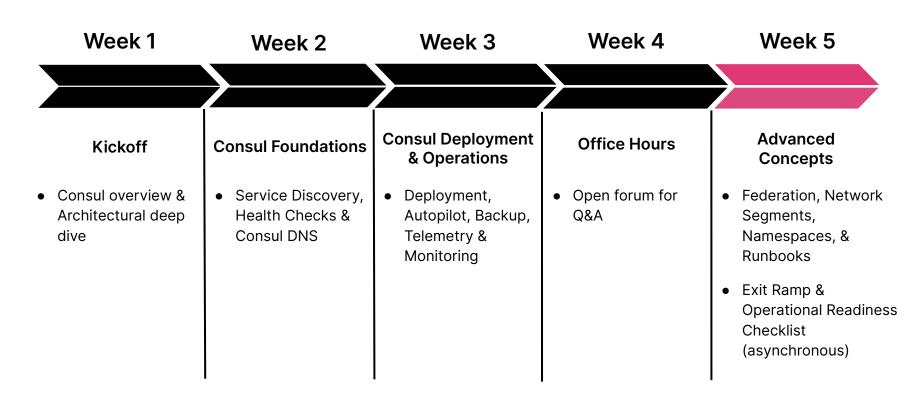


Consul Enterprise Onboarding Program Closing Thoughts



Consul Enterprise Path to Production





Agenda

Onboarding Program Recap	01
Production Readiness	02
Content & Resources	03







Onboarding Goal

Our objective is to make you successful with our products and see value within 90 days



Consul Installed

- Consul Enterprise installed in your environment
- Basic configuration completed
- Telemetry and monitoring in place
- Deployment and operational patterns established



Consul Operational

- 3+ foundational use cases in place
 - Service Catalog
 - Service Health Checking
 - Service Discovery
 - Consul DNS
 - Consul Key Value store
- A roadmap created for onboarding additional use cases (Service Mesh track or NIA track)



Completed within 90 days



02



Production Readiness



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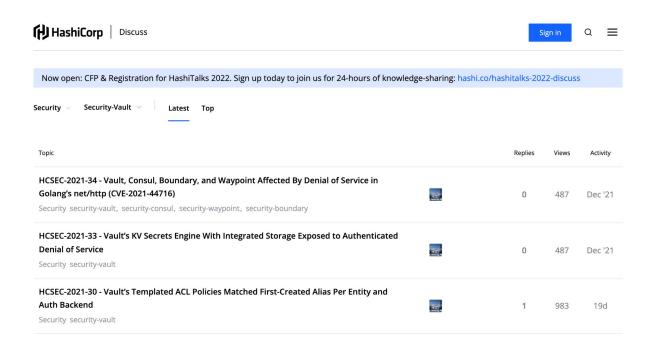
Welcome to the HashiCorp Announcement list! On this list you will receive high-priority, low-volume announcements about HashiCorp products, including release information and security bulletins. Posting is reserved for HashiCorp staff only; for discussion about specific tools, please use the corresponding list. As a reminder, if you wish to contact us regarding any security-sensitive matter, please responsibly disclose by emailing security@hashicorp.com, PGP information can be found at https://www.hashicorp.com/security.html. lu...@hashicorp.com [ANN] Nomad 1.2.4, 1.1.10, and 1.0.16 Released — Nomad 1.2.4, 1.1.10, a... Jan 19 jba...@hashicorp.com Terraform CLI v1.1.3 Released — Today we release Terraform CLI v1.1.3. T... Jan 6 ☆ meg...@hashicorp... Vault 1.9.2 released! - Hi folks, The Vault team is announcing the release ... 12/21/21 meg...@hashicorp... 合 Vault 1.8.7 released! — Hi folks. The Vault team is announcing the release ... 12/21/21 meg...@hashicorp... 合 Vault 1.7.8 released! — Hi folks, The Vault team is announcing the release ... 12/21/21 Krista LaFentres Terraform CLI v1.1.1 released — Hello everyone! Today we released Terraf... 12/15/21 tgr...@hashicorp.com Nomad 1.2.3 released — Nomad 1.2.3 Security Release Nomad 1.2.3 has b... 公 12/13/21



1-30 of 282

Join security & vulnerability announcements list

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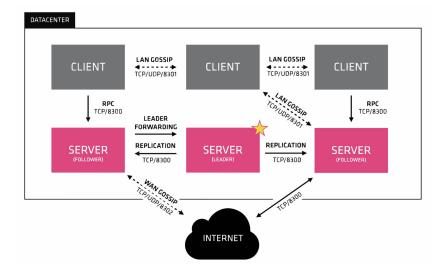
Operations & Business Continuity





Architecture

- Are all Consul clusters aligned with the reference architecture?
 - Consul Reference Architecture
 - Consul and Kubernetes Reference Architecture
 - Is autopilot configured and are redundancy zones enabled?
 - Are server sizes appropriate to current and near-term future workloads?
- Are all Consul data centers aligned with best practices?
 - Have network segments been implemented to optimize LAN Gossip?
 - Is LAN gossip in all data centers within the 8ms latency budget for all nodes and clients?







Performance

- Consul Server Performance Guide
- Read Heavy Clusters service heavy DNS usage and/or high volume of RPC calls
- For DNS heavy workloads, the <u>allow_stale</u> configuration will allow reads to scale across all Consul servers
- Read replica servers (don't participate in raft quorum)
 can help distribute the load on read-heavy clusters





Performance - Write & Read Heavy Clusters

- Write Heavy Clusters have high K/V usage and/or a high rate of agent joins/leaves
- The file system should have adequate provisioned IOPS
- Operating system ulimit should be increased from the defaults
- Systems with heavy K/V write loads need additional RAM as Consul is an in-memory database
- Overhead RAM = number_of_keys * 512KB * 2 or 3
- The normal maximum recommended number of Consul client agents in a single data center is 5,000, this might need to be reduced for read or write heavy clusters



Performance Considerations

- RPC requests from Consul clients can be <u>rate limited</u> to protect the Consul servers
- Gossip churn (how fast Consul nodes are joining, leaving, or failing) can have significant impacts on cluster performance
- Certificate signing for Connect / Service Mesh can spike cluster node CPUs
 - Setting csr_max_per_secondand

 csr_max_concurrent values will reduce the

 potential for this issue to occur
 - By default, csr_max_per_secondis set to
 50/second, which may limit performance and needs tuned to suit your environment





Security

- Consul is not secure-by-default, Consul's security model is only applicable if all parts of the system are running with a secure configuration
- Tools to mitigate security threats
 - Encryption configure mTLS for gossip traffic
 - ACLs configure a default deny policy
 - Sentinel for K/Vs
 - Network Infrastructure Automation
 - Segmentation via Namespaces & Admin Partitions





Security

- Secure the Consul UI using TLS, HTTP write restrictions, and ACLs
- Rotate encryption keys regularly using the <u>Consul</u> <u>keyring</u>
- Rotate ACL tokens and X.509 Certificates regularly
- Do not run Consul as root (on servers or clients)
- Restrict access to the Consul data directory





Operations & Business Continuity

- Enable <u>telemetry and monitoring</u> for every Consul datacenter
 - Consul <u>key metrics</u> list
 - Envoy <u>metrics</u>
- Enable <u>audit logging</u> on all servers and agents
- Ensure NTP synchronization is configured across clusters and data centers
- Configure snapshot agent for each datacenter and ensure they are stored in accessible and secured locations





Operations & Business Continuity

- Create a Disaster Recovery (DR) Plan for Consul with clearly defined RPO and RTO
- Test DR operations on a consistent and scheduled basis
- Create and Document Standard Operating Procedures for Consul
 - Upgrade process including testing prior to production upgrade
 - Key rotation
 - Restoration process
- User and Operator onboarding and offboarding procedures established



03



Content & Resources





COBRA Onboarding Journey

- HashiCorp Customer Success password:
 C7d2gZjq39
- <u>HashiCorp Support Overview</u> password:
 Welcome!
- <u>Kickoff Consul Overview & Architecture</u> password: **Ezsy2Sp0t**
- <u>Consul Foundations</u> password: Coq10!
- <u>Consul Deployment & Operations</u> password:
 C7d2gZjq39
- Advanced Concepts password:

All program materials





Additional Training Resources

Wanting to Learn More? A Topic Not Covered? See these

Consul Tutorials -

https://developer.hashicorp.com/consul/tutorials

- Tutorials on just about everything
- Discuss for Consul https://discuss.hashicorp.com/c/consul
 - Great place for best practices, finding similar configuration questions

HashiCorp Consul Certification

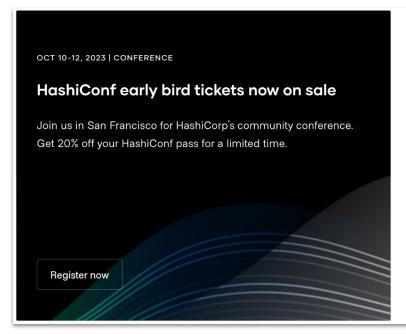
- Even if you don't want the certification, the <u>Study</u> <u>Guide</u> is a relevant and useful curriculum to follow especially for folks new to Consul.
- Production Readiness Checklist
- Consul Up & Running





HashiCorp Events

Visit our <u>events page</u> for future events to live webinars, virtual workshops and other training courses











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