CCL AWS WAFR

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|  |  |
| --- | --- |
| Name | Position |
| Andre Bezuidenhout | AWS Principal Architect |

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Document Approvers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Person | Position | Signature | Date |
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Document Reviewers

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Associated Documents

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| Document | Description/Notes |
| CCL AWS WAFR – Workshop Guide.ppt | Copy of the WAFR Workshop deck for reference |
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Terms and Definitions

|  |  |
| --- | --- |
| Term | Definition |
| WAFR | Well-Architected Framework Review |

## Introduction

#### Purpose

This report details the outputs of a Well-Architected Framework Review performed for AgResearch. The review is applied to a specific candidate workload described as ServiceNow Integration workload, as part of a migration programme.

#### Background

The modern business landscape is defined by ever evolving technologies, and pressure to adapt quickly with resulting dynamic business needs. With a massive focus on cloud adoption as a solution framework, businesses are looking to realise value from their existing or future cloud investments. Thus, aligning with industry best practices to ensure optimisation across a broad spectrum of maturity pillars is critical in securing digital success in the cloud.

Public Cloud providers, such as AWS, have condensed decades worth of experience across thousands of customers to compile a set of best practices, design principles and key concepts, collectively known as the AWS Well-Architected Framework. This framework captures an evaluation of maturity and compliance across 6 pillars. These best practices are derived from the AWS Well-Architected Framework and adapted towards the specific architectures developed for Landing Zones.

**The 6 Pillars:**

* Operational Excellence
* Security
* Reliability
* Performance Efficiency
* Cost Optimisation
* Sustainability

In addition to the standard WAFR, tailored sets of best practices have been developed into Lenses which can be applied to these 6 pillars. These lenses are specific to common workload types and industries i.e. SaaS Lens, Healthcare Lens. In this case, no additional lenses are applied for this review.

## WAFR Report

# Risk Breakdown by Pillar

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Unanswered | High | Medium | None | NotApplicable |
| Operational Excellence | 0 | 3 | 1 | 7 | 0 |
| Security | 0 | 4 | 6 | 1 | 0 |
| Reliability | 0 | 6 | 4 | 3 | 0 |
| Performance Efficiency | 0 | 5 | 1 | 2 | 0 |
| Cost Optimization | 0 | 4 | 3 | 4 | 0 |
| Sustainability | 0 | 0 | 5 | 1 | 0 |

# High Risk Items

|  |  |  |
| --- | --- | --- |
| Pillar Name | Question Title | Best Practice Choice |
| Operational Excellence | OPS 4. How do you design your workload so that you can understand its state? | Implement application telemetry |
| Implement and configure workload telemetry |
| Implement user activity telemetry |
| Implement dependency telemetry |
| Implement transaction traceability |
| Operational Excellence | OPS 8. How do you understand the health of your workload? | Identify key performance indicators |
| Define workload metrics |
| Collect and analyze workload metrics |
| Establish workload metrics baselines |
| Learn expected patterns of activity for workload |
| Alert when workload anomalies are detected |
| Validate the achievement of outcomes and the effectiveness of KPIs and metrics |
| None of these |
| Operational Excellence | OPS 9. How do you understand the health of your operations? | Identify key performance indicators |
| Define operations metrics |
| Collect and analyze operations metrics |
| Establish operations metrics baselines |
| Learn the expected patterns of activity for operations |
| Alert when operations anomalies are detected |
| Validate the achievement of outcomes and the effectiveness of KPIs and metrics |
| None of these |
| Security | SEC 4. How do you detect and investigate Security events? | Analyze logs, findings, and metrics centrally |
| Automate response to events |
| Implement actionable security events |
| None of these |
| Security | SEC 6. How do you protect your compute resources? | Perform vulnerability management |
| Automate compute protection |
| Validate software integrity |
| None of these |
| Security | SEC 9. How do you protect your data in transit? | Enforce encryption in transit |
| Automate detection of unintended data  access |
| Authenticate network communications |
| None of these |
| Reliability | REL 5. How do you design interactions in a distributed system to mitigate or withstand failures? | Implement graceful degradation to transform applicable hard dependencies into soft dependencies |
| Throttle requests |
| Control and limit retry calls |
| Fail fast and limit queues |
| Set client timeouts |
| Implement emergency levers |
| None of these |
| Reliability | REL 6. How do you monitor workload resources? | Monitor all components for the workload (Generation) |
| Define and calculate metrics (Aggregation) |
| Automate responses (Real-time processing and alarming) |
| Analytics |
| Monitor end-to-end tracing of requests through your system |
| None of these |
| Reliability | REL 10. How do you use fault isolation to protect your workload? | Deploy the workload to multiple locations |
| Select the appropriate locations for your multi-location deployment |
| Use bulkhead architectures to limit scope of impact |
| Automate recovery for components constrained to a single location |
| Performance Efficiency | PERF 2. How do you select your compute solution? | Collect compute-related metrics |
| Determine the required configuration by right-sizing |
| Continually evaluate compute needs based on metrics |
| None of these |
| Performance Efficiency | PERF 4. How do you select your database solution? | Understand data characteristics |
| Evaluate the available options |
| Collect and record database performance metrics |
| Choose data storage based on access patterns |
| Optimize data storage based on access patterns and metrics |
| Performance Efficiency | PERF 5. How do you configure your networking solution? | Understand how networking impacts performance |
| Choose appropriately sized dedicated connectivity or VPN for hybrid workloads |
| Leverage load-balancing and encryption offloading |
| Choose network protocols to improve performance |
| Optimize network configuration based on metrics |
| None of these |
| Performance Efficiency | PERF 7. How do you monitor your resources to ensure they are performing? | Record performance-related metrics |
| Establish key performance indicators (KPIs) to measure workload performance |
| Use monitoring to generate alarm-based notifications |
| Review metrics at regular intervals |
| Monitor and alarm proactively |
| None of these |
| Performance Efficiency | PERF 8. How do you use tradeoffs to improve Performance Efficiency? | Identify how tradeoffs impact customers and efficiency |
| Measure the impact of performance improvements |
| Use various performance-related strategies |
| None of these |
| Cost Optimisation | COST 3. How do you monitor usage and cost? | Configure detailed information sources |
| Identify cost attribution categories |
| Establish organization metrics |
| Add organization information to cost and usage |
| Allocate costs based on workload metrics |
| None of these |
| Cost Optimisation | COST 6. How do you meet cost targets when you select resource type, size and number? | Perform cost modeling |
| Select resource type, size, and number based on data |
| Select resource type, size, and number automatically based on metrics |
| Cost Optimisation | COST 7. How do you use pricing models to reduce cost? | Perform pricing model analysis |
| Implement pricing models for all components of this workload |
| None of these |
| Cost Optimisation | COST 8. How do you plan for data transfer charges? | Perform data transfer modeling |
| Select components to optimize data transfer cost |
| Implement services to reduce data transfer costs |

# Medium Risk Items

|  |  |  |
| --- | --- | --- |
| Pillar Name | Question Title | Best Practice Choice |
| Operational Excellence | OPS 7. How do you know that you are ready to support a workload? | Use playbooks to investigate issues |
| Enable support plans for production workloads |
| None of these |
| Security | SEC 1. How do you securely operate your workload? | Automate testing and validation of security controls in pipelines |
| None of these |
| Security | SEC 3. How do you manage permissions for people and machines? | Share resources securely within your organization |
| Share resources securely with a third party |
| Manage access based on life cycle |
| Analyze public and cross-account access |
| None of these |
| Security | SEC 5. How do you protect your network resources? | Automate network protection |
| Implement inspection and protection |
| None of these |
| Security | SEC 7. How do you classify your data? | Automate identification and classification |
| None of these |
| Security | SEC 8. How do you protect your data at rest? | Automate data at rest protection |
| Enforce access control |
| Use mechanisms to keep people away from data |
| None of these |
| Security | SEC 10. How do you anticipate, respond to, and recover from incidents? | Automate containment capability |
| None of these |
| Reliability | REL 1. How do you manage service quotas and constraints? | Automate quota management |
| None of these |
| Reliability | REL 4. How do you design interactions in a distributed system to prevent failures? | Make all responses idempotent |
| Do constant work |
| None of these |
| Reliability | REL 7. How do you design your workload to adapt to changes in demand? | Load test your workload |
| None of these |
| Reliability | REL 8. How do you implement change? | Integrate resiliency testing as part of your deployment |
| None of these |
| Performance Efficiency | PERF 1. How do you select the best performing architecture? | Benchmark existing workloads |
| Load test your workload |
| None of these |
| Cost Optimisation | COST 1. How do you implement cloud financial management? | Quantify business value from cost optimization |
| Report and notify on cost optimization |
| Create a cost-aware culture |
| None of these |
| Cost Optimisation | COST 9. How do you manage demand, and supply resources? | Implement a buffer or throttle to manage demand |
| Supply resources dynamically |
| None of these |
| Sustainability | SUS 1. How do you select Regions for your workload? | Choose Region based on both business requirements and sustainability goals |
| Sustainability | SUS 3. How do you take advantage of software and architecture patterns to support your Sustainability goals? | Optimize software and architecture for asynchronous and scheduled jobs |
| Optimize areas of code that consume the most time or resources |
| Optimize impact on devices and equipment |
| None of these |
| Sustainability | SUS 4. How do you take advantage of data management policies and patterns to support your Sustainability goals? | Implement a data classification policy |
| Use policies to manage the lifecycle of your datasets |
| Use shared file systems or storage to access common data |
| Minimize data movement across networks |
| Back up data only when difficult to recreate |
| None of these |
| Sustainability | SUS 5. How do you select and use cloud hardware and services in your architecture to support your Sustainability goals? | Optimize your use of hardware-based compute accelerators |
| None of these |
| Sustainability | SUS 6. How do your organizational processes support your Sustainability goals? | Adopt methods that can rapidly introduce sustainability improvements |
| Use managed device farms for testing |
| None of these |