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## Tenant Service Private Edition Guide

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The Tenant Service is a service available with the Genesys Multicloud CX private edition offering. The Tenant Service is included with the Voice Microservices, however there is a separate Private Edition Guide for the Voice Services. For information about the Voice Services, including provisioning, configuration, and deployment information, see the *Voice Microservices Private Edition Guide*.

## Overview

Learn more about the Tenant Service, its architecture, and how to support high availability and disaster recovery.

- [About the Tenant Service](#)
- [Architecture](#)
- [High availability and disaster recovery](#)

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## Configure and deploy

Find out how to configure and deploy the Tenant Service.

- [Before you begin](#)
  - [Configure the Tenant Service](#)
  - [Provision the Tenant Service](#)
  - [Deploy Tenant Service](#)
-

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## Upgrade, roll back, or uninstall

Find out how to upgrade, roll back, or uninstall Tenant services and to migrate the database.

- [Upgrade, roll back, or uninstall Tenant Service](#)

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## Observability

Learn how to monitor the Tenant Service with metrics and logging.

- [Observability in Tenant Service](#)
- [Tenant Service metrics and alerts](#)

# About the Tenant Service

## Contents

- [1 Supported Kubernetes platforms](#)
- [2 Service description](#)

Learn about the Tenant Service and how it works in Genesys Multicloud CX private edition.

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## Supported Kubernetes platforms

Voice Tenant Service is supported on the following Kubernetes platforms:

- Azure Kubernetes Service (AKS)
- Google Kubernetes Engine (GKE)
- OpenShift Container Platform (OpenShift)

See the Voice Microservices Release Notes for information about when support was introduced.

## Service description

The Voice Tenant Service is included with the Voice Microservices and is a core service of the Genesys Multicloud CX platform. The Tenant Service is an application layer between front-end Genesys Multicloud CX solutions and shared back-end core services in a region.

The Voice Tenant Service instances are dedicated to a tenant of the Genesys Multicloud CX platform and provide these main functions:

- Provisioning of tenant resources, such as agents and DNSs.
- Routing of interactions within a tenant.
- Execution of outbound campaigns for a tenant.
- Providing call control functionality.
- Participation in the authentication workflow for a tenant's agents.

# Architecture

## Contents

- [1 Introduction](#)
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Learn about Tenant Service architecture

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## Introduction

The following diagram shows an example of the high-level architecture specific to the Tenant Service.

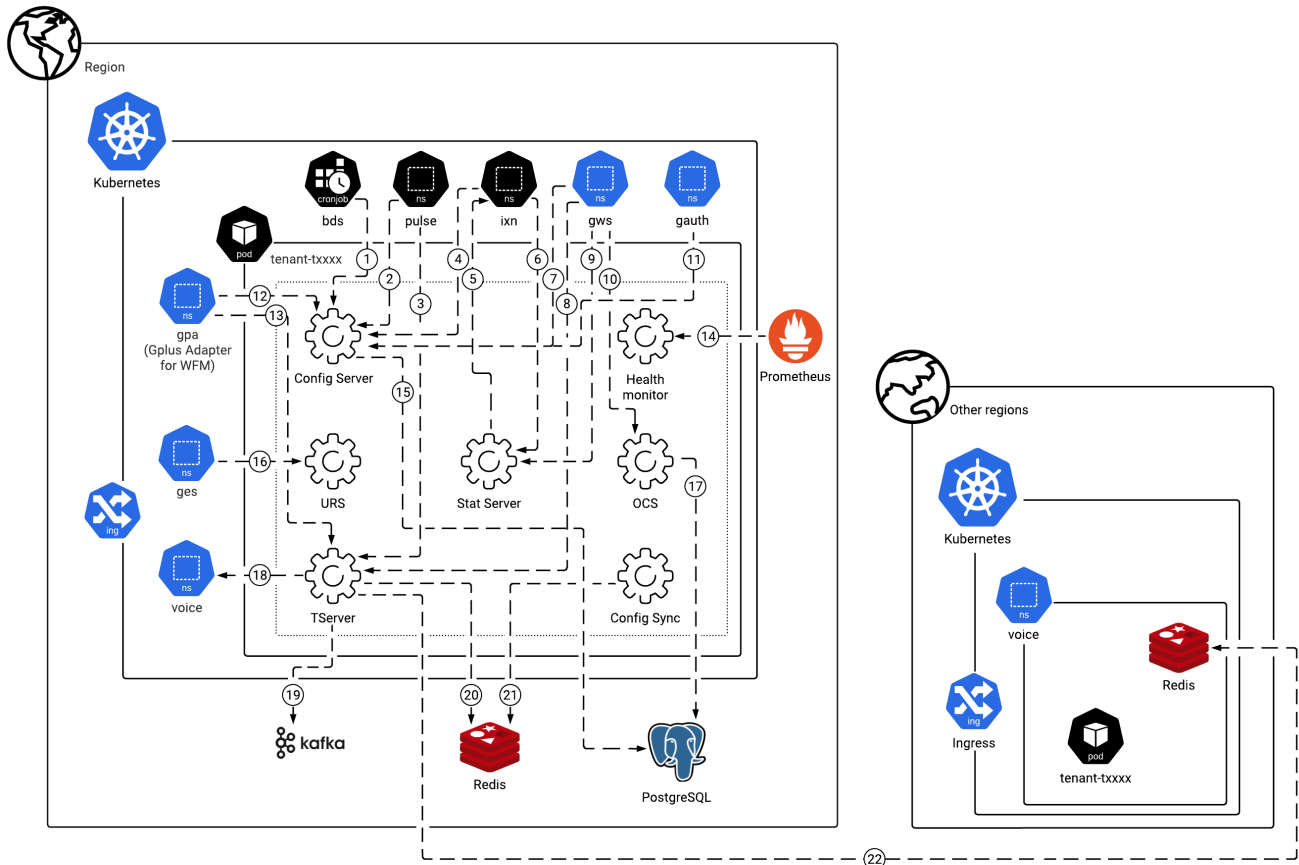
For the high-level architecture that includes all of the Voice Microservices, see [Voice Microservices architecture](#).

For information about the overall architecture of Genesys Multicloud CX private edition, see the [high-level Architecture page](#).




See also [High availability and disaster recovery](#) for information about high availability/disaster recovery architecture.

## Architecture diagram — Connections

The numbers on the connection lines refer to the connection numbers in the table that follows the diagram. The direction of the arrows indicates where the connection is initiated (the source) and where an initiated connection connects to (the destination), from the point of view of Tenant Service as a service in the network.



**Additional information**

|   |   |   |
|---|---|---|
|  |  |  |
| Multi-Tenant  | Single Tenant   |   |

For the benefit of users who are familiar with Genesys legacy applications, the diagram uses application names to identify specific *functionality* within Tenant Service. The legacy applications *do not* exist as containers, pods, services, or any other Kubernetes entity in Genesys Multicloud CX private edition.

## Connections table

The connection numbers refer to the numbers on the connection lines in the diagram. The **Source**, **Destination**, and **Connection Classification** columns in the table relate to the direction of the arrows in the Connections diagram above: The source is where the connection is initiated, and the destination is where an initiated connection connects to, from the point of view of Tenant Service as a service in the network. *Egress* means the Tenant Service service is the source, and *Ingress* means the Tenant Service service is the destination. *Intra-cluster* means the connection is between services in the cluster.

| Connection | Source                                | Destination        | Protocol | Port  | Classification | Data that travels on this connection               |
|------------|---------------------------------------|--------------------|----------|-------|----------------|--|
| 1          | Billing Data Service                  | Tenant Service     | TCP      | 8888  | Intra-cluster  | Configuration and provisioning                     |
| 2          | Genesys Pulse                         | Tenant Service     | TCP      | 8888  | Intra-cluster  | Configuration and provisioning                     |
| 3          | Genesys Pulse                         | Tenant Service     | TCP      | 8000  | Intra-cluster  | Voice Microservices events                         |
| 4          | Interaction Server                    | Tenant Service     | TCP      | 8888  | Intra-cluster  | Configuration and provisioning                     |
| 5          | Tenant Service                        | Interaction Server | TCP      | 7120  | Intra-cluster  | Multimedia transactions status                     |
| 6          | Interaction Server                    | Tenant Service     | TCP      | 2060  | Intra-cluster  | Agent status for multimedia                        |
| 7          | Genesys Web Services and Applications | Tenant Service     | TCP      | 8888  |                | GWS (Configuration Service) access to provisioning |
| 8          | Genesys Web Services and Applications | Tenant Service     | TCP      | 8000  | Intra-cluster  | GWS call control events                            |
| 9          | Genesys Web Services and Applications | Tenant Service     | TCP      | 2060  | Intra-cluster  | GWS statistics                                     |
| 10         | Genesys Web Services and Applications | Tenant Service     | TCP      | 5050  | Intra-cluster  | Outbound campaign control through GWS              |
| 11         | Genesys Authentication                | Tenant Service     | TCP      | 8888  | Intra-cluster  | Genesys Authentication access to provisioning      |
| 12         | Gplus Adapters for WFM                | Tenant Service     | TCP      | 8888  | Intra-cluster  | Configuration and provisioning                     |
| 13         | Gplus Adapters for WFM                | Tenant Service     | TCP      | 8000  | Intra-cluster  | Voice Microservices events                         |
| 14         | Prometheus                            | Tenant             | HTTP     | 15000 | Ingress        | Tenant   |

| Connection | Source                     | Destination         | Protocol | Port      | Classification | Data that travels on this connection   |
|------------|----------------------------|---------------------|----------|-----------|----------------|--|
|            |                            | Service             |          |           |                | Service provides metrics for monitoring and alerting with Prometheus.        |
| 15         | Tenant Service             | PostgreSQL          | TCP      | 5432      | Egress         | Persistent SQL storage for provisioning data                                 |
| 16         | Genesys Engagement Service | Tenant Service      | HTTP     | 5580      | Intra-cluster  | Routing requests and events  |
| 17         | Tenant Service             | PostgreSQL          | TCP      | 5432      | Egress         | Persistent storage for outbound campaigns and calling lists                  |
| 18         | Tenant Service             | Voice Microservices |          |           |                | For information, see connections 16, 27, and 32 in the Voice Microservices . |
| 19         | Tenant Service             | Kafka               | TCP      | 9092/9093 | Egress         | Outbound reporting   |
| 20         | Tenant Service             | Redis               | TCP      | 6379      | Egress         | Voice Microservices call control events                                      |
| 21         | Tenant Service             | Redis               | TCP      | 6379      | Egress         | Tenant configuration and provisioning synchronization for in-memory caching  |
| 22         | Tenant Service             | Redis               | TCP      | 6379      | Intra-cluster  | Cross-region Voice Microservices call control events in                      |

## Architecture

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| Connection | Source | Destination | Protocol | Port | Classification | Data that travels on this connection |
|------------|--------|-------------|----------|------|----------------|--------------------------------------|
|            |        |             |          |      |                | remote Redis                         |

# High availability and disaster recovery

Find out how this service provides disaster recovery in the event the service goes down.

**Related documentation:**

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| Service        | High Availability | Disaster Recovery | Where can you host this service? |
|----------------|-------------------|-------------------|----------------------------------|
| Tenant Service | N = N (N+1)       | Active-spare      | Primary or secondary unit        |

See High Availability information for all services: [High availability and disaster recovery](#)

# Before you begin

## Contents

- [1 Limitations and assumptions](#)
- [2 Download the Helm charts](#)
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- [5 Network requirements](#)
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Find out what to do before deploying the Tenant Service.

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## Limitations and assumptions

Not applicable

## Download the Helm charts

For information about how to download the Helm charts, see [Downloading your Genesys Multicloud CX containers](#).

See [Helm charts and containers for Voice Microservices](#) for the Helm chart version you must download for your release.

## Containers

The Tenant Service has the following containers:

- Core tenant service container
- Database initialization and upgrade container
- Role and privileges initialization and upgrade container
- Solution specific: pulse provisioning container

## Helm charts

- Tenant deployment
- Tenant infrastructure



## Third-party prerequisites

For information about setting up your Genesys Multicloud CX private edition platform, see [Software Requirements](#).

The following table lists the third-party prerequisites for the Tenant Service.

Third-party services

| Name       | Version | Purpose   | Notes   |
|------------|---------|---|---|
| Kafka      | 2.x     | Message bus.  |   |
| Consul     | 1.13.x  | Service discovery, service mesh, and key/value store.   | Starting with version 100.0.100.0041, Tenant Service supports Consul 1.10.  |
| Redis      | 6.x     | Used for caching. Only distributions of Redis that support Redis cluster mode are supported, however, some services may not support cluster mode. |   |
| PostgreSQL | 11.x    | Relational database.  | <p><b>NOTE:</b> Starting with version 100.0.100.0041, Tenant Service supports PostgreSQL 11.x.</p> <p>Before deploying Tenant Service, you must provision a PostgreSQL database for Tenant Service using one of the following methods:</p> <ul style="list-style-type: none"> <li>• Create a PostgreSQL database specifically for use by Tenant Service.</li> <li>• Use the shared PostgreSQL database, which is recommended in the OpenShift platform.</li> </ul> <p>Deploy a PostgreSQL database using the following commands:</p> <pre>helm repo add bitnami https://charts.bitnami.com/bitnami helm install -n voice postgres</pre> |

| Name   | Version | Purpose  | Notes   |
|--|---------|--|---|
|  |         |  | bitnami/postgresql<br><br>During deployment, you require the database information, including credentials. For the list of database parameters that you override in the Tenant Helm chart <b>values.yaml</b> file, see Backend parameters in Override Helm chart values. |
| A container image registry and Helm chart repository |         | Used for downloading Genesys containers and Helm charts into the customer's repository to support a CI/CD pipeline. You can use any Docker OCI compliant registry. |   |

## Storage requirements

For information about storage requirements for Voice Microservices, including the Tenant Service, see *Storage requirements* in the *Voice Microservices Private Edition Guide*.

## Network requirements

For general network requirements, review the information on the suite-level *Network settings* page.

## Browser requirements

Not applicable

## Genesys dependencies

For detailed information about the correct order of services deployment, see *Order of services deployment*.

The following prerequisites are required before deploying the Tenant Service:

## Before you begin

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- **Voice Platform** and all its external dependencies must be deployed before proceeding with the Tenant Service deployment.
- **PostgreSQL 10** database management system must be deployed and database shall be allocated either as a primary or replica. For more information about the sample deployment of a standalone DBMS, see Third-party prerequisites.

In addition, if you expect to use Agent Setup or Workspace Web Edition after the tenant is deployed, Genesys recommends that you deploy **GWS Authentication Service** before proceeding with the Tenant Service deployment.

## Specific dependencies

The Tenant Service is dependent on the following platform endpoints:

- GWS environment API
- Interaction service core
- Interaction service vq

The Tenant Service is dependent on the following service component endpoints:

- Voice Front End Service
- Voice Redis (RQ) Service
- Voice Config Service

## GDPR support

Not applicable.

# Configure the Tenant Service

## Contents

- [1 Override Helm chart values](#)
- [2 Configure Kubernetes](#)
- [3 Configure security](#)
  - [3.1 Security context configuration](#)
  - [3.2 Configure service-specific secrets](#)

Learn how to configure the Tenant Service.

### Related documentation:

- 
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### RSS:

- [For private edition](#)

## Override Helm chart values

For additional information about overriding Helm chart values, see [Overriding Helm Chart values in the Genesys Multicloud CX Private Edition Guide](#).

This section describes the purpose and use case for each configurable parameter in a Tenant Service deployment.

The content in the following tables is not intended to be actual values or the names of override options for the Helm charts; you can extract those later from the **values.yaml** file for each Helm chart.

### Versioning

| Group    | Name                          | Purpose   | Comments |
|----------|-------------------------------|---|----------|
| version  | Tenant image versions         | Target image to install; must use same version for all init containers. |          |
| version  | Roles and permissions version | Target version of roles and permissions to apply.                       |          |
| location | Image location                | Target registry to pull images from.                                    |          |

### Identification

| Group  | Name | Purpose                 | Comments   |
|--------|------|-------------------------|--|
| Tenant | name | Nickname of the tenant. | Human-readable name. The default value is the Helm release name. |

| Group  | Name | Purpose   | Comments   |
|--------|------|---|--|
| Tenant | uuid | Unique identifier of all instances of the Tenant Service. | All nodes deployed to handle the end-customer environment use that UUID that is also registered. The last four positions of the UUID are used as the short Tenant ID, when applicable. |

Backend parameters

| Group    | Name                          | Purpose   | Comments   |
|----------|-------------------------------|---|--|
| postgres | database host                 | A reference to the backend DBMS into which to persist the service.  | Either a direct value or a file path that points to a mapped volume with file content to be used as the DBMS name.   |
| postgres | database user                 | A reference to the backend database into which to persist the service.  | Either a direct value or a file path that points to a mapped volume with file content to be used as the database username.   |
| postgres | database name                 | A reference to the backend database into which to persist the service.  | Either a direct value or a file path that points to a mapped volume with file content to be used as the database name.   |
| postgres | database password parameters  | Either direct value or reference to a secret name and key that hold a value; depends on relevant Kubernetes secret flag and Kubernetes secret env map flag. | These parameters control how password is being extracted by service. Direct value is supported to testing purposes. Secret name can be specified if password from external secret will be mounted as a volume and password exposed via file. Secret key can be specified if password will be mapped to environment variable. |
| postgres | Kubernetes secret usage flags | Indication of Kubernetes secret being used to keep password and whenever secret shall be mounted to env variable or expected to be mapped as a              | Boolean values that force use of secret (instead of direct database password).   |

| Group    | Name                                      | Purpose   | Comments   |
|----------|---|---|--|
|          |   | volume.   |  |
| postgres | ssl usage                                 | specify secure connection preferences   | Allow or require TLS.  |
| consul   | Kubernetes secret usage flags             | indication of Kubernetes secret being used to keep token and whenever secret shall be mounted to env variable or expected to be mapped as a volume                  | boolean values that force use of secret (instead of direct consul token value).  |
| consul   | consul token parameters                   | either direct value or reference to a secret name and key that hold a value, depends on relevant Kubernetes secret flag and Kubernetes secret env map flag          | these parameters control how token is being extracted by service. direct value is supported for testing purposes; secret name can be specified if token from external secret shall be mounted as a volume and token exposed via file; secret key can be specified if password shall be mapped to environment variable                |
| redis    | Kubernetes secret usage flags             | indication of Kubernetes secrets being used to keep connection strings and whenever secrets shall be mounted to env variables or expected to be mapped as a volumes | boolean values that forces use of secret (instead of direct connection strings). applicable for all type of redis connections supported by tenant  |
| redis    | redis connection string for tenant stream | either direct value or reference to a secret name and key that hold a value, depends on relevant Kubernetes secret flag and Kubernetes secret env map flag          | these parameters control how string is being extracted by service. direct value is supported for testing purposes; secret name can be specified if value from external secret shall be mounted as a volume and connection parameters exposed via file; secret key can be specified if string shall be mapped to environment variable |
| redis    | redis connection string for config cache  | either direct value or reference to a secret name and key that hold a value, depends on relevant Kubernetes   | these parameters control how string is being extracted by service. direct value is supported for testing   |

## Configure the Tenant Service

| Group | Name                          | Purpose   | Comments   |
|-------|-------------------------------|---|--|
|       |                               | secret flag and Kubernetes secret env map flag  | purposes; secret name can be specified if value from external secret shall be mounted as a volume and connection parameters exposed via file; secret key can be specified if string shall be mapped to environment variable  |
| redis | cluster flag                  | type of redis backend to connect  | indicate whenever backend for redis is cluster or standalone server (same is used for all types of redis endpoints)  |
| kafka | Kubernetes secret usage flags | indication of Kubernetes secrets being used to keep connection strings and whenever secrets shall be mounted to env variables or expected to be mapped as volumes | boolean values that force use of secret (instead of direct connection strings).  |
| kafka | Kafka connection string       | either direct value or reference to a secret name and key that hold a value, depends on relevant Kubernetes secret flag and Kubernetes secret env map flag        | these parameters control how string is being extracted by service. direct value is supported for testing purposes; secret name can be specified if value from external secret shall be mounted as a volume and connection parameters exposed via file; secret key can be specified if string shall be mapped to environment variable |

### Kubernetes parameters

| Group                 | name            | purpose   | comments   |
|-----------------------|-----------------|---|--|
| Auth and Autorization | Service Account | Specify non-default service account that shall be associated with all PODs of a tenant service deployment | PODs will be assigned default account if not specified. If required, a separate account will be created during tenant deployment and set to use by all PODs. This could be required if consul registration of tenant service relies on |



## Configure the Tenant Service

| Group                  | name              | purpose   | comments   |
|------------------------|-------------------|---|--|
|                        |                   |   | tenant's POD having Kubernetes accounts named after tenant service being registered. Service account is being created with name matching service name of as tenant (as visible in consul)  |
| Auth and Authorization | security context  | Adjust security context to run with random user   | If random user is used to launch tenant containers, an adjustment to security context is needed for all tenant containers. Tenant is running as user 500 in group/ fsgroup 500 by default and it may use group/ fsgroup 0 for random user. For more information, see Security context configuration. |
| Auth and Autorization  | Pod identity      | specify optional annotation to associate with POD in order to access Kubernetes resources | PODs may be assigned an ADODB identity if needed   |
| Scheduling             | pod node selector | specify optional node pool selector for tenant PODs                                       | PODs can be assigned to a specific pool, if needed. There is no default Kubernetes pool selections   |
| Scheduling             | pod toleration    | specify optional toleration for tenant PODs   | PODs can be set to tolerate specific taints, There is no default tolerations   |
| Scheduling             | affinity          | enable affinity of tenant PODs to provide high availability                               | PODs of same tenant service may be forced to schedule in different locations (if supported by underlying infrastructure) using failure-domain.beta.kubernetes.io/ zone annotation when this is enabled. There is no affinity by default.   |
| Scheduling             | priority class    | specify optional priority class for tenant PODs   | PODs may be assigned specific priority class; not set by default.  |

Logging parameters

| Group              | name                      | purpose  | comments   |
|--------------------|---------------------------|--|--|
| logging frameworks | fluentbit                 | Specify usage of fluentbit for tenant console logging  | Tenant PODs won't use fluentbit logging solution by default. Tenant-specific fluentbit configuration can be enabled when deploying tenant-monitor resources, and use of fluentbit sidecar can be enabled on tenant PODs afterward.   |
| logging frameworks | fluentbit config          | Specify config map with fluentbit sidecar configuration that should be mounted as a volume.  | <p>If fluent is enabled in both tenant-monitor and tenant charts, a volume-referencing config map shall be specified, as below (if custom config map is created, map name can be set differently)</p> <pre> - name: tenants-fluent-bit-config  configMap:   name: tenants-fluent-bit-config                     </pre> |
| logging frameworks | fluentbit local storage   | Specify volume and volume mount where fluentbit logs will accumulate.                        | <p>If fluent bit is enabled, the following volume is added:</p> <pre> - name: fluent-logs   emptyDir: {}                     </pre> <p>and volume mount:</p> <pre> - name: fluent-logs   mountPath: "/opt/genesys/logs/JSON"                     </pre>  |
| file logging       | logging persistent volume | Specify usage of persistent volumes for logging by tenant components that produce log files. | Tenant PODs won't use persistent volume claims by default and no storage classes are created. Persistent   |

| Group        | name                                    | purpose   | comments  |
|--------------|---|---|---|
|              |   |   | volume claims can be added to tenant PODs when this is enabled.   |
| file logging | logging persistent volume storage class | If use of persistent volume for logging has been enabled, storage class can be specified for these volumes as needed.                                   | If tenant PODs are set to use persistent volume claims, storage class can be specified explicitly for volume claims. Storage class is not specified in PVC by default.  |
| file logging | logging storage class                   | if logging to persistent volume is enabled and storage class has been specified explicitly then creation of storage class can also be enabled as needed | tenant-specific storage class for persistent volumes won't get created by default, can be enabled when deploying tenant-monitor resources and later utilized by tenant PODs using same storage class name. storage class name shall be specified for this to work |
| file logging | logging empty directory                 | default logging mount path pointing to a Kubernetes empty directory volume  | part of default mounts provided for tenant service  |

Monitoring and observability

| Group      | name                  | purpose  | comments  |
|------------|-----------------------|--|---|
| prometheus | Prometheus PodMonitor | Specify if PodMonitor to scrape Prometheus endpoints of tenant pods should be created. | Tenant-monitor doesn't create PodMonitor for Prometheus by default. Prometheus specific monitor can be created as part of infrastructure deployment when this is enabled. |
| prometheus | Pod level annotations | Alternative to enabling pod monitor.   |   |

Integration

| Group | name         | purpose  | comments   |
|-------|--------------|--|--|
| GWS   | GWS endpoint | specify dedicated endpoint to register tenant service upon initial deployment or upgrade | when provided, define contact address to reach master GWS environment service that should be used to |

## Configure the Tenant Service

| Group        | name                          | purpose  | comments   |
|--------------|-------------------------------|--|--|
|              |                               |  | register tenant resources to make them available for GWS-based applications. by default, endpoint isn't specified and localhost connection attempt will be made by tenant container, GWS endpoint shall be reachable via service mesh upstream   |
| GWS          | GWS endpoint tls mode         | enable https (secure) connection mode to contact GWS endpoint  | when endpoint is provided, use of this parameter forces secure connection when accessing GWS on that address. NOTE: not available in initial release, only http connections are supported  |
| GWS          | Kubernetes secret usage flags | indication of Kubernetes secrets being used to keep client id and token and whenever secrets shall be mounted to env variables or expected to be mapped as volumes | boolean values that force use of secret (instead of direct client id and token).   |
| GWS          | client id and token           | either direct values or references to secret names and keys that hold values, depends on relevant Kubernetes secret flag and Kubernetes secret env map flag        | these parameters control how client id and token is being extracted by service. direct value is supported for testing purposes; secret name can be specified if value from external secret shall be mounted as a volume and connection parameters exposed via file; secret key can be specified if string shall be mapped to environment variables |
| Service Mesh | upstream services             | override upstream service references used by tenant instance to locate intra-service and platform dependencies via consul  | tenant POD has default service references that tenant service has to access via consul service mesh, this parameter allow to specify alternative values to make consul service names to tenant POD local ports   |

## Configure the Tenant Service

| Group  | name                          | purpose  | comments  |
|--------|-------------------------------|--|---|
|        |                               |  | allocated for service mesh.   |
| voice  | sip domain                    | provide sip communication domain for voice /sbc integration  | customize SIP URI used to deliver between tenant and core voice platform and / or SBC   |
| Tenant | service user                  | provide name of service user account   | this account is being used to manage all parts of tenant service provisioning and is created at bootstrap   |
| Tenant | Kubernetes secret usage flags | indicate usage of Kubernetes secrets to keep tenant service account password   |   |
| Tenant | service user password         | either direct value or references to a secret name and key that hold values, depends on relevant Kubernetes secret flag and Kubernetes secret env map flag | these parameters control how password for internal admin account is being accessed service. direct value is supported for testing purposes; secret name can be specified if password from external secret shall be mounted as a volume and password exposed as a file; secret key can be specified if password shall be mapped to environment variables |

### Scalability and redundancy parameters

| Group  | name            | purpose   | comment  |
|--------|-----------------|---|--|
| Tenant | node count      | manage number of nodes deployed per service instance  | by default service instance is being deployed with single node. if local high availability is required, additional nodes can be added to as service by value of this parameter and re-running deployment |
| Tenant | master location | manage location where master (writable) tenant node can be found for multi-regional deployments | by default tenant service is deployed as master, and expects to have writable local database backend accessible at its location, this parameter is required when   |

| Group | name | purpose | comment  |
|-------|------|---------|--|
|       |      |         | deploying additional regions of the same tenant at other locations and its content should match with the name of consul datacenter where master tenant nodes are deployed. it shall be set the same across all locations |

Extended parameters

| Group    | name                                   | purpose   | comment   |
|----------|--|---|---|
| postgres | main volume mounts for backend secrets | specify volumes and volume mounts for main tenant container that reference secrets to bound   | usage of volumes and volume mounts depends on backend parameters selected as part of backend provisioning. volumes and mounts need to be specified if backend secrets are provisioned to come from secrets mapped as file systems. Note: Tenant has only one set of volume and volumeMounts entries in parameters overrides, all volumes for all purposes must be concatenated into one entry |
| postgres | init volume mounts for backend secrets | specify volumes and volume mounts for init containers (which are started as part of tenant onboarding and require secrets to operate) | Similar to volumes/ mounts of main tenant container. Note: Tenant has only one set of initVolumes and initVolumeMounts entries in parameters overrides, all volumes for all purposes must be concatenated into one entry.   |
| consul   | main volume mounts for consul token    | specify volume mounts for main container to bound for consul access creds   | usage of volumes and volume mounts depends on backend parameters selected as part of consul provisioning. Volumes and mounts need to be specified if consul token is being provisioned from secret mapped as  |

| Group  | name                                | purpose   | comment   |
|--------|-------------------------------------|---|---|
|        |                                     |   | file systems. Note: Tenant has only one set of volume and volumeMounts entries in parameters overrides, all volumes for all purposes must be concatenated into one entry  |
| consul | init volume mounts for consul token | specify volume mounts for main container to bound for consul access creds | Similar to volumes/ mounts of main tenant container. Tenant has only one set of initVolumes and initVolumeMounts entries in parameters overrides, all volumes for all purposes must be concatenated into one entry. |
| redis  |                                     |   | Only main container needs to be bound   |
| kafka  |                                     |   | Only main container needs to be bound   |

## Configure Kubernetes

For information, see the following resources:

- Override Helm chart values
- Configure security
- Configure service-specific secrets
- Deploy Tenant Service

## Configure security

Before you deploy the Tenant Service, be sure to read Security Settings in the *Setting up Genesys Multicloud CX Private Edition* guide.

### Security context configuration

By default, the user and group IDs are set in the **values.yaml** file as 500:500:500, meaning the **genesys** user.

## Configure the Tenant Service

---

```
containerSecurityContext:
  # primaryApp containers' Security Context
  # ref: https://kubernetes.io/docs/tasks/configure-pod-container/security-context/#set-the-
security-context-for-a-container
  # Containers should run as genesys user and cannot use elevated permissions
  readOnlyRootFilesystem: false
  runAsNonRoot: true
  # base/centos7 uses uid=500
  runAsUser: 500
  runAsGroup: 500

securityContext:
  # ref: https://kubernetes.io/docs/tasks/configure-pod-container/security-context/#set-the-
security-context-for-a-pod
  # fsGroup is only valid at pod level
  fsGroup: 500
```

## Arbitrary UIDs in OpenShift

If you want to use arbitrary UIDs in your OpenShift deployment, you must override the **securityContext** settings in the **values.yaml** file, so that you do not define any specific IDs.

```
containerSecurityContext:
  # primaryApp containers' Security Context
  # ref: https://kubernetes.io/docs/tasks/configure-pod-container/security-context/#set-the-
security-context-for-a-container
  # Containers should run as genesys user and cannot use elevated permissions
  readOnlyRootFilesystem: false
  runAsNonRoot: true
  # base/centos7 uses uid=500
  runAsUser: null
  runAsGroup: 0

securityContext:
  # ref: https://kubernetes.io/docs/tasks/configure-pod-container/security-context/#set-the-
security-context-for-a-pod
  # fsGroup is only valid at pod level
  fsGroup: null
```

## Configure service-specific secrets

### Postgres database backend

Database backend can be allocated as shared or dedicated. The Tenant Service requires a separate database. Once deployed, secrets with details of Postgres backend parameters must be created as follows:

```
kubectl create secret generic dbserver -n voice --from-literal="dbserver="
kubectl create secret generic dbname -n voice --from-literal="dbname="
kubectl create secret generic dbuser -n voice --from-literal="dbuser="
kubectl create secret generic dbpassword -n voice --from-literal="dbpassword="
```

### Service account password

The default account that allows access to the Tenant Service config interface after initial deployment can be supplied a password through a secret. If not provided, **password** will be used as a default value (empty passwords are prohibited by the Tenant Service).



## Configure the Tenant Service

---

```
kubectl create secret generic svcuseraccount -n voice --from-literal="svcpassword="
```

### Genesys Authentication backend secrets

Genesys Web Services (GWS)/Genesys Authentication integration requires a client ID and token to allow the Tenant Service to register at GWS.

```
kubectl create secret generic gauthclientid -n voice --from-literal="clientid="
```

```
kubectl create secret generic gauthclientsecret -n voice --from-literal="clientsecret="
```

# Provision the Tenant Service

- Administrator

Learn how to provision the Tenant Service.

## **Related documentation:**

- 
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- 

## **RSS:**

- [For private edition](#)

There are no specific steps to provision Tenant Service itself. When you deploy Tenant Service or perform an upgrade, Tenant Service provisioning is done automatically.

After you complete the deployment of Tenant Service, use Agent Setup to provision the agents, DNSs, and other objects that describe your environment and to enable features in your contact center. For more information about Agent Setup and how to use it to provision and enable features and functionality in your contact center, see [Get started with Agent Setup](#).

When properly deployed, Tenant Service is immediately operational and ready to contain the provisioning information for every feature of the platform.

# Deploy Tenant Service

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Learn how to deploy Tenant Service into a private edition environment.

### Related documentation:

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### RSS:

- [For private edition](#)

## Assumptions

- The instructions on this page assume you are deploying the service in a service-specific namespace, named in accordance with the requirements on [Creating namespaces](#). If you are using a single namespace for all private edition services, replace the namespace element in the commands on this page with the name of your single namespace or project.
- Similarly, the configuration and environment setup instructions assume you need to create namespace-specific (in other words, service-specific) secrets. If you are using a single namespace for all private edition services, you might not need to create separate secrets for each service, depending on your credentials management requirements. However, if you do create service-specific secrets in a single namespace, be sure to avoid naming conflicts.

For an overview of solution-level deployment, see the [deployment tour](#).

## Deployment scenarios

More than one deployment scenario is supported for Tenant Service, including single region, redundant, and multi-region deployment as well as multi-Tenant deployment.

### Single region/location/cluster

You deploy Tenant resources in a single Kubernetes cluster within the same or separate namespace (project) with the Voice platform. If shared resources are being deployed across all Tenants, they must also be added to the same target namespace.

The Tenant deployment process creates resources using a *release name* parameter, specified when executing the Helm deployment step. When installed in a single namespace, you must make sure that the release name value is distinct across all Tenants and other deployments.

For example, you might specify the Helm release name in the format `t`. Optionally, if you want the Tenant service name to match other Voice services, you can prefix the Tenant name with `voice-` in the Helm release name. So, in this example, you would specify the release name as `voice-t` during Helm deployment. The value for `t` is the last four characters of the Tenant UUID that you configure in the **values.yaml** file. For more information about the identification parameters for the Tenant service, see Identification.

If you plan to use Prometheus monitoring or Fluent Bit logging framework for Tenant, you must execute the **tenant-monitor** module, as described in `tenant-monitor`. The module enables the following features:

- Prometheus PodMonitor definition for all tenant pods.
- Common Fluent Bit framework configuration for all tenant pods.

### Single Tenant: Basic deployment

Single-node deployment requires a single override file and one "tenant" module to deploy, with reference implementation described at Single service at one location.

To increase the number of nodes, adjust the **node count** parameter. For more information, see Scalability and redundancy parameters.

### Upgrade

For information about upgrading Tenant Service, see Upgrade, rollback, or uninstall the Tenant Service.

### Multiple Tenants at one location: Basic deployment

You can deploy additional Tenants at the same location using the following guidelines:

- Each Tenant Service must have a unique tenant uuid, shortid, and nickname.
- Each Tenant Service is deployed or upgraded and adjusted independently.

### Multiple regions/locations/clusters: Basic deployment

In multi-regional/multi-location deployments, one region/location is considered "master" (from the Tenant perspective) and includes the database backend with write capabilities. Other regions/locations have replicas of the database backend in read-only mode. A Tenant Service at each location may be deployed to have one of its nodes running as master (write access to provisioning data through the config API) or have all its nodes running only as replicas (read access to configuration).

Multi-regional deployments must be performed using the following steps (with prerequisites already satisfied at each region/location):

- If required, deploy the **tenant-monitor** module at a location planned as a Master Tenant node.
- Complete the basic deployment of a Tenant Service in the Master region, including specification of DR parameters for the Master, as per Scalability and redundancy parameters.
- Complete the deployment of the database backend with a replica of the Master database at the location(s) where the replica Tenant nodes are expected to run, including provisioning of access keys/

secrets to access the local replica.

- If required, deploy the **tenant-monitor** module at location(s) where replicas are expected to run.
- Complete the basic Tenant deployment for additional region(s) and specify DR parameters for the Master region (see Scalability and redundancy parameters).

The same customization scenarios described for Tenant nodes can be applied for each location independently.

### Upgrade

For information about upgrading Tenant Service, see Upgrade, rollback, or uninstall the Tenant Service.

## Deploy the service

This section provides reference commands with key parameters that are required to complete each deployment step.

On this page, the **tenant-values.yaml** file refers to the **values.yaml** file in the Tenant Helm chart. Likewise, the **tenant-monitor-values.yaml** file refers to the **values.yaml** file in the Tenant Monitor Helm chart.

### Prerequisites

- Read Before you begin for the full list of prerequisites required to deploy the Tenant Service.
- Mandatory parameter values for basic installation are:
  - tenant uuid (v4)
  - tenant nickname (becomes a Helm release name)
  - all backend parameters (along with all secrets that may be required based on these parameters)
- Before proceeding with the Tenant Service deployment, ensure you have completed procedures in the Configure security section of this guide.
- Ensure you have configured all required overrides in the Helm chart **values.yaml** files, including specifying the correct SIP domain. For information, see Override Helm chart values.

### Location-specific deployment steps

tenant-monitor

#### Monitoring/logging shared configuration and infrastructure deployment:

```
helm upgrade --install --force --wait --timeout 600s -n voice tenant-monitor https://tenant-monitor-$TENANT_MANIFEST_VERSION.tgz --username "$JFROG_USER" --password "$JFROG_PASSWORD"
```

To enable Prometheus monitoring, you can use the following overrides with tenant-monitor. Use the following changes in the **tenant-monitor-values.yaml** file to implement the changes:

```
prometheus:
  podMonitor:
    create: "true"
```

To enable Fluent Bit to send additional logs to stdout in json format (for selected Tenant functions, such as configuration audit) and/or raw format (such as from internal applications such as StatServer and URS), modify the following changes to upgrade tenant-monitor. Use the following changes in the **tenant-monitor-values.yaml** file to implement the changes.

```
fluent:
  enable: "true"
  rawlogs:
    stdout:
      enable: "true"
  jsonlogs:
    stdout:
      enable: "true"
```

To enable RWX Persistent Volume Claim (PVC) in tenant-monitor to store Tenant logs shared across all Tenant pods, make the following modifications to override values in the **tenant-monitor-values.yaml** file:

```
tenant:
  logging:
    volume:
      enabled: "true"
      createSC: "false"
      createpvClaim: "true"
      logClaim: "tenant-logs-pvc"
      logClaimSize: "5Gi"
      logStorageClass: ""
      Storageprovisioner: "TBD OC provisioner"
      parameters: {}
```

RWX PV is disabled by default; no overrides are required in the **tenant-monitor-values.yaml** file to disable it.

### Service-specific deployment steps: Single service at one location

A PostgreSQL database must be available for the Tenant Service before you begin the service deployment. For more information about the database requirements, see [Third-party prerequisites](#). In addition, after the PostgreSQL database is deployed and before you deploy the Tenant Service, you must configure secrets that contain values for certain PostgreSQL database parameters. To configure

the secrets, see Service-specific secrets.

Use the following template if you are deploying with the tenant Helm chart. A single-service deployment can be implemented with the following sample parameters in the **tenant-values.yaml** file:

```
##UUID 4 format ( Set a new UUID for new tenant deployment)
tenantid:

serviceAccount:
  create: true

images:
  imagePullSecrets: mycred
  registry:
  pullPolicy: Always
  tenant:
  tag:

pgdbInit:
  tag:

rcsInit:
  tag:
  enable: "true"

pulseInit:
  tag:
  enable: "true"
  pulseMode: "setup"

tenant:
  general:
    upstreamServices: voice-sipfe:9101,voice-config:9100,ixn-server-{{ $.Values.tenantid
  }}:7120,ixn-vqnode-{{ $.Values.tenantid }}:7122"
  pgdb:
    dbhost: "/opt/genesys/dbserver/dbserver"
    dbuser: "/opt/genesys/dbuser/dbuser"
    dbname: "/opt/genesys/dbname/dbname"
  securityContext:
    fsGroup: 0

  logging
  ...
  volumes:
    logPvc:
      enabled: "true"
      logClaimSize: "5Gi"
      accessModes: "ReadWriteOnce"
      logStorageClass: "" #Replace the storage class with a relevant storage class for
the cluster type

  mounts:
    log:
      - name: log
        mountPath: /opt/genesys/logs/volume
      - name: log
        mountPath: /logs
  secrets:
```



```
pgdb:
  pwd:
    secretName: "/opt/genesys/dbpassword/dbpassword"
    secretKey: "dbpassword"
  volumes: |
    - name: dbpassword
      secret:
        secretName: dbpassword
    - name: dbserver
      secret:
        secretName: dbserver
    - name: dbname
      secret:
        secretName: dbname
    - name: dbuser
      secret:
        secretName: dbuser
  mounts:
    - name: dbpassword
      readOnly: true
      mountPath: "/opt/genesys/dbpassword"
    - name: dbserver
      readOnly: true
      mountPath: "/opt/genesys/dbserver"
    - name: dbname
      readOnly: true
      mountPath: "/opt/genesys/dbname"
    - name: dbuser
      readOnly: true
      mountPath: "/opt/genesys/dbuser"

consul:
  acl:
    secretName: "/opt/genesys/consul-shared-secret/consul-consul-voice-token"
  volumes:
    - name: consul-shared-secret
      secret:
        secretName: consul-voice-token
  mounts:
    - name: consul-shared-secret
      readOnly: true
      mountPath: "/opt/genesys/consul-shared-secret"

redis:
  configPwd:
    secretName: "/opt/genesys/redis-config-secret/redis-config-state"
  volumes:
    - name: redis-config-secret
      secret:
        secretName: redis-config-token
  mounts:
    - name: redis-config-secret
      readOnly: true
      mountPath: "/opt/genesys/redis-config-secret"

streamPwd:
  secretName: "/opt/genesys/redis-tenant-secret/redis-tenant-stream"
  volumes:
    - name: redis-tenant-secret
      secret:
        secretName: redis-tenant-token
  mounts:
    - name: redis-tenant-secret
      readOnly: true
```

```
    mountPath: "/opt/genesys/redis-tenant-secret"

kafka:
  pwd:
    secretName: "/opt/genesys/kafka-secrets/kafka-secrets"
  volumes:
    - name: kafka-secrets
      secret:
        secretName: kafka-secrets-token
  mounts:
    - name: kafka-secrets
      mountPath: "/opt/genesys/kafka-secrets"
gws:
  user:
    secretName: "/opt/genesys/gauth-client-id/clientid"
  pwd:
    secretName: "/opt/genesys/gauth-client-token/clientsecret"
  volumes:
    - name: gauth-client-id
      secret:
        secretName: gauthclientid
    - name: gauth-client-token
      secret:
        secretName: gauthclientsecret
  mounts:
    - name: gauth-client-id
      readOnly: true
      mountPath: "/opt/genesys/gauth-client-id"
    - name: gauth-client-token
      readOnly: true
      mountPath: "/opt/genesys/gauth-client-token"

redis:
  isCluster: true
```

In addition, use the following deployment command:

```
helm upgrade --install --force --wait --timeout 600s -n voice -f ./tenant-node-values.yaml t \
https://tenant-.tgz \
--username "$JFROG_USER" --password "$JFROG_PASSWORD"
```

The preceding deployment will create a Tenant with the password of the service account set up explicitly and without enabling GWS integration. See Samples and references for values that allow you to reset the Tenant password upon deployment using a pre-generated value from the secret and to enable automated GWS integration.

## Samples and references

Enabling a service admin password (the secret should be created as described in the Service account password section):

```
...
tenant:
  serviceuser: "default"
  svcpwdSecretName: "/opt/genesys/service-user-account/svcpassword"
  ...
```

## Deploy Tenant Service

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```
volumes: |
  - name: service-user-account
    secret:
      secretName: svcuseraccount
  ...
volumeMounts: |
  - name: service-user-account
    readOnly: true
    mountPath: "/opt/genesys/service-user-account"
  ...
initVolumeMounts: |
  - name: service-user-account
    readOnly: true
    mountPath: "/opt/genesys/service-user-account"
  ...
```

To enable stdout log output for all Tenant components, make the following modifications to override values in the **tenant-values.yaml** file.

```
images
fbregistry: fluent/fluent-bit
...
fluentBit:
  enable: "true"
  name: json-sidecar
  tag: 1.8.x

fluentBitUrs:
  enable: "true"
  name: stdouturs-sidecar
  tag: 1.8.x

fluentBitSs:
  enable: "true"
  name: stdoutss-sidecar
  tag: 1.8.x

fluentBitOcs:
  enable: "true"
  name: stdoutocs-sidecar
  tag: 1.8.x

fluentBitCs:
  enable: "true"
  name: stdoutcs-sidecar
  tag: 1.8.x

tenant:
...
logging:
  volumes:
    log:
      - name: log
    jsonLog:
      - name: fluent-logs
        emptyDir: {}
    stdoutUrsLog:
      - name: fluenturs-logs
        emptyDir: {}
    stdoutOcsLog:
      - name: fluentocs-logs
        emptyDir: {}
    stdoutSsLog:
```

```
- name: fluentss-logs
  emptyDir: {}
stdoutCsLog:
- name: fluentcs-logs
  emptyDir: {}
fluentBconfigmap:
- configMap:
  defaultMode: 420
  name: tenants-fluent-bit-config
  name: tenants-fluent-bit-config
fluentBconfigmapCs:
- configMap:
  defaultMode: 420
  name: tenants-fluent-bit-config-cs
  name: tenants-fluent-bit-config-cs
fluentBconfigmapSs:
- configMap:
  defaultMode: 420
  name: tenants-fluent-bit-config-ss
  name: tenants-fluent-bit-config-ss
fluentBconfigmapOcs:
- configMap:
  defaultMode: 420
  name: tenants-fluent-bit-config-ocs
  name: tenants-fluent-bit-config-ocs
fluentBconfigmapUrs:
- configMap:
  defaultMode: 420
  name: tenants-fluent-bit-config-urs
  name: tenants-fluent-bit-config-urs
mounts:
log:
- name: log
  mountPath: /opt/genesys/logs/volume
- name: log
  mountPath: /logs
jsonLog:
- name: fluent-logs
  mountPath: "/opt/genesys/logs/JSON"
stdoutUrsLog:
- name: fluenturs-logs
  mountPath: "/opt/genesys/logs/URS"
stdoutSsLog:
- name: fluentss-logs
  mountPath: "/opt/genesys/logs/SS"
stdoutOcsLog:
- name: fluentocs-logs
  mountPath: "/opt/genesys/logs/OCS"
stdoutCsLog:
- name: fluentcs-logs
  mountPath: "/opt/genesys/logs/confserv"

fbJsonLog:
- name: fluent-logs
  mountPath: "/mnt/logs"
fbstdoutUrsLog:
- name: fluenturs-logs
  mountPath: "/mnt/logs"
fbstdoutSsLog:
- name: fluentss-logs
  mountPath: "/mnt/logs"
fbstdoutOcsLog:
- name: fluentocs-logs
```

## Deploy Tenant Service

---

```
    mountPath: "/mnt/logs"
  fbstdoutCsLog:
    - name: fluentcs-logs
      mountPath: "/mnt/logs"

  fluentBconfigmap:
    - mountPath: /fluent-bit/etc/
      name: tenants-fluent-bit-config
  fluentBconfigmapCs:
    - mountPath: /fluent-bit/etc/
      name: tenants-fluent-bit-config-cs
  fluentBconfigmapSs:
    - mountPath: /fluent-bit/etc/
      name: tenants-fluent-bit-config-ss
  fluentBconfigmapOcs:
    - mountPath: /fluent-bit/etc/
      name: tenants-fluent-bit-config-ocs
  fluentBconfigmapUrs:
    - mountPath: /fluent-bit/etc/
      name: tenants-fluent-bit-config-urs
```

You can deploy Persistent Volume/Persistent Volume Claim (PV/PVC) in two ways:

1. Enable ReadWriteOnce (RWO) from the tenant Helm chart, which maintains unique PVCs for each pod/replica from the same Tenant.
2. Enable ReadWriteMany (RWX) from the tenant-monitor Helm chart, which has multiple Tenant pods sharing the same PVC.

To enable RWO PV/PVC logging from individual Tenant pods in Statefulset, make the following modifications to override the values in the **tenant-values.yaml** file. RWO Persistent Volume is disabled by default.

```
logging
...
  volumes:
    logPvc:
      enabled: "true"
      logClaimSize: "5Gi"
      accessModes: "ReadWriteOnce"
      logStorageClass: "" #Replace the storage class that's relevant to the Openshift
Cluster
```

Enabling GWS integration (the secret should be created as described in the Genesys Authentication backend secrets section):

```
tenant:
...
gws:
  # enable: Enable GWS registration about tenant
  # tls: Enable/Disable Secure connection to GWS
  # authEndpoint: GWS auth end point
  # envEndpoint: GWS env end point for Registration
  # db: Pass DB information for GWS to connect to PSQl DB for read and store data
  enable: "true"
  tls: false
  authEndpoint: "gauth-auth.gauth.svc.cluster.local"
  envEndpoint: ""
  db:
    enable: "false"
    read: "false"
```

## Deploy Tenant Service

---

```
    init: "false"
      secrets:
.....
gws:
  enabled: true
  user:
    secretName: "/opt/genesys/gauth-client-id/clientid"
  pwd:
    secretName: "/opt/genesys/gauth-client-token/clientsecret"
  volumes:
    - name: gauth-client-id
      secret:
        secretName: gauthclientid
    - name: gauth-client-token
      secret:
        secretName: gauthclientsecret
  mounts:
    - name: gauth-client-id
      readOnly: true
      mountPath: "/opt/genesys/gauth-client-id"
    - name: gauth-client-token
      readOnly: true
      mountPath: "/opt/genesys/gauth-client-token"
```

To mount the PVC to store Tenant logs, make the following modifications to override the values in the **tenant-values.yaml** file:

```
.....
tenant:
  ..
  logging:
  mounts:
    log:
      - name: log
        mountPath: /opt/genesys/logs/volume
      - name: log
        mountPath: /logs
```

## Validate the deployment

*Content coming soon*

# Upgrade, roll back, or uninstall Tenant Service

## Contents

- **1 Supported upgrade strategies**
  - 1.1 Single region/location/cluster
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- **7 Uninstall**

Learn how to upgrade, roll back, or uninstall Tenant Service.

**Related documentation:**

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- 
- 
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**RSS:**

- [For private edition](#)

**Important**

The instructions on this page assume you have deployed the services in service-specific namespaces. If you are using a single namespace for all private edition services, replace the namespace element in the commands on this page with the name of your single namespace or project.

## Supported upgrade strategies

Tenant Service supports the following upgrade strategies:

| Service        | Upgrade Strategy | Notes |
|----------------|------------------|-------|
| Tenant Service | Rolling Update   |       |

For a conceptual overview of the upgrade strategies, refer to Upgrade strategies in the Setting up Genesys Multicloud CX Private Edition guide.

Tenant Service uses a rolling upgrade process. When multiple Tenant nodes are deployed, you can perform an upgrade to your existing deployment without causing a complete service outage. Tenant instances are rolled over, one by one, affecting only a portion of your agents each time.

Upgrading the master Tenant instance (node "0", which is responsible for write access to the provisioning data) causes a temporary degradation of functionality with no write access until instance "0" is restored.

### Single region/location/cluster

Genesys recommends performing a backup of the backend database for Tenant Service before upgrading.



To perform an upgrade, follow the deployment process – use the same `helm upgrade` command and the same mandatory parameters. Remember to update the Tenant image(s) and Helm charts version tags in the **values.yaml** file. The upgrade is performed automatically, one node at a time (if **node count** is > 1). When you upgrade the primary node, the Tenant configuration updates automatically.

For information about the deployment process, see [Deployment scenarios](#) and [Deploy the service](#).

### Multiple regions/locations/clusters

Genesys recommends performing a backup of the backend database for Tenant Service before you upgrade the master region.

To perform an upgrade, follow the deployment process – use the same `helm upgrade` command and the same mandatory parameters. Remember to update the Tenant image(s) and Helm charts version tags in the **values.yaml** file for every location. When you upgrade the master node in the master region, the Tenant configuration updates automatically.

For information about the deployment process, see [Deployment scenarios](#) and [Deploy the service](#).

## Backend upgrade

When you perform an upgrade to Tenant Service, Tenant Service provisioning is done automatically, as part of the `helm upgrade` step. There is no need to make any provisioning changes, unless noted in Release Notes for a particular version.

If you must perform an upgrade or maintenance to the database management system (DBMS) that Tenant Service uses to store its provisioning data, then the DBMS upgrade or maintenance can be performed in place, separate from Tenant Service. Perform the DBMS upgrade according to the vendor's instructions, making sure that:

- Tenant Service is disconnected from the backend during maintenance, and
- you specify the same parameters that were provisioned during the Tenant Service upgrade in order for Tenant Service to access the updated database.

Be aware that the Tenant Service is in a degraded state (no write access to provisioning) during the database upgrade.

If the database upgrade involves moving to a new DBMS instance with new parameters, then you trigger this as part of the Tenant Service upgrade. Both the new database and the new values for the database parameters (specified in the **values.yaml** file used for the `helm upgrade` step) must be ready and available before you trigger the Tenant Service upgrade.

If you're performing an upgrade or maintenance to the Redis backend that is shared with the core Voice platform, and you require a change to the Redis connection parameters, first scale Tenant Service down to a single instance (setting the `replicaCount` parameter in the **values.yaml** file), then perform the Redis backend maintenance or upgrade, and finally, trigger a restart of the Tenant Service. After that's complete, you can scale up Tenant Service again.

### Timing

A regular upgrade schedule is necessary to fit within the Genesys policy of supporting N-2 releases, but a particular release might warrant an earlier upgrade (for example, because of a critical security fix).

If the service you are upgrading requires a later version of any third-party services, upgrade the third-party service(s) before you upgrade the private edition service. For the latest supported versions of third-party services, see the Software requirements page in the suite-level guide.

### Scheduling considerations

Genesys recommends that you upgrade the services methodically and sequentially: Complete the upgrade for one service and verify that it upgraded successfully before proceeding to upgrade the next service. If necessary, roll back the upgrade and verify successful rollback.

### Monitoring

Monitor the upgrade process using standard Kubernetes and Helm metrics, as well as service-specific metrics that can identify failure or successful completion of the upgrade (see Observability in Tenant Service).

Genesys recommends that you create custom alerts for key indicators of failure — for example, an alert that a pod is in pending state for longer than a timeout suitable for your environment. Consider including an alert for the absence of metrics, which is a situation that can occur if the Docker image is not available. Note that Genesys does not provide support for custom alerts that you create in your environment.

### Preparatory steps

Ensure that your processes have been set up to enable easy rollback in case an upgrade leads to compatibility or other issues.

Each time you upgrade a service:

1. Review the release note to identify changes.
2. Ensure that the new package is available for you to deploy in your environment.
3. Ensure that your existing **-values.yaml** file is available and update it if required to implement changes.

## Rolling Update

### Rolling Update: Upgrade

Execute the following command to upgrade :

```
helm upgrade --install -f -values.yaml -n
```

**Tip:** If your review of Helm chart changes (see Preparatory Step 3) identifies that the only update you need to make to your existing **-values.yaml** file is to update the image version, you can pass the image tag as an argument by using the `--set` flag in the command:

```
helm upgrade --install -f -values.yaml --set .image.tag=
```

When you perform an upgrade to Tenant Service, Tenant Service provisioning is done automatically, as part of the `helm upgrade` step. There is no need to make any provisioning changes, unless noted in Release Notes for a particular version.

### Rolling Update: Verify the upgrade

Follow usual Kubernetes best practices to verify that the new service version is deployed. See the information about initial deployment for additional functional validation that the service has upgraded successfully.

### Rolling Update: Rollback

Execute the following command to roll back the upgrade to the previous version:

```
helm rollback
```

or, to roll back to an even earlier version:

```
helm rollback
```

Alternatively, you can re-install the previous package:

1. Revert the image version in the `.image.tag` parameter in the **-values.yaml** file. If applicable, also revert any configuration changes you implemented for the new release.
2. Execute the following command to roll back the upgrade:

```
helm upgrade --install -f -values.yaml
```

**Tip:** You can also directly pass the image tag as an argument by using the `--set` flag in the command:

```
helm upgrade --install -f -values.yaml --set .image.tag=
```

### Rolling Update: Verify the rollback

Verify the rollback in the same way that you verified the upgrade (see Rolling Update: Verify the upgrade).

## Uninstall

### Warning

Uninstalling a service removes all Kubernetes resources associated with that service. Genesys recommends that you contact Genesys Customer Care before uninstalling any private edition services, particularly in a production environment, to ensure that you understand the implications and to prevent unintended consequences arising from, say, unrecognized dependencies or purged data.

Execute the following command to uninstall :

```
helm uninstall -n
```

# Observability in Tenant Service

## Contents

- **1 Monitoring**
  - 1.1 Enable monitoring
  - 1.2 Configure metrics
- **2 Alerting**
  - 2.1 Configure alerts
- **3 Logging**

Learn about the logs, metrics, and alerts you should monitor for Tenant Service.

**Related documentation:**

- 
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- 
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**RSS:**

- [For private edition](#)

## Monitoring

Private edition services expose metrics that can be scraped by Prometheus, to support monitoring operations and alerting.

- As described on [Monitoring overview and approach](#), you can use a tool like Grafana to create dashboards that query the Prometheus metrics to visualize operational status.
- As described on [Customizing Alertmanager configuration](#), you can configure Alertmanager to send notifications to notification providers such as PagerDuty, to notify you when an alert is triggered because a metric has exceeded a defined threshold.

The services expose a number of Genesys-defined and third-party metrics. The metrics that are defined in third-party software used by private edition services are available for you to use as long as the third-party provider still supports them. For descriptions of available Tenant Service metrics, see:

- [Tenant Service metrics](#)

See also [System metrics](#).

Tenant Service supports various metrics in Prometheus format, exposed via a dedicated endpoint.

### Enable monitoring

Tenant Service deployment supports the creation of a Prometheus monitor resource in order to scrape the monitoring endpoint; this feature is disabled by default. For information about the parameters that enable a Prometheus monitoring resource, see [Monitoring and observability](#).

| Service        | CRD or annotations? | Port  | Endpoint/Selector | Metrics update interval |
|----------------|---------------------|-------|-------------------|-------------------------|
| Tenant Service | PodMonitor          | 15000 | /metrics          | 30 seconds              |

| Service | CRD or annotations? | Port | Endpoint/Selector       | Metrics update interval   |
|---------|---------------------|------|-------------------------|---|
|         |                     |      | (http://:15000/metrics) | (Applicable for any metric(s) that Tenant Service exposes. The update interval is not a property of the metric; it is a property of the optional PodMonitor that you can create.) |

## Configure metrics

The metrics that are exposed by the Tenant Service are available by default. No further configuration is required in order to define or expose these metrics. You cannot define your own custom metrics.

The Metrics pages linked to above show some of the metrics the Tenant Service exposes. You can also query Prometheus directly or via a dashboard to see all the metrics available from the Tenant Service.

## Alerting

Private edition services define a number of alerts based on Prometheus metrics thresholds.

### Important

You can use general third-party functionality to create rules to trigger alerts based on metrics values you specify. Genesys does not provide support for custom alerts that you create in your environment.

For descriptions of available Tenant Service alerts, see:

- Tenant Service alerts

## Configure alerts

Private edition services define a number of alerts by default (for Tenant Service, see the pages linked to above). No further configuration is required.

The alerts are defined as **PrometheusRule** objects in a **prometheus-rule.yaml** file in the Helm charts. As described above, Tenant Service does not support customizing the alerts or defining additional **PrometheusRule** objects to create alerts based on the service-provided metrics.

## Logging

The Tenant Service Helm Chart **values.yaml** files include the following configurable log volume options:

- Persistent Volume Claim (PVC) with RWX storage: This creates a shared RWX volume in tenant-monitor; this volume is then claimed across all pods of all tenants. For more information, see tenant-monitor and Samples and references.
- Persistent Volume (PV)/PVC with RWO storage for logging from individual Tenant pods: Mount the PVC from the Tenant StatefulSet volume claim template, instead of using tenant-monitor. For more information about Statefulsets, see Statefulsets in the Kubernetes documentation.  
For more information about the Tenant Service RWO PV/PVC log volume configuration, see tenant-monitor and Samples and references.
- Ephemeral volume (emptyDir) with a Fluent Bit logging sidecar that tails log files and sends them to standard output (stdout). The optional log forwarding to stdout is disabled by default. To enable the log forwarding option, see tenant-monitor.  
For general information about forwarding logs from internal components to stdout, see Sidecar processed logging in the *Genesys Multicloud CX Private Edition Operations guide*.



# Tenant Service metrics and alerts

## Contents

- [1 Metrics](#)
- [2 Alerts](#)

Find the metrics Tenant Service exposes and the alerts defined for Tenant Service.

**Related documentation:**

- 
- 
- 
- 
- 

**RSS:**

- [For private edition](#)

| Service        | CRD or annotations? | Port  | Endpoint/Selector                   | Metrics update interval   |
|----------------|---------------------|-------|-------------------------------------|---|
| Tenant Service | PodMonitor          | 15000 | /metrics<br>(http://:15000/metrics) | 30 seconds<br>(Applicable for any metric(s) that Tenant Service exposes. The update interval is not a property of the metric; it is a property of the optional PodMonitor that you can create.) |

See details about:

- [Tenant Service metrics](#)
- [Tenant Service alerts](#)

## Metrics

You can query Prometheus directly to see all the metrics that the Tenant Service exposes. The following metrics are likely to be particularly useful. Genesys does not commit to maintain other currently available Tenant Service metrics not documented on this page.

| Metric and description             | Metric details   | Indicator of |
|------------------------------------|------------------|--------------|
| <b>tenant_service_health_level</b> | <b>Unit:</b> N/A | Health       |

| Metric and description   | Metric details   | Indicator of |
|--|--|--------------|
| <p>Health level of the tenant node. Values are -1 (fail), 0 (starting), 1 (degraded), 2 (pass).</p> <p>When the value is 2, the tenant Tenant Service node is fully functional.</p> <p>When the value is 1, the tenant might have issues with some of its internal functions and external dependencies, but is still capable of providing some services. When a value of 1 is reported, additional investigation is needed, via tenant logs, to troubleshoot and recover.</p> <p>A value of 0 or -1 indicates an inoperable node, either pending start or it has failed.</p> | <p><b>Type:</b> gauge<br/> <b>Label:</b><br/> <b>Sample value:</b> 2</p> |              |

## Alerts

If you enable a Tenant PodMonitor to expose the Tenant health metric, then you can create a basic alert rule for the Tenant Service using a template like the following:

```
apiVersion: monitoring.coreos.com/v1
kind: PrometheusRule
metadata:
  name: "custom-tenant-alert-rules"
spec:
  - alert: HealthFailFor5min
    expr: (max by (tenant) (tenant_service_health_level{namespace="",pod=~""}))
```

Enter your values where there are placeholders in the preceding template; the placeholders are:

- 
- 

Values are based on how you deployed tenant(s); in other words, what you used for override values.

No alerts are defined for Tenant Service.