Enterprise Workload Management Solution Blueprint

Reference Architecture

Authors: Cédric Bourgeois;Stefano Boveri;Graeme Provan;Gordon Bell

Version: 2.10

Status: DRAFT

Published: 8/10/2018

ooo GENESYS

Table of Contents

Table of Figures

Table of Tables

Revision History

Rev	Date Published	Author	Reason for Revision
1.1	05/16/2016	David Curley	Initial release (Based on 1.0 published in by Terry Love and David Curley on 1/09/2015)
1.2	05/17/2016	Don Huovinen	Initial review with light edits
1.3	05/31/2016	David Curley	Reworked following comments
1.4	06/22/2016	David Curley	Reworked following comments
1.5	07/13/2016	Cédric Bourgeois	Include feedback from second reviews
1.6	07/20/2016	Don Huovinen	Addion of Common Components Summary and minor edits
1.7	09/01/2016	Don Huovinen	Updated disclosure language.
2.0	21/08/2017	Cédric Bourgeois	Different Schema updates
2.1	28/08/2017	Cédric Bourgeois	Refactoring of the deployment and sizing
2.2	31/08/2017	Cédric Bourgeois	Spelling check
2.3	24/10/2017	Cédric Bourgeois	Comments from Stephane; Vasu and Peter Integrated
2.4	23/05/2018	Cédric Bourgeois	First draft with iWD 9.0
2.5	05/06/2018	Cédric Bourgeois	Modification on iWD9.0 part based on input for Ilya Dergalin
2.6	21/06/2018	Cédric Bourgeois	Merging with Gordon Bell template + comments from Graeme Provan, Gordon Bell and Bruce Hunter
2.7	29/06/2018	Cédric Bourgeois	Re introduce components part that disappeared in copy past
2.8	11/7/2018	Cédric Bourgeois	Modifications linked to Stefano Boveri comments
2.9	3/08/2018	Cédric Bourgeois	Final version for approval
2.10	17/10/2018	Cédric Bourgeois	Include comment from Graeme and Gordon

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS DOCUMENT ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS DOCUMENT ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THIS DOCUMENTATION IS BEING PROVIDED GRATUITOUSLY AND, THEREFORE GENESYS SHALL NOT BE LIABLE UNDER ANY THEORY FOR ANY DAMAGES SUFFERED BY LICENSEE OR ANY USER OF THE GENESYS DOCUMENTATION. UNDER NO CIRCUMSTANCES, INCLUDING NEGLIGENCE, SHALL GENESYS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR RELATING TO THIS DOCUMENTATION. SOME JURISDICTIONS DO NOT ALLOW THE LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THIS LIMITATION MAY NOT APPLY TO YOU.

1   Introduction

The purpose of this Architecture Blueprint is to document the Workload Management technical solution. It provides a prescriptive list of components (both Genesys and 3rd party) that should be included in the solution. It also provides guidance for implementing and deploying the solution including sizing and configuration as well as addressing several system concerns such as security, high availability, disaster recovery and serviceability.

In this version of the document, we also introduced the modifications related to version 9 of intelligent workload distribution (iWD), the main component of the workload management solution.

As version 9 of iWD is still under PM approval, we will present the modifications at the end of each section, when applicable, in blue framed notes, like the following:

> IWD9.0 Notes

1.1   Document Overview

The document contains the following sections:

- 1: Introduction
- 2: Definitions and Acronyms
- 3: Solution Architecture
- 4: Deployement View
- 5: Interaction View
- 6: Implementation View

1.2   Intended Audience

Describing system and solution architectures can be difficult as there are multiple audiences each with different expectations. This document is intended for multiple audiences with various chapters being more interesting to some readers versus others.

The Overall Architecture and Deployment View are likely meaningful to most audiences. However the Interaction View and the Implementation View may be of more interest to those configuring the network and components.

2   Definitions, Acronyms, and Document Standards

2.1   Definitions

This document uses various abbreviations and acronyms that are commonly used in Genesys product documentation and the telecommunications and contact center industries. The following table defines terms that will be referenced subsequently in this document. A complete glossary of terms and acronyms can be found at: http://docs.genesys.com/Glossary.

2.2   Glossary

ADDP	Advanced Disconnect Detection Protocol
BCMS	Business Context Management Services
BO	Back Office
BPM	Bussiness process managment
CEP	Customer Experience Platform
CME	Configuration Management Environment
CPU	Computer processor unit
CRM	Customer Relationship Managment
CS	Config Server
CSP	Config Server Proxy
CTI	Computer-telephony integration, the adding of computer intelligence to monitoring and control of telephone calls
CX	Customer eXperience
DB	Database
DBMS	Database Management System
DCM	Dynamic Case Managment
DHCP	Dynamic Host Configuration Protocol
DN	Directory number
DNS	Domain Name System
ERP	Enterporise resource planning
ESP	External Service Provider
ETL	Extract Transfer and Load
WM	Workload Management

FTP	File Transfer Protocol
GA	Genesys Administrator
GAX	Genesys Administrator Extension
GIM	Genesys InfoMart
GI2	Genesys Interactive Insights
GRAT	Genesys Rules Authoring Tool
GTL	Global Task List
GUI	Graphical User Interface
GVP	Genesys Voice Platform
GWS	Genesys Web Services
HA	High Availability
HTTP	Hypertext Transfer Protocol
ICON	Interaction Concentrator
IP	Internet Protocol
IRD	Interaction Routing Designer
IVR	Interactive Voice Response
IWS	Interaction Workspace
IVR	interactive voice response
IRD	Interaction Routing Designer
IXN	Interaction
iWDBP	iWD Business Process
JMS	Java Message Service
LAN	Local Area Network
LCA	Local Control Agent
LM	License Manager
OEM	Original Equipment Manufacturer
ORS	Orchestration Server
OS	Operating System
RDBMS	Relational Database Management System

REST(ful)	Representational state transfer
SCS	Solution Control Server
SCXML	State Chart XML: State Machine Notation for Control Abstraction
SOAP	Service Oriented Application protocol
SQL	Structured Query Language
TLib	TServer Library
UCS	Universal Contact Service
UI	User Interface
VM	Virtual Machine
WM	Workload Managment
WFM	Work Force Managment
XML	Extended marked language

2.3   Document Conventions

The following documentation and naming conventions are used throughout the document:
- Code and `configuration property names & values` will appear in `console font`.
- References to other documents are bracketed ([]).

The following documentation and naming conventions are used throughout the document:
- Code and configuration property names & values will appear in `console font`.
- References to other documents are bracketed ([]).
- Blue framed notes are related to modification introduced in iWD9.0

IWD9.0 Notes

3   Solution Architecture

Workload Management (Workload Management) is a suite of solutions that can be used together to increase efficiency, enhance customer experience and reduce costs in the back-office operations of enterprises and organizations.

Genesys intelligent Workload Distribution (iWD) is a business application that dynamically prioritizes the distribution of work tasks to the people best suited to handle them.

Built on the powerful and proven Genesys Customer Experience Platform (CEP) platform, Genesys iWD provides out-of-the-box functionality designed specifically for business users that integrate resources, contact centre capabilities and internal business processes.

It works in concert with existing enterprise software applications such as ERP, BPM and CRM, as well as home-grown legacy systems, to create a single, global task list which is sorted based on business value.

Genesys iWD quickly delivers business benefits as well as shorter time to market, lower project risk, and increased the level of functionality.

Workspace Desktop Edition (formerly Interaction Workspace) is a smart-client application that provides agents and knowledge workers with non-intrusive access to the tasks, information, processes, and applications they need to perform their jobs more efficiently and to ensure increased customer satisfaction. Workspace Web Edition is the sister of Workspace Desktop Edition and is enabled under the same commercial licensing as Workspace Desktop edition.

Workload Management Suite of Solutions

Genesys Intelligent Workload Distribution – dynamic work-item delivery engine. Providing the ability to capture tasks, calculate and prioritize tasks, distribute the task, report on task activities and manage backlog of tasks.

Genesys Workforce Management – Workforce planning, scheduling and forecasting. Uses the information provided by iWD to schedule back office resources.

Genesys Workspace – agent desktop application supporting all media types

Genesys Reporting – ICON, Info Mart, Interactive Insights (Interactive Insights is in the process of being replaced by Customer Experience Insights or CX Insights)

This enables:

- Exceptional Customer Care
- Decrease customer churn
- Increase service order completion speed and quality

Streamlined Customer Service Interactions

• Avoid customer service bottlenecks

Increased Control and Agility

• Improve operational efficiencies

• Faster time-to-market

3.1   Functional View

The Genesys Workload Management Solution is constructed of the following components and functional blocks.

The four blocks are:

Workload Distribution

- Managed delivery of work-streams, to increase flexibility
- Optimization of business activities, increasing efficiency
- Ensuring priority of activities by business value, increasing revenues
- Enforcing SLAs, Customer Promises, and increasing customer satisfaction

Workforce Management

- Workforce aligned to Business Goals, to ensure performance
- Accurately planning multiple types of work, increasing efficiency
- Use of precise information to forecast future needs, thus reducing costs
- Accommodate workforce preferences, delivering fair working practices

Intelligent Insights

- Real-time visibility into activities and people, enabling rapid decisions
- Informed management, reducing time lags and guesswork
- Adherence visibility through metrics and reports, increasing efficiency
- Exposing hidden trends and root cause analysis, increasing operational efficiency

Workspace

- Intuitive, easy to use, and dynamic user interface to maximize efficiency
- Minimize dropped interactions improves customer satisfaction
- Reduce error and improve productivity for text based communication
- Allows users to work in both push or pull modes

This blueprint will cover the Workload Distribution part and specifically the intelligence Workload Distribution (iWD) product. the other components listed above are decribed in other blueprints. (common components blueprint; WFM Blueprint).

Figure 1: Workload Management Functional Diagram

3.1.1 Business scenarios

Business scenarios can be described according to the industry vertical. At a high level, while many organizations have spent millions on workflow systems like BPM, CRM and case management, a gap exists where work needs to be performed by employees.

This area: where employees process, distribute, prioritize and manage work (e.g. add value for mortgages, billing exceptions, complaints and etc.) is a largely manual process today.

In addition, visibility into the 'back-office' activities on a day to day basis or historical basis is often missing, leaving operations managers in the dark about the real efficiency of their staff.

In many organizations Workforce Planning is not possible as the information needed to plan, schedule and forecast staffing requirements is not available.

Genesys Workload Management addresses these issues, by providing the ability to classify, prioritize and deliver work items to back office staff. It also enables the management of the enterprise workforce giving a resource planning and capacity capabilities to managers.

In addition to this, the operations management can benefit from real-time information on workforce and work item processing through configurable dashboards. These dashboards can be provided for individual workers, team leaders, managers and senior management. Reports of how historically the back office performed, including trending and root cause analysis, are also provided.

Some of the typical Business scenarios are described by industry vertical as:

Insurance

- Claims Processing
- Underwriting
- Risk Mitigation
- Policy Servicing

Telco/Operator/Cable provider

- Service Order Fallout
- Service Assurance
- Billing Assurance
- Customer Complaints
- New Sales/Upgrades

Banking/Financial Services

- Payment Processing
- Fraud
- Customer Banking
- Mortgage / Loans
- Investments

Government

- Tax Collections
- Entitlements
- Legal operations
- Welfare & Health Benefit Payments

Energy

- Service Order Fallout
- Service Assurance
- Billing Assurance
- Customer Complaints

Lead Generation

- Lead Management / Revenue
- Student Lifecycle
- Admissions
  Onboarding

3.1.2 Smart Use-Cases

Genesys has developed, pre build Deployment packages for the most successful Business scenarios that have been multiple time deployed across the globe. These Business scenarios have been scoped and translated in functional descriptions that have been documented as Smart Use Cases. These Smart Use cases are the generalization of the most successful usages of the different Genesys solutions, where proven benefits (CX and ROI) have been Identified by our customers. Smart Use cases can be seen as Best practices solution implementation.

Associate to these Use cases, professional service has developed pre build deployment packages that reduce the Implementation risks of these Use Cases to a zero figure.

For the Workload Management Solution, the following Use-cases have been packaged:

1. BO01 Genesys Task Import

2. BO02 Genesys Task Distribution

3. BO03 Genesys Task Distribution - Workgroup

4. BO04 Genesys Personalized Task Distribution

5. BO05/SL05 Genesys Lead Engagement

Further information on these Use-cases can be found on the Genie Portal and on docs.genesys.com

BO01 Genesys Task Import is designed as a standalone use case. The B002 Genesys Task distribution is a baseline use-case for the base capabilities and then BO03 – SL05 all build capabilities and/or sophistication onto BO02 Genesys Task Distribution.

3.2   Logical Architecture Model

The following is a logical model of the Workload Management architecture.
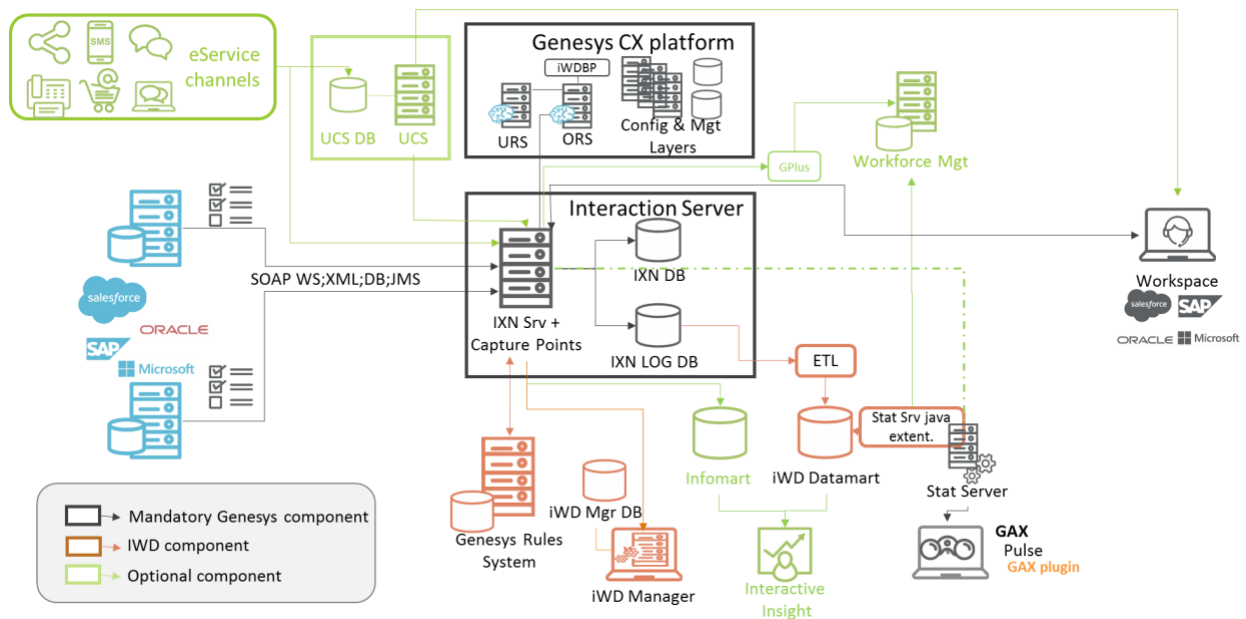
Figure 2: Workload Management Solution Logical Model

iWD9.0 introduced 2 major modifications in the Workload Management architecture which are:

1) History Node

2) iWD Manager

History Node

History node is replacing the iXN LOG DB component.. iWD History Node information are accessible by iWD Manager(GTL) and iWD Runtime Node (Datamart) using a new set of REST API, that could be accessible also from custom application

In order to improve the scalability of the solution, Interaction server is now providing event elements to the history node through a JMS message broker (ActiveMQ currently, but other JMS brokers will also be supported in the future). History node consumes these JMS messages and filters only the ones that are relevant for the reporting. History uses the new WS REST APIs of Datamart and iWD manager to communicate the required information to these components.
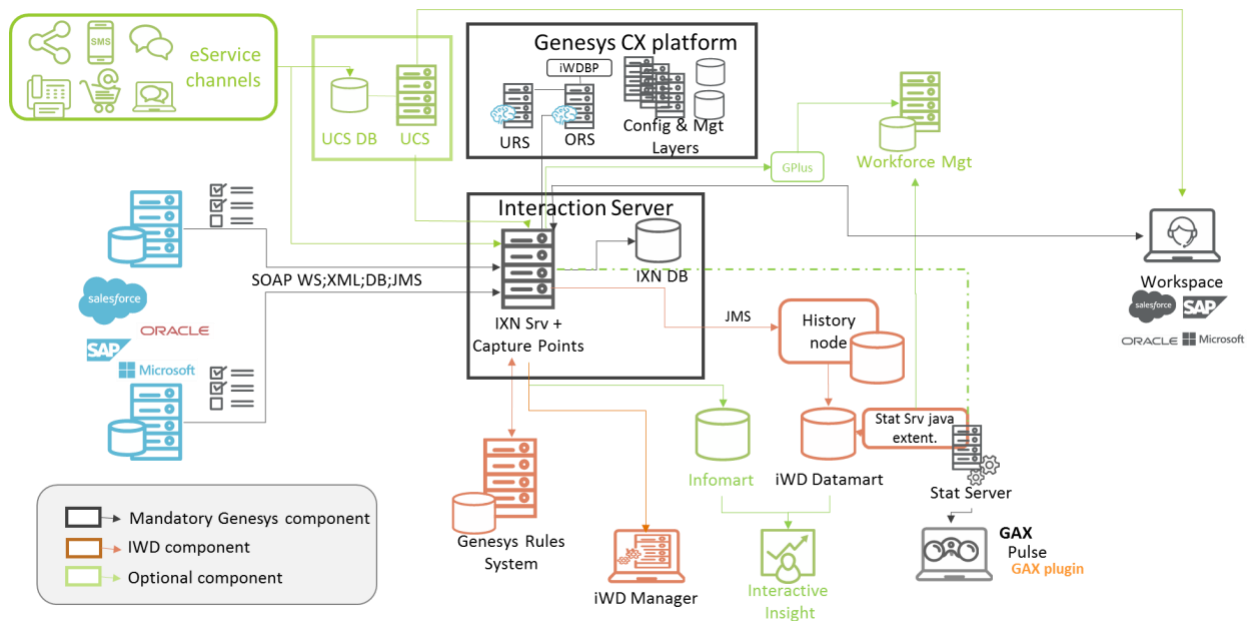
iWD Manager

The iWD manager UI has been completely redesigned and is now based on a underlying Web Services Restful API.

3.2.1   Capture Points

iWD Capture Points are logical interfaces to source systems with the necessary connection information and other parameters to connect and retrieve/accept tasks. For example, a Web Service Capture Adapter might enable two capture points – one to a CRM system like Siebel, and another to a document management system like IBM FileNet. Each Capture Point may be specific to a business process, such as orders, refunds, or returns. Alternatively, a Capture Point can accept tasks for a number of business processes, in which case task classification rules are used to assign the task to the right iWD business process, based on task attributes. In keeping with the configuration nature of iWD, there is no coding required to configure and activate a Capture Point.

Genesys iWD works in concert with existing enterprise software applications such as ERP, BPM, DCM, and CRM to create a single, global task list, continually prioritized and sorted based on business value. With a global task list the enterprise can ensure the right resources, regardless of location, are proactively receiving the most critical or highest value tasks, regardless of media-type or system, at the right time and right location.

Some capture points are bi-directional, ensuring that changes in source system are immediately updated in iWD, and vice-versa, where changes in iWD (for example, an update to a task's priority, or the completion of a task) are communicated back to the source system.

iWD Capture Points include:

- Java Message Service (JMS) capture point
- Web Service capture point
- Database capture point
- File (XML) capture point
- Spreadsheet capture Point via iWD Web

3.3   Components view

The Component View describes the higher-level modules that make up the solution. The following diagram depicts the components required as part of the solution.
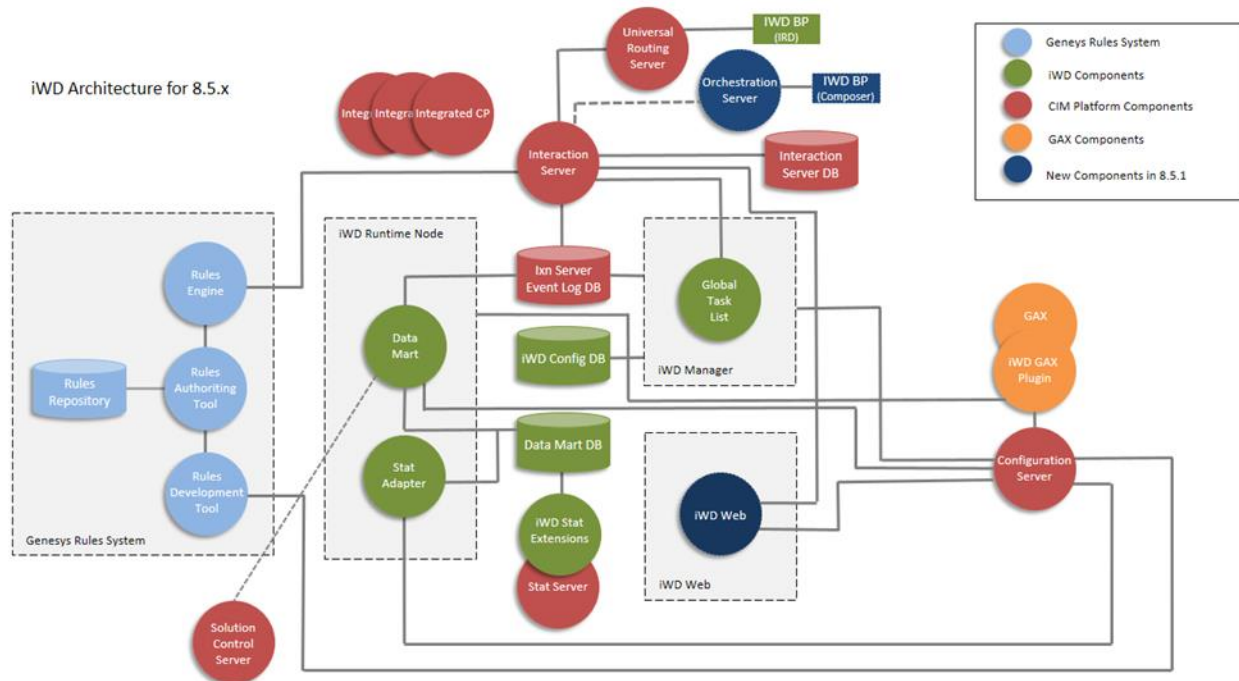
Figure 3: iWD Solution Components of Workload Management Solution

The iWD Solution is made up of the following major building blocks:

- iWD Manager—A Java web application that runs on a web application server.

- iWD Runtime —A standalone Java application in release 8.5.0, This includes the following iWD Services:
    - iWD datamart
    - iWD Stat adaptor

- Genesys Rules System—A set of software components that are used for rule template development, rules authoring, and rule evaluation. The Rules Engine and Rules Authoring Tool are web applications that run on a web application server. The Rule Development Tool is an Eclipse plug-in.
- Genesys CEP Platform—Core Genesys components that provide interaction management (Interaction Server), routing (Universal Routing Server), employee presence and employee and queue-based real-time statistics (Stat Server), and configuration and management services (Genesys Management Framework, including Genesys Administrator Extension (GAX), Configuration Server and Message Server).

For iWD9.0 the architecture is the following.

iWD Architecture for 9.x
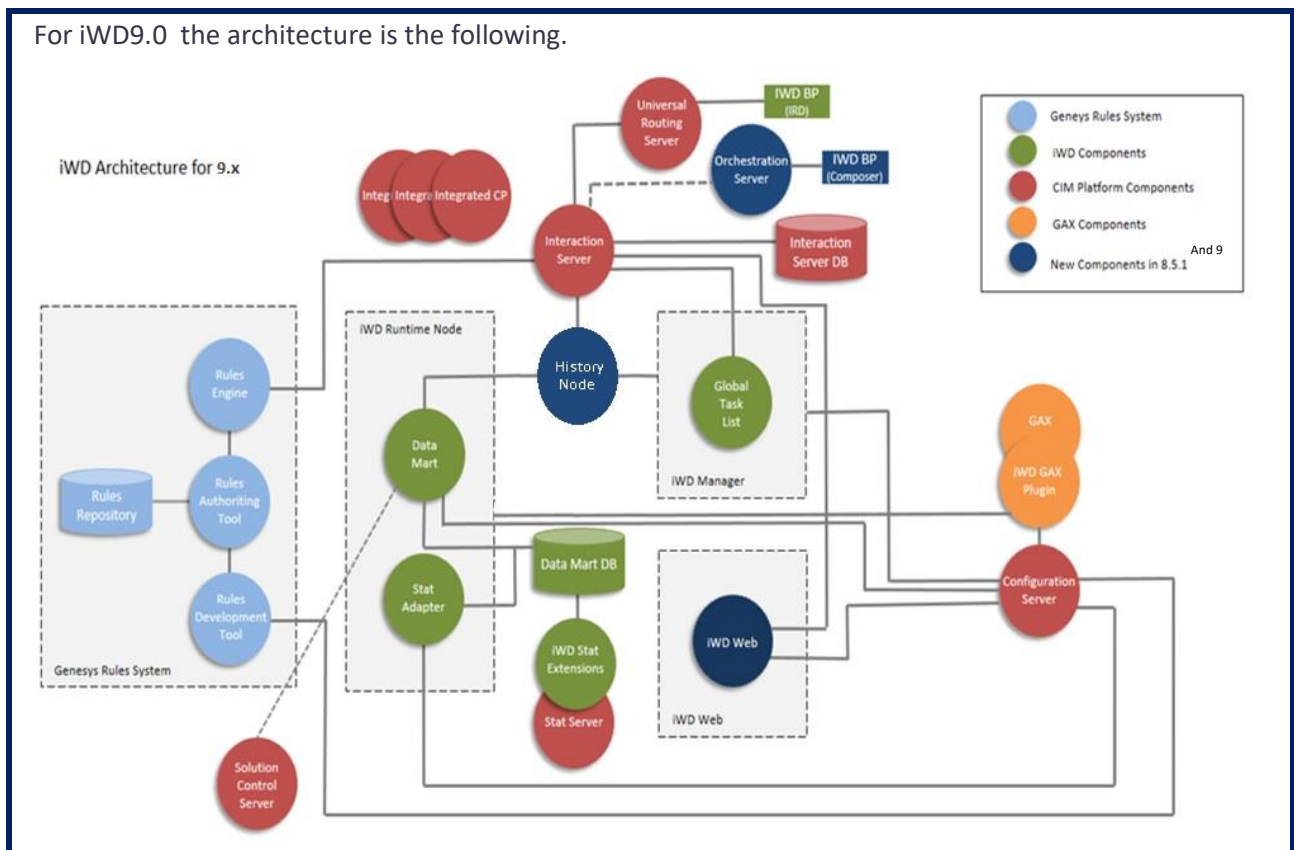
History node has replaced the iXN Server event LOG DB

The history node has been designed to only store events that are relevant for iWD reporting and thereby offer performance optimization.

Note that iWD config DB is also removed as all config elements have been moved to the Configuration layer.

3.3.1 Core iWD components

3.3.1.1 Capture adaptors

The diagram below identifies multiple source system and the iWD capture adapters. In the following sections, each source system is listed and the iWD capture adapter solution is described in detail.

Since version 8.1.x capture adaptor are part of interaction servers component. In thi section we will only present the capture adaptor part. Addional information on Interaction server can be found in the [Common Components Blueprint].
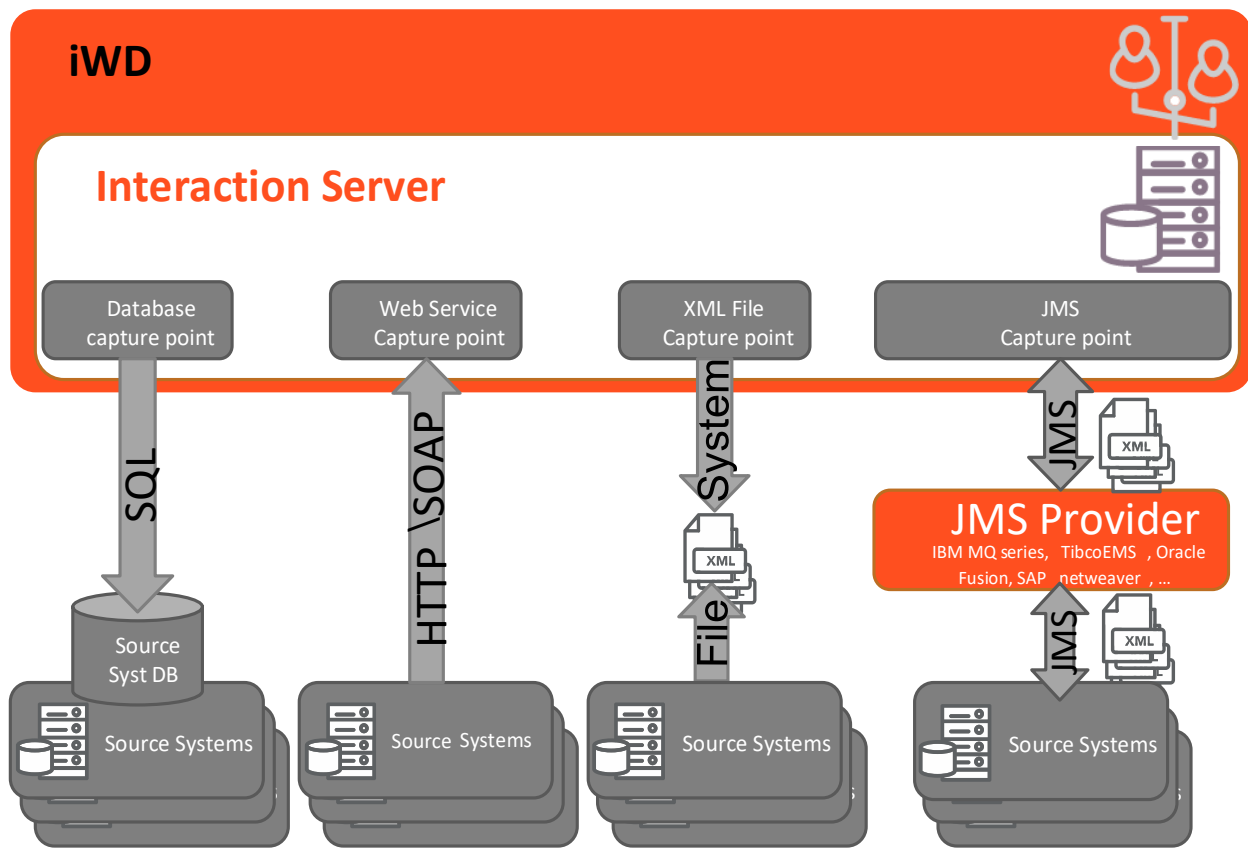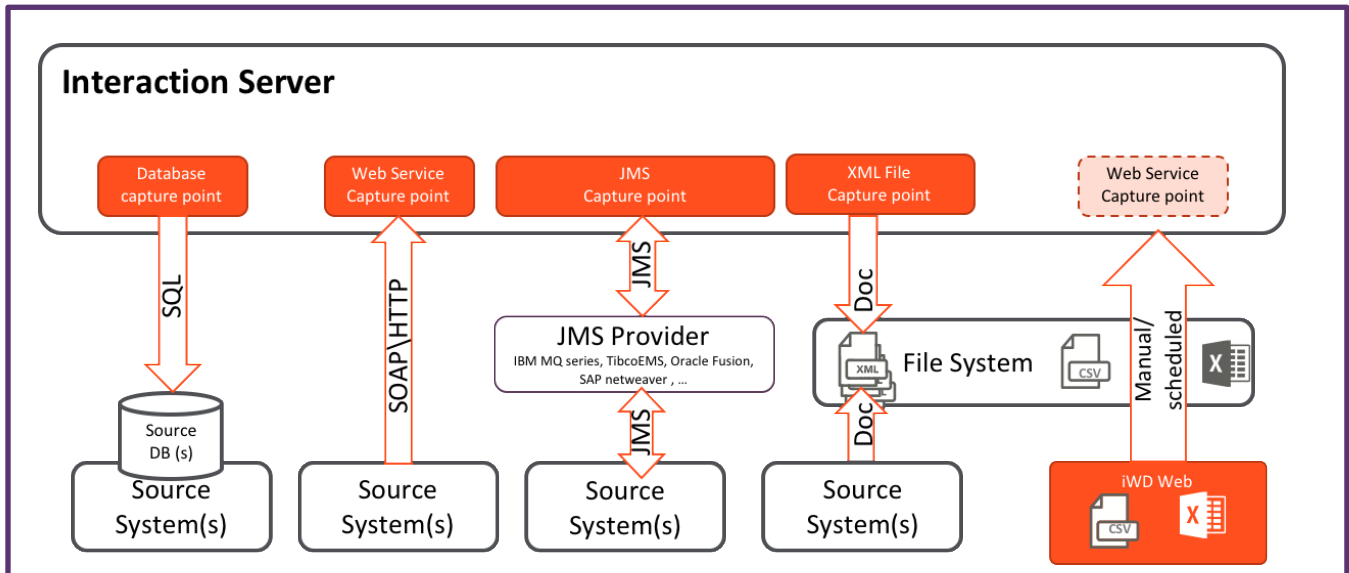
Figure 4: iWD Capture points

The capture point you select will depend on the capabilities of the source system from which you are capturing tasks. In some cases, there will be multiple options you will be selecting from. Therefore, it is useful to know the capabilities and limitations of the various capture points.

iWD 9.0 Capture Adapters

3.3.1.1.1 JMS Capture Point

When possible, you should use the JMS Integrated Capture Point if the JMS (Java Message Service) enterprise messaging service is supported by your source system. This capture point is bi-directional, supporting an input queue and an output queue. Since it uses an enterprise messaging system, it is more reliable than other types of communication. For example, if iWD has a notification to provide to the source system, that notification will be placed in a JMS message queue by the JMS Integrated Capture Point. If there is a loss of communication between the JMS Provider and the source system, the notification message will remain in queue until communication is restored.

IWD Documentation provides indication how to configure this capture point in case of usage of:

- OpenMQ
- TIBCO
- WebSphere MQ

3.3.1.1.2 Web Service capture point

The iWD Web Service Capture Adapter is an iWD service that allows third-party systems and applications e.g. Remedy, Siebel, Kana, etc. to submit and manipulate tasks in iWD via a SOAP based Web Service interface. All web service calls are invoked by the source system.

3rd Party source systems tasks are updating either through the desktop (either automated or by the agent manually) or through web service calls back the source system which are added to the Genesys iWD strategy.

The WEB service capture point does not provide transformation service through groovy. So, any XML messages sent to the web service capture point must comply with the Genesys standard.

The Web Services capture adapter is not bi-directional. If events need to feed back to the source systems through iWD indicating when the task is distributed or completed, a bi-directional capture

adapter such as the JMS capture adapter may be a better approach although other mechanisms could be employed to communicate back to the middleware.

The most common method calls are listed here.

- Submit- Submit a new interaction
- Update - Update or change interaction properties
- Hold - Hold the interaction
- Resume - Resume the interaction
- Stop - Stop or delete the interaction
- Getinfo - Request interaction properties
- Ping - (for heartbeat monitoring)

However, the previous message structure used in earlier versions of iWD Capture points are still supported, to ease the migration to Version 8.5.x (Compatibility mode) and Version 9.0.

The compatibility Mode messages are:

- Create a task
- Cancel a task, either by `InteractionId` or by `CaptureId`
- Hold a task, either by `InteractionId` or by `CaptureId`
- Resume a task, either by `InteractionId` or by `CaptureId`
- Update a task, either by `InteractionId` or by `CaptureId`
- Get task data, either by InteractionId or by CaptureId

- Restart a task, either by InteractionId or by CaptureId

- Complete a task, either by `InteractionId` or by `CaptureId`
- Ping (for heartbeat monitoring)

3.3.1.1.3   Database capture point

The only other bi-directional capture point is the Database Capture Point, which is very flexible. However, to leverage the bi-directionality, it is necessary to update tables on the source system database. In some environments, this will not be possible. The queries are written in SQL language, observing the semantics of the DBMS that you are using.

3.3.1.1.4   File (XML) capture point

The integrated File Capture Point provides the ability to capture interactions from XML files that are found in a specified directory and also provides compatibility with iWD file capture points.

The XML capture point supports XML script transformation through the use of Groovy Scripts. The groovy scripts can transform the format of the XML from the source system to the required Genesys iWD format.

3.3.1.2 IWD Manager

IWD Manager User interface allows Supervisors and Administrators to review the tasks that are being processed by iWD. IWD Manager presents tasks by organizations, departments and Processes. The different views are subject to role privileges. Tasks are presented as well as task's statuses and task's attributes (attached data). Usesr can apply filters to the tasks list to easily select the workitem(s) they want to review.

Depending on his rights a User can also alter, cancel, hold and reprocess tasks.
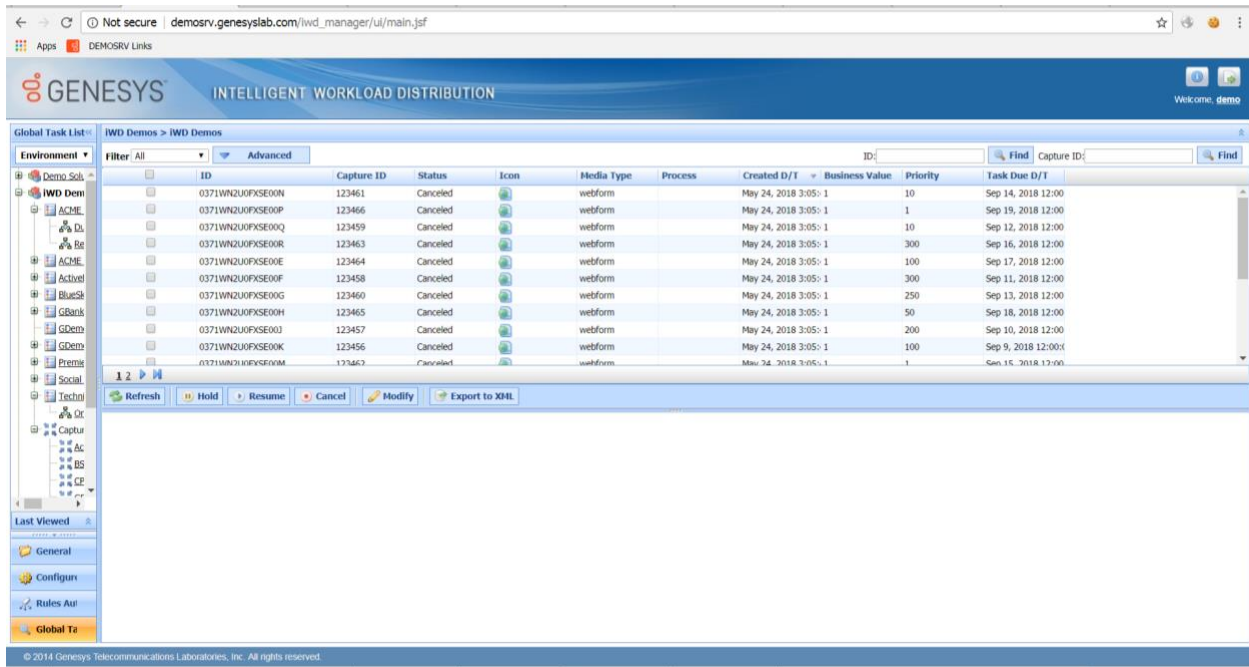
Figure 5: IWD Manager UI

In iWD 9.0 iWD Manager UI has been completely revisited, the new version is now applying the same look and feel as Workspace, Designer, GAX and iWD_WEB interfaces.

The new Interface is built on top of a published Web Service restful API. This allows customers to expose iWD Manager capabilities in their external applications.

3.3.1.2.1   The Global Task List concept

The Global Task List is a view within the iWD Manager user interface that is designed for operational managers to monitor and manage tasks handled by Genesys iWD. For example, through the Global Task List a user may:

- View the list of tasks associated to different business contexts as well as view the details and history for each task
- Manage the live cycle of tasks in the global task list.
- Perform manual task operations such as hold, resume, cancel and modify
- Update task attributes, such as customer segment or priority
- Use filters to refine the list of tasks visible in the view, by defining filter criteria and selecting which task attributes to display

3.3.1.3   iWD Web

iWD Web is a web-based, easy-to-deploy workload management solution. It enables organizations to automate and optimize the distribution and handling of tasks and increase workforce efficiency. Purpose-built to deliver rapid time to value, it provides the capability to upload task lists without the

need to connect to other source systems, such as CRM, ERP, and legacy systems, leveraging export functionality commonly available to business users.

Instead of having to rely on manual task distribution to your team via spreadsheets (and also CSV files,) or team members having to pick their next work item manually from a CRM, ERP, or legacy system, iWD Web enables you to create new lists with task definitions based on data that business or operations managers can upload from .CSV, .XLS and .XLSX files.

You can use your CRM, ERP, or legacy system's export to spreadsheet/CSV file feature to download a list of work items that your team needs to work on and import that file to iWD Web, which reads and treats every line of your spreadsheet as a task to be analyzed and properly distributed to your available team members.

iWD web offers a easy to use UI to allow the definition file template, the manual upload of CSV, XLS or XLSX files.
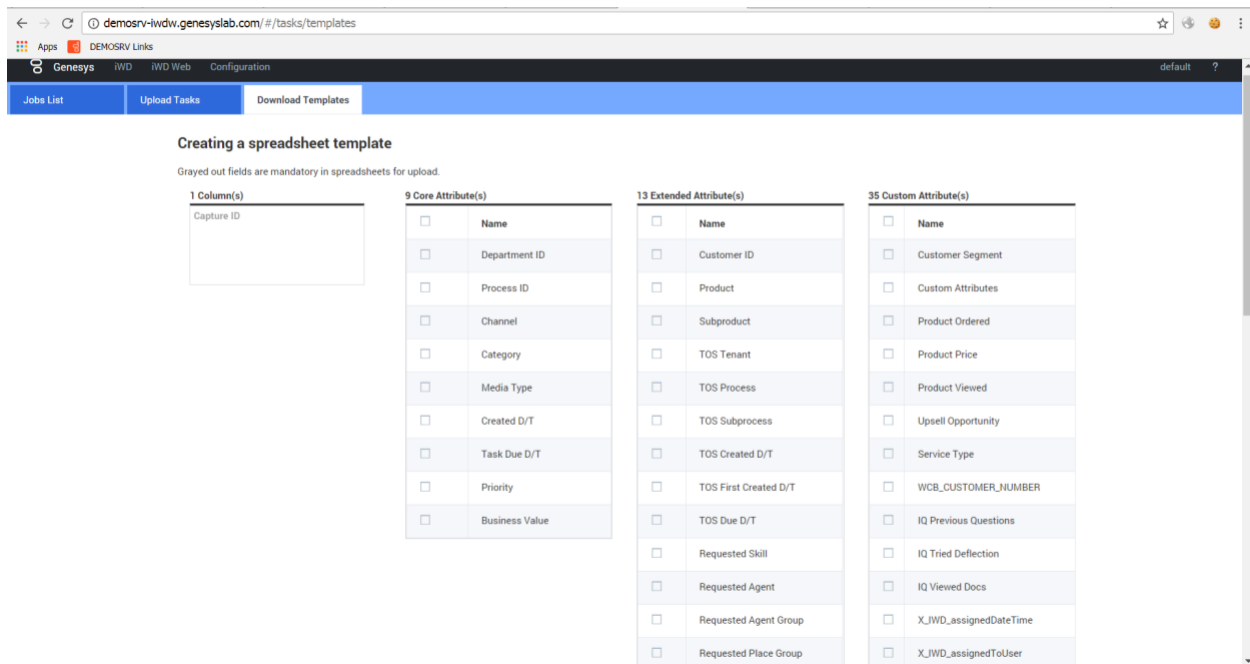
Figure 6: iWD WEB user interface

In release 9.0, you can configure automatic imports of .XLS and .CSV files with column headings, based on time intervals of the customer's choosing.

Source systems export tasks/workitems to a safe location that iWD Web can access.

iWD Web checks for the presence of a new file in this location, verifies the file format, then imports the individual tasks to iWD / Interaction Server for insertion into the Global Task List.

Automatically uploaded jobs can be viewed (alongside any manual uploads) in the Jobs List tab of iWD Web.

The web interface also provides the ability to generate a template file to be used for population by the customer, reducing the chance of an incorrectly formatted spreadsheet.

3.3.1.4   Genesys Administrator Extension (GAX) Plug-in

iWD is deployed through a GAX Plugin, delivered with the installation package. This GAX plugin provides additional functionality to the GAX interface to enables the iWD configuration to be performed.

iWD configuration is performed via Genesys Administrator Extension (GAX) and a new iWD GAX plug-in component. Specifically, the following aspects that were previously carried out in iWD Manager have now moved in 9.0:

- Tenant profile (to GAX)
- Lookup tables (to iWD GAX Plugin)
- Services (to iWD GAX Plugin)
- Generic capture point (to GAX)
- Data Mart Services (to iWD GAX Plugin)
- Departments and processes (to iWD GAX Plugin)
- Audit history (to a centralized log database)
- Security policy (to Genesys Administrator, using Role-Based Access Control (RBAC))

The iWD Data Mart Services view is replaced by a GAX dashboard monitoring the state of the Data Mart node.

3.3.1.5   Reporting

The iWD Extended Statistics Service performs custom aggregations on data and sends the resulting statistics via Genesys Statistics Adapter to Genesys Statistics Server. Statistics then can be viewed in Genesys Pulse. Genesys Statistics Adapter uses a User Event mechanism to deliver statistics to Genesys Stat Server.

The key to achieving the desired business results is having access to actionable business intelligence. Genesys iWD offers comprehensive reporting, providing management insight into business operation. It provides key indicators of performance both through current-day statistics and on an historical basis. The historical metrics are provided based on aggregates and measures that are populated by scheduled ETL processes, which extract data from the Genesys Interaction Server Event Log database and load it into the iWD Data Mart.

iWD monitors the entire lifecycle of tasks, from the moment that they are captured until they are stopped (removed from the system).

iWD provides:

- Consolidated reporting across the various systems that are involved in customer service delivery: fax servers, workflow, customer-relationship management, and Genesys Customer Interaction Management.
- Reporting that is based on business context—with business process, business value, customer segment, and product independent of channel, instead of being limited to interactions, queues, channels, and workflows.

It does this by monitoring a number of events, including the following:

- **New**—The point at which the task was captured by the Capture Point
- **Queued**—The point at which the task has been classified and prioritized and is awaiting potential reprioritization or assignment to a resource
- **Assigned**—When the task was assigned to an employee for processing
- **Transfer/Transfer to Queue**—Whether the employee transferred the task to another employee or back to the queue
- **Held**—Whether the task was held (manual hold) Each record is timestamped and stored in the iWD Data Mart, where the data that is collected can be leveraged in third-party reporting applications.

Customers can build reports by querying the iWD Data Mart by using the reporting tool of their choice. In addition, Genesys offers the Interactive Insights for iWD product, which includes a data universe and nine out-of-the-box reports, built to be used with the iWD Data Mart. In addition to the iWD Data Mart, iWD interoperates with Interaction Concentrator and Genesys Info Mart for historical reporting. Certain Info Mart fact tables (for example, MMEDIA_IXN_FACT_EXT and MMEDIA_SEG_FACT_EXT) store media-specific facts about open media as well as multimedia interactions and multimedia interaction segments.

iWD tasks all flow through Interaction Server queues as Open Media interactions (sometimes referred to as Third Party Media) and typically with a media type of "workitem", so that these tables in Genesys Info Mart are populated with iWD data.

Refer to the Interaction Concentrator and Genesys Info Mart documentation for more information.

3.3.1.5.1   Reporting Architecture

The following figure provides a functional overview of iWD's reporting components. Third party services can reference iWD statistics from the GTL_STAT table (GTL, for Global Task List) to display data in dashboards or within Genesys Pulse.

Important: Each iWD solution requires its own Data Mart.
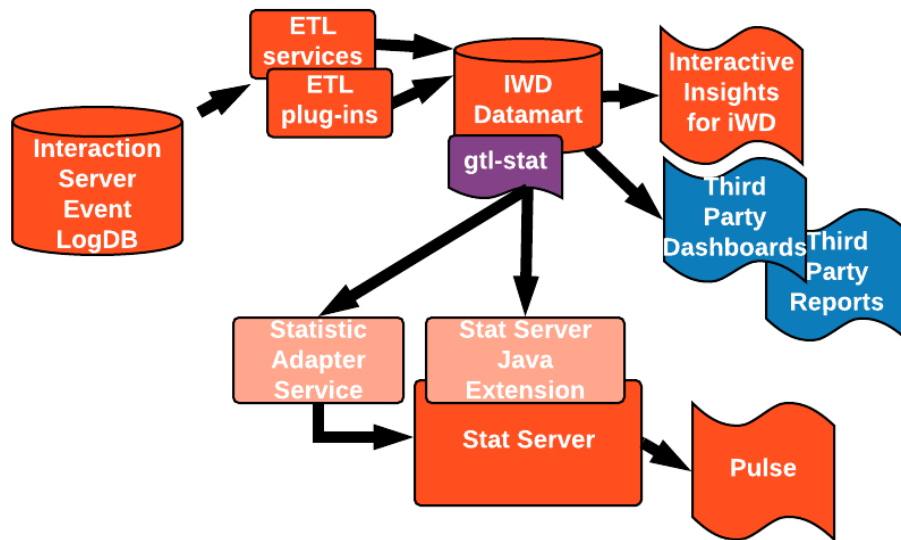
Figure 7:iWD Data Mart Database Objects

In iWD 9.0 the iWD DataMart Database objects is modified by the introduction of the History Node
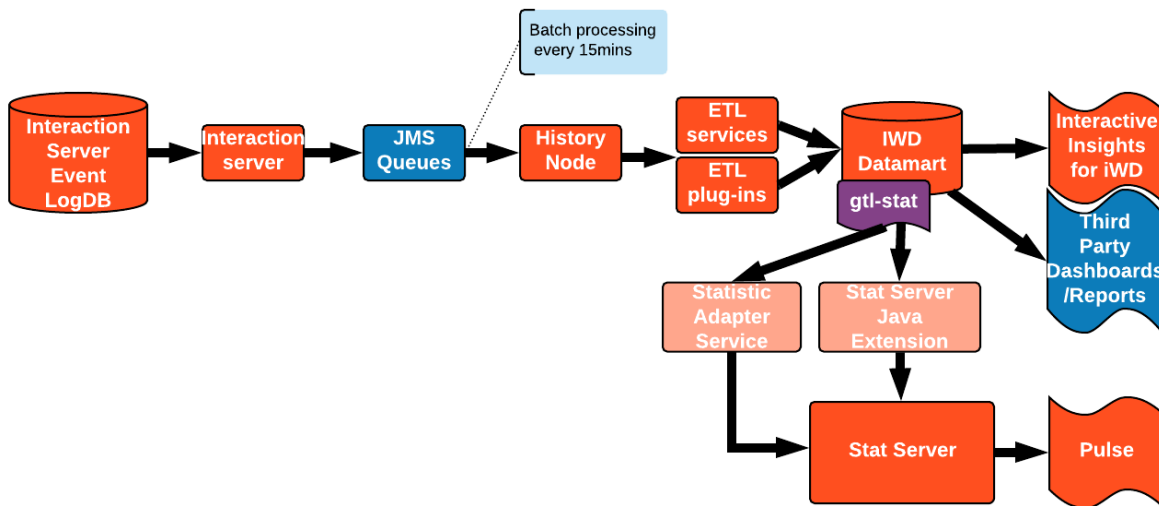
The Interaction events are directly posseted by the interaction server in specific JMS Message Queue. History note consumsnes those message and store the relevant information in the History node Data base. ETL services and ETL plugins transfer the relevant information to iWD Datamart and GTL_stat.

- Fine-grained fact tables—Store all attributes that are associated with tasks (I_TASK_FACT/H_TASK_FACT tables), work-related events

(I_TASK_WORK_FACT/H_TASK_WORK_FACT tables), when the task was assigned to one or more agents; and a full audit history of the task (I_TASK_EVENT_FACT/H_TASK_EVENT_FACT tables).

Important: The term agent refers to any resource, configured as a Person object in Configuration Server, that can handle tasks. (Within Genesys Administrator, Person objects appear as User objects within the interface.)

- Aggregated fact tables—Describe tasks in an iWD-oriented context across the various stages, or the iWD life cycle of the task, from capture and classification to distribution to agent.
- Dimensions—Describe task attributes that are common across the fact tables in iWD Data Mart, such as iWD business process, priority, business value, and date and time. Fact tables link to these dimensions through keys.
- Measures—Represent numerical values (such as totals, durations, averages, minimums, and maximums) that are stored in aggregated fact tables across intraday and historical intervals. For example, the total number of completed tasks by 15-minute interval by an iWD process and business value would be captured within the I_TASK_CAPT_FACT_15MIN intraday table.

When they are connected to existing enterprise data marts, including Genesys Info Mart, analysts gain access to comprehensive views of the entire customer experience. Analytical reporting leverages existing business intelligence tools, such as those that are provided by Pentaho (which is an open-source product suite for business intelligence) or through a host of commercial products from Microstrategy, Cognos or SAP Crystal Reports.
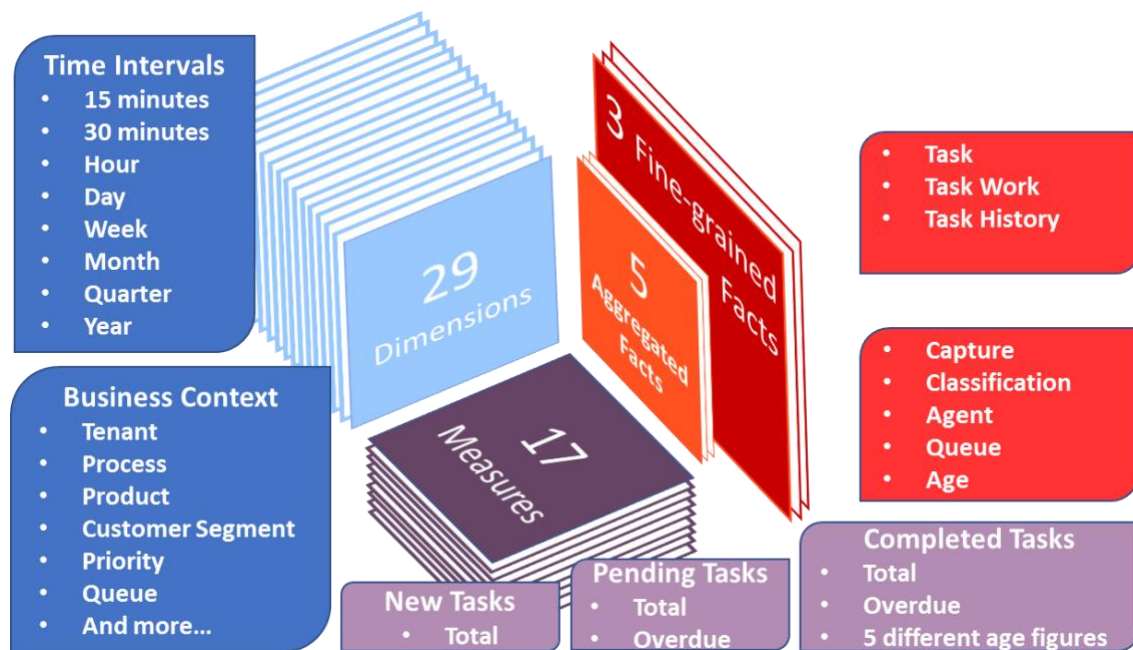
Figure 8:iWD Data Mart–Dimensions, Measures, and Facts

3.3.1.5.2   Reporting Services

The Statistics Adapter Service allows performance of custom aggregations on data and sends the resulting statistics to Genesys Stat Server. Statistics then can be viewed in Pulse or any other Stat Server client.

Historical reporting is enabled by a number of ETL jobs that transform and load iWD runtime data into a separate reporting database that is called the iWD Data Mart for a list of preconfigured ETL jobs). Essentially, the iWD Data Mart is a set of star schemas that contain historical iWD data that is optimized for reporting. The ETL jobs are set up as scheduled services in iWD.

Refer to the iWD 8.5 Data Mart Reference Guide 8.5.102.03+ and iWD Web 8.5.100.06+

3.3.2   Other required Genesys components

3.3.2.1   Distribution components

Support for Composer/ORS in iWD Business Process

Release 8.5.104+ ships with versions of the IWDBP available in both Genesys Interaction Routing Designer (IRD) and Genesys Composer/ORS. There are also some updates to the content of the original IRD IWDBP.

Composer is a single Integrated Development Environment (IDE) for creating applications to orchestrate the entire customer experience. Composer-created voice and routing applications can command and control the customer experience through all channels (IVR, voice, e-services, and so on). Composer's open framework enables widely-available, existing competencies to be used to create reusable components that manage the customer experience. The IDE allows both customers and integrators to utilize existing code sets (HTML, VXML, Java, Perl, REST and others) to control the customer experience. The open framework also allows simplified integration into all Enterprise applications to harness the information within the Enterprise to drive and personalize the customer experience.

Before iWD 8.5.104, Interaction Routing Designer (IRD) was the Genesys tool used to create iWD routing applications. Genesys Composer is now the tool of choice for creating both routing and voice self-service applications. A few of the differences between Composer and Interaction Routing Designer are listed below.

- Composer is integrated with Orchestration Server allowing you to manage customer conversations spread out over time using the ORS session-based functionality and persistent storage as well as Orchestration Extensions.
- Composer encompasses IRD's functionality and much more routing functionality in general.
- Composer lets you create routing applications using an open language (SCXML) and ECMAScript for decision-making. In contrast, IRD uses a Genesys proprietary language (IRL).
- Composer gives the option of writing your own SCXML code and/or using predefined blocks.

- You can also use Composer to create voice self-service applications for Genesys Voice Platform, including VoiceXML and CCXML-based applications. You can also create integrated voice and routing applications.

3.3.2.2   Genesys Rules Systems

Genesys Rules System (GRS) provides the ability to develop, author, and evaluate business rules. A business rule is a piece of logic defined by a business analyst. These rules are evaluated in a Rules Engine based upon requests received from client applications such as intelligent Workload Distribution, Genesys Web Engagement and Genesys Conversation Manager.

GRS consists of three software components:

- **Genesys Rules Development Tool (GRDT)** is an Eclipse plug-in that allows the business rules developer to create rule templates that define the conditions and actions that will be used by the business rule author. The developer creates the plain-language statements that the business author will see and maps them to the rule language statements that the rules engine will execute. For each rule condition and action, the developer decides what kind of data the rules author will be providing. Some examples include whether the input should be an integer value, a non-integer numeric value, a string, a selection from a pre-defined list, or a selection from a dynamic list.

- **Genesys Rules Authoring Tool (GRAT)** is a browser-based application that enables you to create and edit business rules. Business rule authors use this tool to create, edit, or delete rules, and deploy them to either production or lab systems. The rules you create in the GRAT are based on rule templates that are either:

  - Created by business rule developers using the Genesys Rules Development Tool (GRDT); or;
  - Developed externally and imported directly into GRAT

  All the functionality described here is available only to users who have the relevant permissions configured using role-based access control.

- **Genesys Rules Engine (GRE)** is Java program which evaluates the rule packages (groups of rules). Rule packages are deployed to the Rules Engine by the Rules Authoring Tool. When a rule package has been deployed, Genesys applications will be able to request the Rules Engine to evaluate the logic that is defined in this rule package.

3.3.2.3   Agent/Knowledge Worker desktop integration

Genesys iWD fully supports Workspace Desktop Edition (WDE). WDE can be leveraged to provide additional Agent/Advisor functions such as Workbin Support, Statistics Widget support and Advanced Supervisor support for back office interactions and workforce.

Genesys iWD also fully supports Workspace Web Edition 8.5 (WWE). WWE can be leveraged to provide additional Agent/Advisor functions such as Workbin Support, Statistics Widget support and Advanced Supervisor support for back office interactions and workforce.

iWD will support any desktop that is integrated to the CX Platform via the Universal SDK. Data can be attached to the task as part of the "capture" and "calculate" phases of the task lifecycle, which can be provided to the desktop to help the agent or knowledge worker process the task.

3.3.3   Summary of Components view

3.3.3.1   Genesys components

The following table lists the Genesys components that make up the Workload Management Optional components are noted in the table.

Category	Component	Version	Notes
iWD	**iWD Runtime Node**	**8.5+**	**Runs scheduled iWD Data Mart services.** **For ORS-BP Version 8.5.1+**
	iWD Manager	8.5+	iWD Manager is used for real-time management of tasks. For ORS-BP Version 8.5.1+
	iWD GAX Plugin	8.5+	Business configuration of the iWD solution. For ORS-BP Version 8.5.1+

	iWD Stat Extensions	8.5+	Provides Stat Server clients the ability to display current-day statistics from iWD's Data Mart
			For ORS-BP Version 8.5.1+
	iWD Setup Utility	8.5+	To configure various mandatory configuration objects.
			Supported only for iWD 8.5.0x up to 8.5.103x
Routing	Orchestration Server (ORS)	8.1.3+	For ORS-BP Version 8.1.4+
	Universal Routing Server (URS)	8.1.2+	
	StatServer	8.1.2+	
Media	Interaction Server	8.1.4+	For ORS-BP Version 8.5.1+ is required
	Interaction Server Proxy	8.1.4+	For ORS-BP Version 8.5.1+ is required
Administration	Genesys Administrator	8.5+	UI
	Genesys Administrator Extension (GAX)	8.5.00047+	UI
Configuration	Configuration Server	8.1.3+	
	License Manager (FlexLM)	11.9+	
	Local Control Agent (LCA)	8.1.3+	
	Message Server	8.1.3+	
	SNMP Master Agent	8.1.3+	

	Solution Control Server (SCS)	8.1.3+	
Database			
	DBServer	8.1.3+	Used for iWD DataMart
User Applications	Composer	8.1.3+	Used for Genesys Rules & routing strategy development For ORS-BP 8.1.410.09+ is required
	Genesys Rules Engine	8.5+	
	Interaction Workspace (WDE)	8.1.4+	
	Interaction Workspace Deployment Manager	8.1+	Deployment of WDE

Table 1 - Genesys Component List

For iWD9.0 the components table is the following:

Category	Component	Version	Notes
iWD	iWD Runtime Node	9.0+	Runs scheduled iWD Data Mart services. For ORS-BP Version 8.5.1+
	iWD Manager	9.0+	iWD Manager is used for real-time management of tasks. For ORS-BP Version 8.5.1+
	iWD GAX Plugin	8.5+	Business configuration of the iWD solution. For ORS-BP Version 8.5.1+

	iWD Stat Extensions	9.0+	Provides Stat Server clients the ability to display current-day statistics from iWD's Data Mart
			For ORS-BP Version 8.5.1+
	IWD WEB	9.0+	
Routing	Orchestration Server (ORS)	8.1.4+	For ORS-BP Version 8.1.4+
	Universal Routing Server (URS)	8.1.4+	
	StatServer	8.5.107+	
Media	Interaction Server	8.5.11+	For ORS-BP Version 8.5.1+ is required
	Interaction Server Proxy	8.1.4+	For ORS-BP Version 8.5.1+ is required
Administration	Genesys Administrator	8.5+	UI
	Genesys Administrator Extension (GAX)	8.5.250.11+ Or 8.5.270.06+	for Gax plugin upto 9.0.002.20 or for GAX plugin from 9.0.003.07
Configuration	Configuration Server	8.5.1+	
	Local Control Agent (LCA)	8.5.1+	
	Message Server	8.5.1+	
	SNMP Master Agent	8.5.1+	
	Solution Control Server (SCS)	8.5.1+	
Database			

	DBServer	8.5.1+	Used for iWD DataMart
User Applications	Composer	8.1.3+	Used for Genesys Rules & routing strategy development
			For ORS-BP 8.1.410.09+ is required
	Genesys Rules Engine	8.5.302+	
	Pulse	8.5.0+	
	Interaction Workspace (WDE)	8.1.4+	
	Interaction Workspace Deployment Manager	8.1+	Deployment of WDE
	Workspace Web Edition	8.5+	

3.3.3.2 3rd Party Components

The following table lists the recommended 3rd party components for this solution. Alternatives are also noted though the recommended components are encouraged.

Component	Recommended	Version	Note
OS	MS Windows Server	2008, 2012 64bit native	
	Red Hat Enterprise Linux	6.0 64-bit native	
Storage	Cassandra	1.1.12+	Required for ORS
	MS SQL	Server 2008, 2012, 2012 Cluster	
	Oracle	11g, 12c	

Java implementation	OpenJRE 7 for Linux	7.x	
	IBM JDK 7 for Websphere		
	IBM JDK 6 or 7 for AIX		
	Oracle JRE 7 for Windows.		
	For customers using Tomcat, Genesys only supports Java JDK 7.		
File Server	WebDAV enabled file storage accessible to GVP		Required for Call Recording option.
Virtualization	VMWare ESXi	5.1+	
	Windows 2012 Server Hyper-V		

Table 2- 3rd Party Components

3rd party components for iWD9			
Component	**Recommended**	**Version**	**Note**
OS	MS Windows Server	2012 and 2016 64bit native	
	Red Hat Enterprise Linux	7 64-bit native	
Storage	Cassandra	1.1.12+	Optional for ORS

	MS SQL	2012, 2012 Cluster 2016, 2016 cluster and AlwaysOn	
	Oracle	11g, 12c	
Java	Java	8	iWD9.0 is only running on Java 8
Virtualization	VMWare ESXi	5.1+	
	VMWare ESXi	6.0.0	
	Windows 2012 Server Hyper-V		
Message broker	ActiveMQ	5.14+	Other JMS compatible message brokers will be supported in the future

Note that databases are not listed. RDBMS is often a customer preference. Note, however, that Business Continuity solutions are currently only supported with Oracle Golden Gate.

	Oracle	**11g, 12c**	
Java	Java	8	iWD9.0 is only running on Java 8
Virtualization	VMWare ESXi	5.1+	
	VMWare ESXi	6.0.0	
	Windows 2012 Server Hyper-V		

| Message broker | ActiveMQ | 5.9+ | Other JMS compatible message brokers will be supported in the future |

Note that databases are not listed. RDBMS is often a customer preference. Note, however, that Business Continuity solutions are currently only supported with Oracle Golden Gate.

4   Deployement view

4.1   Centralized Deployment

The centralized deployment assumes that the customer has a data center that is reachable by all agents and that the network has the capacity to support the traffic between solution components in the data center and between the agents' desktop/endpoints and the data center.

The following diagram is a logical representation of the single site deployment:
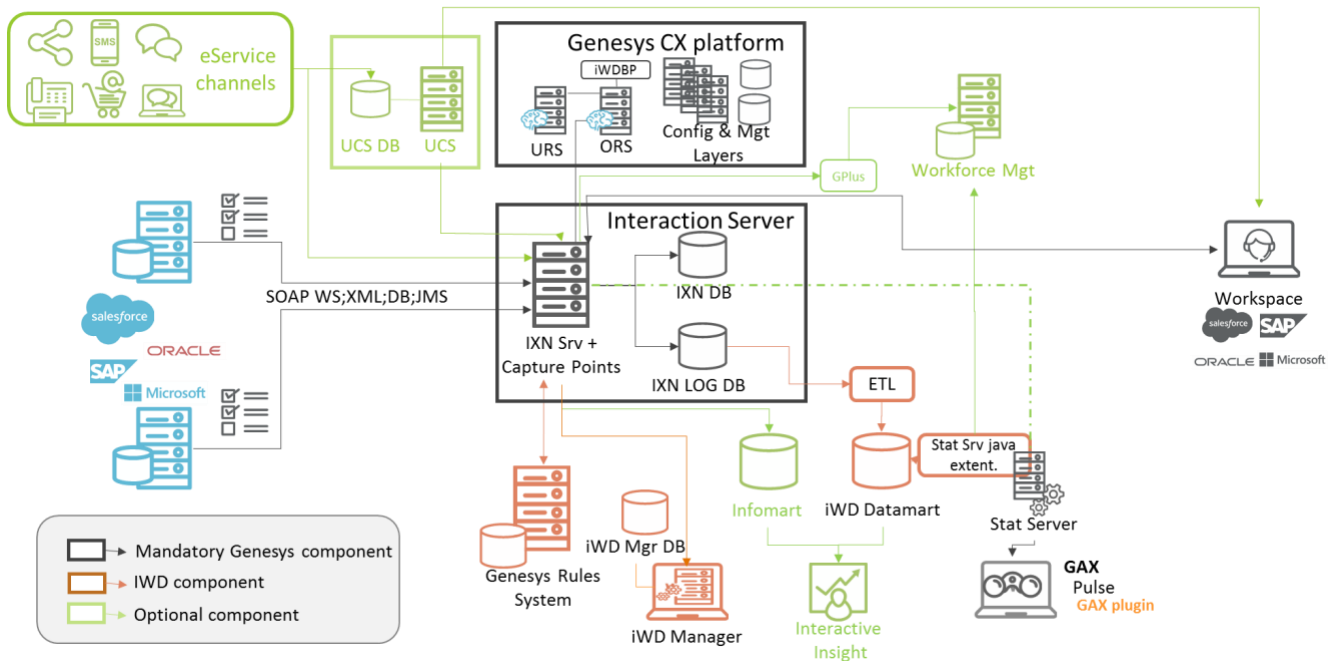
Figure 8:   iWD Solution Logical Model

The iWD Solution Logical Model for iWD 9.0 is thew following:
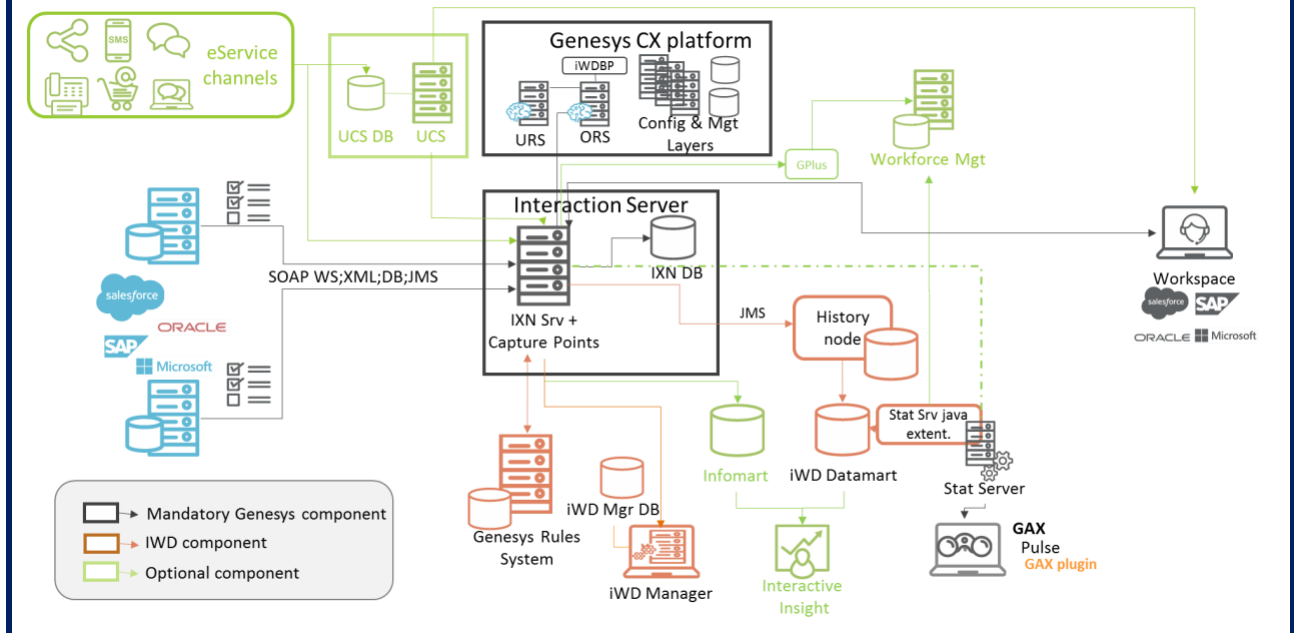
A typical deployment will be similar to that depicted in the following diagram. Note that each server node depicted may be installed on a hardware server or as a virtual machine image.
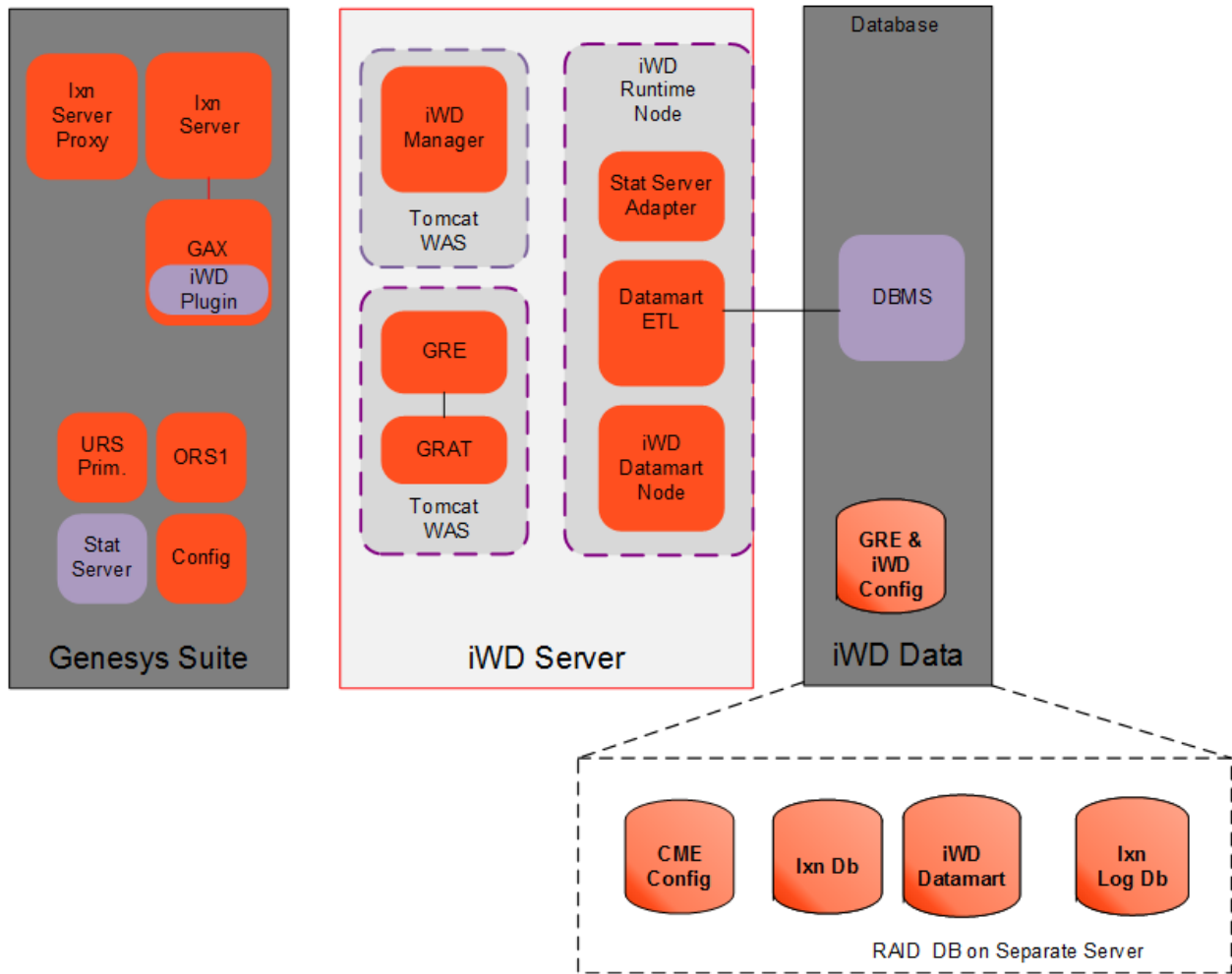
Figure 9: iWD Solution Components

In iWD 9.0 the iWD Solution components drawing is the following

4.2   High Availability

The following describes the Hardware requirements for an HA deployment:

Genesys supports various modes of HA in order to assure service availability. These modes are:

- Distributed Architecture
- Transactional Persistent State
- Warm Standby
- Hot Standby

These modes are described as:

1. Distributed Architecture
2. Transactional Persistence State
3. Warm Standby
4. Hot Standby
5. Connection Management

4.2.1.1 Distributed Architecture

- Reduces single points of failure within the application by distributing same load balanced components on several Servers, avoiding this way complet outage of the solution.
- Ensures reliable performance, e.g. heavy resource services can be distributed across nodes or shared with lighter services on single nodes (for example, Datamart reporting services need to be on their own node.
- Provides scalability for services across physical servers.

4.2.1.2 Transactional persistent state

- All tasks in process persist in Interaction Server's 'Interactions Database'. This ensures that any failure of hardware or software does not interrupt the 'in process' service with data loss.

4.2.1.3 Warm Standby

- A backup service is started in 'standby' operation mode, ready to take over the operations of the primary service if it becomes unavailable.
- The backup service is 'aware' of its role as a backup service, and will not become active unless it detects that the primary service has become unavailable. In this case, it will switch to active operation and takeover of processing from the primary service.
- Once the original primary service becomes available again, the backup service will switch to standby mode again. The primary service will resume processing.
- The availability of the primary and backup are detected by bi-directional heartbeat monitoring through ADDP protocol.

4.2.1.4 Hot Standby

- Is similar to Warm Standby operation, except Hot Standby incorporates measures to avoid data loss during failover.
- It utilizes a contextual data buffer between the primary and backup services.
- The backup service for the primary in Hot Standby mode works in a 'semi-active' mode. It maintains the same data communications as the primary service for which it is designated backup.
- However, the backup service does not process or act upon the communications received over this connection; it only buffers what it receives.
- In case of failover, the backup service will first process the data in the buffer from the point where the primary service left off.

4.2.1.5 Connection Management

- Intelligent Workload Distribution implements active connection management for connections in which lower-level protocols are used, such as TCP. Examples of such connections include databases and connections to other Genesys servers. Active connection management supports the following capabilities:
- Active disconnect detection, which includes polling of the other party to ensure that the connection is alive
- Attempts at automatic reconnection in case of disconnect, until the connection is resumed
- Connection pooling.
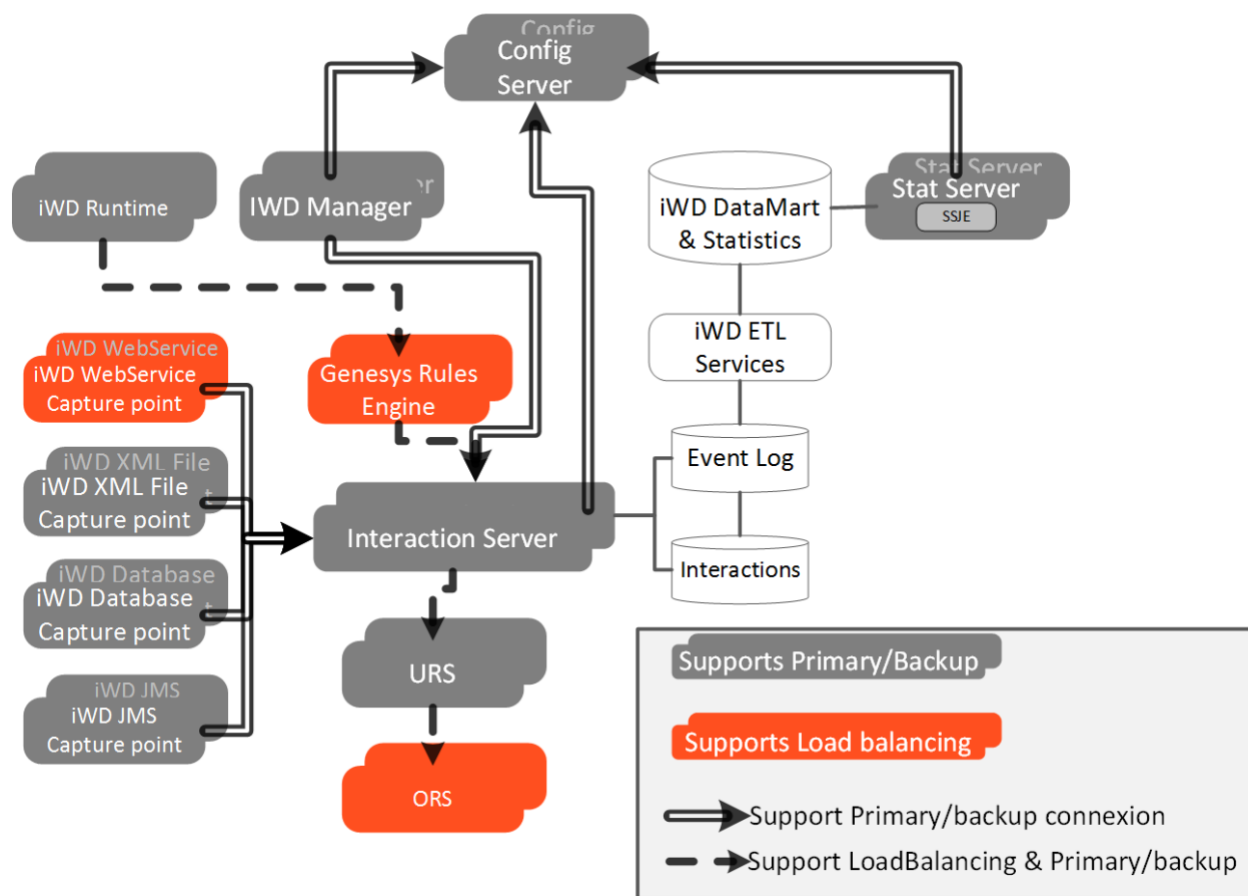
Figure 10: iWD Module View – High Availability

The iWD9.0 modified diagram

"Supports Primary/Backup configuration" means that this Genesys application, or iWD service in some cases, can be configured in a primary/backup mode, and the system will manage the conditions that will cause the configured backup instance to take over requests from the primary instance.

"Supports load balancing through external HTTP load balancer" means that an external HTTP load balancer can be used to balance requests from multiple application nodes. In the case of iWD Web Service Capture Point services, they are stateless, so you can put an HTTP load balancer in front to balance the requests. The same can be done for iWD Manager, but the user will have to re-log in if one of the nodes goes down.

"Supports primary/backup connection" means that the Configuration Server application (e.g., iWD Manager) has a connection to another application (for example, Genesys Interaction Server). The application, being connected to, may be configured in a primary/backup configuration, and the failover from primary to backup will happen transparently to the application requesting the connection.

"Supports load balancing & primary/backup connection" means that the application making the connection (e.g., Interaction Server) can connect to multiple instances of another application (e.g. , Universal Routing Server and ORS), and requests to this other application will be load balanced across the multiple instances. In addition, if primary/backup configuration is in place for the application to which the connection is being established, the failover from primary to backup will happen transparently to the application requesting the connection.

Note:

- A single instance of iWD Manager should be in service at any time in order to avoid errors in the GTL

More details on HA deployment of iWD can be found in the 'High Availability for iWD Components' section of the iWD 8.5 Deployment Guide. This chapter describes high-availability and redundancy in iWD.

- iWD Rules Engine supports Load Balancing between two different WAS runtime engines.
- There is no HA option for iWD Manager and iWD Runtime Node, they are configured as applications within Genesys Configuration Layer. Service availability is provided by Genesys standard SCS management for restarting Services.

History node of iWD9.0 brings also improved capabilty on HA and scalability level, as depicted in the following diagram.
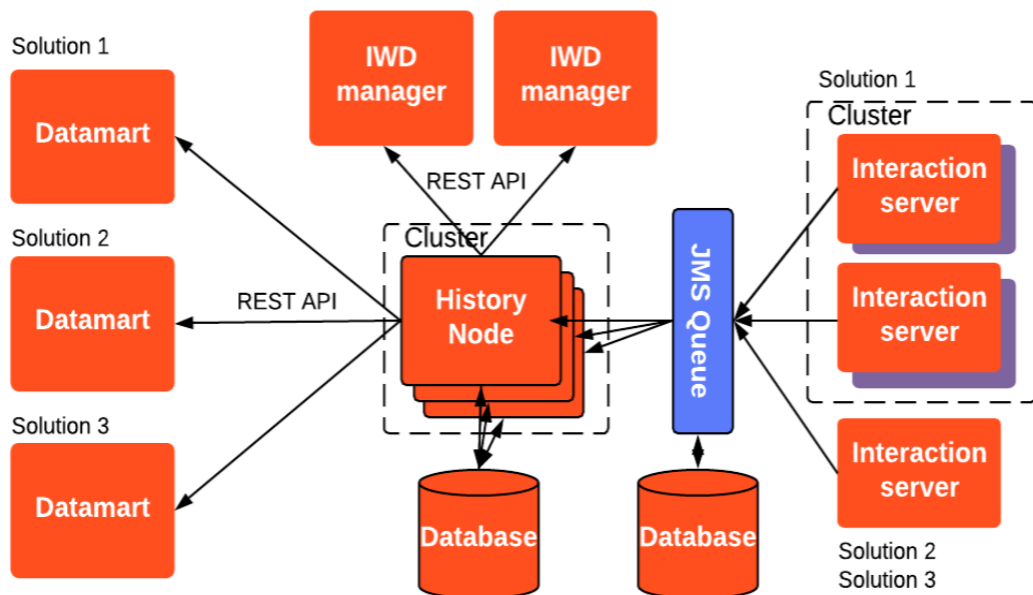
- iWD Datamart uses cold-standby redundancy mode. Multiple iWD Datamart instances for given Solution can be installed with only one being active. In case of failure manual switchover is needed.

- iWD Manager uses n+k scalability model with shared storage. Session data is not shared between iWD Manager instances and load balancer needs to guarantee session-server affinity for subsequent requests.

- History Node uses n+k scalability model with shared storage. History Node processes each event individually (there is no dependency between events). This allows to distribute event processing on multiple instances of the History Node. iWD Datamart and iWD Manager use round-robin algorithm to select active History Node instance. Set of load sharing History Node instances is called History Node Cluster and represented in configuration as Application Cluster.

- JMS Queue scalability model depends on the vendor. Models, that ensure message delivery in case of failure are most suitable for iWD. For ActiveMQ those include Master Slave Cluster and Replicated Message Stores Cluster.

4.2.1.6   Interaction Server High Availability
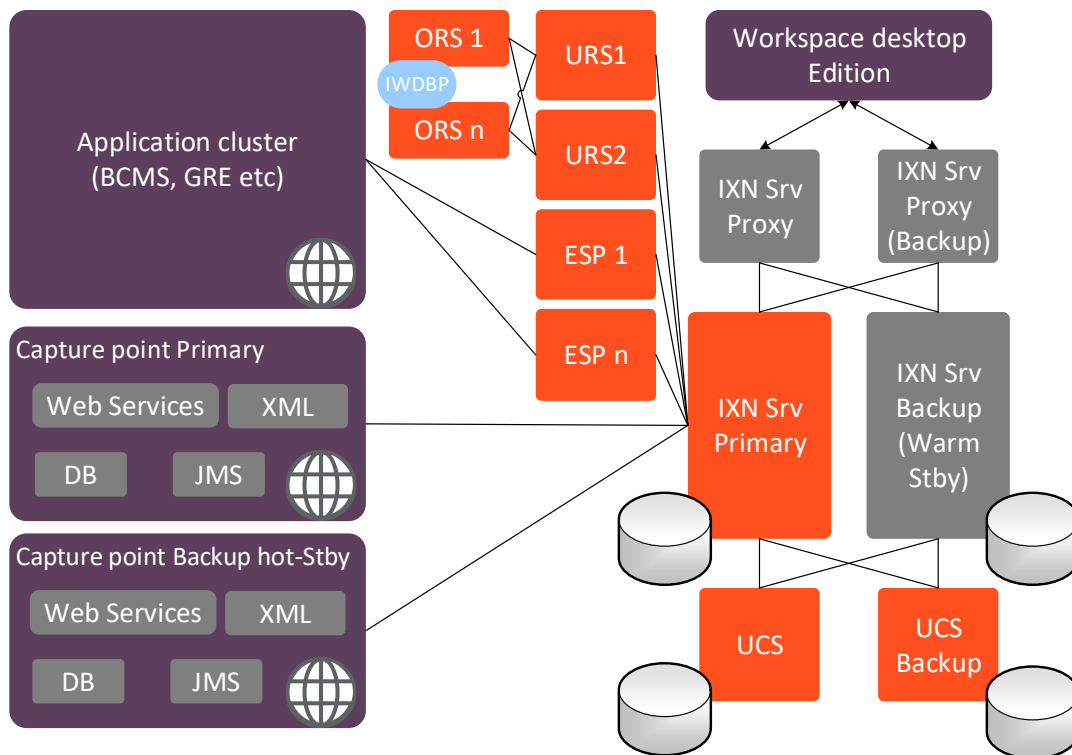
Figure 11: Interaction Server – High Availability

Interaction Server provides different types of high availability capabilities:

- Interaction server is deployed with a primary/backup configuration as depicted below.
- Load balancing and clustering options are used to improve throughput and service availability.
- Interaction Server has its own load balancing functionality. Interaction Server can balance among multiple instances of URS. Interaction Server selects (in round robin fashion) from all of the URS that have the needed strategy loaded.
- Interaction Server accesses the Genesys Rules Engine (usually running on an application cluster) through the ESP servers.
- Interaction Server will automatically skip a failed URS until recovery. Interactions in the failed URS will be re-submitted.
- The custom ESP servers are also accessed in the same manner.
- The integrated capture points also work on a Primary/Standby basis.

In iWD 9.0 interaction cluster is supported

We support the two following configurations:

A) Interaction Server Proxy (With Optional Backup
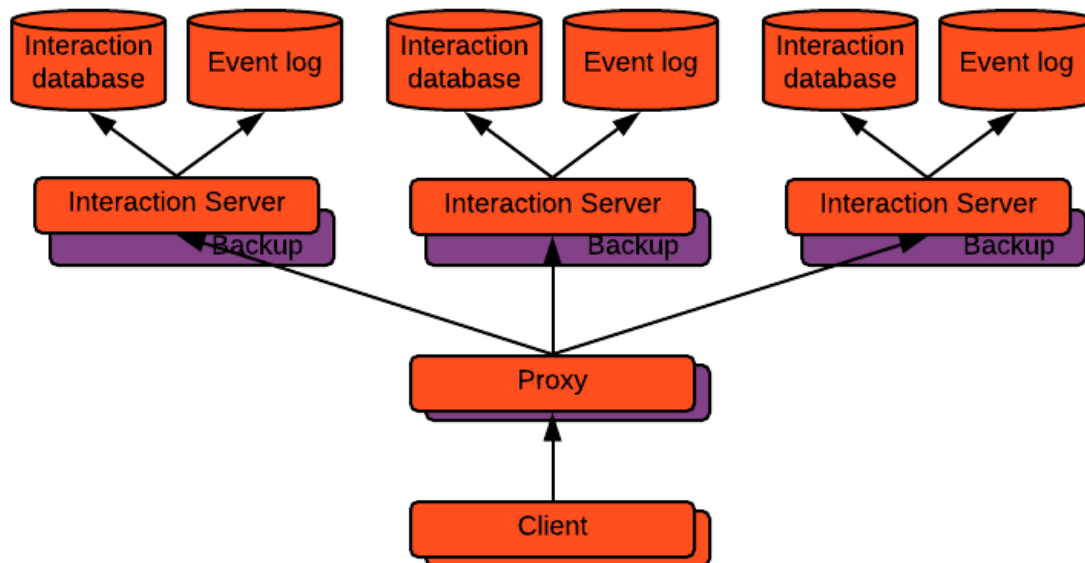
B) Interaction Server Proxy Cluster
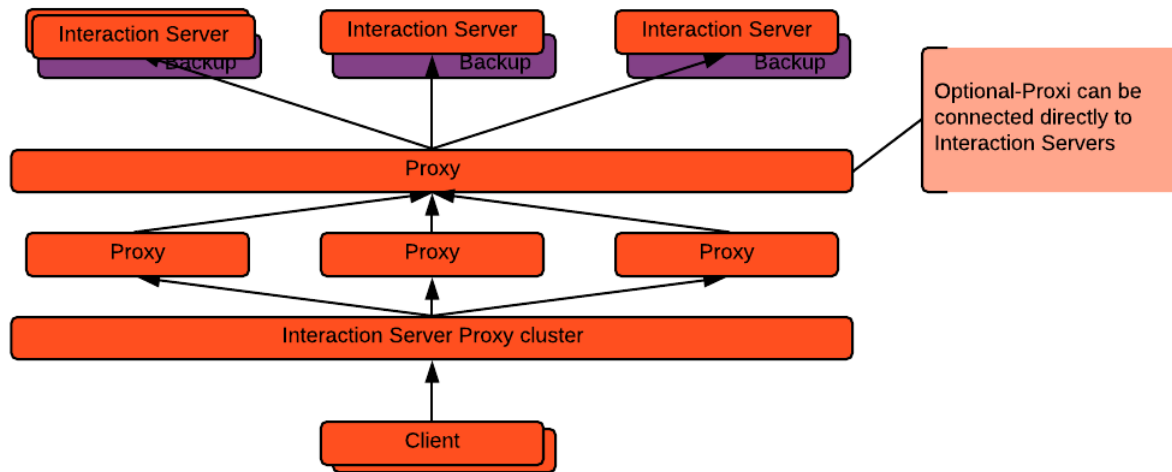
Cluser implementation should only be user in very big deployement Where One interaction server can not sustain the load.

Some Interaction server cluster limitations:

(refer to https://docs.genesys.com/Documentation/ES/8.5.1/Depl/IxnClus for mor info)

- Each primary/backup pair works with its own database (regroup in node) and the proxy requests interactions from the same queue in a round robin fashion, the order of interactions could be broken. If different nodes process different types of interactions, and as a result, only one server in the cluster maintains the order of some specific queue, there is no such problem.

- I Capture Points are configured per node and the limitation is that each Capture Point can only access interactions that are processed by the node for which it is configured.

- SSJE can only receive data from one Interaction Server

4.2.1.7 Capture Point High Availability

Capture Points are integrated into Interaction Server. Therefore, the application host in the Capture Point configuration is not taken into account and the host of Interaction Server is used. A Capture Point can be configured as a primary/backup pair. In this case, the host of the primary application must be the same as host of the primary Interaction Server and the host of the backup application must be the same as host of the backup Interaction Server. The primary Interaction Server (by configuration) will search for the primary Capture Point application and use its configuration to start the capture point. The backup Interaction Server (by configuration) will search for the backup Capture Point application and use its configuration to start the Capture Point. If there is no backup Capture Point configured, the backup Interaction Server will use the primary Capture Point application.

Generally, there is no need to configure a backup Capture Point application in Configuration Manager or Genesys Administrator; a backup Interaction Server will start the "backup" Capture Point instances.

Prior to release 9.0, iWD supported multi-Interaction-Server deployments with tasks segmented into logical entities called Solutions. In this architecture, each Solution is handled by a single Interaction Server (possibly in primary-backup configuration) and each Interaction Server can handle multiple Solutions.

iWD 9.0 expands this capability with an architecture where a single Solution can be handled by multiple Interaction Servers via an Interaction Server Proxy.

4.2.1.8 Genesys Rules Engine – HA Deployment

Genesys Rules System (GRS) provides the ability to evaluate business rules. A business rule is a piece of logic defined by a business analyst. These rules are evaluated in a Rules Engine based on requests received from client applications.
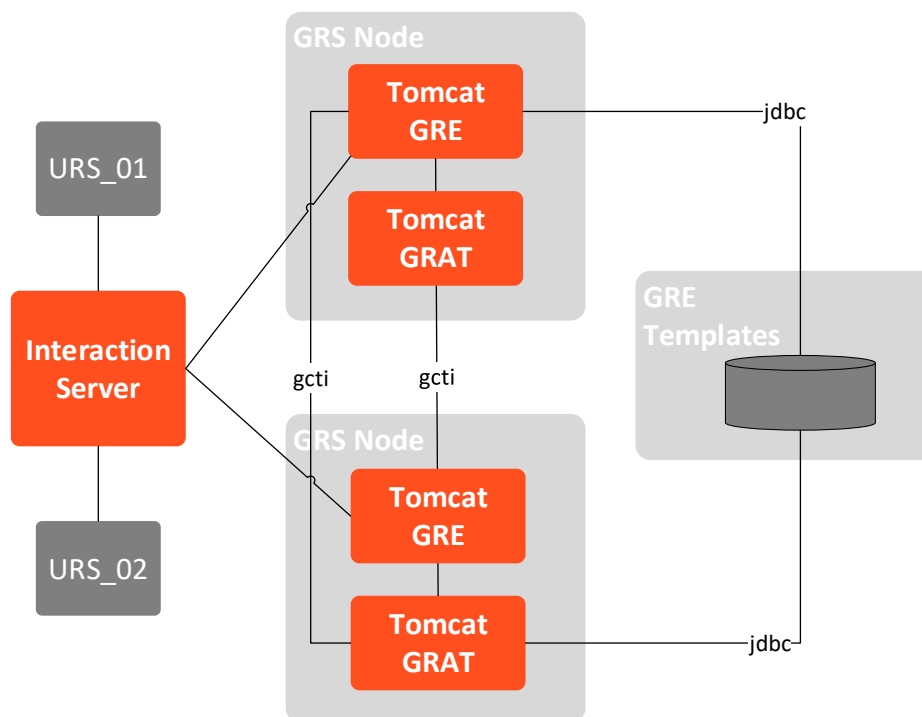

Figure 12: iWD Rules HA Deployment Architecture

Genesys Rules System is made up of GRE and GRAT.

4.2.1.8.1   Genesys Rules Engine

The Genesys Rules Engine (GRE) can be set up in a cluster in order to provide a highly available configuration. GRE is considered as a critical path application because the execution of rules depends upon at least one node in the system being available. Since GRE is stateless, each rule execution request can be dispatched to any node in the cluster, and should a node fail, another node could execute the request.

The load balancer can be set up to dispatch requests to each GRE node at random, or in a round-robin fashion. There is no need to configure "sticky session " as there are no sessions to maintain between rule execution requests.

4.2.1.8.2   Genesys Rules authoring tool

Before release 8.5.301

Only one instance of Genesys Rules Authoring Tool (GRAT) can be connected to a particular rules repository database at a time. GRAT is not considered a critical path application because it only handles the creation, editing and deployment of rules. If GRAT should fail, rule execution continues uninterrupted. Only rule editing becomes unavailable

GRAT can be set up in a warm standby configuration. A standby GRAT can be installed as a mirror image on a separate machine and be configured to use the same configuration management application, same HTTP ports, and so on. Should the primary GRAT fail (hardware failure, network), the standby GRAT could be brought online quickly to restore service. Both the primary and standby GRATs can be connected to the same repository database; however, they should not be connected simultaneously. The rule author would have to log in again and resume their activity.

When configuring a standby GRAT, use option clear-repository-cache=true for both the primary and backup GRAT instances. Setting this option to true can delay the startup of GRAT, since the cache must be rebuilt each time, but it ensures that GRAT is properly synchronized with the rules repository database.

Since release 8.5.301

 You can now configure clusters of GRAT servers which deliver much greater resilience and availability, enabling instant switchovers between GRAT nodes that are members of the cluster. All cluster members connect to the same database repository. No single GRAT node is considered primary—they are all equal partners in the n-node cluster.

4.2.1.9   iWD Runtime HA deployment

In 8.5.1 and prior versions iWD Runtime, Manager and Genesys Rules System runs on a standard Web Server (such as Apache Tomcat) or Application Server (such as IBM Websphere).

The iWD services that run on these web servers are grouped together in nodes. These nodes are defined in the configuration and can be used to support Multi-tenancy and service separation. The Nodes can be spread across physical and logical servers and are managed by the iWD Manager.

This architecture is depicted below:
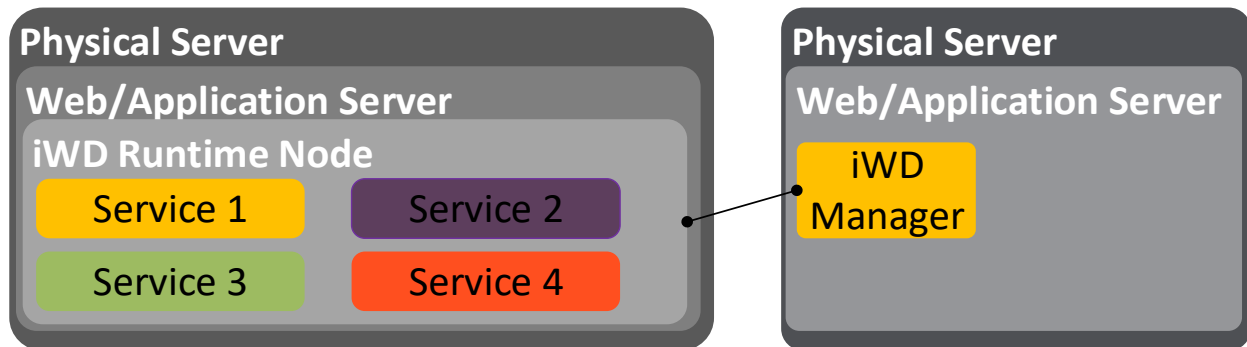
Figure 13: iWD Node & Service Architecture Example 1

Alternatively, iWD Manager can reside in this way on the same Physical Server and/or Web Application Server:
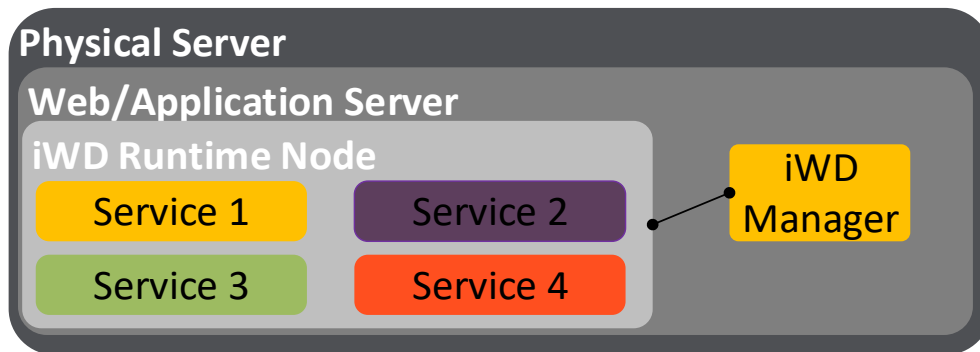
Figure 14: iWD Node & Service Architecture Example 2

High Availability
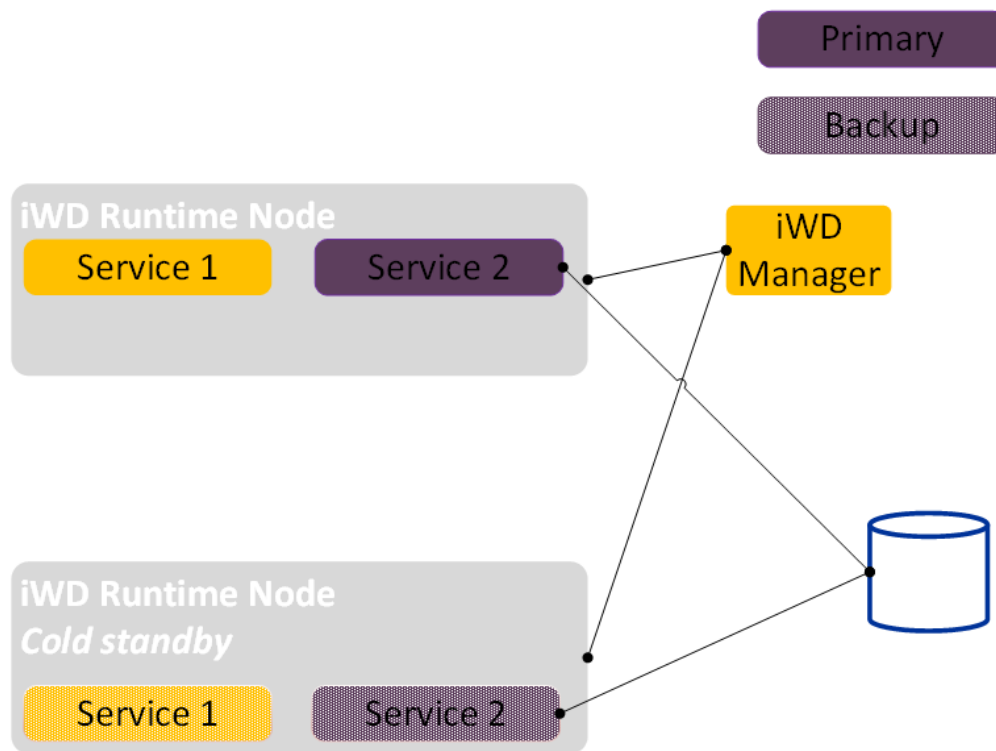
Figure 15: iWD Node & Service Primary & Backup Architecture

IWD runtime Sevices support cold redundancy mode

> In 9.0 iWD runtime is now running on jetty and IWD manager 9.0 now runs as a standalone Java application without. so they could not run on the same Application server any more.
>
> The new IWD manager can support Load Balance mode (sticky session).
>
> One single active IWD Runtime node should be deployed for each Solution.
>
> IWD Runtime 9.0 still supports Cold Stanby redundancy mode.

4.2.1.10 iWD HA summary

The following table summarizes the high availability levels supported by each component.

Genesys Component	HA Mode	Notes
iWD Manager	Load balancing (N+1)	HTTP Load Balancer required (sticky session)
iWD Datamart	Cold Standby	

Genesys Component	HA Mode	Notes
Interaction Server	Warm standby	Cluster is restricted for now
Interaction Server Proxy	Warm Standby	
iWD Capture Point	Warm Standby	
Rules Engine	Load balancing (N+1)	HTTP Load Balancer required
Rules Authoring Tool	Load balancing (N+1)	HTTP Load Balancer required
Universal Routing Server	Hot Standby/Warm Standby	
Stat Server	Warm Standby	
Orchestration Server	Load balancing(N+1)	HTTP Load Balancer required
Contact Server	Warm standby	
Framework and Management Layer	Warm Standby	

Table 3– High Availability Matrix

4.2.2 Disaster Recovery and Business Continuity

Business Continuity for the iWD solution is achieved using the same principles as the Digital solution. Through the use of cold standby servers, database replication and Workspace Desktop Edition capabilities iWD can be deployed across multiple physical locations to provide survivability even in the failure of a primary data center site.[1]

---

[1] Backup IxnServer is working in warm-standby mode. It is operational, but does not accept any connections. After switchover it has to connect to DB, run some initialization actions against db content and only after that it will open connections and start accepting clients. IT takes a few seconds normally.
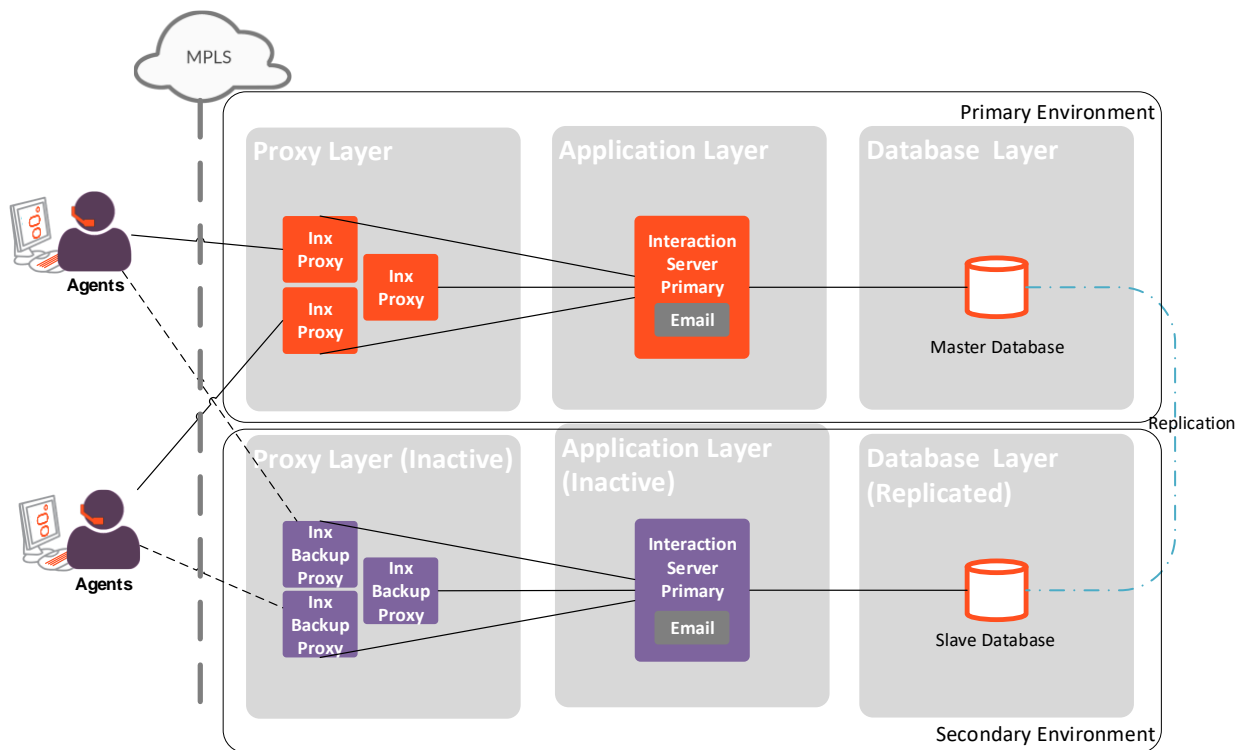
Figure 16: High-Level iWD Solution DR Model

The above figure shows how Business Continuity can be provided over two sites using a proxy, application and database layer duplicated at each site. Both Site A and Site B agents are connected through Site A. The UCS and Inx Server Proxies provide the Agent Desktop with the Genesys events and Customer contact history. The Interaction Server is used as an example of the Primary and Backup applications on each site. The Database supporting the iWD solution is configured as Master (live) and Slave (standby). Database replication software or other database duplication services provide a copy of the master database on the backup site B.

On failure of operations on Site A, the Genesys Desktop can be configured to switch over to the Inx Server and UCS Proxies on Site B, the slave database will become the master, with the data integrity provided by the database duplication policy. The agents will continue on Site B Datacentre with interruption only with 'in queue' items being lost.

A more detailed description of how this is to be achieved follows:

- As with any Disaster Recovery approach, the database layer must be replicated. In addition to the Interaction Server and Universal Contact Server databases, the Interaction Event, Rules and iWD Datamart databases must also be duplicated in the secondary data center. These databases run in slave mode with replicated data from the master database (in the primary data center).

- As with the Digital solution, a cold-standby HA pair of Interaction Server and Universal Contact Server are placed in the secondary data center. Duplicates of all iWD applications are also placed in the secondary data center. This would include the iWD Datamart Runtime Node, Rules Engine(s), Rules Authoring Tool(s) and iWD Manager(s). These servers operate in cold standby relative to the servers in the primary data center. They remain stopped and inactive until a site level failure of the primary data center occurs. At this point, they can be started and used.

4.2.3 Disaster Recovery Process

The following is a typical failover operation scenario:

1. A disaster is detected.
2. The decision to switch over to data center 2 is taken.
3. Stop all the active eServices servers (core and proxies) and iWD servers that might still be running in data center 1.
4. eServices and iWD agent activity is suspended.
5. The database administrator must make the DB of data center 2 the master. Data replication must be complete and accurate.
6. Update the transaction list Iwd_Esp_List, change the names of the UCS those that exist in data center 2.
7. Update the iWD Solution definition to use the Interaction Server from site 2
8. Update the iWD Solution definition with iWD Runtime node application of site 2
9. Update iWD Node to use Stat Server from site 2
10. Start the iWD Manager(s) and iWD Datamart Runtime Node in data center 2.
11. Start the Universal Contact Server pair and Interaction Server pair in data center 2.
12. Start the Interaction Server Proxy and Universal Contact Server Proxy instances in data center 2.
13. Change the value of the disaster-recovery.eservices-site option of the agent at the appropriate hierarchy level (this can be at the Application level if everyone shares the same data center at the same time) so that it points to data center 2.
14. Workspace instances automatically reconnect to Universal Contact Server Proxies and Interaction Server Proxies in data center 2 and agents can resume their eServices activity.

Note: The transition from passive to active of the peer eServices & iWD data center takes a significant amount of time, during which the eServices & iWD capabilities are not usable by agents.

Note: The provided procedure is high level. Customers should establish detailed instruction of failover process as part of a runbook which is incorporated into their overall business continuity procedures.

4.2.4   Disaster Recovery Architecture
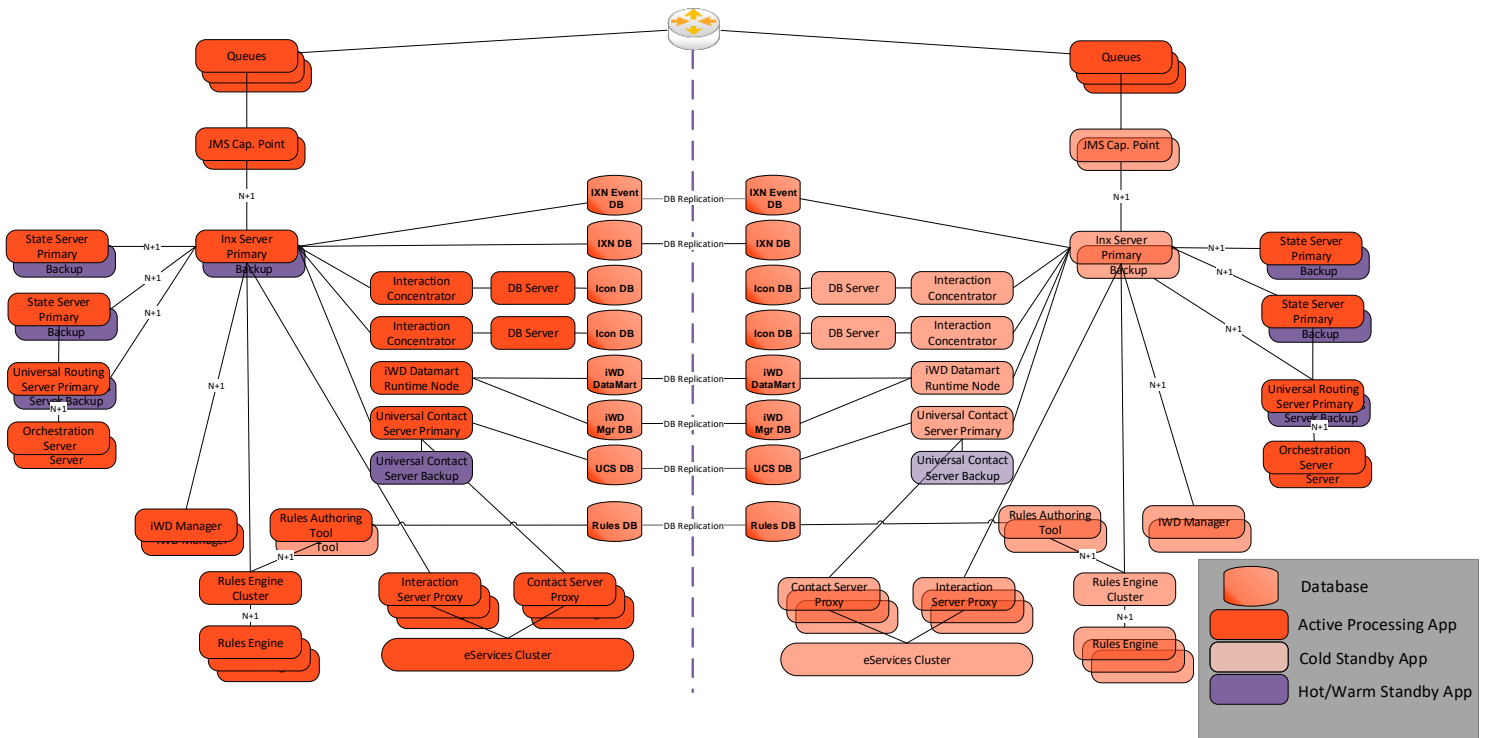
Figure 17: iWD – Disaster Recovery

iWD 9.0 Disater Recovery
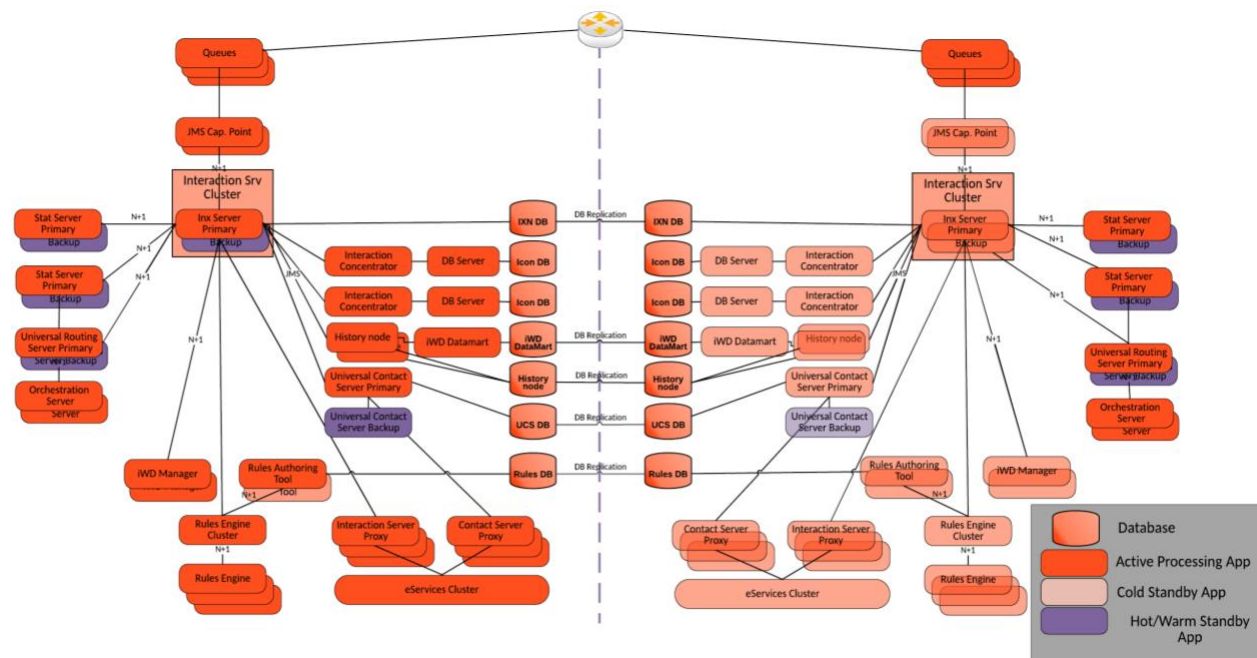
4.3 Virtualisation

Genesys provides an open-software based solution that enables interoperability with other market-leading products, to enable you to deploy Genesys products in a virtualized environment. The virtualization products documented in the Genesys Supported Operational Environments guide are supported with Genesys products running in specified virtualized environments, according to the Genesys virtualization guidelines and support policy in this section.

4.3.1 Genesys Virtualization Guidelines

Products using virtualization must run on sufficiently equipped computing platforms, particularly with respect to CPU speed, available memory, and network interfaces. Virtualization may increase the processing load compared to native deployment on a given node. You should follow the recommendations and best practices discussed in the virtualization platform vendor's documentation.

In all scenarios, when planning a production deployment in a virtualized environment, it is strongly recommended that you test the proposed configuration under simulated production conditions, to ensure acceptable sizing and performance.

To ascertain the sizing of a virtualized environment, take an overhead factor of 15% of resource performance degradation over an individual host (maximum of 85% of 80%).

5   Interaction View

5.1.1 Call Flows

The following diagram shows the interaction process flow between the different Genesys iWD components.
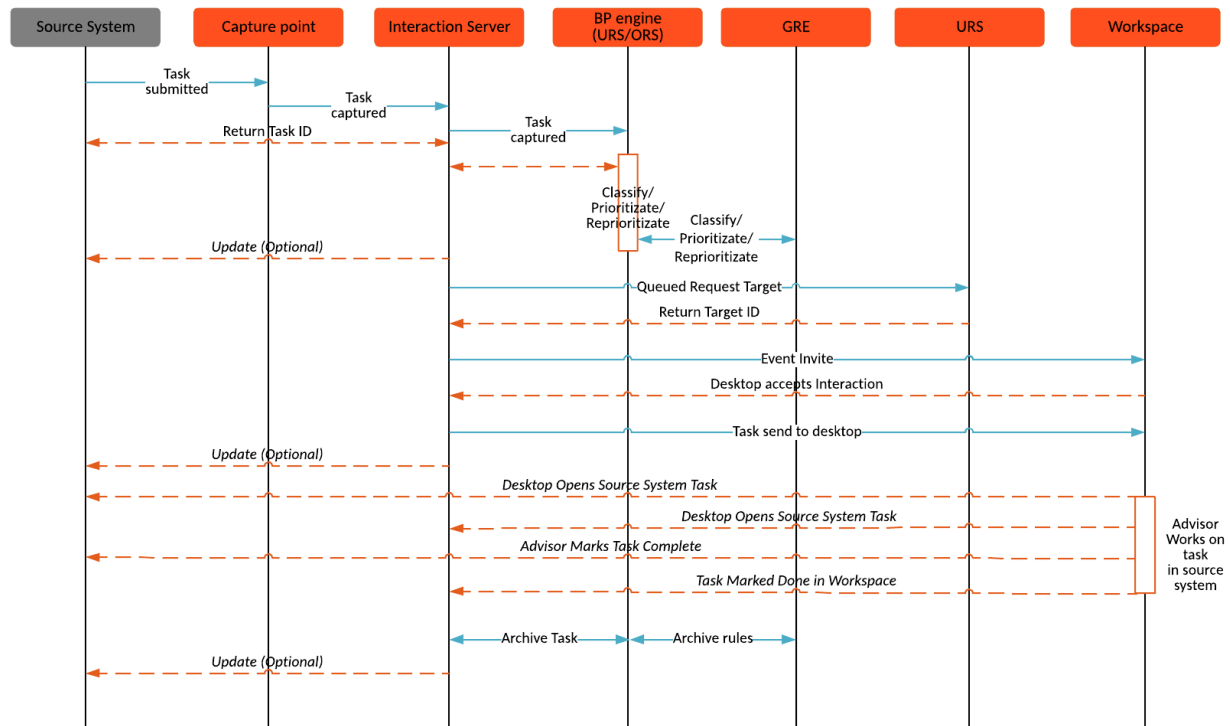
Figure 18: iWD Solution Call Flow

5.1.2 IWD internal Process Flow

The following is a representation of the internal Business Process governing the Classification/Prioritization and delivery of iWD Tasks.
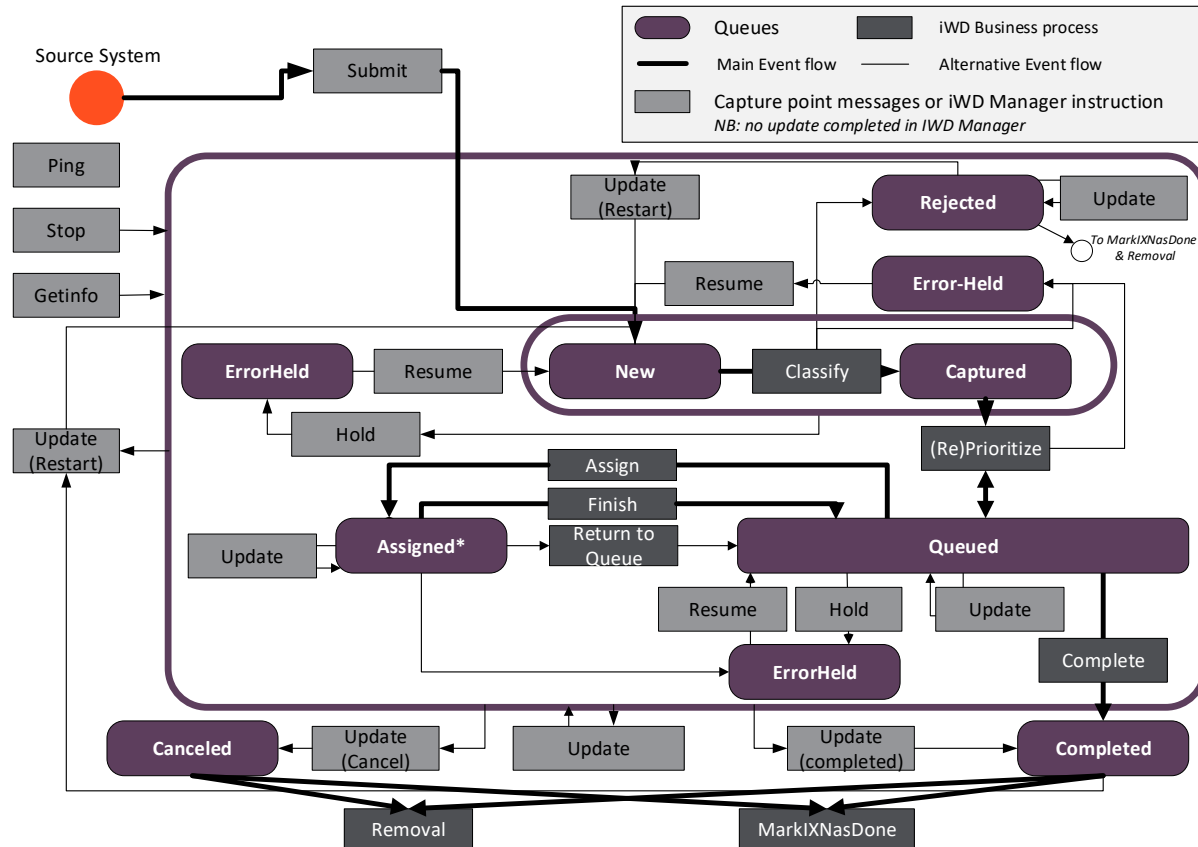
Figure 19: iWD Process flow

The process flow can be implemented in IRD (URS) or Composer (ORS). For new deployments, ORS is the recommended approach.

Detailed information on iWD Business Process can be found on the following Documents:

- IRD (URS)
  https://docs.genesys.com/Documentation/IWD/8.5.1/IWDBusProc/Welcome
  https://docs.genesys.com/Documentation/IWD/9.0.0/IWDBusProc/Welcome

- Composer (ORS)
  https://docs.genesys.com/Documentation/IWD/8.5.1/IWDBPComp/Welcome
  https://docs.genesys.com/Documentation/IWD/9.0.0/IWDBPComp/Welcome

6   Implementation View

This section of the document explains how to do a sizing exercise for presales people. This sizing will need to be revisited by PS/partner's experts during the project implementation based on the PS/Partner detail discovery session.

It explains how to do the high-level sizing based on a few parameters that that describes the envisioned environment for the prospect.

PS: current version 1.1.1 of the Genesys Sizing calculator does not support iWD. Support of iWD is foreseen in H2 2018.

> If you plan to migrate from an earlier version of iWD to version 9.0, you need to know that there is no out-of-the-box migration script of Datamart data. It is recommended to build a new Datamart for version 9.0.
>
> Note that, if this migration is requested by the customer, they can ask for PS/partner's experts involvement to conduct this migration.

6.1   Solution Sizing Guidelines

This section provides guidelines on sizing the solution components to determine the server requirements. Providing a simple and accurate sizing guideline is difficult as there are many variables, between the number of agents, the type of call flows, peak call volumes, network bandwidth, etc. that can occur within the customer's operations.

> At this stage, there is no sizing guide for iWD 9.0. The plan is to include this in the Genesys Sizing calculator. If you need to size an iWD opportunity contact your local Solution Architect or Solution Lead they will help you to evaluate this sizing

6.1.1   Solution Sizing – Centralized Deployment

The iWD Sizing can be found in the Genesys Hardware Sizing Guide on the Genesys Documentation Website here:

https://docs.genesys.com/Special:Repository/g_sizing.pdf?id=5d74b7ce-cffc-43af-ae29-8b53d85c0bb1

6.1.2   Sizing Assumptions

The following assumptions are made regarding the sizing of this solution.

System Profile	Number
Task expiration period (days)	30
iWD Data Mart DB retention period (days)	365
Incoming task rate (per day)	12,000
Average re-prioritization period (hours)	2
Maximum incoming task rate (per second)	1
Average number of tasks in backlog	10,000
Number of agents	500
Attached data size (KB) (> 1)	4

Table 4 – Sizing assumptions

- These are the inputs for a blueprint architecture for a small iWD deployment, comprised of 400 - 500 agents, and a yearly incoming task rate of up to 800-900,000 interactions.
- This type of deployment will have simple rules and routing strategies.
- There would be maximum two source systems using JMS/Web Services capture points. One of the source systems could be a Siebel Connector for desktop.
- Need 7 Departments and processes.
- Simple rules and low rate of backlog items.
- The test deployment should include HA elements and Workspace (with Siebel integration) as the desktop.
- Recommendations need to cover Database engines and sizing, Data mart and the use of Multiple Interaction Servers.

The following section describes how to calculate Effective Task Rate from the above sizing assumptions.

6.1.3 Sizing Calculations - Assumptions

The purpose of the sizing calculations is to ensure that the system can handle the required peak incoming task rate and the databases have enough disk storage to store backlogged and archived tasks data to meet customer requirements.

iWD includes a number of services that work asynchronously. The sizing calculation takes into account that some services share the same resources and can start at the same time. Based on Genesys' measurement, Interaction Server defines the overall performance of the iWD solution.

For proper sizing the following constraints should be used:
- Combined maximum CPU usage of all applications installed at a host does not exceed 80% of a host's total CPU.

- Maximum CPU usage does not exceed 80% of a host's total for multi-threaded applications and 80% of a single CPU core for single-threaded applications.
- Maximum memory usage does not exceed 80% of a host's total RAM.
- The iWD Runtime Data Mart node must be placed on separate hosts with at least 4 GB of RAM each.
- Number of agents with non-shared connections is limited to 4,000 per Interaction Server proxy.
- The total number of open TCP/UDP ports per host should not exceed 10,000.

6.1.4 Effective Task Rate

The number of tasks in the backlog (that is, in the queue), and the amount of attached data per task, impose additional load on iWD components.

The *effective task rate* is an integration parameter that accounts for:

- The task submission rate
- The size of the task backlog
- The task re-prioritization rate
- The attached data size per task

The following formula is used to calculate the maximum effective task rate that iWD can handle for a specific re-prioritization scheme and attached data size requirements:

*EffectiveTaskRate = (MaxInputTaskRate +TaskNumberInBacklog /ReprioritizationPeriodSec) * (1 + (K5 *(UserAttachedDataSizeKbytes -1)))*

Where:

- *EffectiveTaskRate* is the estimated effective task rate that is used for sizing calculations (in KB per second)
- *MaxInputTaskRate* is the maximum incoming task rate that the system has to handle during peak hours (in tasks per second)
- *TaskNumberInBacklog* is the number of tasks in the backlog
- *ReprioritizationPeriodSec* is the average re-prioritization period (in seconds)
- *UserAttachedDataSizeKbytes* is the amount of user attached data (in KB)
- *K5* is the coefficient that characterizes the dependency of the attached data size and the effective task rate K5 = 0.061

From the above sizing assumptions, our effective task rate would be:

Estimated Effective Task Rate (KB/sec)	Database Configuration
2.83	**All in One**

Table 5- Estimated Effective Task Rate

As effective task rate is lower than 20**,** the Database configuration is recommended as 'all in one'. This means that all the database services and databases can be hosted on a single server.

NB:
If task rate is higher or equal to 20, the Interaction Server DB and Interaction Server event log DB need to reside on separated host with a single driver per database.

If task rate is higher or equal to 45, beside the previous requirement, the interaction server database needs to be hosted on a multiple disk RAID.

6.1.5 Database Sizing

Based on Laboratory measurement, the required size, in KB, per task has been determined for each iWD database.

Database	KB Per Task
Interaction Server Database	38.00
Interaction Server Event Log	41.40
iWD Datamart database	0.43

Table 6 - Database Task Sizes

The following formulae can be used to calculate maximum file sizes (in KB)
for each iWD database:

- *InteractionServerDatabaseSize= (IxnDbKbytesPerTask +UserAttachedDataSizeKbytes -1) *(TaskNumberInQueues +TasksExpirationTimeout * TaskRatePerDay) /1024/1024*

- *InteractionServerEventLogDatabaseSize = (IxnLogDbKbytesPerTask +UserAttachedDataSizeKbytes - 1) *(TaskNumberInQueues +TasksExpirationTimeout * TaskRatePerDay) /1024/1024*

- *iWDDataMartDatabaseSize (in GB) = iWDDataMartDbKbytesPerTask * DatamartDbRetentionPeriod * TaskRatePerDay/1024/1024 +24*24/ReprioritizationIntervalinHours*

Where:

- *TaskRatePerDay* is the average number of tasks processed by the iWD system (per day)
- *IxnDbKbytesPerTask* is the average number of bytes stored in the Interaction Server database per processed task (in KB)
- *IxnLogDbKbytesPerTask* is the average number of bytes stored in the Interaction Server Event Log database per processed task (in KB)
- *iWDDataMartDbKbytesPerTask* is the average number of bytes stored in the iWD Data Mart database per processed task (in KB)
- *TaskNumberInQueues* is the average number of tasks in backlog in all iWD queues except the iWD_Completed queue
- *TasksExpirationTimeout* is the average task expiration time set by iWD business rules (in days)
- *IxnLogDbExpirationPeriod* is the maximum period before the data in the Interaction Server Event Log database is pruned (in days)
- *DatamartDbRetentionPeriod* is the amount of time data is retained in the Data Mart database (in days)
- *UserAttachedDataSizeKbytes* is the amount of user attached data (in KB)
- *ReprioritizationIntervalinHours: interval between 2 reprioritizations(in hours)*

Based on the assumption provide for the Small System on table 4 we can calculate the Size of the different database

• Interaction Server Database Size
(38 KB + (4KB-1))*(10000 Tasks + 30days * 12000tasks/day) /1024/1024= **14,47GB**

• Interaction Server Event Log Database Size

(41,40 KB + (2KB-1))*(10000 Tasks + 30days * 12000task/day) /1024/1024= **15,67GB**

• iWD Data Mart Database Size

= **289,78GB**

- iWD Manager and Rules Engine DB, you can assume a requirement of **1GB**

- In addition to the submitted tasks, a task event provides detailed audit information about a task. The creation, update, hold, resumption, cancellation, and completion of each task in iWD Manager generates an audit event in the Interaction Server Event Log database. For this you need to assume extra space requirement for the Task_Fact_Table of **48GB**.

Results are summarized in the following table

Database Name	Database File Size (GB) MS SQL 2012 or Oracle 11/12
Interaction Server database	14.47
Interaction Server Event Log database	15.67
iWD Data Mart database	289.78
Genesys Rules Database	1.0
Task_Fact_Table (Inx Server Log DB)	48.0
Total	**~369 GB**

Table 7 - Database Sizes

6.2   Host Sizing

6.2.1.1   Estimation of CPU Utilization

The purpose of this calculation is to check if CPU utilization is within the limits of the constraints. The following formula can be used to calculate CPU utilization for each iWD Genesys component:

• *CPU = (CPUO + K1 * EffectiveTaskRate + K2 * ActiveTasksNumber + K3 * NumberOfAgents) * CPU_Normalization*

Where:
• *CPU0* is a CPU utilization offset compensating for nonlinear behavior at idle and very low task rates;
• *EffectiveTaskRate* is calculated in "Estimating the Effective Task Rate" as calculate earlier in the document;
• *K1* is the coefficient that characterizes the dependency of CPU utilization and tasks rate;
• *K2* is the coefficient that characterizes the dependency of CPU utilization and tasks in backlog (in the iWD_Queued queue);
• *K3* is the coefficient that characterizes the dependency of CPU utilization and the number of active agents defined in the iWD solution;
• *CPU_Normalization* is the coefficient that can be used to normalize hardware used at the customer site to the equipment used in the Genesys performance laboratory for these tests.

Application	CPU0	K1	K2	K3
Interaction Server	1,1	1,28	2.23E-05	2.70E-03
iWD Runtime Node	0,87	0,68	4.03E-05	0
iWD Data Mart Node MAX	53	3,46	1.19E-05	1.42E-03
SQL Server	0,5	1,27	1.17E-05	0

URS	0	0,177	4.85E-05	0
Stat Server	0.1	0.038	4.27E-05	0

Table 8 - CPU calculation parameters

Based on the Sizing assumptions we get the follow CPU Usages:

Application	CPU Usage %	Maximum CPU Usage %
Interaction Server	8,07	638
iWD Runtime Node	4,14	640
iWD DataMart Node MAX	68,41	640
MS SQL Server	5,97	640
Universal Routing Server	1,23	80
Stat Server	0,69	80

Table 9 - CPU Usage per component

When multiple Genesys components are running on one physical host, the maximum CPU usage should not exceed 80% of the total CPU power of the host, and the maximum memory usage should not exceed the physical RAM size. The following formula defines the total CPU power:

*totalCPU = 100% * Number_of_CPUs * CPU_Number_of_Threads.*

For a host with HP ProLiant DL380 G7 X5660 2P 8Core it is 640%.

*(TotalCPU = 80% * 8 * 1)*

Proper production sizing requires that iWD Runtime node and iWD DataMart Node my not coexist on the same Host.

NB: For development environment, all components can reside on the same host.

Based on the above calculation and comments, the following deployments are recommended.

6.2.1.2 Single Site Environment

Single Site (Non-HA) Deployment

The following provides the server sizing for the sizing given in the above table:

Host 1	Configuration Server and Interaction Server
	iWD Manager, URS, Stat Server
Host 2	iWD Datamart, iWD Rules System
Host 3	Interaction Server database
	iWD Data Mart database
	Interaction Server Event Log database
	GRE Database

The following hosts are standard HP ProLiant DL380 G7 X5660 2P 8 Core 16 GB Servers.
This would give the following server layout (non-HA):

Server 1	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	Framework and Management Layer, Interaction Server, URS, ORS, Statserver, iWD Manager, iWD Runtime node
Application Server	WebSphere Application Server 7.1

Server 2	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	iWD Datamart node, Genesys Rules Engine
Web Application Server	WebSphere Application Server 7.1

Server 3	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	Interaction Server DB, DB Server, Log DB,
3rd Party Server	ORACLE 11G Database

Table 10: Physical Intel Servers

6.2.1.3 High Availability Deployment

The following shows HA deployment of the above sizing.

Physical Hosts for HA Deployment (or Dual Site Redundancy)

Host 1	Interaction Server
	iWD Runtime Node
Host 2	Interaction Server
	iWD Runtime Node
Host 3	iWD Manager, iWD Rules System
Host 4	iWD Rules System
Host 4	iWD Datamart node
Host 5	Interaction Server database
	iWD Data Mart database
	Interaction Server Event Log database
Host 6	Interaction Server database
	iWD Data Mart database
	Interaction Server Event Log database

This would give the following server layout (HA):

Server 1	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	Interaction Server Primary, URS Primary, ORS 1, Statserver, iWD Runtime node
Application Server	WebSphere Application Server 7.1, Apache Tomcat

Server 2	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	Interaction Server Backup, URS backup, ORS 2, Statserver, iWD Runtime node
Application Server	WebSphere Application Server 7.1, Apache Tomcat

Server 3	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	GRE, GRAT, iWD Manager
Web Application Server	WebSphere Application Server 7.1, Apache Tomcat

Server 4	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr

OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	GRE; iWD Datamart node
Web Application Server	WebSphere Application Server 7.1, Apache Tomcat

Server 5	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	Interaction Server DB, DB Server, Log DB, ORACLE 11G Database, ETL primary,
Web Application Server	WebSphere Application Server 7.1, Apache Tomcat

Server 6	HP ProLiant DL380 G7 X5660 2P 16GB-R P410i/1GB FBWC 8 SFF 750W RPS Perf IC Svr
OS	Red Hat Enterprise Linux AP 64-bit x86 5 v8.0
Genesys Services	Interaction Server DB, DB Server, Log DB, ORACLE 11G Database; ETL Backup,
Web Application Server	WebSphere Application Server 7.1, Apache Tomcat

Table 11 – Physical Intel Servers - HA

Assumptions

That the Web Application Services (WebSphere WAS 7.1) are distributed across the servers (except database servers):

- Provides reduction of single point of failures within the application (except for iWD Manager and Datamart Services).
- Ensures reliable performance as resource heavy applications can be shared across servers.
- Provides additional scalability, as additional resources can be added to hold additional web containers if necessary.
- All tasks in processes persist in the Interaction Server 'interactions' database, ensuring that any failure of hardware or software does not result in significant data loss.
- Note: Genesys does not support WebSphere Web Application Server 7.1 ND (Network Deployment).

The following drawing represents a typical deployment. ****Note that Tomcat is not required in iWD 9 ****
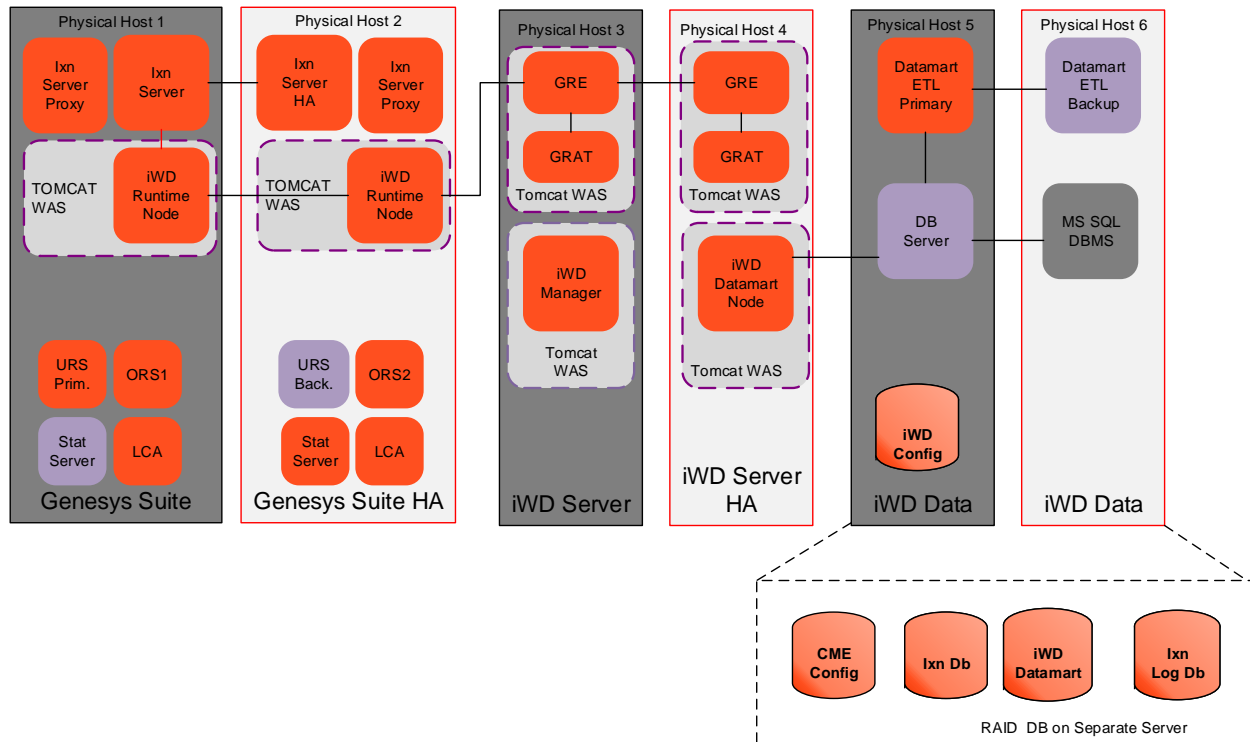
Figure 20: HA deployment

6.2.2 Virtual Deployment Guidelines

The following table provides the layout and requirements for deploying iWD in a virtual environment including the virtual machine sizing for CPU, RAM and disk

VM	CPU	RAM	Disk0/1
Configuration Server and Interaction Server	4	8	60GB/60GB
iWD Runtime Node, iWD Manager, URS, Stat Server	4	8	60GB/60GB
iWD Data Mart Node,	4	6	60GB/60GB

iWD Rules System			
Interaction Server database with RAID	4	8	60GB/60GB
iWD Data Mart database	4	8	60GB/60GB
Interaction Server Event Log database	4	4	60GB/60GB
GRE Database	2	4	60GB/60GB
TOTAL VM	26	46	

Table 12 - VM Sizing

6.2.3 Memory Usage

- The iWD Data Mart node takes 460 MB at idle and up to 18 GB during the inbound task rate of 60 tasks per second with 4,000 agents.
- Interaction Server takes up to 580 MB during the inbound task rate of 60 tasks per second with 4,000 agents.

6.3   Configuration Guidelines

The following lists key pre-requisites and configuration guidelines that are important to be aware of when deploying the Enterprise Workload Management (EWorkload Management) solution.

- Intelligent Workload Distribution (iWD) 8.5 is integrated with Genesys Rules System (GRS) 8.5+.
- Compatibility with URS and IRD:
  - o iWD 8.5 is compatible with Genesys Universal Routing Server (URS) 8.1.3 or higher. Interaction Routing Designer (IRD) 8.1.3 or higher is required for the provided business process (IWDBP) to work.
  - o In fact, Universal Routing Server (URS) and Interaction Routing Designer (IRD) **MUST** be from the same release in order to work together.

6.4   Security

Protecting the customer's infrastructure should be imperative for any solution deployment. Genesys components can typically be deployed securely. Many customers have their own security procedures that our solution needs to conform to. The following are guidelines for some of the requirements that may be encountered or should be recommended.

6.4.1   Secure Connections

Connections between components, especially those external to the solution should be secured. Where possible use SSL or HTTPS.

Typically customers will insist on firewalls to protect HTTP traffic from the wild internet. In a similar fashion Media Gateways or Session Border Controllers need to be configured to protect VoIP traffic.

TLS 1.2 support is now available in 9.005+

6.4.2   Data Security Considerations

Genesys users are required to authenticate themselves before using the system. Each Genesys GUI application contains a login dialog box that users use to login to that application. User should keep logins and passwords for these applications confidential.

Genesys also has another level of security that can be used to further limit the access that an authenticated user has once they are logged into the system. This is especially useful for access to the information in your Configuration Database. Access Groups can be used to group people with similar job function into groups of Persons who have the same set of permissions with respect to Configuration Database objects.

In many cases, users of Configuration Manager fall into a small number of categories with similar access needs. A team of agents all performing the same tasks often have identical access needs. Two or three people responsible for maintaining a specific site of the contact center may also have identical access needs. By adding individuals to Access Groups, and then setting permissions for those groups, access control is greatly simplified.

The following Default Access Groups exist in an Enterprise configuration environment:

Users

Members of this group have Read and Execute permissions with respect to all objects under the Resources folder, except the Access Groups. By default, every agent added to the Configuration Database becomes a member of this group.

Administrators

Members of this group have:
- Full Control permissions with respect to all objects under the Resources folder, except the Access Groups.

- Read and Change permissions with respect to Users and Administrators Access Groups.

- By default, every non-agent added under the Configuration Database becomes a member of this group.

Super Administrators

Members of this group have Full Control permissions with respect to every object in the Configuration Database except the default Configuration Server application. No person is added to this group by default.

6.5   VM and OS hardening

Operating Systems are often pre-configured for ease of use and development and not necessarily security. If the OS is being installed or is part of a set of VMs being delivered, then that OS should be hardened to ensure that typical security holes are addressed.

The following document provides recommendations that can be used to harden the solution VMs and the OS.

https://portal.genesyslab.com/dir/rd/rndsop/Shared%20Documents/10%20Security%20and%20Compliance/SaaS%20Program%20Policies/System%20Configuration%20Standards/10.06.10%20SaaS%20Standard%20-%20Windows%20Server%202008%20Configuration%20-%20v1.0.docx

6.6   Network Considerations

The customer's network infrastructure is a key element for consideration when integrating iWD into their environment. Networks at each customer's sites will be different and unique to their own requirements. In most cases, the network will already be in place and the solution will need to contend with its idiosyncrasies.

6.7   Operational Management

Once a Genesys solution is in place, managing the solution becomes a primary concern of the customer. There are two approaches to operational management that need to be considered for the solution.

1. If Genesys components are the main focus of the operation, then using Genesys Administrator and GAX becomes the primary mechanism for administering the solution.

2. If Genesys is part of a larger operation, then integration into the customer's operational management tool becomes advisable.

In both cases, Genesys Administration and GAX software need to be installed and configured to manage the solution.

6.7.1 Network Management Systems

If the customer does have a Network Management System (NMS), then Genesys components need to be integrated into their NMS. This is typically done by setting up the SNMP Master Agent to send SNMP events and info to their NMS.

Examples of supportable NMS include Zabbix, HP OpenView and OpenNMS (an open source NMS - http://www.opennms.org/).

In addition to Genesys monitoring the following additional recommendations should be considered:

- Monitor JVM status, especially memory usage. Note that a regular saw-tooth pattern should be observed due to Java garbage collection.
- Set alarms for specific disk and CPU thresholds
- Additional SNMP traps

6.7.2 Serviceability

Serviceability relates to the ability of technical support to identify issues and defects within the system. Most of this relates to the ability to retrieve logs and configuration information and pass them back to technical support.

Setting up logical logging locations is a best practice that can reduce the time to send logs to support. Configuring 3rd party components to log into the same location is ideal as well. Establishing a "log" directory in the root of the disk structure and logging there is recommended:

```
D:\GCTI\log
```

```
/log
```

At the time of this writing, technical support is building a tool that will aggregate and retrieve logs for analysis from a customer's environment. Once in place, this should be a standard part of the solution.

Proactive monitoring provides the most complete servicing of a customer's environment. This is provided through Premium Care and is beyond the scope of this document.

6.8 Localization and Internationalization

Localization and Internationalization are topics for numerous Genesys components, especially user interfaces and reporting. Within the Workload Management Solution, the main components to pay particular attention are:

- Framework and Configuration need to Specify UTF8 parametering

- Administration & Operation management user interfaces

- Agent desktop software

- Reports

iWD 9.0 is only available in English