Cloud Architecture, Frameworks and Benchmarks

January 26, 2024 | 3 minutes read | David Broggy, Microsoft MVP

At any point in your cloud security journey, you should be thinking about practical architectures, frameworks and benchmarks that will benefit your current and future infrastructure. These tools will provide you guidance from those who have pioneered similar solutions. Working with existing designs will both speed up your efforts and provide your organization confidence that industry standards are being followed.

Architecture vs Framework

What is the difference between an architecture and a framework? Generally, a framework encompasses several architectures. So, the frameworks mentioned below will contain several architectures such as SIEM, EDR etc. (Although don't be surprised to see these 2 terms often interchanged.)

Architectures and Framework Examples

All cloud vendors provide best practices architecture guides and frameworks.
For example, Microsoft has:

- The Cloud Adoption Framework (CAF) – for guidance on migrating to the Cloud.
- The Well Architected Framework (WAF) – for details on specific workloads.
- The Microsoft Cloud Reference Architecture (MCRA) - a collection of PowerPoint slides presenting a wide range of security architectures.

Security Benchmarks

In addition to frameworks, there are security benchmarks that can be used as controls for ensuring cloud resources are behaving according to some measure of security standards.
An example of this is the Microsoft Cloud Security Benchmark (MCSB).
The MCSB can be thought of like NIST or CIS compliance controls, however it includes secure scores, which assist in prioritizing the security improvements processes.

Combining Benchmark, Controls and Architectures

Connecting benchmarks like MCSB and controls like NIST along with actual security solutions can help bridge the gap between auditors and security architects. By understanding the associations between these topics an effective delivery solution can be planned and prioritized.

MCSB Control	Description	NIST SP 800-53 Mapping	CIS Benchmark Mapping	Matching Microsoft Security Solution
MCSB-IA-1	Identity and Access Management	AC-2 (Account Management)	CIS Control 16 (Account Monitoring and Control)	Azure Entra ID

Table 1: Example mapping between MCSB, NIST and a Microsoft Security Solutions

Use Cases

Who should use all of this and where is it used? It's typically the Cybersecurity Architect's responsibility to understand these topics and to communicate relevant subjects to the required teams, such as the auditors and security operations.

Here's an example of a use case and how it maps to the architectures, etc.

Use Case	Architectures	Relevant Controls and Frameworks	Relevant Benchmarks	Matching Microsoft Security Solution
New web app deployent	Azure WAF K8S	NIST SP 800-53 CIS CSS	CIS Benchmarks MCSB	Azure Entra ID WAF Azure K8S Defender for Cloud

Table 2: Example mapping of an actual use case to the relative architectures, etc.

Summary

Always be thinking in terms of a well-structured architecture when constructing enterprise cloud solutions.
Use security benchmarks as controls to keep track of best practices in your security architecture.
Understand the relationship between frameworks, architecture, benchmarks and controls.

About This Blog Series

Follow the full series here: Building Defenses with Modern Security Solutions
This series discusses a list of key cybersecurity defense topics. The full collection of posts and labs can be used as an educational tool for implementing cybersecurity defenses.

References

Azure Architecture Center
Google Cloud Architecture Framework
AWS Well Architected Framework
Microsoft Architecture Use Case Examples on GitHub
CIS Critical Security Controls
CIS Benchmarks

David Broggy, Trustwave's Senior Solutions Architect, Implementation Services, was selected last year for Microsoft's Most Valuable Professional (MVP) Award.

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