Questionnaire: Deploying in a Customer-Controlled Cluster with Amazon Elastic Kubernetes Service

This questionnaire is specific to deployments of Solace Cloud in Customer-Controlled Clusters using Amazon Elastic Kubernetes Service. For questions related to deployments for Dedicated Clusters, see Questionnaire: Deploying in a Dedicated Cluster.

Deploying Solace Cloud can require planning and coordination across different teams. It's important that you plan and design your deployment to ensure the long-term success of your system. The following questions are designed to uncover the configuration information needed to create your event broker services properly. To help make your deployment go quickly and smoothly, carefully research and plan your decisions around these questions.

To begin your planning, we have produced a questionnaire to help identify critical information required for a successful deployment, including:

- questions common to deployments in all Kubernetes implementations, including queries about your cluster, Operational Connectivity, Messaging Connectivity, and feature requirements.
- questions specific to the implementation of Kubernetes you have chosen for your Customer-Controlled Cluster, including queries about your cluster, Messaging Connectivity, and storage.

The answers to these questions help Solace determine how to configure the Mission Control Agent to create event broker services in your cluster.

Once you have chosen a Kubernetes implementation, you must answer the questions common to all Kubernetes implementations.

- Common Deployment Questions

After you have finished the common questions, you must answer the questions that are specific to your Kubernetes implementation. If you intend to use multiple implementations, you must complete a questionnaire for each Kubernetes implementation:

- Amazon Elastic Kubernetes Service Questions
- Azure Kubernetes Service Questions
- Google Kubernetes Engine Questions
- Oracle Kubernetes Engine Questions
- Alibaba Cloud Container Service for Kubernetes Questions
- Huawei Cloud Container Engine Questions
- On-Premises Questions

Common Deployment Questions

This section contains questions about the following common deployment factors:

- Cluster
- Operational Connectivity
- Messaging Connectivity
- Features
- Contact Information

Cluster

You must answer the following questions about your cluster.

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Do you have an existing cluster (or a defined specification for a new cluster), or do you require an architecture example to start from?	I have an existing cluster (or clusters) or intend to create new clusters based on existing specification. **or** I would like a best practice architecture example to start from.	The Solace best practices documentation provides descriptions of how best to label and taint worker nodes with the correct resource requirements for the service classes that are supported in Solace Cloud. If you have an existing cluster, you can use our best practices documentation to understand how to modify your cluster, and how to provide Solace with the node selectors and tolerations we need to deploy event broker services in your cluster. Solace provides reference Terraform projects for deploying a Kubernetes cluster to AKS, EKS, and GKE. These Terraform projects have the recommended configuration settings, such as worker node sizes, resource configurations, taints, and labels optimized to install Solace Cloud. For other cloud providers or on-premises deployments, we can provide documentation that describes our best practices.	Support for nodeSelector, Taints, and Tolerations Resource Requirements for Kubernetes

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
		You can download the reference Terraform projects from our GitHub repository: https://github.com/SolaceLabs/customer-controlled-region-reference-architectures Beware that all sample scripts, Terraform modules, and examples are provided as-is. You can modify the files as required and are responsible for maintaining the modified files for your Kubernetes cluster.	
Will the cluster be used exclusively for Solace Cloud or will it be shared with other applications or workloads?	Exclusive **or** Shared	Providing this information allows Solace to understand the architecture of your cluster so we can better suggest changes that may help the operation of Solace Cloud in your cluster.	Deployment Architecture for Kubernetes Resource Requirements for Kubernetes
Is the Kubernetes version of your cluster sup-	Yes **or** No	Only supported Kubernetes versions are tested and guaranteed to work with Solace Cloud. If you use a different implementation	Supported Kubernetes Versions

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
ported by Solace Cloud?		of Kubernetes, contact Solace to find out how we can support your deployment.	
What is the cluster domain for your Kubernetes cluster?		This is typically `cluster.local`, but your Kubernetes administrator can configure it to be something else. Solace requires this information to properly configure the Mission Control Agent.	DNS for Services and Pods in the Kubernetes documentation
Are there any custom node selectors or tolerations required to successfully schedule the Mission Control Agent or event broker service pods? If so, what are they?		If it varies from our best practices, Solace requires this information to ensure that the event broker service pods are scheduled successfully.	Support for nodeSelector, Taints, and Tolerations
Are there any custom		Solace supports only fixed labels that can be applied to the Mission	Support for nodeSelector,

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
labels that must be applied to the Mission Control Agent or event broker service pods? If so, what are they?		Control Agent or event broker services. We don't support dynamic labels.	Taints, and Tolerations
What geographic locations will the clusters reside in? For clusters in the cloud, provide a list of regions. For on-premises clusters provide a list of countries or regions.		Solace Cloud produces diagnostic logs that are pushed to an AWS S3 bucket for use by Solace. We use S3 buckets that are geographically close to the deployment to optimize retrieval.	S3 Bucket Names for Gathered Diagnostics

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Does your cluster have any Pod Security Policies? Do you use a Policy Controller (for example, Gatekeeper) to enforce security in your cluster? If so, do any of these policies affect the operation of Solace Cloud in your cluster?		Policy controllers like Gatekeeper can enforce security policies in a cluster, such as required labels, a restricted set of container registry images, and so on. In most cases, Solace Cloud can be configured to meet these requirements.	Support for nodeSelector, Taints, and Tolerations Connectivity Model for Kubernetes Deployments
Does your cluster enforce		Your cluster must have sufficient resource to successfully create event broker service.	Resource Requirements for Kubernetes

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
resource quotas? Have these quotas been updated to support the number of event broker services you expect to create in your cluster?			
Will your cluster use dedicated nodes for your event broker services? If so, will you size those nodes for only a single event broker service?		The resource requirements outlined by Solace assume you are deploying a single event broker service per node in your cluster. If you intend to deploy more than one event broker service, or other applications in the same node you must work with Solace to ensure your nodes provide sufficient resources to your event broker service.	Resource Requirements for Kubernetes

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Will the same cluster be used for Micro-Integrations?	Yes or No	Your Kubernetes cluster must be at least a 1k-prod size for Micro-Integrations. In addition, there are memory and RAM requirements for each pod used by a Micro-Integration that differ from those for event broker services.	Micro-Integration Pod Requirements

Operational Connectivity

You must answer the following questions about yourOperational Connectivity.

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Will you use access the Solace Container Registry directly or will you use a mirror?	Direct **or** Mirror	Solace Cloud container images are provided in a private registry that can either be accessed directly or a using a registry mirror. For registry mirroring, Solace only sup-	Connectivity Model for Kubernetes Deployments

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
		ports *pull-through cache* mirrors, such as using Nexus, Artifactory, or Artifact cache In Azure Container Registry. Solace Cloud cannot push images to a private registry due to the frequency with which we publish and perform upgrades with new container images for our Mission Control Agent.	
If you are using a mirror container registry, what is its path?	For example, for container image `quay.io/example/nginx` the container registry portion is `quay.io/example`.	Solace requires this information to configure the Mission Control Agent to create event broker services using	Connectivity Model for Kubernetes Deployments

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
		the correct container image name.	
If you are using a mirror container registry, what is the name of the image pull secret used to authenticate with it?		The Mission Control Agent and event broker service may require a secret in the namespace they're deployed in so they can pull images from the registry.	Downloading the Registry Credentials for the Solace Container Registry
Do you restrict outbound internet access? Is your environment configured to allow all outbound communication required for proper operation of Solace Cloud?	Restricted **or** Not restricted	If you restrict outbound access then you must read the documentation for details about how to allow access for Solace Cloud.	Connectivity Model for Kubernetes Deployments

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation

If you have an HTTP/HTTPS proxy that is required for out-bound com-munication, what is its URL? Does it require cre-dentials? If yes, we will contact you to securely provide them.	For example:
	`https://proxy-host`
	or
	`http://proxy-host`
		Solace needs this information to configure the Mission Control Agent to use your proxy.	Using HTTP/HTTPS Proxies

Messaging Connectivity

You must answer the following questions about yourMessaging Connectivity.

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Do you intend to create event broker services that are accessed via the public internet, private networking, or both?	Public **or** Private **or** Both	Solace needs this information to configure the Mission Control Agent to create event broker services that match your require-ments.	Exposing Event Broker Services to External Traffic

Feature Requirements

You must answer the following questions about your plans to use certain features that require special configuration.

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Do you intend to use MQTT Retain on any of your event broker services?	Yes **or** No	Solace may need to allocate more memory to the event broker service's pod for it to support MQTT Retain.	
Do you intend to provide a custom server certificate for your event broker services?	Yes **or** No	Solace needs this information to configure the Mission Control Agent to use your custom server certificates.	
Will you be using more than one environment? If so, which environment do you want your initial datacenter created in?	Yes, and the environment name **or** No	Solace uses this information to put your datacenter in the environment you specify. If you won't be using more than one environment, or don't specify the environment, the datacenter will be placed in your organization's default environment. You can create environments, change your	Creating and Managing Environments

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
		default environment, and move datacenters to different environments at a later time.	
Will you be using distributed tracing? If so, will you require proxy exclusions?	Yes **or** No	Solace needs to know if you require proxy exclusions so we can properly configure the Mission Control Agent with your proxy exclusion list so your distributed tracing deployment works correctly.	Configuring Distributed Tracing to Use a Proxy

Contact Information

You must provide a point of contact for each entry in the table below. Solace prefers a distribution list as the point of contact, though you can choose to provide individual contact details.

Contact Type	Distribution List or Contact Details
Event broker service incidents or issues.	
Event broker service upgrade notifications and scheduling.	
Release and maintenance notifications.	

Amazon Elastic Kubernetes Service (EKS) Questions

After answering the common questions, you must answer the following questions related to your Amazon EKS deployment.

- Cluster Questions
- Messaging Questions
- Storage Questions

Amazon EKS Cluster

You must answer the following questions about your AWS EKS cluster.

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Do you have subnets for the worker nodes in all zones in your region?	Yes	High availability event broker services require three availability zones.	Kubernetes Cluster Details
Have you deployed the AWS Cluster Autoscaler? If not, do you have sufficient worker nodes to support the event broker services?	Using Auto-scaler **or** Cluster has sufficient worker nodes	Solace recommends that you use the AWS Cluster Autoscaler in your cluster. The alternative is to provision sufficient worker nodes.	Amazon EKS Autoscaling Documentation

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Are your cluster's VPC and Subnets properly sized to support the number of event broker services you'd like to create?	Yes	The number of event broker services that can be created in a cluster is limited by the available IP addresses in the VPC and its subnets. By default, EKS uses the Amazon VPC CNI to assign IP addresses from the cluster's VPC to its pods. This means it is critical to properly size the VPC CIDR block to support the number of event broker services you intend to create. Additionally, if you are using GP3 for your storage class, you must also deploy the Amazon EBS CSI driver, which consumes IP addresses in the VPC. > Consider the size of your cluster's network carefully, as it is not possible to change its size after creation.	IP Range in Installing in Amazon Elastic Kubernetes Service

Amazon EKS Messaging Connectivity

You must answer the following questions about your AWS EKS Messaging Connectivity.

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
If you are intending to use a LoadBalancer service to connect to your event broker service, have you deployed the AWS Load Balancer Controller into your cluster?	Yes	Solace recommends that customers use the AWS Load Balancer Controller because the in-tree alternative is deprecated.	Amazon AWS Load Balancer Controller Add-on documentation
If you intend to use LoadBalancer services to connect to your event broker services, have you tagged the Subnets that will contain the ENIs for the NLBs so the AWS Load Balancer Controller can find them?	Yes **or** No	The AWS Load Balancer documentation defines this as the best practice for AWS Load Balancers. The Solace best practice Terraform project for EKS applies the tags to the public and private subnets. If the terraform script cannot apply the tags, you must provide the tags to Solace so we	Subnet Auto Discovery in AWS Load Balancer Controller documentation

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
		can apply them with a service annotation.	
Are there any additional annotations required in your environment (beyond the standard ones) that must be used on the LoadBalancer service for proper operation?	Yes **or** No	Solace requires the extra service annotations to configure the Mission Control Agent so it can create event broker services.	Load Balancer in Installing in Amazon Elastic Kubernetes Service (EKS)

Amazon EKS Storage

You must answer the following questions about your AWS EKS storage.

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
Have you created a storage class based on our best practices?	Yes	Some storage class parameters need to be set to properly support the creation of event broker services as well as other features.	Installing in Amazon Elastic Kubernetes Service (EKS)
Which underlying disk type does your storage class use?	GP2 **or** GP3	Solace supports the deployment of event broker services only to GP2 and GP3 disks.	Storage Class in Installing in Amazon Elastic Kubernetes Ser-

Question	Possible Answers	How Solace Uses This Information	Links to Related Documentation
			vice (EKS)
What is the name of the storage class?		Solace requires the name to properly configure the Mission Control Agent so it can create event broker services.	Storage Class in Installing in Amazon Elastic Kubernetes Service (EKS)