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Voice Microservices Private Edition Guide

Architecture

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Introduction

The following diagram shows an example of the high-level architecture for Voice Microservices.

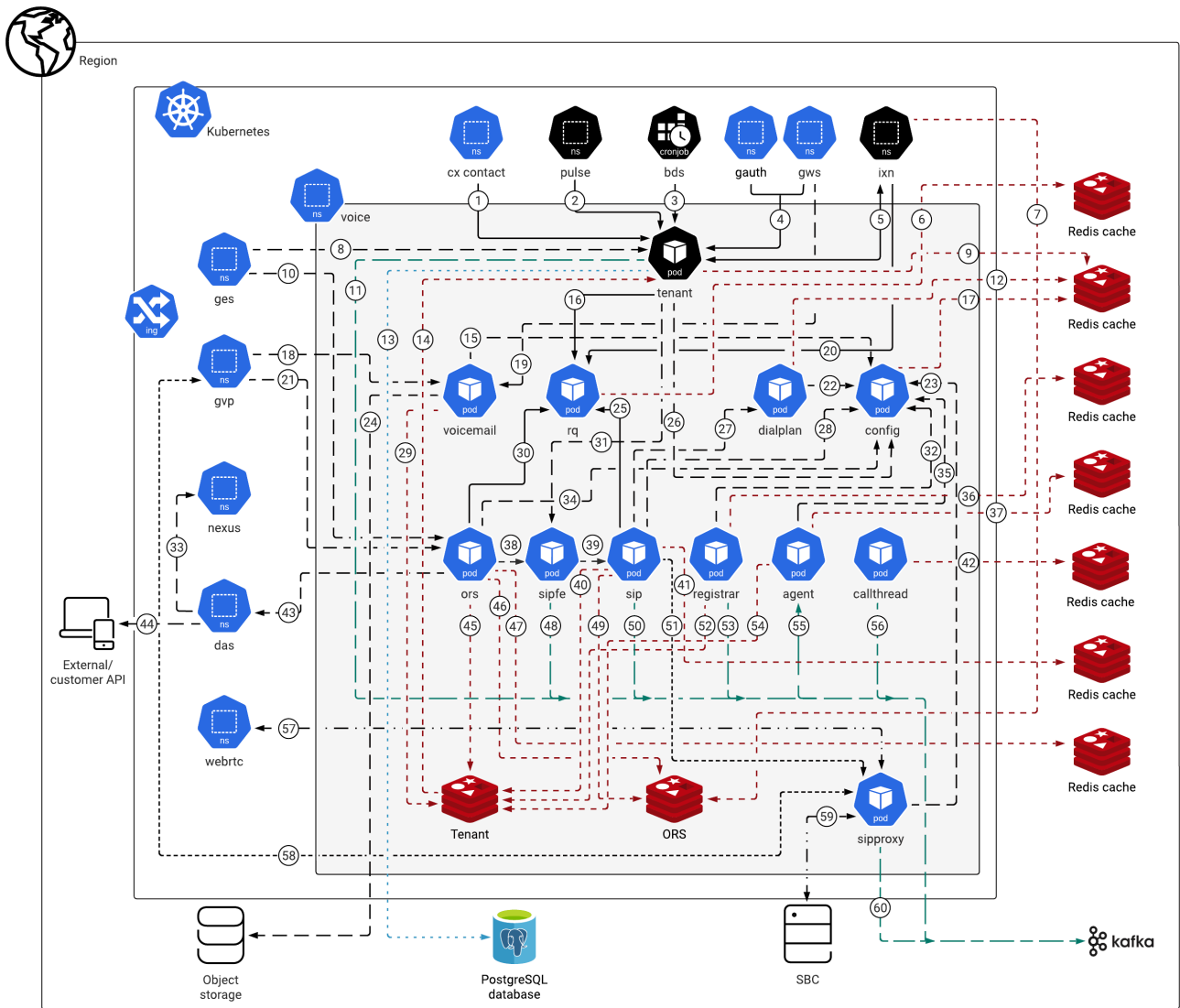
For information about voice connectivity network details, see [Voice connectivity](#).

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 as a service in the network.



Connection type	
TCP	—————
SIP/TCP	- - - - -
SIP/UDP
HTTP/HTTPS	- - - - -
Kafka	- - - - -
Redis	- - - - -
Postgres

Tenant type	
Multi-tenant	
Single tenant	

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 as a service in the network. *Egress* means the service is the source, and *Ingress* means the 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	CX Contact	Tenant Service	TCP	5050, 8888	Intra-cluster	Outbound campaigns provisioning and control performed by CX contact.
2	Genesys Pulse	Tenant Service	TCP	8888, 8000	Intra-cluster	Pulse obtains provisioning and real-time reporting data.
3	Billing Data Service	Tenant Service	TCP	8888	Intra-cluster	BDS reads the Tenant resource inventory.
4	Genesys Web Services and Applications	Tenant Service	TCP	8888, 8000, 2060	Intra-cluster	Provisioning and voice control/observability requests to Tenant resources through GWS.
5	Interaction Server	Tenant Service	TCP	8888, 2060	Intra-cluster	Multimedia provisioning access and interaction status requests.
6	Voice RQ Service	Redis	Redis	6379*	Egress	Call-related Voice Microservices events for in-memory cache.
7	Interaction Server	Redis	Redis	6379	Egress	Interaction events.
8	Genesys Engagement	Tenant Service	HTTP	5080	Intra-cluster	Routing requests/

Connection	Source	Destination	Protocol	Port	Classification	Data that travels on this connection
	Service					events.
9	Tenant Service	Redis	Redis	6379*	Egress	Tenant configuration for in-memory cache.
10	Genesys Engagement Service	ORS	HTTP	9098	Intra-cluster	GES starts a session in ORS when it is time to put the callback in the queue for an agent. To initiate the ORS session, GES stores an entry in the Voice Microservice's Redis (using port 6379), rather than communicating directly with ORS. Once the ORS session is started, GES regularly queries the ORS session (using port 9098) for diagnostics information about the callback. In addition, GES might send events to control the ORS session; for example, when the callback is cancelled through the API or UI.

Connection	Source	Destination	Protocol	Port	Classification	Data that travels on this connection
11	Tenant Service	Kafka	Kafka	9092/9093*	Egress	Outbound data for reporting.
12	Dial Plan Service	Redis	Redis	6379*	Egress	Configuration and registration details for in-memory cache.
13	Tenant Service	PostgreSQL	Postgres	5432	Egress	Configuration data for persistent storage.
14	Redis 6.x	Tenant Service	Redis	6379*	Egress	Call and routing Voice Microservices events for the message bus.
15	Voicemail	Config Service	HTTP	9100	Intra-cluster	Fetches configuration data.
16	Tenant Service	Voice RQ Service	TCP	12100	Intra-cluster	Exchange of routing data for voice.
17	Config Service	Redis	Redis	6379*	Egress	In-memory cache for the Config Service.
18	Genesys Voice Platform	Voicemail	HTTP	8081	Intra-cluster	Communication to provide voicemail IVR pages.
19	Genesys Web Services and Applications	Voicemail	HTTP	8081	Intra-cluster	Voicemail uses GWS for user authentication. Agent Setup uses Voicemail service for Admin API functionalities. WWE uses Voicemail service for User API functionalities.

Connection	Source	Destination	Protocol	Port	Classification	Data that travels on this connection
20	Interaction Server	Voice RQ Service	TCP	12100	Intra-cluster	Exchange of routing data for digital.
21	Genesys Voice Platform	ORS	HTTP	11200	Intra-cluster	Provides call data to GVP.
22	Dial Plan Service	Config Service	HTTP	9100	Intra-cluster	Exchange of tenant information.
23	Voice SIP Proxy Service	Config Service	HTTP	9100	Intra-cluster	Exchange of tenant information.
24	Voicemail	Object storage	HTTP	N/A	Intra-cluster	Mailbox configurations and all the voicemail messages are saved in Azure Blob Storage/AWS S3 bucket. HTTP connection protocol is used without any specific port, whereas secret keys are used for establishing the connections.
25	Voice SIP Cluster Service	Voice RQ Service	TCP	12100	Intra-cluster	Exchange of voice call details.
26	Tenant Service	Config Service	HTTP	9100	Intra-cluster	Exchange of tenant information.
27	Voice SIP Cluster Service	Dial Plan Service	HTTP	8800	Intra-cluster	Provides routing instructions.
28	Voice SIP Cluster Service	Config Service	HTTP	9100	Intra-cluster	Exchange of tenant information.
29	Voicemail	Redis	Redis	6379*	Egress	In-memory cache for voicemail

Connection	Source	Destination	Protocol	Port	Classification	Data that travels on this connection
						data.
30	ORS	Voice RQ Service	TCP	12100	Intra-cluster	Fetches call and routing data.
31	Tenant Service	FrontEnd Service	HTTP	9101	Intra-cluster	Tenant Service provides Voice Microservices requests to the FrontEnd Service.
32	Voice Registrar Service	Config Service	HTTP	9100	Intra-cluster	Exchanges tenant information and stores agent registration.
33	Designer Application Server	Digital Channels	HTTP	80	Intra-cluster	Designer Applications use the ORS method to communicate with Nexus.
34	ORS	Config Service	HTTP	9100	Intra-cluster	ORS reads Route Points (RP) and Enhanced Routing Script (ERS) objects. ORS also implements keep-alive messages to detect if the connection to Config Service is alive.
35	Agent State Service	Config Service	HTTP	9100	Intra-cluster	Fetching of tenant, DN, person (agent) information, storing agent login/logout.
36	Voice	Redis	Redis	6379*	Egress	In-memory

Connection	Source	Destination	Protocol	Port	Classification	Data that travels on this connection
	Registrar Service					cache for SIP registration.
37	Agent State Service	Redis	Redis	6379*	Egress	In-memory cache for agent activities.
38	ORS	FrontEnd Service	HTTP	9101	Intra-cluster	ORS requests are sent to the FrontEnd Service.
39	FrontEnd Service	Voice SIP Cluster Service	HTTP	11300	Intra-cluster	FrontEnd Service sends requests to SIP Server (SIP Cluster Service).
40	Voice SIP Cluster Service	Redis	Redis	6379*	Egress	Streaming of Voice Microservices events.
41	Voice SIP Cluster Service	Redis	Redis	6379*	Egress	In-memory cache for SIP Cluster Service.
42	Call State Service	Redis	Redis	6379*	Egress	In-memory cache for the Call State Service.
43	ORS	Designer Application Server	HTTP	80	Intra-cluster	ORS fetches Designer Applications (routing strategy).
44	Designer Application Server	External/customer	HTTPS	443	Egress	External/customer API requests. Designer Applications use the ORS method for external requests.
45	ORS	Redis	Redis	6379*	Egress	Streams routing events.

Connection	Source	Destination	Protocol	Port	Classification	Data that travels on this connection
46	ORS	Redis	Redis	6379*	Egress	Reads new calls and interactions in the system.
47	ORS	Redis	Redis	6379*	Egress	In-memory cache.
48	FrontEnd Service	Kafka	Kafka	9092/9093*	Egress	Provides data to reporting.
49	Voice SIP Cluster Service	Redis	Redis	6379*	Egress	Streams new call events.
50	Voice SIP Cluster Service	Kafka	Kafka	9092/9093*	Egress	Provides data to reporting.
51	Voice SIP Cluster Service	Voice SIP Proxy Service	SIP/TCP	5080	Intra-cluster	Exchange of SIP signals.
52	Voice Registrar Service	Redis	Redis	6379*	Egress	Streams DN registration details.
53	Voice Registrar Service	Kafka	Kafka	9092/9093*	Egress	Provides data to reporting.
54	Agent State Service	Redis	Redis	6379*	Egress	Streams agent-related events.
55	Kafka 2.x	Agent State Service	Kafka	9092/9093*	Egress	Provides data to reporting.
56	Call State Service	Kafka	Kafka	9092/9093*	Egress	Provides data to reporting.
57	Voice SIP Proxy Service	WebRTC Media Service	SIP/UDP	5070	Intra-cluster	Exchange of SIP signals.
58	Genesys Voice Platform	Voice SIP Proxy Service	SIP/TCP	5080	Intra-cluster	Exchange of SIP signals.
59	Voice SIP Proxy Service	Session Border Controller	SIP/TCP	Not known (configured as trunk DN level in customer)	Intra-cluster	Exchange of SIP signals.

Connection	Source	Destination	Protocol	Port	Classification	Data that travels on this connection
				CME)		
60	Voice SIP Proxy Service	Kafka	Kafka	9092/9093*	Egress	Provides data to reporting.

* Configurable ports