

Questionnaire: Deploying in a Customer-Controlled Region with Azure Kubernetes Service

This questionnaire is specific to deployments of PubSub+ Cloud in Customer-Controlled Regions using Azure Kubernetes Service. For questions related to deployments for Dedicated Regions, see [Questionnaire: Deploying in a Dedicated Region](#).

Deploying PubSub+ 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 Region, 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.

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](#)
- [Google Kubernetes Engine Questions](#)
- [Azure Kubernetes Service 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. | Solace's 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 PubSub+ 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. SolaceWe 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 | Support for nodeSelector, Taints, and Tolerations Resource Requirements for Kubernetes |

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|--|------------------------------------|--|---|
| | | <p>node sizes, resource configurations, taints, and labels optimized to install PubSub+ Cloud. For other cloud providers or on-premises deployments, we can provide documentation that describes our best practices.</p> <p>You can download the reference Terraform projects from ourthe following GitHub repository: https://github.com/SolaceLabs/customer-controlled-region-reference-architectures</p> <p>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.</p> | |
| <p>Will the cluster be used exclusively for PubSub+ Cloud or will it be shared with other applications or workloads?</p> | <p>Exclusive or Shared</p> | <p>Providing this information allows Solace to understand the architecture of your cluster so we can better suggest changes that may help the operation of PubSub+ Cloud in your cluster.</p> | <p>Deployment Architecture for Kubernetes</p> <p>Resource Requirements for Kubernetes</p> |
| <p>Is the Kubernetes version of your cluster supported by PubSub+ Cloud?</p> | <p>Yes or No</p> | <p>Only supported Kubernetes versions are tested and guaranteed to work with PubSub+ Cloud.</p> <p>If you use a different implementation of Kubernetes, contact Solace to find out how we can support your deployment.</p> | <p>Supported Kubernetes Versions</p> |
| <p>What is the</p> | | <p>This is typically <code>cluster.local</code>, but your</p> | <p>DNS for Services</p> |

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|--|------------------|--|---|
| cluster domain for your Kubernetes cluster? | | Kubernetes administrator can configure it to be something else. Solace requires this information to properly configure the Mission Control Agent. | 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 labels that must be applied to the Mission Control Agent or event broker service pods? If so, what are they? | | Solace supports only fixed labels that can be applied to the Mission Control Agent or event broker services. We don't support dynamic labels. | Support for nodeSelector, Taints, and Tolerations |
| What geographic locations will the clusters reside in? For clusters in | | PubSub+ 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 |
|---|------------------|--|---|
| <p>the cloud, provide a list of regions.</p> <p>For on-premises clusters provide a list of countries or regions.</p> | | | |
| <p>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 PubSub+ Cloud in your cluster?</p> | | <p>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.</p> <p>In most cases, PubSub+ Cloud can be configured to meet these requirements.</p> | <p>Support for nodeSelector, Taints, and Tolerations</p> <p>Connectivity Model for Kubernetes Deployments</p> |
| <p>Does your cluster enforce resource quotas? Have these quotas been updated</p> | | <p>Your cluster must have sufficient resource to successfully create event broker service.</p> | <p>Resource Requirements for Kubernetes</p> |

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|--|------------------|----------------------------------|--------------------------------|
| to support the number of event broker services you expect to create in your cluster? | | | |

Operational Connectivity

You must answer the following questions about your Operational 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 | <p>PubSub+ Cloud container images are provided in a private registry that can either be accessed directly or mirrored (for example using Nexus or Artifactory).</p> <p>PubSub+ Cloud cannot push images to a private registry due to the frequency with which we publish and perform upgrades with new container images</p> | Connectivity Model for Kubernetes Deployments |

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|--|--|---|--|
| | | for our Mission Control Agent. | |
| If you are using a mirror container registry, what is its path? | For example, for container image <code>quay.io/example/nginx</code> the container registry portion is <code>quay.io/example</code> . | Solace requires this information to configure the Mission Control Agent to create event broker services using the correct container image name. | Connectivity Model for Kubernetes Deployments |
| 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 Solace's Container Registry |
| Do you restrict outbound internet access? Is your environment configured to allow all outbound communication required for proper operation of PubSub+ Cloud? | Restricted or Not restricted | If you restrict outbound access then you must read the documentation for details about how to allow access for PubSub+ Cloud. | Connectivity Model for Kubernetes Deployments |
| If you have an HTTP/HTTPS proxy that is required for | For example: <code>https://proxy-host</code> or <code>http://proxy-host</code> | Solace needs this information to configure the Mission Control Agent to | Using HTTP/HTTPS Proxies |

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|---|------------------|----------------------------------|--------------------------------|
| outbound communication, what is its URL? Does it require credentials? If yes, we will contact you to securely provide them. | | use your proxy. | |

Messaging Connectivity

You must answer the following questions about your Messaging 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 requirements. | 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 | Yes or | Solace may need to allocate more memory to the event broker service's pod for it to sup- | |

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|--|------------------------|--|--------------------------------|
| services? | No | port 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. | |

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. | |

Azure Kubernetes Service (AKS) Questions

After answering the common questions, you must answer the following questions related to your Azure Kubernetes Service (AKS) deployment.

- [Cluster Questions](#)
- [Messaging Connectivity Questions](#)
- [Storage Questions](#)

AKS Cluster

You must answer the following questions about your Azure AKS cluster.

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|--|------------------|--|---|
| Are your cluster's VNet and Sub-nets properly sized to support the number of event broker services you'd like to create? | Yes | <p>The number of event broker services that can be created in a cluster is limited by the available IPs in the VNET and its Sub-net(s). Additionally, those chosen networking option (Kubenet or Azure CNI) changes how IPs from the VNET are utilized which affects how many event broker services can be created.</p> <div style="border: 1px solid orange; padding: 10px; margin: 10px 0;"> <p>Consider the size of your cluster's network carefully, as it is not possible to change its size after creation.</p> </div> | IP Range in Installing in Azure Kubernetes Service (AKS) |
| Have you configured the cluster's node pools to use auto-scaling? | Yes or No | Solace recommends using the cluster autoscaler to ensure that there is sufficient capacity in the cluster to create event broker services with a minimum waste of resources. | Autoscaling in Installing in Azure Kubernetes Service (AKS) |

AKS Messaging Connectivity

| Question | Possible Answers | How Solace Uses This Information | Links to Related Documentation |
|--|------------------|--|---|
| 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 Azure Kubernetes Service (EKS) |

AKS Storage

You must answer the following questions about your Azure AKS 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. | Azure Kubernetes Service Deployment Details |
| Which underlying disk type does your storage class use? | Premium LRS | Solace supports the deployment of event broker services only to Premium LRS. | Storage in Installing in Azure Kubernetes Service (AKS) |
| 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 in Installing in Azure Kubernetes Service (AKS) |