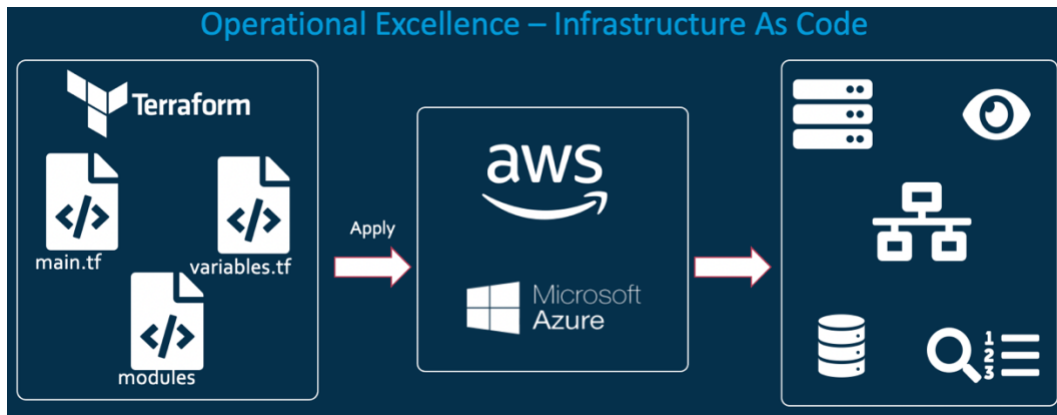


Figure 5 Infrastructure as Code

CONCLUSION

The advent of cloud infrastructure constitutes an evolutionary leap from traditional best practices and should not be seen as a simple lift and shift of current software solutions to your new cloud platform. There will be some advantages, but it's scratching the surface of the possibilities.

Ultimately, a cloud strategy is critical to future proof your solutions. Like any project, take the time to build a plan prior to getting started. Cloud providers give you many tools to make it easy to build your environment and where there is power, there is responsibility. In the beginning, be prepared to train your staff so they can be successful.

A key part of your plan should be to automate as many processes as you can. This automation takes human error out of the equation and ultimately makes the deployment and upkeep of your systems easier and much faster. **Automation is a key component that has allowed Zencos to drive the onboarding of customers down to days from months.**

Keep in mind this is a journey and not just a quick fix. If you don't have the needed skills immediately, find a **trusted partner that will help you and enable you** for the long haul.

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