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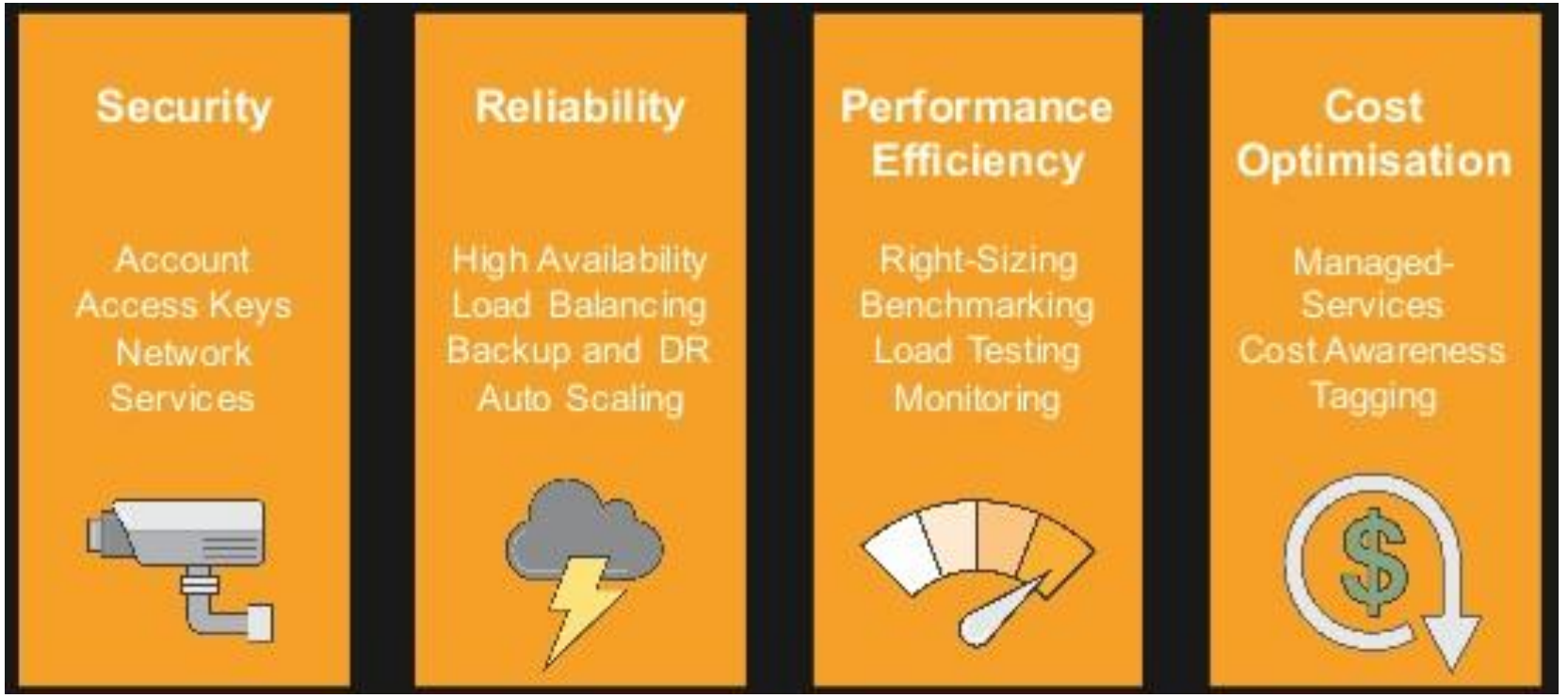
What is Well Architected Framework ?


Security
Account
Access Keys
Network
Services
Reliability
High Availability
Load Balancing
Backup and DR
Auto Scaling
Performance
Efficiency
Right-Sizing
Benchmarking
Load Testing
Monitoring
Cost
Optimisation
Managed-
Services
Cost Awareness
Tagging

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Security

The ability to protect information, systems, and assets while delivering business value through risk assessments and mitigation strategies.

- Apply security at all layers
- Enable Traceability
- Automate response to security events
- Focus on securing your system
- Encrypt your data
- Use IAM and MFA for privilege management

Key Services for Security

Areas	Key Services
Identity and Access Management	AWS IAM, MFA Token, AWS Organizations
Detective Controls	AWS CloudTrail, AWS Config, Amazon CloudWatch
Infrastructure Protection	Amazon VPC
Data Protection	Elastic Load Balancing, Amazon EBS, Amazon S3, Amazon RDS
Incident Response	AWS IAM, AWS CloudFormation

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Reliability

- Ability of a system to recover from a service or infrastructure outage/disruptions
- Ability to dynamically acquire computing resources to meet demand
- Automatically recover from failure
- Scale horizontally to increase aggregate system availability
- Stop guessing capacity

Consists of 3 areas:

Foundations:

- Make sure you have the prerequisite foundations in place
- Consider the size of communication links between HQ and data centers
- AWS handles most of the foundations for you. The cloud is designed to be essentially limitless meaning that AWs handles the networking, and compute requirements themselves. They set service limits to limit accidental spin up of too many resources.

Change Management:

- Be aware of how change affects a system so you can plan pro-actively around it.
- Monitoring allows you to detect any changes to your environment and react.
- CloudWatch can be configured to monitor your environment and services such as auto-scaling, to automate change in response to changes in your prod environment.

Failure Management:

- Always architect your system with the assumption that failure will occur
- Become aware of these failures, how they occurred, how to respond to them and then plan on how to prevent them in the future.

Key Services for Reliability

Areas	Key Services
Foundations	AWS IAM, Amazon VPC
Change management	AWS CloudTrail, AWS Config
Failure management	AWS CloudFormation

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Performance Efficiency

- Focuses on how to use computing resources efficiently to meet requirements
- How to maintain that efficiency as demand changes and technology evolves
- Consume as service vs setup and maintain
- Go Global in minutes
- Experiment more often

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Consist of 4 Areas:

Compute:

- Choose the right kind of server
- AWS servers are virtualized and at the click of a button you can choose & change server types

Storage:

Optimal storage solutions for your environment depend on access methods (block, file or object), patterns of access, throughput, frequency of access, frequency of update, availabilty constraints, and durability constraints.

Databases:

- Optimal database solution depends on number of factors, do you need database consistency, high availability, No-SQL, DR, Relational tables?
- Lots of options, RDS, DynamoDB, Redshift, etc.

Space Time Trade off:

- Using services such as RDS to add read replicas reduces the load of your database and creates multiple copies of the data to help lower latency
- Can use Direct Connect to provide predictable latency between HQ and AWS
- Use the global infrastructure to have copies of environment in regions closest to where your customer base is located.

Key Services for Performance Efficiency

Areas	Key Services
Selection	Amazon EBS, Auto Scaling, Amazon S3, Amazon Glacier, Amazon RDS, Amazon DynamoDB
Review	AWS CloudFormation, AWS Blog
Monitoring	Amazon CloudWatch, AWS Lambda
Trade-Off	Amazon CloudFront, Amazon Elasticache, AWSSnowball

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Cost Optimization

- Reduce cost to minimum and use those saving for other parts of your business
- Allows you pay the lowest price possible while still achieving your business objectives
- Transparently attribute expenditure
- Benefit from economies of scale (AWS buys servers by the thousands)
- Stop spending money on data center operations
- Lower the risk of architecture change
- Automate to make architectural experimentation easier
- Stop guessing your capacity needs

Comprised of 4 different areas:

Matched Supply and demand

- Align supply with demand
- Don't over or under provision, instead expand as demand grows

Cost-Effective resources

- Use correct instance type
- Well architected system will use the most cost efficient resources to reach the end business goal

Expenditure awareness

- No longer need to get quotes for physical servers, choosing a supplier, have resources delivered, installed, manufactured, etc..
- Can provision things within seconds
- Be aware of what each team is spending and where is crucial to any well architected system
- Billing alerts as well as consolidated billing.

Optimizing over time

- A service that you chose yesterday man not be the best service to be using today
- Constantly re-evaluate your existing architecture
- Subscribe to the AWS blog
- Use Trusted Advisor