6 Pillars Of AWS Well-Architected Framework

5 Pillars of AWS Well-Architected Framework are as follows:

- **Operational Excellence**
- **Security**
- **Reliability**
- **Performance Efficiency**
- **Cost Optimization**
- **Sustainability**

What Does Well-Architected Mean?

Essentially, a well-architected framework is a concept of designing and architecting cloud infrastructure for high-performing, resilient, and efficient infrastructure for their applications and workloads.
It must be done in such a way, it achieves the desired business use case and technical outcomes, all while optimizing costs.
Click here to read about a good example of how the DevOps principles are used in practice is AWS CloudFormation.

Why are AWS Architectural Frameworks Necessary?

These pillars allow the architect to evaluate the infrastructure at hand, thereby allowing the Cloud to be utterly compliant while making use of the best practices at hand.

It took AWS Solutions Architects several years and experience to identify a set of best practices for architecting in AWS. Thus they designed the five pillars, finely tuned keeping in mind the underlying purpose of AWS: **Operational Excellence, Security, Reliability, Performance Efficiency, Cost Optimization, and Sustainability.**
Also read: This post covers the AWS Free Tier Account Overview. Amazon Web Services (AWS) is providing 12 months of Free Tier accounts to new subscribers to get hands-on experience with all the AWS cloud services.
Let's discuss one by one what each pillar dictates:

1. Operational Excellence

Operational Excellence is the first pillar of AWS Well-Architected Framework, it includes the ability to support the development and run workloads effectively, while gaining insight into operations, and continuously improving processes and procedures to deliver business value.

Design Principles

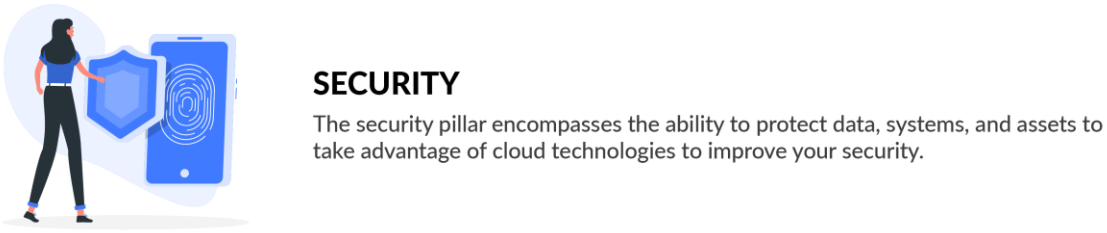
There are five design principles for operational excellence in the cloud:

- **Perform operations as code:** Limit human error and enable consistent responses to events.
- **Make frequent, small, reversible changes:** Make changes in small increments that can be reversed if they fail.
- **Refine operations procedures frequently:** As workload evolves, procedures should evolve along.
- **Anticipate failure:** Test on failure scenarios and identify potential sources of failure.
- **Learn from all operational failures:** Learn from all operation event that fails and share across to the entire team.

Also Read: Our Previous Blog On **Blue Green Deployment.**

2. Security

Security on the cloud is a big concern for everyone on the cloud. Infrastructure should be designed such that it serves complete data protection while maintaining privileges to all AWS accounts, and infrastructure protection, and identifying any security breach with Detective Controls.



.

Design Principles

There are seven design principles for security in the cloud:

- **Implement a strong identity foundation:** Provide the least required permission and enforce separation of duties through.
- **Enable traceability:** Monitor, alert, and audit actions.
- **Apply security at all layers:** Utilize multiple security controls.
- **Automate security best practices:** Automated security mechanisms to improve security and scale more rapidly and cost-effectively.
- **Protect data in transit and at rest:** Segregate data into sensitivity levels and use encryption, tokenization, and access control for data protection.
- **Keep people away from data:** Eliminate the need for direct access or manual processing of data.
- **Prepare for security events:** Create incident management and investigation policy.

3. Reliability

Reliability is the third pillar of 6 Pillars of AWS Well-Architected Framework, it encompasses the ability of a workload to successfully complete and consistently has linear performance when it's expected to. This includes operating and testing the workload through its total lifecycle.

RELIABILITY

The reliability pillar encompasses the ability of a workload to perform its intended function correctly and consistently when it's expected to. This includes the ability to operate and test the workload through its total lifecycle. This paper provides in-depth, best practice guidance for implementing reliable workloads on AWS.

Design Principles

There are five design principles for reliability in the cloud:

- **Automatically failure recovery:** Use key performance indicators (KPIs) to automate trigger a certain action when a threshold is breached.
- **Test recovery procedures:** Use automation to simulate different failures and test recovery procedures.
- **Scale horizontally to increase aggregate workload availability:** (Distribute requests across multiple, smaller resources to reduce failure this can be achieved using an Elastic Load balancer.
- **Stop guessing capacity:** Auto Scaling to automate the addition or removal of resources.
- **Manage change in automation:** Changes to the infrastructure should be made using automation.

4. Performance Efficiency

Performance Efficiency fourth pillar of AWS Well-Architected Framework, it includes the ability to use compute resources in an efficient manner while maintaining performance with changing workloads. It requires continuous monitoring to ensure that you are aware of how the workload changes. What trade-offs must be made while architecting to improve performance efficiency?

PERFORMANCE EFFICIENCY

The ability to use computing resources efficiently to meet system requirements, and to maintain that efficiency as demand changes and technologies evolve.

Design Principles

There are five design principles for performance efficiency in the cloud:

- **Democratize advanced technologies:** Delegating complex tasks to your cloud vendor.
- **Go global in minutes:** Deploy your workload in multiple AWS Regions.
- **Use serverless architectures:** remove the need for you to run and maintain physical servers for traditional compute activities.
- **Experiment more often:** Carry out comparative testing using different types of instances, storage, or configurations.

- **Consider mechanical sympathy:** Use the technology approach that aligns best with your workload.

5. Cost Optimization

The Cost Optimization pillar fifth pillar of the AWS Well-Architected Framework, it includes the ability to run systems to deliver business value at the lowest price point.

COST OPTIMIZATION

The ability to run systems to deliver business value at the lowest price point.

Design Principles

There are five design principles for cost optimization in the cloud:

- **Implement cloud financial management:** Utilize Cloud Financial Management /Cost Optimization to become a cost-efficient organization.
- **Adopt a consumption model:** Pay only for the resources that you use, increase or decrease resources depending on business requirements.
- **Measure overall efficiency:** Monitor to know the gains you make from increasing output and reducing costs.
- **Stop spending money on undifferentiated heavy lifting:** AWS Manages data center operations like racking, stacking, and powering the server.
- **Analyze and attribute expenditure:** Accurately identify the usage and cost of systems. This provides transparent attribution of IT costs to individual workload owners

6. Sustainability

The sustainability discipline considers your company's long-term environmental, economic, and societal impact.

.

Design Principles

There are six design principles for cloud sustainability:

- Recognize your influence
- Set goals for long-term sustainability.
- Increase utilization
- Expect and implement new, more efficient hardware and software offerings.
- Make use of managed services.
- Reduce the aftereffects of your cloud workloads.

Summary

The **5 Pillars of AWS Well-Architected Framework** provides architectural best practices to run a workload or application without having any bottlenecks and faults while gaining efficiency.
Five pillars of architecture have been created by experts after gaining insight into thousands of scenarios.