Universal Routing 7.6

Cost-Based Routing

Configuration Guide

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Genesys Telecommunications Laboratories, Inc., a subsidiary of Alcatel-Lucent, is 100% focused on software for call centers. Genesys recognizes that better interactions drive better business and build company reputations. Customer service solutions from Genesys deliver on this promise for Global 2000 enterprises, government organizations, and telecommunications service providers across 80 countries, directing more than 100 million customer interactions every day. Sophisticated routing and reporting across voice, e-mail, and Web channels ensure that customers are quickly connected to the best available resource—the first time. Genesys offers solutions for customer service, help desks, order desks, collections, outbound telesales and service, and workforce management. Visit www.genesyslab.com for more information.

Each product has its own documentation for online viewing at the Genesys Technical Support website or on the Documentation Library DVD, which is available from Genesys upon request. For more information, contact your sales representative.

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Preface

Welcome to *Universal Routing 7.6 Cost-Based Routing Configuration Guide*. This guide describes how to configure a Genesys cost-based routing (CBR) solution. It includes information on configuring infrastructure and resource cost, configuring cost as an agent property, activating a CBR solution, and using the cost-based routing wizard. The appendix present an overview of CBR reporting and sample cost-based routing strategies.

This document is valid only for the 7.6 release of Universal Routing.

Note: For all Genesys product documentation, visit the Genesys Technical Support website, or request the Documentation Library DVD, which you can order by e-mail from Genesys Order Management at orderman@genesyslab.com.

This preface provides an overview of this document, identifies the primary audience, introduces document conventions, and lists related reference information: This information is divided among the following topics:

Customer Interaction Management

Universal Routing enables you to design sophisticated strategies for handling both voice and non-voice interactions and for directing them to an appropriate target. Universal Routing also provides data that is required in order to report on interaction handling in your Enterprise.

Universal Routing, which comprises Enterprise Routing and Network Routing, is one part of the Genesys Customer Interaction Management (CIM) Platform. The CIM Platform consists of the following:

- Genesys Universal Routing
- Genesys Reporting (CC Analyzer, CCPulse+)
- Genesys Multimedia
- Genesys Management Framework

Each of these components has its own documentation set.

Multimedia

Genesys Multimedia is the core of a series of components that work together to handle interactions from disparate media-based devices. It enables you to centralize your handling of the various channels that customers use to reach your contact center. The core functionality that Multimedia provides must operate with at least one of the following media channels:

- Genesys E-mail. This channel has an optional enhancement: Genesys Content Analyzer, which uses natural language technology to provide automated classification of incoming e-mail.
- Genesys Web Media (chat).
- Genesys Open Media. This channel enables you to add customized support for other media. For more information see the documentation for the Genesys Developer Program 7.6, particularly the documentation pertaining to the Media Interaction SDK.

Note: Universal Routing 7.6 can work in a pure voice environment or with the Multimedia software components, which enable the additional routing of non-voice interactions on the basis of IRD-designed business processes.

Intended Audience

This guide is primarily intended for users involved in developing and setting up a routing solution, including administrators and strategy designers. This guide assumes that you have a basic understanding of:

- Computer-telephony integration (CTI) concepts, processes, terminology, and applications.
- Network design and operation.
- Familiarity with your own network configurations.

You should also be familiar with the Genesys Framework architecture and functions.

Chapter Summaries

In addition to this preface, this guide contains the following chapters and appendix:

- Chapter 1, "Overview," on page 17, describes the elements of a CBR solution, solution levels, cost-based routing compatibility with ther types of routing, strategy creation guidelines, Configuration Layer objects to support cost-based routing, and how to a associate `Site` and `Cost Contract` objects with Configuration Layer objects. It also lists the limitations association with a CBR solution.
- Chapter 2, "Infrastructure Cost," on page 35, describes the part of interaction cost associated with transfering an interaction from the Enterpise to a Site or from a Site back to the Enterprise.
- Chapter 3, "Resource Cost," on page 43, describes the part of interaction cost associated with Cost Contracts.
- Chapter 4, "Activating a CBR Solution," on page 73, briefly describes the two methods of activating a CBR solution in routing strategies. It also includes a discussion of Interaction Types and describes how to set the Dominant Optimization Factor.
- Chapter 5, "Cost as an Agent Property," on page 79, describes a simple method of cost-based routing.
- Chapter 6, "Using the Wizard," on page 83, describes how to use the the cost-based routing wizard.
- Appendix A, "Cost-Based Routing Reporting," on page 148, describes how to configure Genesys Interaction Concentrator (ICON)/Info Mart to capture attached cost-based routing data from interactions to enable the building of CBR reports as a Professional Services engagement.
- Appendix B, "Sample Strategies," on page 193, describes two methods for activating a CBR solution, and it presents sample strategies.

Document Conventions

This document uses certain stylistic and typographical conventions—introduced here—that serve as shorthands for particular kinds of information.

Document Version Number

A version number appears at the bottom of the inside front cover of this document. Version numbers change as new information is added to this document. Here is a sample version number:

76r_sol_11-2006_v7.6.000.00

You will need this number when you are talking with Genesys Technical Support about routing solution that can be implemented with Universal Routing 7.6.

Type Styles

Italic

In this document, italic is used for emphasis, for documents' titles, for definitions of (or first references to) unfamiliar terms, and for mathematical variables.

Examples:

- Please consult the *Genesys 7 Migration Guide* for more information.
- *A customary and usual practice* is one that is widely accepted and used within a particular industry or profession.
- Do *not* use this value for this option.
- The formula, $x + 1 = 7$ where x stands for . . .

Monospace Font

A monospace font, which looks like `teletype or typewriter text`, is used for all programming identifiers and GUI elements.

This convention includes the *names* of directories, files, folders, configuration objects, paths, scripts, dialog boxes, options, fields, text and list boxes, operational modes, all buttons (including radio buttons), check boxes, commands, tabs, CTI events, and error messages; the values of options; logical arguments and command syntax; and code samples.

Examples:

- Select the `Show variables on screen` check box.
- Click the `Summation` button.
- In the `Properties` dialog box, enter the value for the host server in your environment.
- In the `Operand` text box, enter your formula.
- Click `OK` to exit the `Properties` dialog box.
- The following table presents the complete set of error messages T-Server distributes in `EventError` events.
- If you select `true` for the `inbound-bsns-calls` option, all established inbound calls on a local agent are considered business calls.

Monospace is also used for any text that users must manually enter during a configuration or installation procedure, or on a command line:

Example:

- Enter `exit` on the command line.

Screen Captures Used in This Document

Screen captures from the product GUI (graphical user interface), as used in this document, may sometimes contain a minor spelling, capitalization, or grammatical error. The text accompanying and explaining the screen captures corrects such errors *except* when such a correction would prevent you from installing, configuring, or successfully using the product. For example, if the name of an option contains a usage error, the name would be presented exactly as it appears in the product GUI; the error would not be corrected in any accompanying text.

Square Brackets

Square brackets indicate that a particular parameter or value is optional within a logical argument, a command, or some programming syntax. That is, the parameter's or value's presence is not required to resolve the argument, command, or block of code. The user decides whether to include this optional information. Here is a sample:

```
smcp_server -host [/flags]
```

Angle Brackets

Angle brackets indicate a placeholder for a value that the user must specify. This might be a DN or port number specific to your Enterprise. Here is a sample:

```
smcp_server -host <confighost>
```

Related Resources

Consult these additional resources as necessary:

- *Universal Routing 7.6 Deployment Guide.* The first part of the guide provides information you will need to get started: a high-level overview of Universal Routing features and functions, including product architecture, system availability, redundancy information and deployment-planning. The second part provides instructions for deploying Universal Routing components, and describes how to start and stop these components once you have configured and installed them.
- *Universal Routing 7.6 Reference Manual,* which describes and defines routing strategies, IRD objects that can be used in routing strategies, Universal Routing Server (URS) functions that can be used in routing strategies, URS options, and other options that affect routing, number translation, pegs, statistics used for routing, and log events.

- *Universal Routing Business 7.6 Process User's Guide*, which contains step-by-step instructions for creating interaction workflows (*business processes*), which direct incoming customer interactions through various processing objects. The goal is to generate an appropriate response for the customer.
- *Universal Routing 7.6 Strategy Samples*, which simplifies strategy configuration for first-time users of the strategy development tool, Interaction Routing Designer. To achieve this goal, this document provides examples of simple voice and e-mail routing strategies that can be used as general guides during the design stage.
- *Universal Routing 7.6 Interaction Routing Designer Help,* which describes how to use IRD to create routing strategies. It also describes Interaction Design view, where you create business processes that route incoming interactions through various processing objects with the goal of generating an appropriate response for the customer.
- *Genesys 7 Events and Models Reference Manual*, which provides information on most of the published Genesys events and their attributes, and an extensive collection of models describing core interaction processing in Genesys environments.
- *Genesys 7.1 Resource Capacity Planning Guide*, which provides instructions on using the Genesys Agent Capacity Wizard to set up agent capacity rules, which affect the routing of interactions to agents.
- *Framework 7.6 Stat Server User's Guide*, which introduces you to the concepts, terminology, and procedures relevant to Genesys Stat Server.
- *Framework 7.6 Combined Log Events Help*, which provides details about the error and informational messages that server components (including Universal Routing Server) generate.
- *Reporting Technical Reference Guide for the Genesys 7.2 Release,* which describes the statistics that the CC Analyzer and CCPulse+ applications gather about overall contact center performance and the reporting templates and reporting layouts that you can use to present that data.
- *Genesys 7 Interoperability Guide*, which identifies which Genesys components can successfully work together, and which versions are not compatible.
- *Genesys 7 Hardware Sizing Guide*, which provides hardware and CPU guidelines for Genesys products.
- *Genesys Technical Publications Glossary,* which ships on the Genesys Documentation Library CD and which provides a comprehensive list of the Genesys and CTI terminology and acronyms used in this document.
- *Genesys 7 Migration Guide*, also on the Genesys Documentation Library CD, which provides a documented migration strategy from Genesys product releases 5.1 and later to all Genesys 7.x releases. Contact Genesys Technical Support for additional information.

- Release Notes and Product Advisories for this product, which are available on the Genesys Technical Support website at http://genesyslab.com/support.

Information on supported hardware and third-party software is available on the Genesys Technical Support website in the following documents:

- *Genesys 7 Supported Operating Systems and Databases*
- *Genesys 7 Supported Media Interfaces*

Genesys product documentation is available on the:

- Genesys Technical Support website at http://genesyslab.com/support.
- Genesys Documentation Library CD, which you can order by e-mail from Genesys Order Management at orderman@genesyslab.com.

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When you send us comments, you grant Genesys a nonexclusive right to use or distribute your comments in any way it believes appropriate, without incurring any obligation to you.

Chapter

1 Overview

This chapter contains an overview of Genesys cost-based routing (CBR). If you wish to immediately start the configuration process, go to "Using the Wizard" on page 83.

Note: While the CBR model described in this chapter is not media-specific, cost-based routing in the 7.6 release is supported for voice interactions only. Supported types are Time Division Multiplexing (TDM) and Voice over Internet Protocol (VOIP) interactions.

With a CBR solution, Universal Routing Server (URS) can:

- Calculate the cost of routing to any target based on configuration information, statistical values, and its own data.
- Use the cost of routing to a target as additional target selection criteria.
- Use information contained in strategies to activate/de-active cost-based routing during target selection.
- Automatically attach to interactions information that can be used for CBR.

Note: Contact Genesys Technical Support before configuring a cost-based routing (CBR) solution. Depending on the number of features you implement, CBR can be complex to configure for the first-time user. Because of this, and in order to ensure successful first implementations, Genesys wants to initially track all customers implementing CBR via contact with Genesys Technical Support.

The information in this chapter is divided among the following topics:

What Is a CBR Routing Solution?

A *routing solution* refers to the method of, and configuration elements for, getting a customer interaction to the right target in the shortest amount of time. In the case of a CBR solution, URS considers the cost of routing to a target, comprised of the *Infrastructure* cost and/or the *Resource* cost, as additional selection criteria when choosing the right target.

Infrastructure Cost

Infrastructure cost is related to items such as switches, phones, transport layer, and so on. It is the cost to transfer an interaction from Site A to Site B including Sites associated with Switches that can service multiple locations. Or it can be the cost to transfer an interaction back to the Enterprise from a Site. You can also define Infrastructure cost for an interaction that is being sent from Switch A to an outsourcer whose Resources (agents, DNs, and so on) are not defined by Genesys (see “Non-Configured DNs” on page 19).

For more information on Infrastructure cost, continue with Chapter 2, “Infrastructure Cost,” on page 35.

Resource Cost

A Resource can be a human (agent, knowledge worker, employee, and so on) or a non-human (IVR, IVR port, and so on) entity that belongs to the Enterprise or Network Provider.

Resources can also include outsourcers. For the purpose of CBR, there are two types of outsourcers:

- An outsourcer that is involved only in staffing (supplying agents). In this case, the Enterprise is responsible for supplying the Infrastructure. For this type of outsourcer, the Enterprise’s Genesys software can monitor the outsourcer’s Resources, such as DNs and agents.
- An outsourcer that manages everything from Infrastructure to staffing. For this type of outsourcer, the Enterprise’s Genesys software does not have the necessary visibility to monitor the outsourcer’s Resources (DNs, agents, and so on) because the outsourcer does not have the Genesys software installed. The routing targets are typically expressed as non-configured DNs (see page 19).

For more information on Resource cost, continue with Chapter 3, "Resource Cost," on page 43.

Note: CBR is not supported in a Federated environment in which resources are shared across Enterprises, as described in the *Framework 7.5 Federation Proxy Deployment Guide*.

Non-Configured DNs

Certain types of `DN` objects (see page 32) in the Configuration Database can have associated `Cost Contract` objects (see page 44). However, if a particular DN is associated with a routing destination where the Genesys software is not installed, Stat Server cannot monitor the DN for the purpose of generating state and statistical information. In this case, the main usage for such a DN is to enable the routing of calls to a *non-monitored destination* (a Site where there is no Genesys software installed). This is a common practice for hosted vendors who route calls in load balancing mode to different Sites that might not be Genesys customers. For additional information on outsourcers, see "Nonmonitored Destinations" on page 85.

Solution Levels

You can configure CBR solutions of varying complexity:

- **Level 1 Solution:** Defines the Infrastructure (transfer) cost only for Sites that URS can potentially route to (such as outsourcers).
- **Level 2 Solution:** Defines the Resource cost based on Cost Contracts for different interaction types. This solution can use an agent hourly rate, a flat rate per interaction, or a volume-based rate.
- **Full-Scale Solution:** Uses a combination of Level 1 and Level 2.
- **Simple Cost-Based Routing:** This is not actually a solution, but merely involves defining cost as an agent property in the Configuration Layer (see page 79).

Benefits and Features

Cost-based routing represents entirely new routing functionality for both Genesys Universal Routing and the contact center software market itself. A Genesys CBR solution has the following benefits:

- Provides a combination of optimized routing features that can significantly improve Return on Investment (ROI) by making routing decisions that are sensitive to operational expenditures.

- Provides customers with the flexibility to route based on cost while still considering performance objectives, agent skills, availability, and/or occupancy.
- Enables you to perform different types of cost-based routing based on the incoming interaction media type, type of service requested, and customer revenue potential (`Customer Segment`).
- Enables you to define existing contracts with outsourcers by using Configuration Database objects and to route based on this data.

  For example, some outsourcers may use an agent hourly rate; others may use cost per interaction, or they may charge based on volume or the day of the week or year. Some may charge penalties if the actual volume of interactions falls under or over a forecasted volume. A Genesys CBR solution accommodates all these differences.

The features of a CBR routing solution are as follows:

- Enables you to define two types of interaction cost: Resource cost (see page 18) and Infrastructure cost (cost to transfer an interaction from Site A to Site B, which includes switches that are able to serve multiple locations) (see page 18). Together, Resource cost and Infrastructure cost comprise the total routing cost of an interaction. You can also define Infrastructure cost for an interaction being sent to a Site (such as an outsourcer) whose Resources (Persons, DNs, and so on) are not defined by Genesys (non-monitored destination).
- Uses a Configuration Layer entity called a `Site` object (see page 36) to define Sites (remote and otherwise) that URS can potentially route to. Each `Site` object can have its own `Configuration Units` (such as `Persons` (agents), `Switches`, and so on) and references to other Sites that can potentially be routed to (including the transfer cost to each Site).
- You can assign Resource cost to various objects in the Configuration Layer: `Person`, `AgentGroup`, `Place`, `PlaceGroup`, `DN` (certain types), `Site`, and `Tenant` (see page 31).
- Gives the flexibility of defining Resource cost for different Interaction Types (see page 46).
- For each Interaction Type defined, you can specify a Dominant Optimization Factor (see page 48). This factor controls whether URS should use Cost as additional selection criteria or whether it should route based on Performance/Service Objective (minimum/maximum value of a statistic).
- You have the option of defining Resource cost for different Interaction Types based on interaction volume (Volume Contract on page 56) or using a variable rate (Variable Rate Contract on page 54). If you select variable rate processing, you can specify a flat rate per interaction or use an agent hourly rate/average handling time.

- If you use a Volume Contract, you then define one or more Day Contracts (see page 58). A Day Contract forecasts interaction volume for a specific day, such as a holiday, day of the week, or a specific day of the year. For each Day Contract, you forecast interaction volume for different volume periods during the day, define a base rate per interaction in each volume period, and penalties for interaction volume over or under the forecast.
- When a Volume Contract is used, URS implements a special pacing and regulating algorithm (see page 66) to evenly distribute the number of interactions sent to a routing destination.
- You can activate CBR via a new function (see page 74) or a new IRD predefined statistic (see page 77).
- Universal Routing provides sample strategy files that demonstrate how to activate and configure cost-based routing (see page 193).
- Genesys ICON/Info Mart can be configured to capture sufficient data to allow the building of CBR reports as a Professional Services engagement (see page 148).

CBR Solution Elements

To help you configure a CBR solution, Genesys supplies the following solution elements:

Wizard The cost-based routing wizard (see Figure 42 on page 104) is a child of the Universal Routing Wizard (see Figure 37 on page 101). You access the cost-based routing wizard through Genesys Wizard Manager (see Figure 35 on page 99). This guide supplies worksheets (see page 86) to prepare you for entering data in wizard screens. See "Wizard Worksheets" on page 86 for more information.

User Interfaces

After using the wizard user interface to create the "CBR Objects" on page 24, you can use Configuration Manager (see Figure 1 on page 25) to fine-tune configuration information. You use Interaction Routing Designer's (IRD) `Routing Design` window (see Figure 27 on page 74) to create strategies that activate cost-based routing either via a special function or via a special statistic.

Function Function TargetSelectionTuning (see page 74) enables you to activate CBR without the need to modify existing strategies (other than by adding a Function object that sets TargetSelectionTuning to `true` for routing targets). It works together with regular statistics-based target selection.

Statistic Another way to activate a CBR solution is by selecting the predefined IRD statistic `RStatCost` on the `Target Selection`

tab of the Routing Selection object (see page 77). Activating CBR through `RStatCost` causes URS to consider both the Infrastructure and the Resource cost when evaluating a target. If one of these is not configured, URS ignores that part.

Attached Data for Reporting

URS automatically attaches cost-based routing information to interactions when the URS option `report_targets` is set to `true` and you are implementing Infrastructure and/or Resource cost. The attached cost-based routing data is propagated into interaction-related event messages from T-Server (for voice interactions). You can then configure Genesys Interaction Concentrator (ICON)/Info Mart to capture sufficient data from Universal Routing to allow the building of CBR reports as a Genesys Professional Services engagement. See Appendix A, "Cost-Based Routing Reporting" on page 148 for more information.

Samples Universal Routing 7.6 provides two cost-based routing sample strategies: `cbr_enabled_sample` and `costbasedrouting_sample`. Each of these sample strategies demonstrate cost-based routing between DNs. See Appendix B, "Sample Strategies" on page 193 for more information.

Compatibility With Other Types of Routing

Note: Other than the exceptions listed under "Limitations" on page 32, a CBR solution is applicable to and compatible with all other routing models including those listed in this section.

You can combine cost-based routing with other types of routing. For example:

- With skills-based routing, the right target can be an available agent with the skills that most closely match the customer's needs.
- With share agent by service level agreement routing, the right target can be the most appropriately skilled agent borrowed from another business unit because all agents serving the called business line are busy.
- With service-level routing, URS can route interactions based on a service-level factor for a customer segment. For example, a business might have a service-level requirement that ninety percent of the interactions received from premier customers must be answered in 10 seconds.
- With statistical routing URS can route interactions based on the minimum or maximum value of a statistic that Stat Server supplies; for example, `StatAgentLoading`.

- With database-driven routing, URS can route interactions based on information retrieved from a database. For example, the customer's account number (entered via an Interactive Voice Response (IVR) unit and stored in the interaction) can be used to look up the customer's revenue potential (such as Gold, Silver, or Bronze `Customer Segments`) in the database.
- With business-priority routing, you can fine-tune the criteria that URS uses when selecting interactions from queues. You can select the interaction with the highest priority, the interaction with the longest current wait time, or the interaction with oldest age. You can also use "what-if" wait time, highest risk factor in service objective based on current wait time, highest risk factor in service objective based on age of interaction, and highest risk factor in service objective based on predicted wait time.

Note: The preceding is only a partial list of the types of routing that Universal Routing 7.6 supports. For a complete list, see the *Universal Routing 7.6 Deployment Guide*.

Strategy Creation Guidelines

When creating strategies that combine cost-based routing with other types of routing, you must still take into account the Genesys philosophy that is inherent in URS:

- Unless you design your strategy to do otherwise, if only one agent is available (as is often the case in contact centers), that particular agent will get the call. This will happen regardless of the cost associated with the agent taking the call.
- If possible, to ensure that any appropriate cost-based routing is applied, design a strategy that builds in even a small amount of wait time so that you can find the best agent for a given Cost Contract.
- Cost-based routing is a routing-optimization feature. Like all routing optimization features, there are possible drawbacks. One possibility is degradation of quality of service as the result of sending too much call traffic in one direction. Be sure to account for inappropriate call routing based only on cost by looking at quality-of-service metrics (abandonment rates, average time in queue, and so on) in the criteria for how you target calls.

See "Sample Strategies" on page 193 for more information.

CBR Objects

Configuration Layer 7.6 contains the following objects to support CBR.

- `Site` object
- `Cost Contract` object (an extension of the `Objective Table` object)
- `IT Contract` object (an extension of the `Stat Table` object)
- `Day Contract` object (an extension of the `Statistical Day` object)

This section discusses each of these objects.

Site Object

Infrastructure cost (see page 18) is represented by a Configuration Layer entity called a `Site` object. Each `Site` object:

- Refers to a location of contact center Resources (remote and otherwise) that URS can potentially route to.
- Can have references to other Sites that can potentially be routed to (including the transfer cost to each Site).

A *Site* is similar to a *Switch*, but is more generic in that a Site is not limited to voice DNs (although only TDM and VOIP interactions are supported in the 7.6 release of CBR). Because the notion of "Switch" is strongly voice-dependent, Configuration Layer introduced the `Site` object, which is media-independent.

Note: In many cases, a Switch can be represented by a Site in Configuration Layer.

The `Site` object is a class of the `Folder` common object. To view a `Site` object's properties, right-click the folder, and then select `Properties` (see Figure 9 on page 37). `Site` can also be a property of `Person`, `Agent Group`, `Place`, `Place Group` objects, as well as certain types of `DN` objects (see "Site and Cost Contract Associations" on page 31). For additional information on `Site` objects, see "Defining Sites" on page 83. Figure 1 shows some example `Site` objects in Configuration Manager.

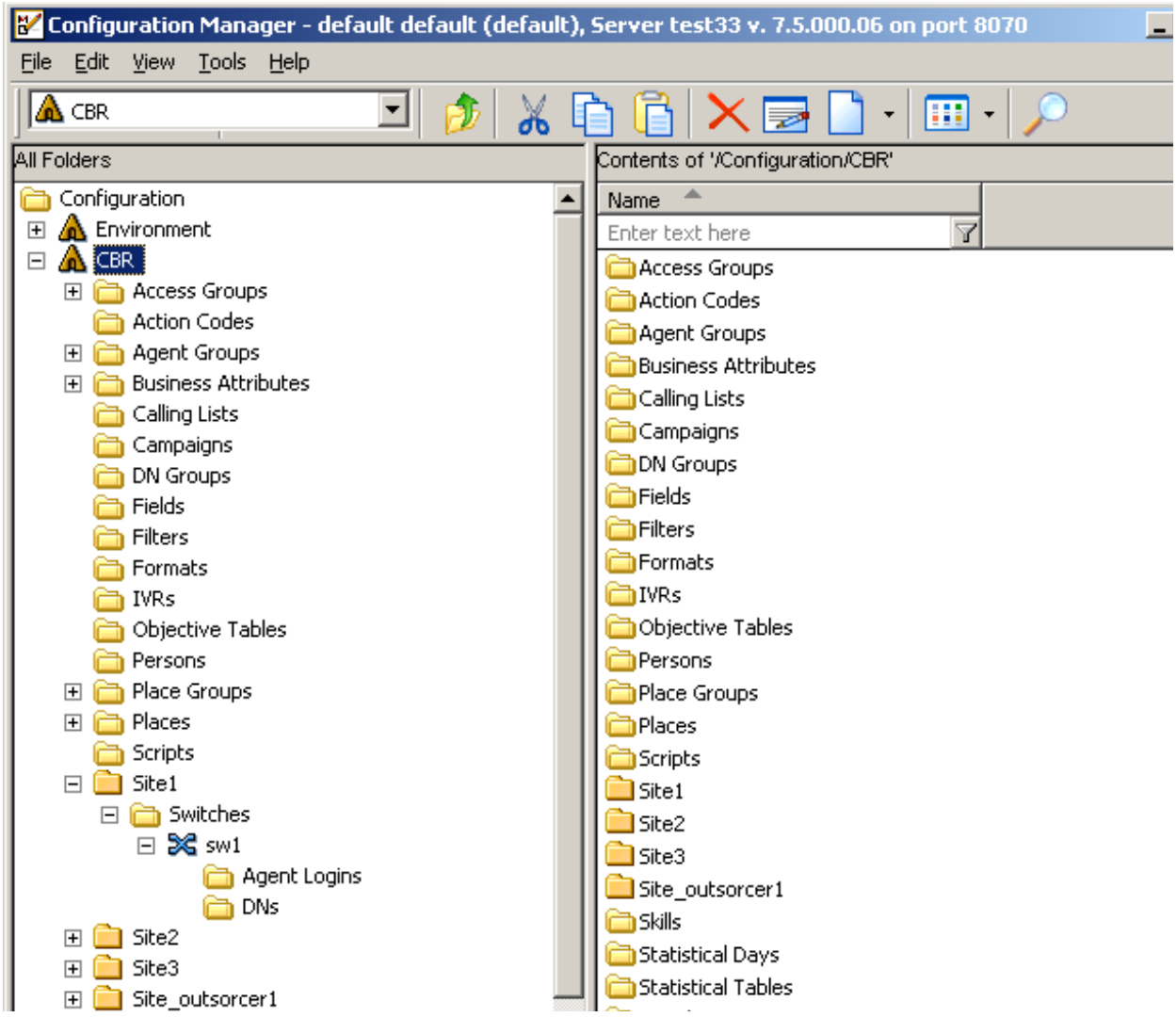


Figure 1: Configuration Manager, Example Site Objects Under Tenant

Note: The screen shots in this guide show a multi-tenant environment (see the Configuration Manager limitation described on page 32), but a CBR solution can also be created in a single-tenant environment.

Underneath each Site, one of the possible arrangements (serving only as a visual aid) consists of placing `Configuration Unit` folders for the objects associated with the Site (see Figure 2).

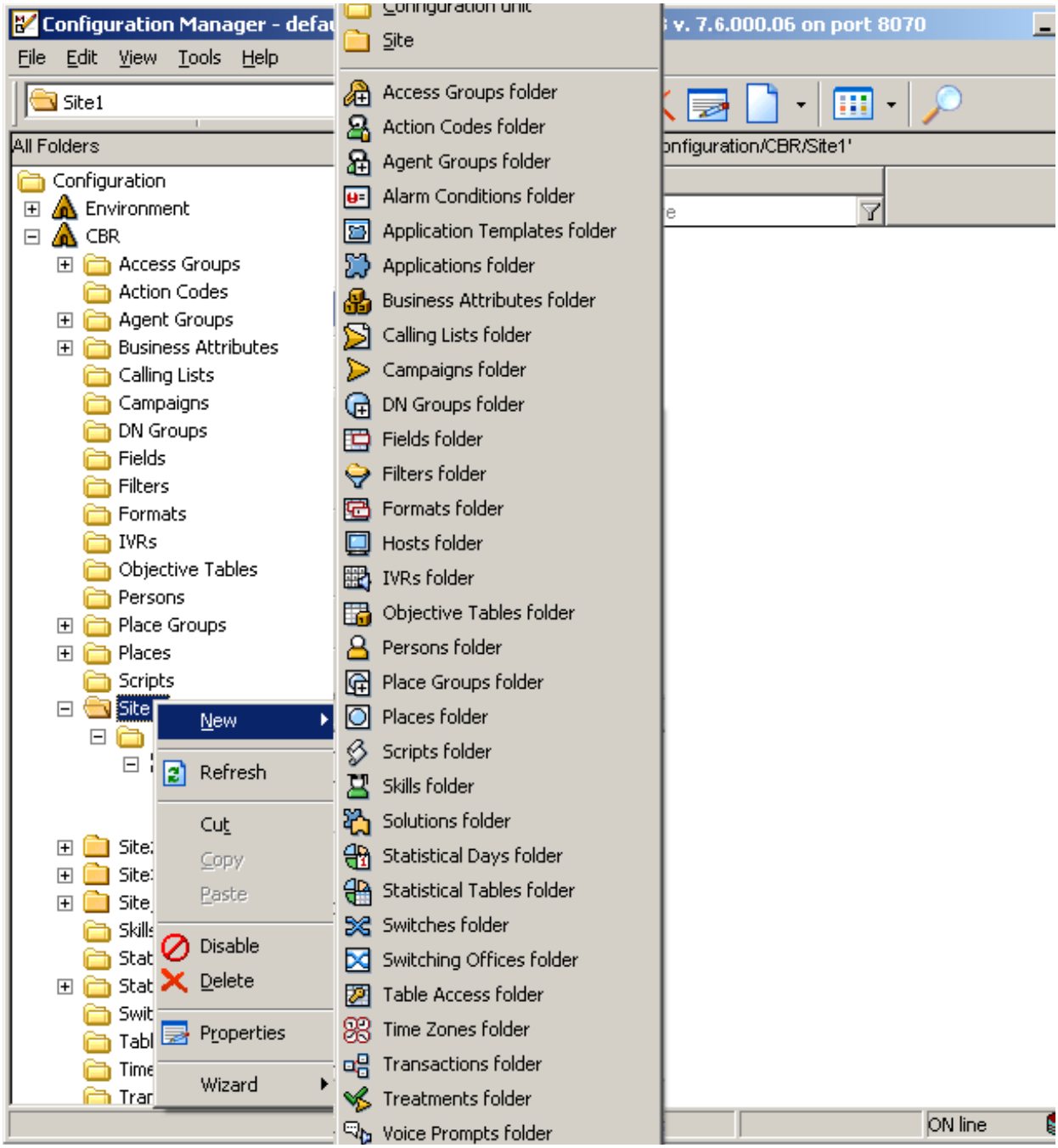


Figure 2: Configuration Units Under Sites

Once the desired object type folder exists, you can define the corresponding object type; for example, `Switch`, `Person`, `Agent Group`, and so on.

Note: The Site Wizard (see Figure 46 on page 108) does not support creating `Configuration Units` within `Site` folders. If, in Configuration Manager, you manually create `Person`, `Agent Group`, `Place`, `Place Group`, or certain types of `DN` objects within `Site` folders, the Site is not automatically associated with the underlying object. You must do so manually in the properties dialog box for the object.

For more information on Sites, see "Defining Sites" on page 83.

Cost Contract Object

Resource cost (see page 18) is represented by a Configuration Layer entity called a `Cost Contract` object, which is a new type of `Objective Table` object. Figure 3 shows some example `Cost Contract` objects.

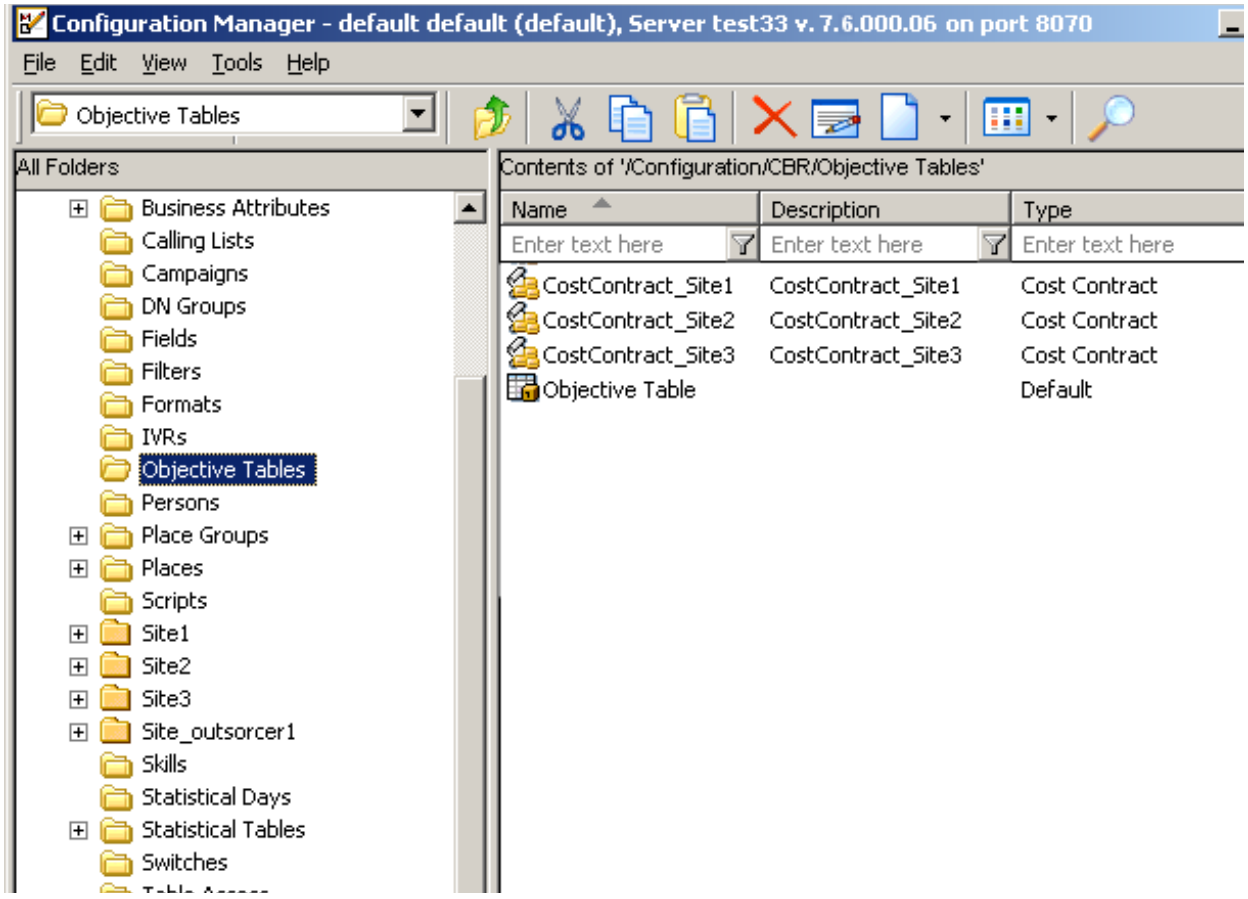


Figure 3: Example Cost Contract Objects

Each `Cost Contract` object is comprised of various Interaction Type (IT) records, which are different combinations of the following:

`Media Type + Service Type + Customer Segment`.(see page 47)

You can think of each Interaction Type record as representing an Interaction Type *subcontract*. Figure 4 shows an example Interaction Type record.

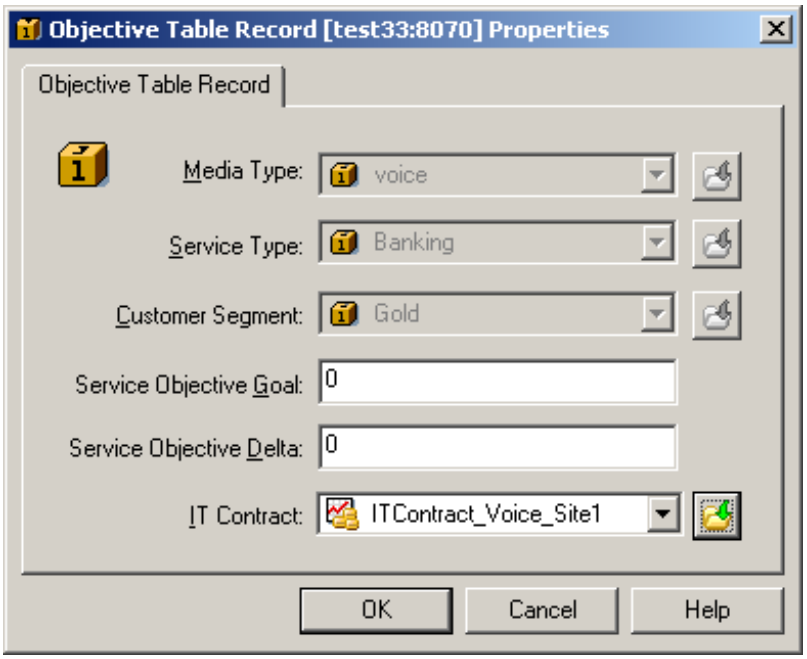


Figure 4: Example Interaction Type Record

Note: When you are defining Interaction Type records for a `Cost Contract` object, `Media Type`, `Service Type`, and `Customer Segment` are required fields. For more information on defining Interaction Types, see page 46.

Genesys offers two kinds of cost processing for an Interaction Type:

1. **Processing based on a Variable rate (Variable Rate Contract)**. Does not impose any volume commitment from the Enterprise. Since there is no volume commitment, the cost is typically higher than the volume rate discussed in the next item. See page 54 for more information.
2. **Processing based on Volume (Volume Contract)**. There is a volume commitment, and therefore the negotiated cost can be a more of a "bargain" price. See page 56 for more information.

Note: The same `Cost Contract` object can use Variable rate processing for some Interaction Types and Volume-based processing for other Interaction Types.

This brings us to the next type of Configuration Manager object that supports CBR: `IT Contract` object.

IT Contract Object

The `IT Contract` object is new type of `Stat Table` object that you use to indicate whether to use Variable rate or Volume-based processing for an Interaction Type. Figure 5 shows some example `IT Contract` objects.

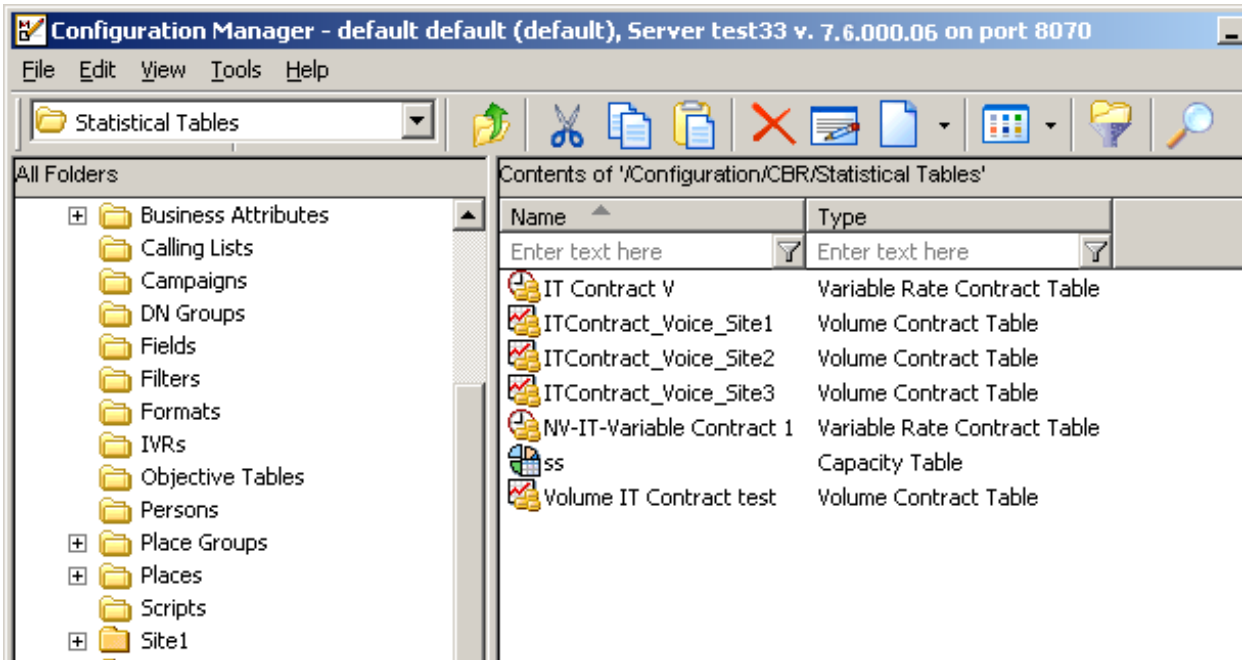


Figure 5: Example IT Contract Objects

After defining an `IT Contract` object (see page 52), you can then associate it with an Interaction Type record within a `Cost Contract` object. To do this, you enter its name in the `IT Contract` field of the record (see Figure 15 on page 46). This tells URS whether cost processing for a particular Interaction Type within a Cost Contract uses volume-based or variable rate processing and what IT Contract to use.

Variable Rate Contract

When creating a new `IT Contract` object, if you select `Variable Rate`, then you then choose between `Flat` and `Agent Hourly`.

- For flat-rate-per- interaction processing, you enter a value in dollars and cents.
- For agent-hourly processing, you also enter a value in dollars and cents. URS calculates the variable rate based on the Average Handling Time statistic.

For more detailed information, see “Variable Rate Contracts” on page 54.

Volume Contract

When creating a new `IT Contract` object, you can also select `Volume Contract`. With a Volume Contract, you define one or more *Day Contracts*. They enable cost to vary to accommodate volume fluctuations that may occur on different days of the week, on weekends, and on exception days, such as holidays. For more detailed information, see “Volume Contract” on page 56.

Day Contract Object

Day Contracts (see page 58) are represented by a Configuration Layer entity called a `Day Contract` object, which is an extension of the `Statistical Day` object. Figure 6 shows some example `Day Contract` objects.

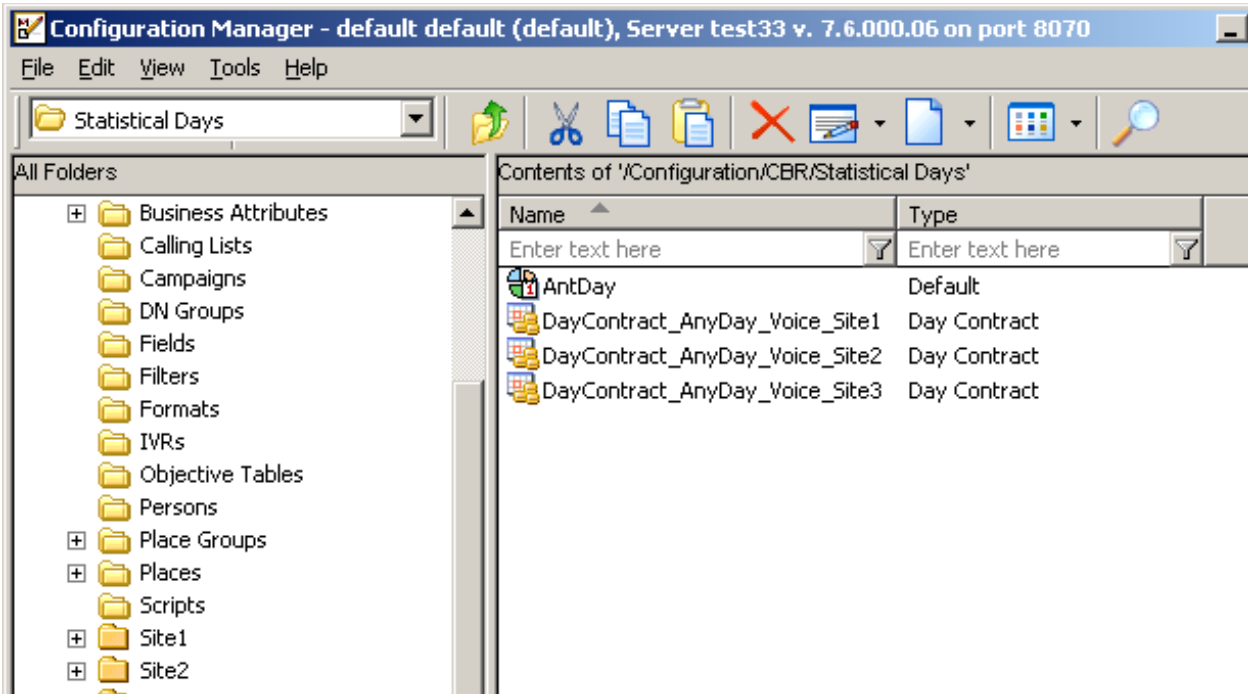


Figure 6: Example Day Contracts

A `Day Contract` object defines:

- A forecasted volume for each time interval (called a *volume period*).
- A base rate for each interaction within the volume period.
- Over and under penalties (if applied).

With Volume Contracts, URS counts the number of interactions sent to every target during a specific interval. URS derives the cost of interactions by comparing these numbers with forecasted volumes during the same period.

- If the actual number of interactions routed within the current period is within the forecasted boundary, URS evaluates each potential routing destination by using a predefined base rate per interaction.

- If the actual number of interactions routed within the current period is over or under the forecasted boundary, URS includes overflow/underflow penalty cost information when it calculates the cost for each potential routing destination.

Note: Day Contracts do not apply to IT Contracts based on a Variable rate.

Defining Interaction Types results in records in a Cost Contract table that URS reads when calculating the Resource cost of an interaction.

Site and Cost Contract Associations

Once you define `Site` and `Cost Contract` objects, you associate them with other Configuration Layer objects. Figure 7 shows an agent associated with a Site and a Cost Contract in the properties dialog box for a `Person` (agent) object.

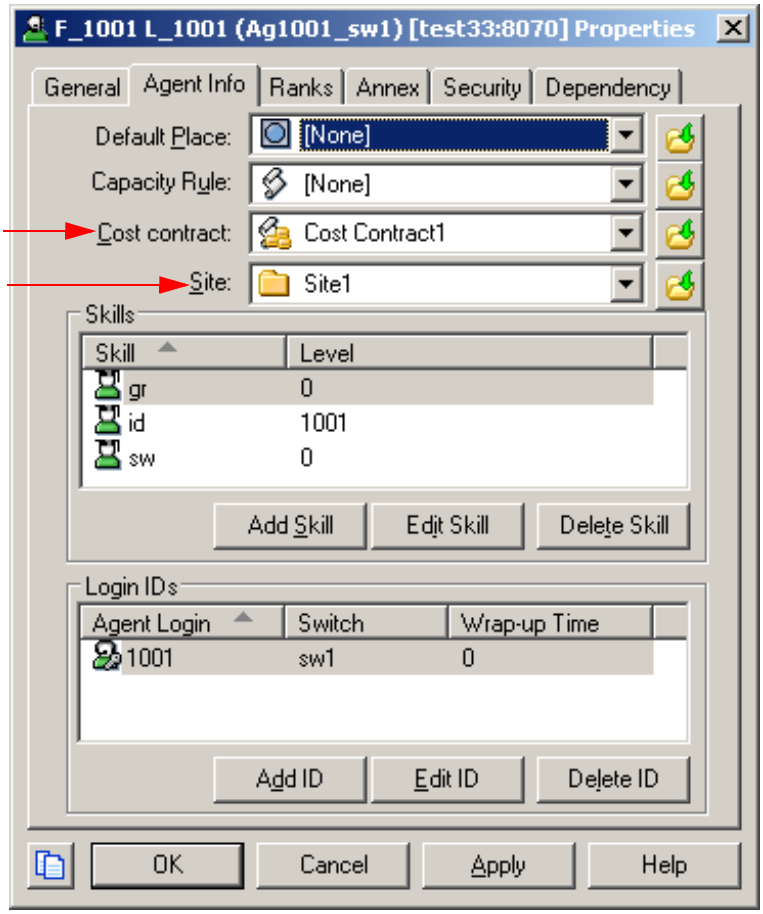


Figure 7: Cost Contract Associated with Agent

Cost Contract and Site objects may be associated with the following Configuration Layer objects:

- Persons.
- Places.
- Agent Groups and Place Groups.
- Certain types of DNs: ACD Queue, Network Destination, Routing Point, Routing Queue, Service Number, and Virtual Routing Point.
- Tenants. URS considers the Cost Contract assigned to a Tenant object to be the default Cost Contract. It uses the default to evaluate the interaction cost when some routing targets have associated Cost Contracts and some do not. For information on how URS finds the first "good" Cost Contract, see Table 13 on page 68.

In addition, Site objects may be associated with Cost Contract objects.

Limitations

A cost-based routing solution in the Universal Routing 7.6 release supports only TDM (voice) and VOIP interactions, and has the following limitations:

- Other than the exceptions listed in the follow items below, a CBR solution is applicable to and compatible with, all other routing models and with the use of Workforce Routing rules. The exceptions where CBR should not be used are:
  - Load balancing based on RStatExpectedLoadBalance, RStatLBEWTLAA, RStatExpectedLBEWTLAA, StatExpectedWaitingTime, StatEstimatedWaitingTime, StatLoadBalance, StatCallsInQueue, and statistics derived from these statistics. Routing based on the value of these statistics focuses load balancing on wait time; using cost as an additional target selection criteria will upset the balance.
  - Service level routing rules.
  - Percentage allocation. If CBR and Percentage allocation (the Percentage IRD object) are both activated, URS uses the Percentage object and CBR is disabled for the call.
  - Routing based on the value of any type of statistic that leads to equal or quantifiable distribution of interactions to routing targets.
- Configuration Manager 7.5 and 7.6 supports using Infrastructure cost in a multi-tenant environment only when all Sites and other objects are configured under the same Tenant object or under Environment. You can have Site links from Environment to Tenant, or from Tenant to Environment. You cannot have links from one Tenant to another Tenant.
- When default routing occurs, such as when the Switch routes an interaction instead of URS, attached data (such as CBR reporting data attached to interactions) may no longer be current. This occurs for all types of

reporting based on interaction attached data, not just cost-based data. For this reason, Genesys recommends that you set the default URS option `default_destination` to a queue.

- When CBR is implemented, Universal Routing supports only one URS.
- When a Variable Rate Contract uses an agent hourly rate, the hourly rate you enter applies to all Interaction Types that the agent can handle. In this release, there is only one hourly rate for an agent, even for cross-trained agents. You can enter an agent hourly rate either as the default in the `Agent Hourly` field of the `IT Contract` object, or as an agent property on the `Annex` tab of the `Person` object.
- When URS calculates actual volume, the actual volume used in a Day Contract may be incorrect after switchover occurs from a primary to a backup URS.
- For the same reason, the High Availability feature described in the *Universal Routing 7.6 Deployment Guide* may work incorrectly with two or more URSs. For instance, if the primary URS fails, some values that the primary URS was keeping may be lost and may be inaccessible to the backup URS.
- When configuring a Network Routing solution, you must define targets for CBR-enabled strategies within the `Tenant` object the call belongs to. For example, you should not route from a premise T-Server to DNs defined under `Environment`.
- CBR is an extension of the current routing based on the value of a statistic. With the exception of the limitations noted in the preceding items above, you can use CBR anywhere that regular statistics are used. However, note that URS has no information about the meaning or applicability of statistics. It is the user's responsibility to define the "reasonability" of combining CBR with certain types of statistical distribution. An exception to this is Percentage allocation. If CBR and Percentage allocation (the Percentage IRD object) are both activated, URS uses the Percentage object and CBR is disabled for the call. Consider that any rules that apply to statistical selection are also applied to CBR; for example, the level of the target (Agent versus Agent Group).
- In a multi-tenant deployment, if a reporting application is designed in accordance with the Genesys Interaction Management data model, some limitations may occur. Limitations may also occur when an interaction is propagated to several routing strategies. Consult your Genesys Representative for the details.
- In order to automatically attach reporting information to a call (option `report_targets=true`), URS requires that an interaction specify both the `CustomerSegment` and `ServiceType` attributes. If one of these attributes is not specified, URS treats the interaction as not fully classified and it reports the default `CustomerSegment` and `ServiceType` values.

- When the Average Handling Time statistic is not opened, URS does not attach agent hourly rate data to interactions.
- For contracts based on an hourly rate, if Stat Server does not have enough information to calculate Average Handling Time (AHT), it will report `0` (zero) as the value of AHT. This can happen, for example, if agents have not yet answered calls. In such cases, where the value of AHT is reported as `0`, URS will temporarily use 90 seconds as the value of AHT.
- CBR is not supported in a Federated environment in which resources are shared across Enterprises, as described in the *Framework 7.5 Federation Proxy Deployment Guide*.
- CBR cannot be used with `Campaign Group` target type.

Chapter

2 Infrastructure Cost

For a definition of Infrastructure cost, refer back to page 18.

Note: This chapter continues the general information on Infrastructure cost presented in Chapter 1, "Overview," on page 17. Configuration information can be found in "Using the Wizard" on page 83.

As described in "Solution Levels" on page 19, you can create a cost-based routing (CBR) solution that defines only the Infrastructure cost, or one that defines both the Infrastructure cost and the Resource cost.

If your CBR solution involves Infrastructure cost, the use of Sites to define the Infrastructure cost is mandatory. In this case, any Resource that an interaction can be routed to must have an association with some Site. The same holds true for any Resource (usually `Routing Points`) that an interaction can potentially be routed from: you must define the Site that the interaction can be routed from.

This information in this chapter is divided among the following topics:

Contact Center Infrastructure

Figure 8 depicts a conceptual diagram of a contact center with one Enterprise, multiple Sites underneath the Enterprise, and two outsourcer Sites.

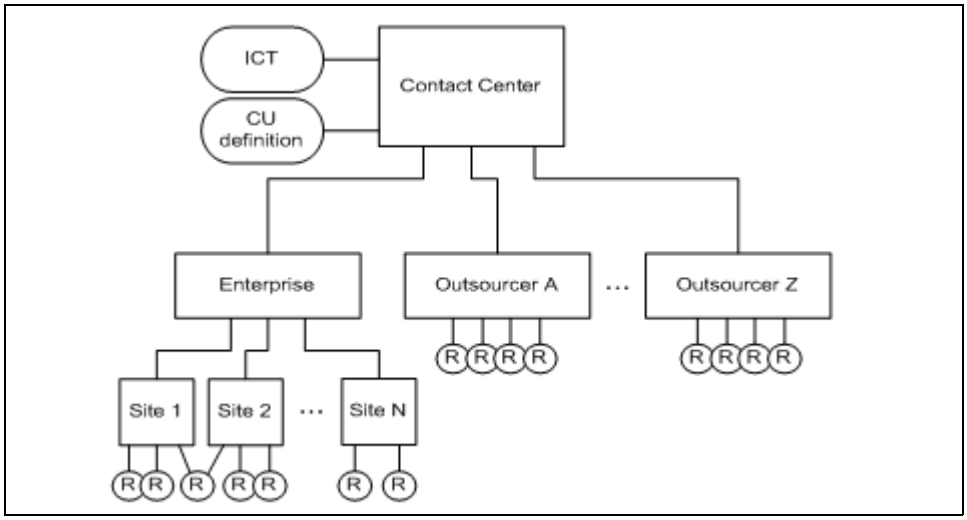


Figure 8: Contact Center Infrastructure

In Figure 8, the Infrastructure cost is the cost (for items such as switches, phones, transport layer, and so on as described on page 18) to transfer an interaction to either a Site (remote or otherwise) within the Enterprise, to one of its outsourcers, or back to the Enterprise from a Site.

Notes: See page 84 for important information on configuring outsourcers in Configuration Manager.

See page 83 for important information on configuring the Infrastructure cost in a multi-tenant environment.

Creating a Site Object

Assume that you right-click `Site1` in Figure 1 on page 25 and then select `Properties`. A properties dialog box opens for the `Site` object. Figure 9 shows an example completed `General` tab of the properties dialog box for a `Site` object.

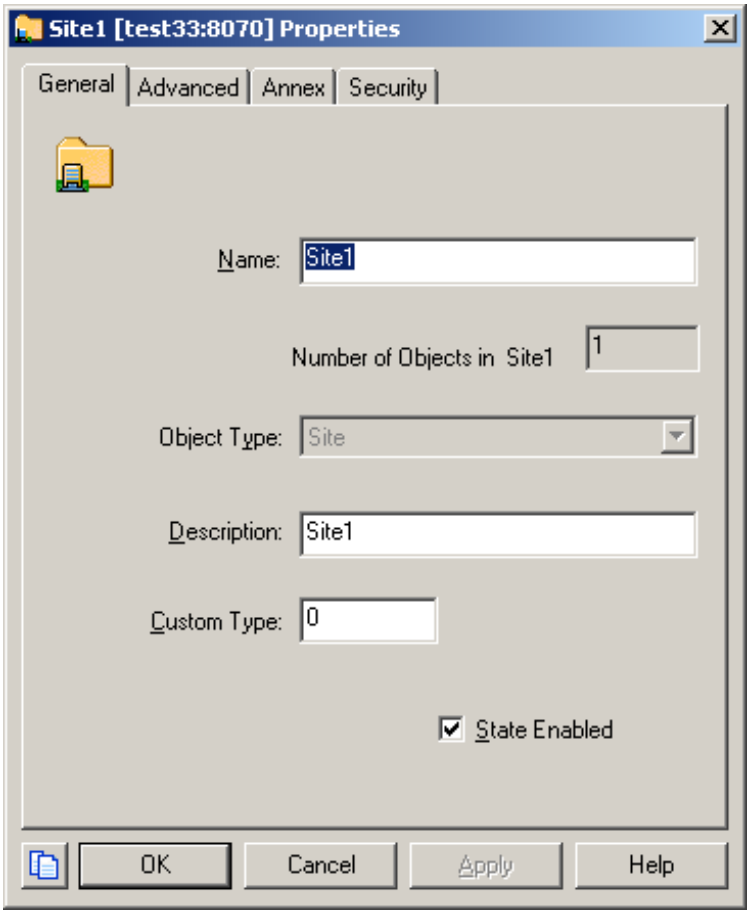


Figure 9: Site Properties Dialog Box, General Tab

General Tab

The information in Table 1 applies to the fields in the `General` tab.

Table 1: Site Properties—General Tab

Parameter	Description
Name	Required. Enter a name for the Site object.
Number of Objects in Site <name>	Read only. Configuration Manager automatically generates the number shown in this field. It reflects the number of Configuration Units under the Site (see Figure 2 on page 26).
Object Type	Read only. When you create a new Site object, Configuration Manager automatically inserts Site in this field.
Description	Optional. Enter a description of the Site object.

Table 1: Site Properties—General Tab (Continued)

Parameter	Description
Custom Type	Cost-based routing does not use this field, which must contain an integer. Custom Type is a generic property of every Folder object. For more information, see the Framework 7.6 Configuration Manager Help.
State Enabled	Normally you will leave this check box checked. State Enabled indicates that this object is in regular operating condition and can be used without any restrictions. For more information, see the Framework 7.6 Configuration Manager Help.

Advanced Tab

Figure 10 shows an example completed `Advanced` tab for this `Site` object.

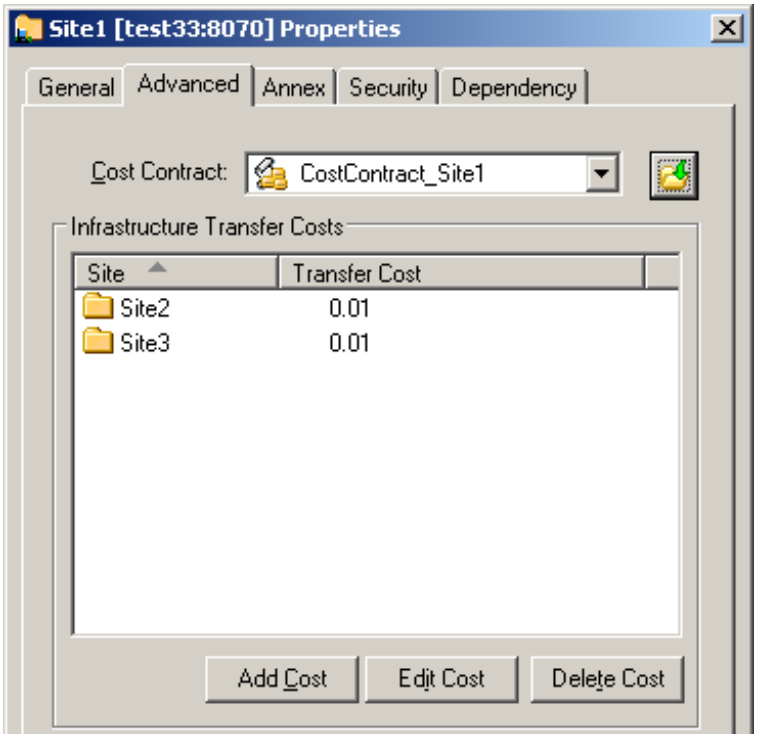


Figure 10: Site Object, Advanced Tab

The information in Table 2 on page 39 applies to `Advanced` tab.

Table 2: Site Properties, Advanced Tab

Parameter	Description
Cost Contract	Optional. If you are implementing the Resource cost (see page 43), click the downward-pointing arrow and select the Cost Contract associated with the Site (or you can select it at a later time. For a review of Cost Contracts, see "Cost Contract Object" on page 27.
Infrastructure Transfer Costs	Add Cost: See "Defining Transfer Cost to a Site" below. Edit Cost: Select a row, and then click Edit Cost to modify a Site's Infrastructure/transfer cost. Delete Cost: Select a row, and then click Delete Cost to delete a Site's Infrastructure/transfer cost after a confirmation message.

Defining Transfer Cost to a Site

Note the `Infrastructure Transfer Costs` area in Figure 10 on page 38. This is where you define the rows in an Infrastructure cost table that Universal Routing Server (URS) reads when calculating the least expensive Resource based on the Infrastructure cost. Clicking `Add Cost` opens the `New Transfer Cost properties` dialog box. Figure 11 shows an example completed dialog box.

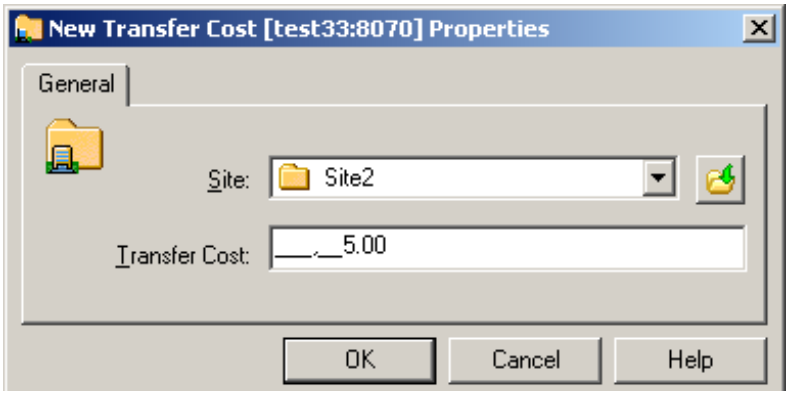
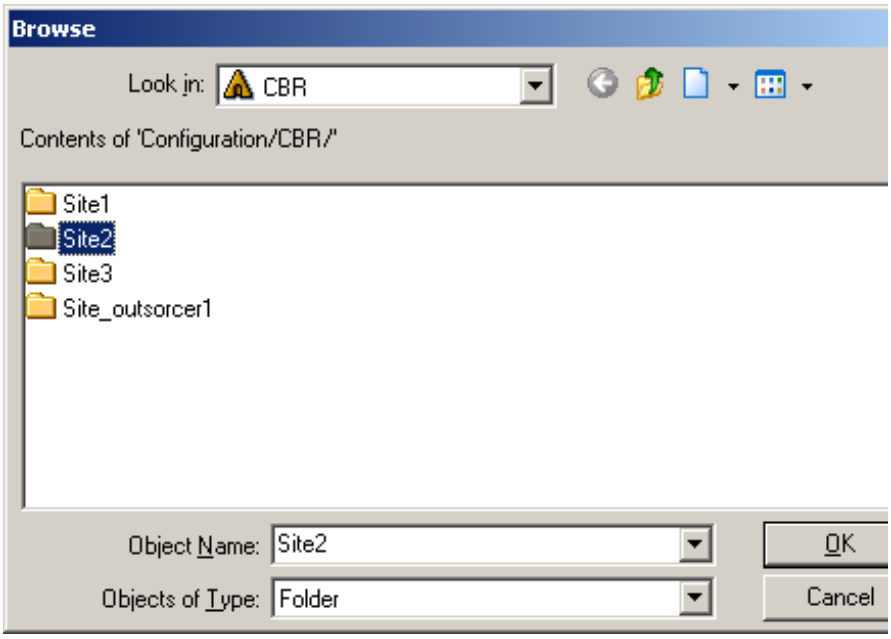


Figure 11: Site Object, New Transfer Cost

By repeatedly using this dialog box for Sites that can potentially be routed to, you create rows in an Infrastructure cost table that URS reads. The information in Table 3 applies to the `New Transfer Cost` properties dialog box shown in Figure 11.

Table 3: New Transfer Cost Properties

Parameter	Description
Site	Required. To complete the `New Transfer Cost Properties` dialog box shown in Figure 11 on page 39, click the downward-pointing arrow. In the `Browse` dialog box, select a Site that can potentially be routed to from the current Site. Figure 12 shows an example.  **Figure 12: Selecting a Site**
Transfer Cost	Required. Enter the Infrastructure cost for transferring an interaction from the Routing Point where the strategy was started) to the potential routing destination. In this example, it is the cost from Site1 to Site2.

In this example, clicking `OK` in the `New Transfer Cost` properties dialog box, creates a row representing the Infrastructure cost for a Site that interactions from `Site1` could potentially be routed to. You build rows in the Infrastructure cost table in this manner.

Calculating Infrastructure Cost

URS calculates the Infrastructure cost as follows:

- If URS fails to find Site #1 (transfer-from Site) or Site #2 (transfer-to Site), it considers Infrastructure cost to be 0 (zero).
- If URS finds both Site #1 and Site #2, then Infrastructure cost is obtained from the properties of Site #1 for Site #2. URS uses the value entered in the `Transfer Cost` field for Site #2 (see the example in Figure 11 on page 39).

URS takes the transfer-from Site from the properties of the `Routing Point`. Usually it takes the Transfer-to Site from the properties of the destination (`DNs`, `Person` (agents), `Place`, `Agent Group`, and `Place Group` objects).

Note: See "Site and Cost Contract Associations" on page 31.

When No Direct Site Reference To Agent or Place

When calculating Infrastructure cost, URS first checks the Agent target. If there is no `Site` association in the `Person` object (see Figure 13), URS then checks the Agent's Group (if any). This could occur in the case where:

A routing destination entered on the `Target Selection` tab of the Routing Selection object (see Figure 122 on page 202) is an `Agent` or `Place` object that by itself has no Site reference in its properties dialog box.

For example, Figure 13 shows an Agent target selected in the `Target Selection` tab of a Routing Selection object used in a routing strategy. The example shows the `Type` dropdown menu so you can see the various types of targets.

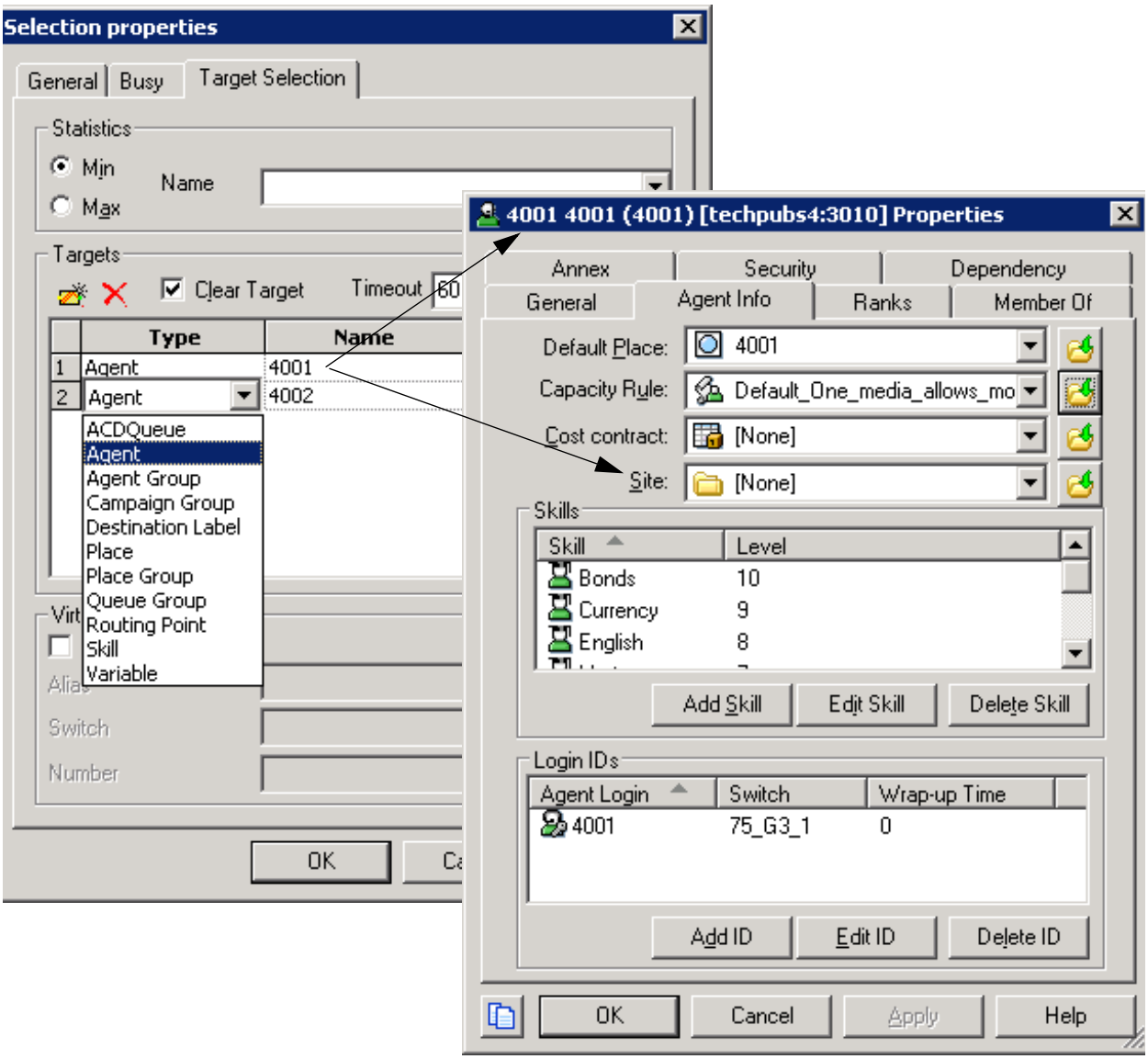


Figure 13: Agent Target With No Associated Site In Person Properties Dialog Box

As can be seen in Figure 13, `Agent 4001` does not have a `Site` object assigned in his `Person` properties dialog box.

In this case, URS can still consider the `Agent` or `Place` as a target if that object has membership in a group (`Agent Group` or `Place Group` object) that *does* have a `Site` object assigned to it. If the Group does have a Site object assigned, URS considers the `Site` object associated with the Group as the routing destination Site.

Chapter

3 Resource Cost

For a definition of Resource cost, refer back to page 18.

Note: This chapter continues the general information on Resource cost presented in Chapter 1, "Overview," on page 17. Configuration information can be found in "Using the Wizard" on page 83.

The other part of the cost of routing an interaction is the Resource cost (see page 18). In the real world, the cost of human Resources (such as agent resources) is usually associated with a monetary compensation agreement signed by all participants. To represent this agreement, Resource cost is represented in the Configuration Layer by a `Cost Contract` object (see page 27).

Note: Genesys recommends using the cost-based routing wizard (see page 83) to create `Cost Contract` objects. Use the information presented in this chapter after configuring a cost-based routing (CBR) solution via the wizard—for example, if you need to manually add a `Cost Contract` object.

The information in this chapter is divided among the following topics:

Creating a Cost Contract Object

Note: It is not necessary to create CBR objects, such as `Cost Contracts`, under `Site` objects. `Site` is a regular object property (just like `Name`). Existing customers may already have a complex hierarchy based on folders or `Configuration Units`. Because a requirement to place new CBR objects only under `Site` objects could potentially interfere with existing hierarchy/access permission schemes, customers do not need to do this.

From a routing perspective, `Cost Contract` objects are associated with destinations in a routing strategy (see page 31). A routing destination may be either of the following:

- The Resources (see page 18) of the current Site or
- The Resources of a remote Site

Assume that you right-click `CostContract_Site1` in Figure 3 on page 27 and then select `Properties`. A properties dialog box opens for the Cost Contract. Figure 14 shows an example completed `General` tab.

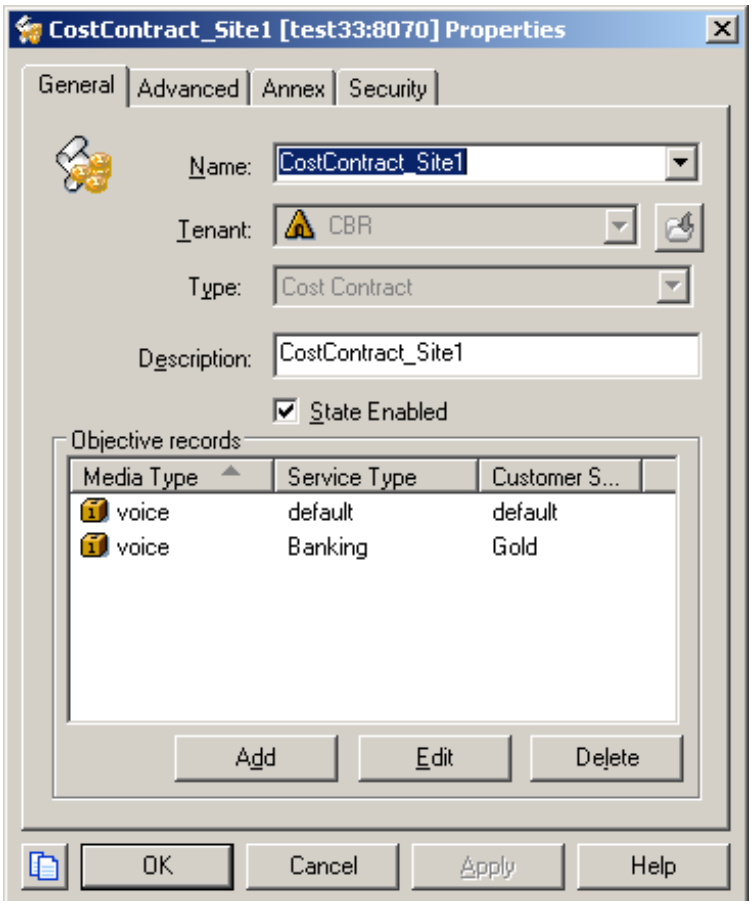


Figure 14: Cost Contract Object Properties Dialog Box

The information in Table 4 applies to the `General` tab.

Table 4: New Cost Contract Properties—General Tab

Parameter	Description
Name	Required. Enter a unique name for the Cost Contract.
Tenant	Read only. This field does not appear in a single-tenant environment. In a multi-tenant environment, it shows the name of the Tenant object associated with the Cost Contract, and it cannot be changed.
Type	Read only. This field defaults to Cost Contract.
Description	Optional. Enter a description of the Cost Contract.
State Enabled	Normally you will leave this check box selected. State Enabled indicates that this object is in regular operating condition and can be used without any restrictions. For more information, see the Framework 7.6 Configuration Manager Help.
Add	Click to define new Interaction Type records. You create Interaction Types from different combinations of the following Configuration Manager Business Attributes: • Media Type • Customer Segment • Service Type. Media Types are already predefined under Business Attributes in Configuration Manager. Prior to creating Interaction Types, you must define the Customer Segments and Service Types in use at your Site. See "Creating Interaction Types" on page 46 below for more information.
Edit	Select a row in the Objective records pane, and then click Edit to open the Objective Table Record dialog box shown in Figure 15.
Delete	Select a row in the Objective records pane, and then click Delete to delete a record after a confirmation message.

Note: In case of a routing destination, such as an outsourcer, that is not monitored by Genesys (see "Non-Configured DNs" on page 19), a `Cost Contract` object can be associated only with the whole outsourcer, and not with its individual Resources.

Creating Interaction Types

To manually create the Interaction Type records associated with a `Cost Contract` object, click `Add` on the `General` tab of the object's properties dialog box (see Figure 14 on page 44). This opens an empty `New Objective Table Records` dialog box where you can define an Interaction Type record. Figure 15 shows an example completed Interaction Type record.

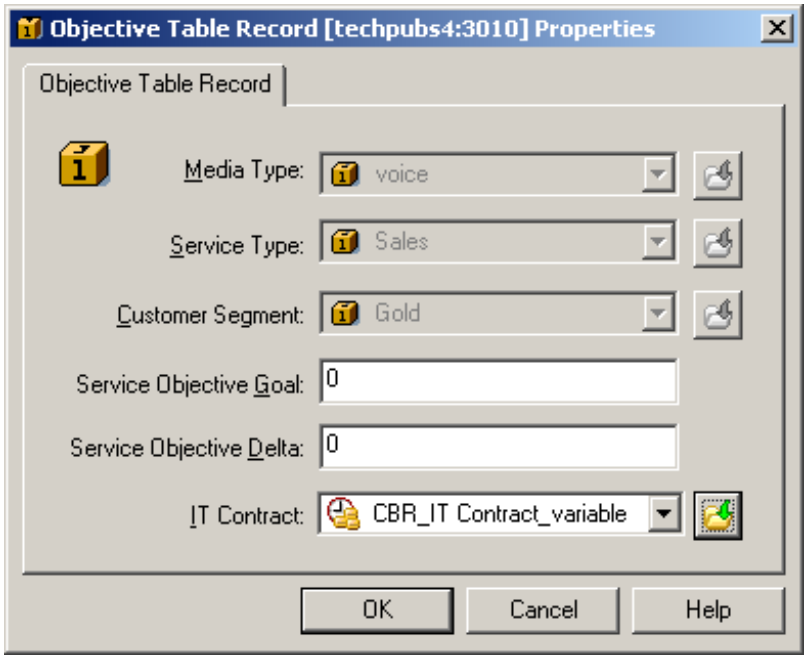


Figure 15: Objective Table Record Dialog Box

In this example, when URS processes a voice interaction of the Sales `Service Type` (see page 47) for a customer belonging to the Gold `Customer Segment` (see page 47), it will calculate cost based on an IT Contract called `CBR_IT_Contract_variable`.

Note: Before an interaction enters any target Selection object in a strategy, URS requires that the interaction already be classified by `Customer Segment` and `Service Type`. If the interaction is not classified, the URS uses the default `Service Type` and `Customer Segment`.

The information in Table 5 applies to the `New Objective Table Record Properties` dialog box shown in Figure 15.

Table 5: Objective Table Record Properties

Parameter	Description
Media Type	Required. Click the downward-pointing arrow or browse button, and then select either the voice or voip Media Type. These are the only two types supported for a CBR solution in Universal Routing 7.6. Configuration Manager predefines values for Media Type under Business Attributes.
Service Type	Required. Click the downward-pointing arrow or then browse button, and then select a previously defined Service Type, found under Business Attributes in Configuration Manager. Service Type describes what service a customer is requesting at a particular moment in time. For example, an Interactive Voice Response (IVR) system may have the customer select `1` for Loan, `2` for Investment, or `3` for Information. In this example, Loan, Investment, and Information are all Service Types. Or, the IVR may prompt the customer to say "Sales," "Service," or "Information." The exact value for each Service Type is user-defined in Configuration Manager. See important Note on page 46.
Customer Segment	Required. Click the downward-pointing arrow or the browse button, and then select a previously defined Customer Segment, found under Business Attributes in Configuration Manager. Customer Segment categorizes a customer based on their revenue potential to the enterprise relative to a business line. For example, in the credit card business line, customers are categorized according to their maximum spending limit. This is indicated by whether the customer has a Platinum (high), Gold (medium), or Bronze (low) credit card. Customers can belong to one or multiple Customer Segments, depending on the value against which they are being measured. See important Note on page 46.
Service Objective Goal	Reserved for future use. Universal Routing 7.6 does not use this field.
Service Objective Delta	Reserved for future use. Universal Routing 7.6 does not use this field.
IT Contract	Optional. Do one of the following: 1. Leave this field empty if you wish to use conventional routing for the current Interaction Type. 2. Browse for/select an Interaction Type (IT) Contract to specify the type of cost processing (see page 28). An IT Contract object specifies either a Variable Rate Contract or a Volume Contract. The presence or absence of an IT Contract in this field determines the Dominant Optimization Factor (DOF) for this Interaction Type (see next section).

IT Contract—Setting a Dominant Optimization Factor

URS also uses the `IT Contract` field (see Figure 15 on page 46) for the Dominant Optimization Factor (DOF) for an Interaction Type. The DOF can be based on:

- Cost—Uses cost per call as evaluated by the URS cost-based routing function to evaluate the destination as the DOF.
- Performance and Service Level—Uses current the routing behavior, based on the selected minimum or maximum value of a statistic on the `Target Selection` tab of the Selection object, as the DOF (see Figure 16).

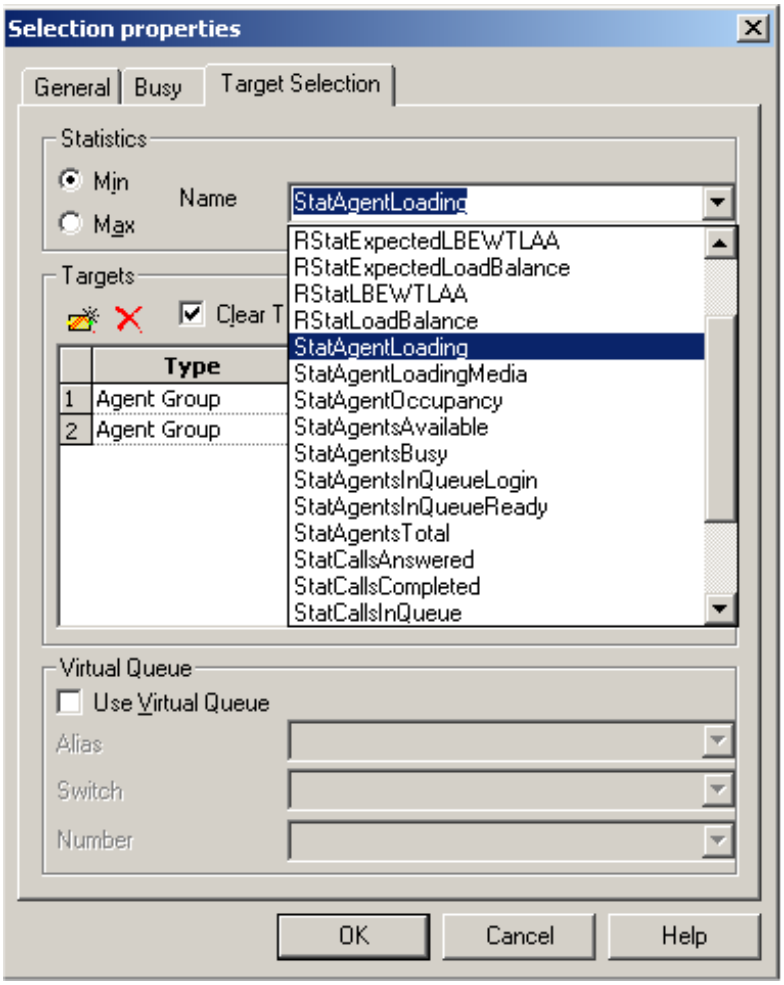


Figure 16: Routing Selection Object, Min/Max Value of a Statistic

The presence or absence of an entry in the `IT Contract` field box (see Figure 15 on page 46) specifies which factor URS should use.

- If the `IT Contract` field is left empty for an Interaction Type, URS uses Performance/Service Level as the DOF. Leaving the field empty means that the DOF is off for this Interaction Type for this particular Cost Contract, since no `IT Contract` object (which specifies cost processing parameters) is specified.
- If the `IT Contract` field refers to an Interaction Type Contract (`IT Contract` object), the DOF is on.

Warning! To completely disable cost-based routing for an Interaction Type, you must switch the DOF off for this Interaction Type in every `Cost Contract` object.

Alternative Method for Specifying DOF

Universal Routing 7.6 supports alternative ways to provide DOF functionality. Since a strategy enables you to enable/disable cost-based routing, you can implement various configurations to support the DOF. The following is an example of a custom configuration that supports the DOF.

1. Create a regular `Objective Table` object in Configuration Manager with the name of (for example) `DominantOptimizationFactor` or just `DOF`.
2. Populate the `Objective Table` object with all possible Interaction Types.
3. Use a `ServiceObjective` field to control the type of routing for an Interaction Type:
   - A value of 0 (zero) means do not use cost-based routing.
   - Any non-zero value means use cost-based routing. Simultaneously, the `Service Objective` field can also carry additional loading, such as predicted wait time.
4. In the strategy, after determining the Interaction Type (a mandatory step for cost-based routing anyway), use the Assign object and If object to check for the applicability of cost-based routing to the call (the DOF is a strategy variable):

```
Assign[DOF,
FindServiceObjective['DominantOptimizationFactor',Media,ServiceType
,CustomerSegment,false]]
If (DOF>0) TargetSelectionTuning[true];
```

Note: To completely disable cost-based routing for an Interaction Type by using this alternative method, you must switch DOF off for this Interaction Type only in this one dedicated Objective Table.

Example Interaction Types

Figure 17 shows an example completed `General` tab in the `Cost Contract Properties` dialog box with six Interaction Types defined.

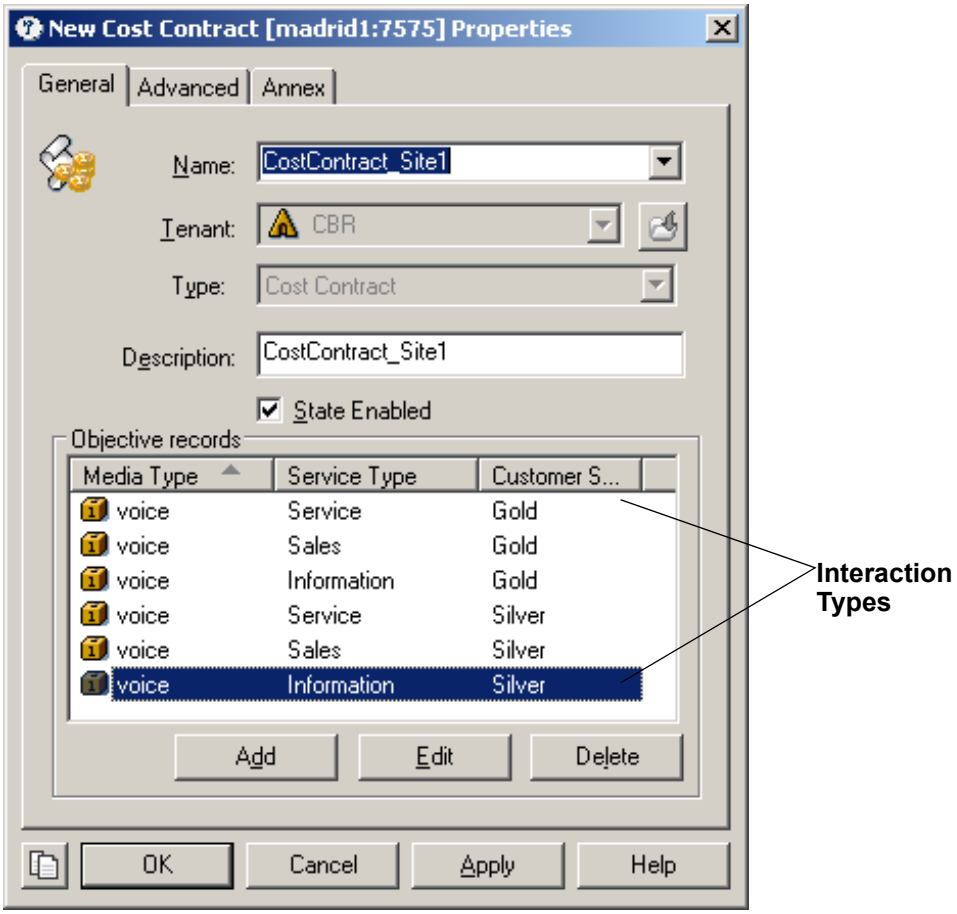


Figure 17: Interaction Types Within a Cost Contract

Note: For multi-skilled agents who are cross-trained on several products, there is only one agent cost for any Interaction Type that the agent can handle.

Cost Contract Properties—Advanced Tab

Figure 18 shows an example completed `Advanced` tab of the `Cost Contract Properties` dialog box.

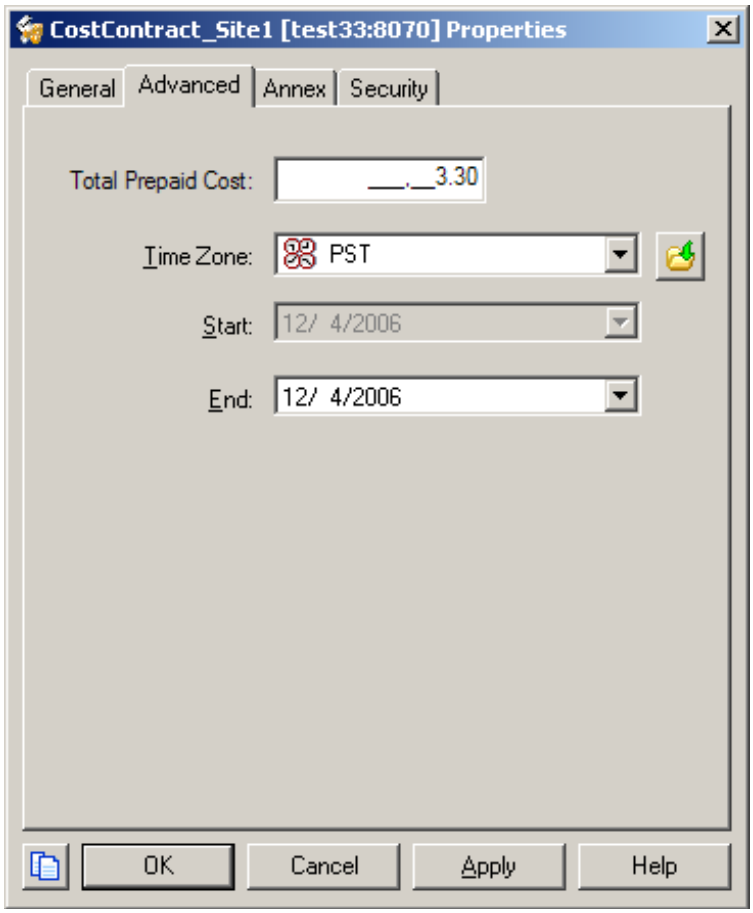


Figure 18: Cost Contract Object Dialog Box, Advanced Tab

Note: The format used for the `Start` and `End` fields depends on the Local Regional Settings.

The information in Table 6 applies to the `Advanced` tab of the `Cost Contract Properties` dialog box.

Table 6: Advanced Tab—Cost Contract Properties

Parameter	Description
Total Prepaid Cost	This optional field for Volume Contracts is intended to be used for reporting. URS 7.6 does not use this field. Enter the total prepaid cost for a volume period in dollars and cents—for example, 125.50.
Time Zone	Required. Select the time zone to be associated with this Cost Contract and with the Interaction Types specified on the General tab.
Start	Required. This field defaults to the current date. Click the downward-pointing arrow, and then select a start date for this Cost Contract. After you click OK to save the Cost Contract, the start date cannot be changed. **Note:** URS considers both the Start and End dates in the context of the Contract Time Zone.
End	Required This field defaults to the current date. Click the downward-pointing arrow, and then select an end date for this Cost Contract. After you click OK to save the Cost Contract, the end date can always be changed at any time.

Creating IT Contract Objects

For each Interaction Type (see Figure 17 on page 50), URS calculates the Resource cost by using one of two types of processing:

1. Variable rate, where the rate is simply either:
   - A flat rate per Interaction Type
   - Agent hourly cost
2. Volume, where the Resource cost is calculated based on all of the following:
   - The volume period timespan
   - A forecasted volume for a volume period
   - A base rate for each interaction during the volume period
   - Over and under penalties (optional) if the volume is not met

Note: The same `Cost Contract` object can use a Variable Rate Contract for one Interaction Type and a Volume Contract for another Interaction Type. You indicate whether to use volume or variable rate processing by the `IT Contract` object you specify in the `Cost Contract` object (see Figure 15 on page 46).

New IT Contract Properties Dialog Box

When you create a new `IT Contract` object, you can select either of the following:

- `Variable Rate Contract Table`
- `Volume Contract Table`

Figure 19 show the `General` tab of the `New IT Contract` properties dialog box including the `Type` dropdown menu selections.

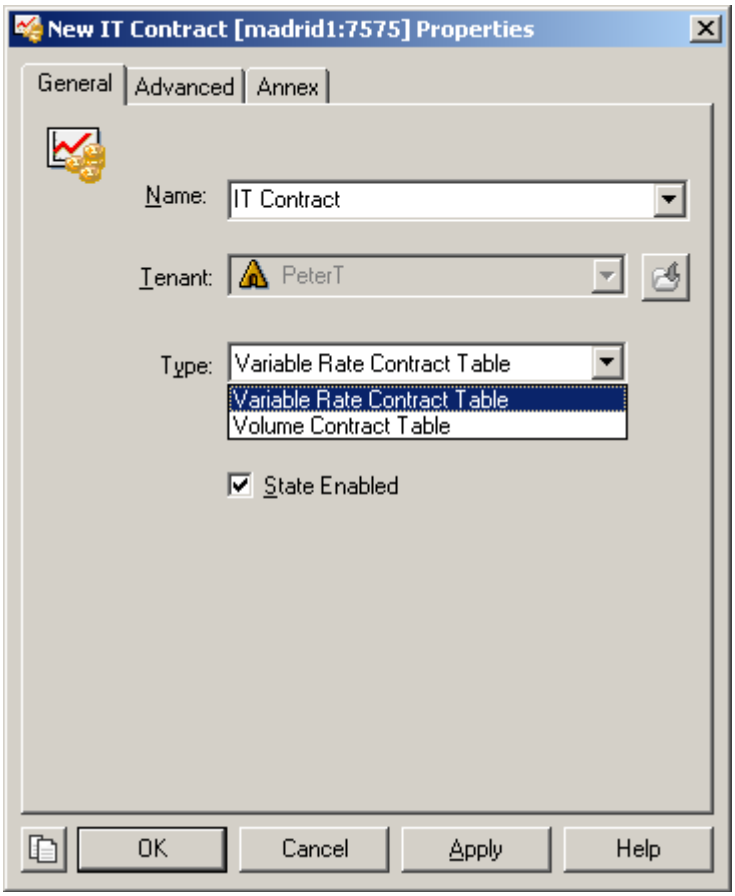


Figure 19: New IT Contract Properties Dialog Box—General Tab

The information in Table 7 applies to the `General` tab.

Table 7: New IT Contract Properties—General Tab

Parameter	Description
Name	Required. Enter a name for this IT Contract.You may wish to incorporate the Media Type, Service Type, or Customer Segment in the name (see page 46).
Tenant	Read only. This field only appears only in a multi-tenant environment.
Type	Required. Click the downward-pointing arrow and select the processing method: • Variable Rate Contract Table • Volume Contract Table

The following section explains Variable Rate Contracts. The description for Volume Contracts starts on page 56.

Variable Rate Contracts

Note: IT Contracts based on a variable rate (Variable Rate Contracts) can be assigned at the Agent and Agent Group levels, or higher (see "Site and Cost Contract Associations" on page 31.

Figure 20 shows an example completed `Advanced` tab of the `New IT Contract Properties` dialog box when `Variable Rate Contract Table` is selected on the `General` tab.

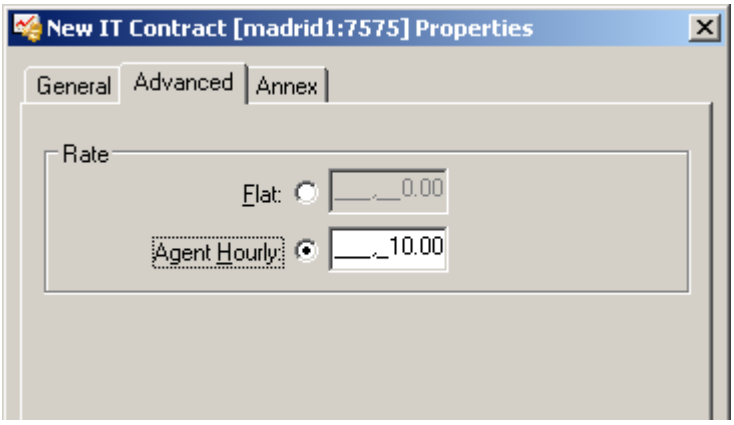


Figure 20: IT Contract Based on Variable Rate—Advanced Tab

The information in Table 8 applies to the `Advanced` tab when `Variable Rate Contract Table` is selected on the `General` tab.

Table 8: IT Contract Based on a Variable Rate—Advanced Tab

Parameter	Description
Flat	Select this radio button to have URS use a flat rate per interaction for the Interaction Types associated with this Variable Rate Contract. A CBR solution uses the same cost units throughout. When you select the Flat radio button, you can enter the value in dollars and cents in the text box. You can postpone entering a value until a later time. **Note:** Both the Flat and Agent Hourly fields accept a seven-digit float value including two decimal places—for example, 33,333.15.
Agent Hourly	Select this radio button to have URS use the cost of an agent for one hour for all Interaction Types associated with this Variable Rate Contract. When you select the Agent Hourly radio button, you can enter a value in dollars and cents. You can postpone entering a value until a later time. See "Agent Hourly Calculation" on page 55 for important information on the Average Handling Time statistic required to calculate agent hourly rates.

Agent Hourly Calculation

When `Agent Hourly` is selected for a Variable Rate Contract, the cost of an interaction is calculated using a special formula. The variable rate calculation is based on Average Handling Time (AHT) and agent occupancy:

$$\textbf{Cost per call = agent hourly rate.} \frac{\text{AHT}}{3600}$$

Where

- *AHT* is the Average Handling Time measured in seconds. AHT is taken from Stat Server.
- 3,600 is the number of seconds in an hour.

Warning! Warning: If Stat Server does not have enough information to calculate AHT (for example, if agents have not answered calls), it will report `0` (zero) as the value of AHT. In such cases, where the value of AHT is reported as `0`, URS will temporarily use 90 seconds as the value of AHT.

URS requires the Average Handling Time statistic in order to calculate the Resource cost based on an agent hourly rate. For this reason, use IT Contracts based on an hourly rate only for targets where the Average Handling Time statistic makes sense. If the Average Handling Time statistic is not open at the moment of calculating hourly rate cost, then URS uses 0 for the Cost Contract

part of the total cost of routing an interaction, and it does not attach agent hourly rate data for reporting.

Note: URS cannot calculate Average Handling Time for some type of targets, such as non-configured DNs (see "Non-Configured DNs" on page 19).

Special Note on Using Agent Hourly

If you plan to implement CBR that uses agent hourly rates, Genesys recommends that you assign Cost Contracts (that point to IT Contacts using `Agent Hourly` (see Figure 20 on page 54)) to ALL agents that are potential routing targets. By making sure that each agent has an associated agent hourly IT Contract, this avoids the following scenario: URS evaluating a potential routing target, not finding a Cost Contract specifying an agent hourly rate, and therefore using a default Cost Contract as defined in Table 13 on page 68.

Volume Contract

Note: An IT Contract based on volume (Volume Contract) cannot be shared between two or more URSs working in load balancing mode (an environment with Load Distribution Server).

With a Volume Contract, URS calculates the price of an interaction based on a *Day Contract,* which defines:

- A forecasted volume for each time interval (called a *volume period*).
- A base rate for each interaction in the volume period.
- Over and under penalties (if they are applied).

Note: Day Contracts do not apply to Variable Rate Contracts.

With a Volume Contract, URS counts the number of interactions sent to every target during a specific interval. It derives the cost of interactions by comparing these numbers with forecasted volumes during the same period.

- If the actual number of interactions routed within the current period is within the forecasted boundary, URS evaluates each potential routing destination by using a predefined base rate per interaction (see the description of `Base Rate` on page 64).
- If the actual number of interactions routed within the current period is over or under the forecasted boundary, URS includes overflow/underflow penalty cost information when it calculates the cost for each potential routing destination (see the Penalty field descriptions in Table 12 on page 64).

General Tab

See Figure 19 on page 53. Use the information in Table 7 on page 54 to complete the `General` tab.

Advanced Tab

Figure 21 shows the `Advanced` tab of the `New IT Contract` properties dialog box when `Volume Contract Table` is selected in the `General` tab.

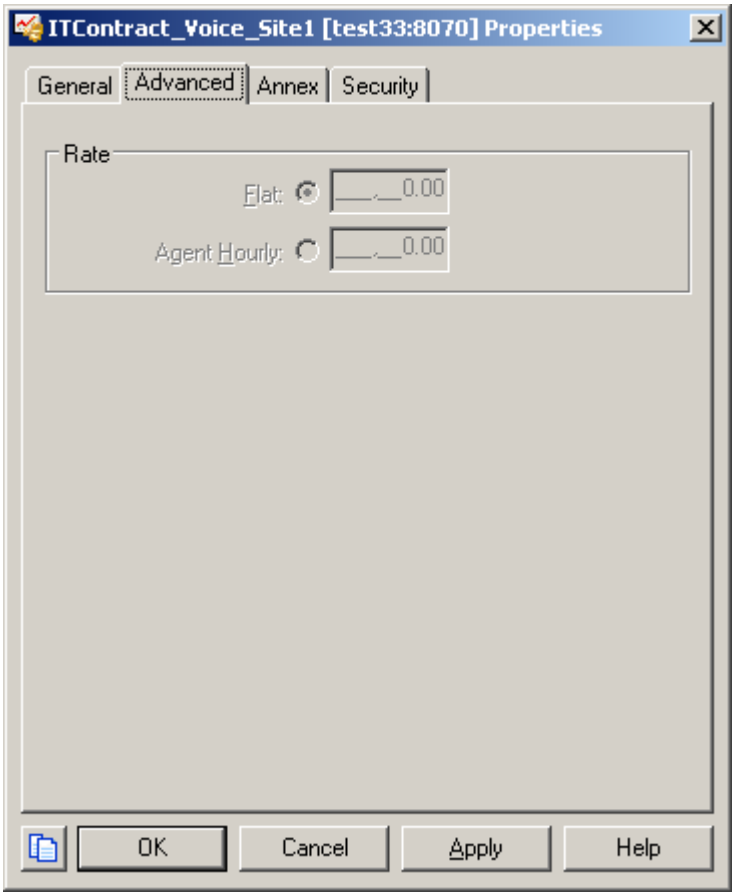


Figure 21: IT Contract Based on Volume—Advanced Tab

The information in Table 9 applies to the `Advanced` tab.

Table 9: IT Contract Based on Volume—Advanced Tab

Parameter	Description
Flat	Flat Rate is disabled for a Volume Contract. This field is used only for a Variable Rate Contract (see Table 8 on page 55).
Agent Hourly	Agent Hourly is disabled for a Volume Contract. This field is used only for a Variable Contract (see Table 8 on page 55).

Day Contracts

With a Volume Contract, you define one or more *Day Contracts*. They enable cost to vary to accommodate volume fluctuations that may occur on different days of the week, on weekends, and on exception days, such as holidays. Figure 22 depicts the structure of Day Contracts.

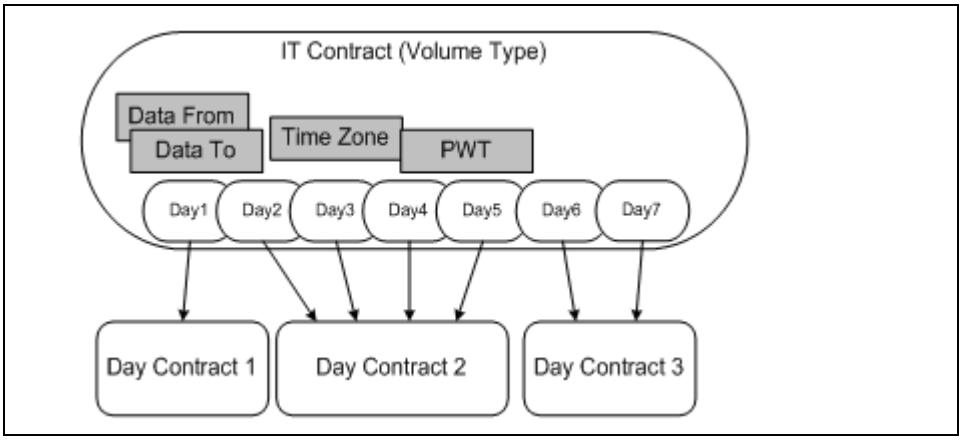


Figure 22: Interaction Type Contract Based on Volume

You specify a cost for each Day Contract period of time (represented in Figure 22 by `Data From` and `Data To`). For example, in Figure 22:

- Tuesday, Wednesday, Thursday and Friday are associated with Day Contract 2.
- Weekends (Saturday and Sunday) are associated with Day Contract 3.

Monday is assumed to be a holiday (exceptional day), and it is associated with Day Contract 1.

Creating a Day Contract Object

Assume that you right-click `DayContract_AnyDay_Voice_Site1` in Figure 6 on page 30, and then select `Properties`. A properties dialog box opens.

General Tab

Figure 23 shows an example completed `General` tab of the properties dialog box for a Day Contract.

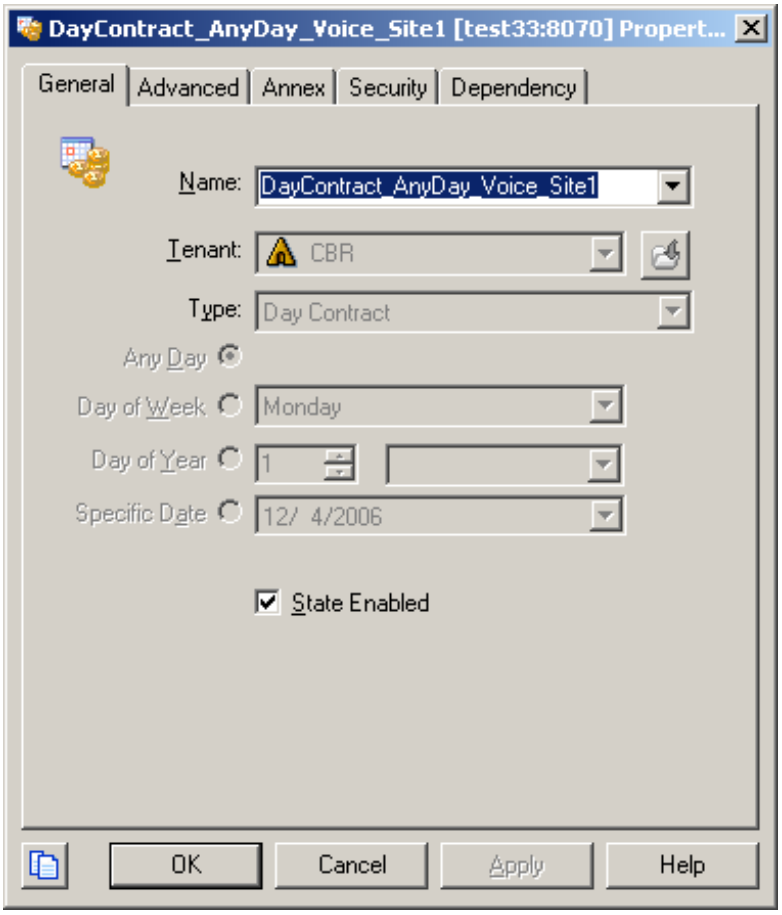


Figure 23: New Day Contract, General Tab

Note: The format of used for the `Specific Date field` depends on the Local Regional Settings.

The information in Table 10 applies to the `General` tab.

Table 10: Day Contract Properties—General Tab

Parameter	Description
Name	Required. Enter a name for the Day Contract. Suggestion: Use a name that identifies: • The Customer Segment and Service Type that comprise the Interaction Type • The type of special day. Example: GoldSalesNewYears.
Tenant	Read only. This field only appears only in a multi-tenant environment.
Type	Read only. This field defaults to Day Contract.
Any Day	Select this radio button if the Day Contract applies to any day other than the specific days to be specified in the fields that follow.
Day of Week	Select this radio button if this Day Contract should always apply to a specific day of the week (other than days specified in the Day of Year or Specific Date fields). Then click the downward-pointing arrow and select the week day.
Day of Year	Select this radio button if this Day Contract should always apply to a specific day of the year (other than days specified in the Day of Week or Specific Date). Then click the downward-pointing arrow and select the day and month.
Specific Date	Select this radio button if this Day Contract should apply only to a specific day in a specific year. Then, enter the specific date using the format MM/DD/YYYY.
State Enabled	Normally you will leave this check box selected. See the description of State Enabled in Table 4 on page 45 for more information.

Advanced Tab

Figure 24 shows an example completed `Advanced` tab where the specific day is defined.

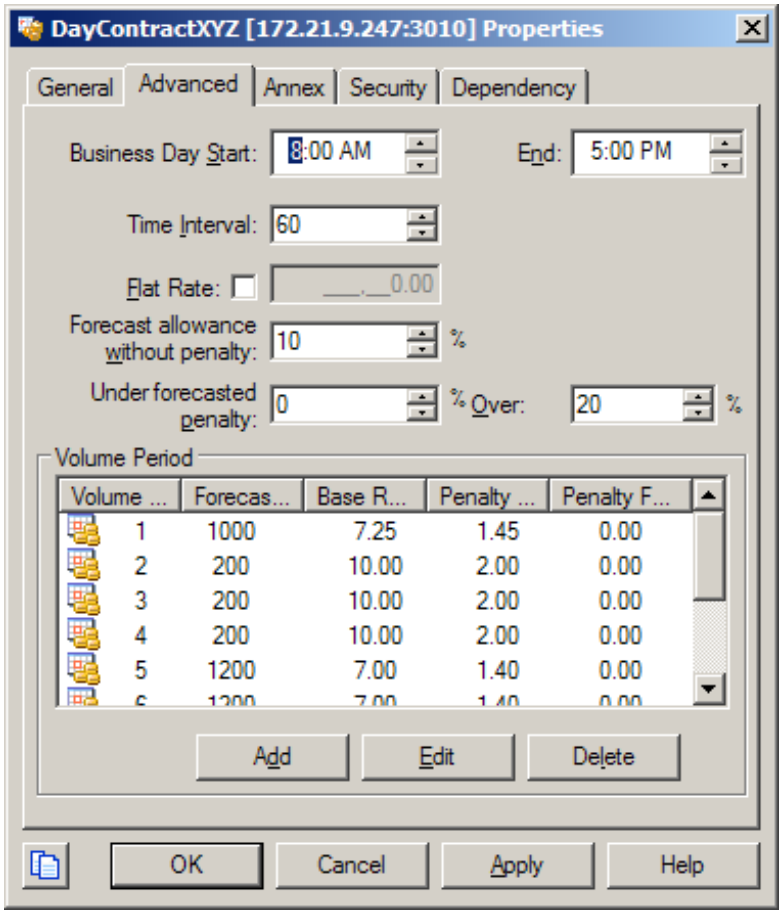


Figure 24: Day Contract Properties Dialog Box—Advanced Tab

The information in Table 11 applies to the `Advanced` tab (see Figure 24).

Table 11: New Day Contract Properties—Advanced Tab

Parameter	Description
Business Day Start	Click the arrows or type into the text box to enter the start of the business day specified on the General tab.
End	Click the arrows or type into the text box to enter the end of the business day specified on the General tab.

Table 11: New Day Contract Properties—Advanced Tab (Continued)

Parameter	Description
Time Interval	Required. Click the arrows or type into the text box to enter the number of minutes to be used for all time intervals (called volume periods) that will be defined when you click Add. This number must be divisible by 5. Assume that you define an 8-hour Business day with four volume periods, each consisting of 120 minutes. In this case the Time Interval entry would be 120. • If you use multiple volume periods, the sum of all volume period minutes must equal the total number of minutes in the Business Day. • For each volume period, you will specify a forecasted volume, a base rate for each interaction, and penalty cost units if actual volume is over or under the forecasted volume.
Flat Rate	Optional. Click this check box if a flat rate applies to all interactions during all volume periods. If a flat rate applies, enter it. This field accepts up seven digits including two decimal places. **Note:** When you use the wizard, any flat rate that you entered gets populated into each volume period; this does not happen in Configuration Manager.
Forecast allowance without penalty	Optional. The default value is 10. Enter or select the percentage of the forecasted volume of routed interactions (defined in the dialog box shown in Figure 25 on page 64) for all volume periods that can be overestimated or underestimated without incurring a penalty. This field defines a penalty-free volume window around a volume forecast. You define the volume forecast in the lower half of the Advanced tab.
Under forecasted penalty	Required. The default value is 50. Click the arrows or type into the text box to enter the percentage of the Base Rate (see Figure 25 on page 64) for every volume period that URS will consider as a penalty for not reaching the interval forecast volume. **Note:** You can also specify the penalty for not reaching the forecasted volume separately for each volume period, by setting a value for Penalty For Interaction For Under Forecast in the dialog box shown in Figure 25 on page 64. However, the Under forecasted penalty value takes precedence over the Penalty For Interaction For Under Forecast value that you set for a particular volume period. This means that if you set Under forecasted penalty to a non-zero value, URS ignores the Penalty For Interaction For Under Forecast value.

Table 11: New Day Contract Properties—Advanced Tab (Continued)

Parameter	Description
Over	Required field (default value of 100). "Over" represents the Over forecasted penalty. Click arrows to define or enter the percentage of the Base Rate (see Figure 25 on page 64) for every volume period that will be considered by URS as a penalty for overloading the forecasted volume. Note: You can also specify the penalty for exceeding the forecasted volume separately for each volume period, by setting a value for Penalty For Interaction For Over Forecast in the dialog box shown in Figure 25 on page 64. However, the Over value takes precedence over the Penalty For Interaction For Over Forecast value that you set for a particular volume period. This means that if you set Over to a non-zero value, URS ignores the Penalty For Interaction For Over Forecast value.
volume period	• Add: See "Adding a Volume Period" on page 63. • Edit: Select a row, and then click Edit to modify a forecasted volume, a base rate, and penalty information for a previously defined volume period. • Delete: Select a row, and then click Edit to delete a forecasted volume, a base rate, and penalty information for a previously defined volume period.

Adding a Volume Period

Clicking `Add` on the `Advanced` tab (see Figure 24 on page 61) opens a dialog box for a volume period. Figure 25 shows sample data for a volume period (see "Sample Data for Day Contract" on page 134).

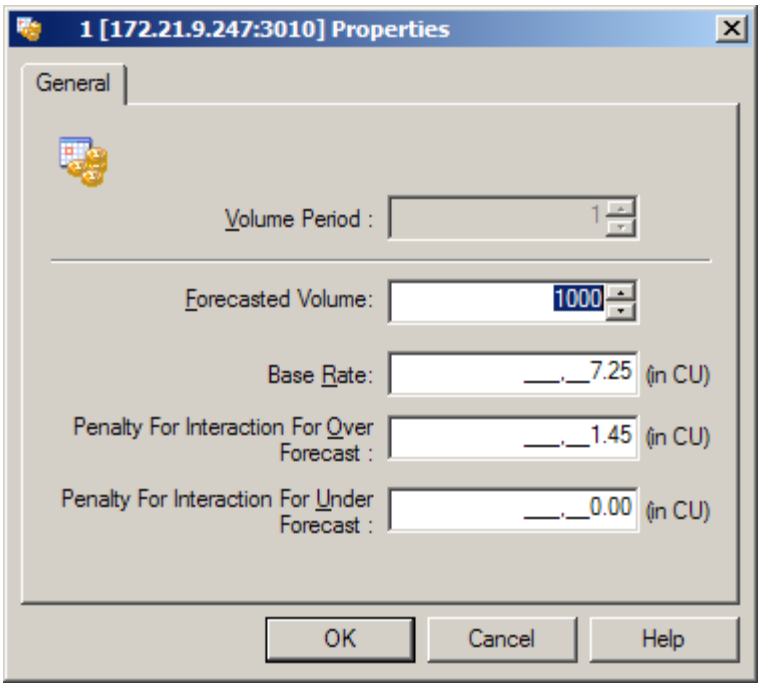


Figure 25: New Day Contract—Volume Period Configuration

The information in Table 12 applies to the `General` tab of the dialog box shown in Figure 25.

Table 12: General Tab for a Volume Period

Parameter	Description
Volume Period	Required. Specify the time interval/volume period by entering a number or select a number by clicking the arrows.
Forecasted Volume	Optional. Click the arrows or type into the text box to enter the number of interactions expected within this volume period.
Base Rate	Optional. Click the arrows or type into the text box to enter the base rate for each interaction expected within this volume period. This is called the "base rate" because a penalty may be imposed if the forecasted volume is underestimated or overestimated (see Figure 26).

Table 12: General Tab for a Volume Period (Continued)

Parameter	Description
Penalty for Interaction for Over Forecast	Optional. For this volume period, click the arrows or type into the text box to enter the additional cost per interaction for falling outside the penalty-free volume window (see the description of Forecast allowance without penalty in Table 11 on page 61) and thereby exceeding the forecasted volume (see the description of Over in Table 11 on page 61).
Penalty for interaction for Under Forecast	Optional. For this volume period, click the arrows or type into the text box to enter the additional cost per interaction for falling outside the penalty-free volume window (see the description of Forecast allowance without penalty in Table 11 on page 61) and thereby not achieving the forecasted volume (see the description of Under Forecast Penalty in Table 11 on page 61).

When you have finished defining volume periods for a Day Contract for an Interaction Type, the Volume table will consists of a set of rows, each row of which is devoted to a time interval during the day specified on the `General` tab (see Figure 24 on page 61). Also see "Sample Data for Day Contract" on page 134.

Day Contract Penalties

Figure 26 illustrates when interaction volume triggers a penalty.

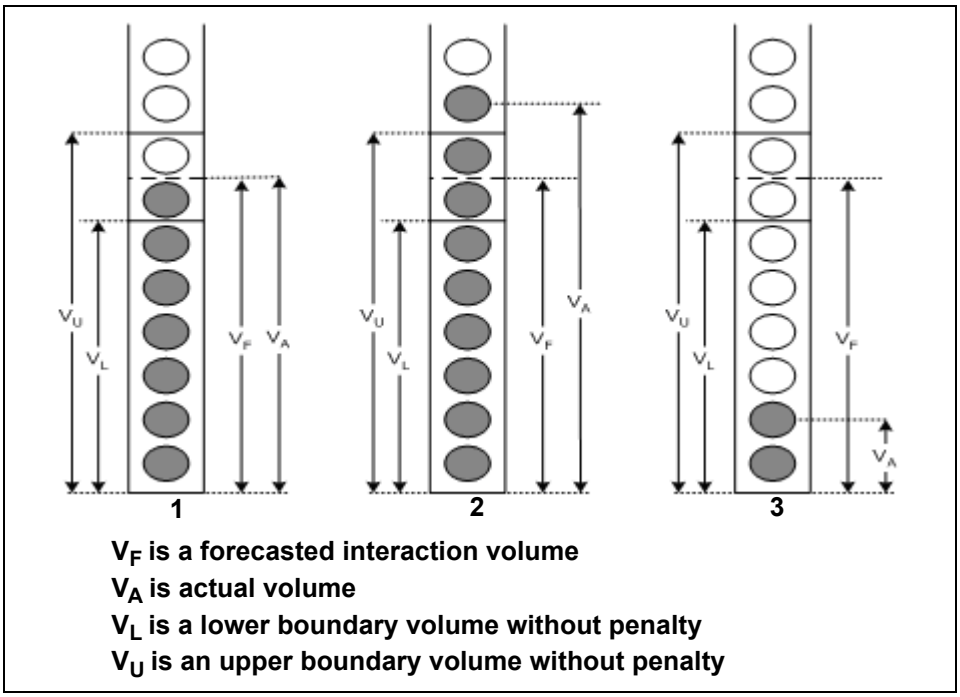


Figure 26: Interaction Volume During Time Interval

- In case 1, the actual volume is within the nonpenalty boundary.
- In case 2, the actual volume exceeds the upper boundary.
- In case 3, the actual volume is below the lower boundary.

Pacer Algorithm

When a Volume Contract is used, URS implements a special "pacer" algorithm to control the amount of interactions sent to a destination. The intent is to prevent a sudden surge of calls sent to one destination, which can jeopardize Service Level objectives. The algorithm is based on following rule:

> URS tries to distribute the forecasted volume (see the description of Forecasted Volume on page 64) of calls evenly throughout the every interval. To accomplish this, URS splits any Day Contract interval (see the description of volume period on page 61) into a sequence of short (five-minute) intervals. The number of forecasted interactions per working interval is scaled correspondingly.

As an example, assume a one-hour interval with a forecast of 7,200 calls. In this example, URS creates 12 working intervals, each five minutes in length, with a forecast of 600 for every working interval. For routing purposes, URS calculates the Volume Contract cost based on working intervals.

This algorithm constrains the number of calls sent to one destination to match as closely as possible the forecasted interaction volume for each five-minute working interval.

Notes: The `Time Interval` value (see Figure 24 on page 61) for a Volume Contract must be divisible by 5. If it is not, URS does not apply the pacer algorithm.

Also, URS applies the pacer algorithm during volume intervals calculation only if the number of interactions for each five-minute interval exceeds or equals 2.

Targets Without Cost Contracts

A `Person` (Agent), `Agent Group`, `Place`, and `Place Group` can all have the same or unique Cost Contracts assigned to them. This does not present a conflict for URS when it executes a strategy. URS always looks for the Cost Contract directly associated with the target. For example:

- If an Agent target does not have a directly-associated Cost Contract, URS does not look for a Cost Contract associated with the Agent's `Place`.
- If a Place target does not have a directly-associated Cost Contract, URS does not look for a Cost Contracted associated with the `Place's` DN.

If the routing target is not directly associated with a Cost Contract in the Configuration Layer, only then does URS look for a Cost Contract associated

with the target's Site. If it does not find one, URS uses the Tenant's Cost Contract as the default. For Cost Contract search sequence information, see Table 13 on page 68.

Defining Peak and Off-Peak Times

As mentioned in "Pacer Algorithm" on page 66, URS tries to distribute calls equally throughout every interval. Because of this, when defining volume periods, do not configure a single interval to encompass peak and off-peak times.

For example, assume that you forecast 10,000 calls from 10:00 AM to 4:00 PM. You could conceivably define this all in one six-hour interval. However, if you knew that 8,000 calls were expected between 12:00 PM and 2:00 PM, then using one interval (making a single interval to cover peak and off-peak time) would not be a good idea. Instead, isolate the rush period as a separate interval and configure something like the following:

- 10:00 AM to 12:00 PM: 1000 calls
- 12:00 PM to 2:00 PM: 8000 calls
- 2:00 PM to 4:00 PM: 1000 calls

Sharing IT Contracts Based on Volume

URS considers every `Cost Contract`/`IT Contract`/`Day Contract` object defined in Configuration Manager as a Contract instance, not as a Contract definition. If Contracts are shared between different targets, those Contracts are, as a result, shared during real-time routing. This can affect Volume Contracts, which depend on the number of interactions distributed during the current volume period. Interaction cost in a shared Contract scenario can differ from a scenario in which Contracts not shared, as the following illustrates.

- Assume a group of agents that handle two types of interactions (IT1 and IT2).
- Assume two completely different IT Contracts (ITContract1 and ITContract2), respectively, one for each Interaction Type.
- Assume that both Contracts have the following content: For the first 3600 calls per hour–cost1 per interaction; if there are more calls, a penalty is applied–cost2.

During one hour in this non-shared scenario, URS can send 3,600 interactions of one type and 3,600 interactions of a second type (cost of interaction = cost1) to this group of agents. Total number of interactions with cost1 is 7,200 (up to 3,600 of IT1 and up to 3,600 of IT2).

Now, assume that there is only one IT Contract with the same content, and that IT Contract is shared between Interaction Types IT1 and IT2. In the shared scenario during one hour, URS can send to this group of agents only 3,600

interactions of Interaction Type IT1 or IT2 with cost of the contract equal to cost1. The total number of interactions is 3,600.

Note: The proportion of different Interactions Types does not matter, provided that the total amount is 3,600.

Calculating Resource Cost

URS finds the first "good" Cost Contract by using the sequence shown in Table 13:

Note: A "good" contract is one that has not expired and has an Interaction Type subcontract for either an interaction's Media Type + Customer Segment, + ServiceType or, if the latter two are not found, an interaction's Media Type + default Customer Segment + default Service Type.

Table 13: Cost Contract Search Sequence

Target (see Note 2)	First Choice	Second Choice	Third Choice	Fourth Choice
Agent:	Contract directly associated with Agent in Person properties dialog box	If Group is involved (see Note 2), Agent Group Contract	Agent Site #2 Contract (potential routing destination).	Tenant Contract by default
Place:	Contract directly associated with Place	If Group is involved, Place Group Contract (see Note 2)	Target's Site contract	Tenant Contract, by default
Agent Group:	Contract directly associated with Agent Group	Target's Site contract	Tenant Contract	
Place Group:	Contract directly associated with Place Group	Target's Site contract	Tenant Contract	

Table 13: Cost Contract Search Sequence (Continued)

Target (see Note 2)	First Choice	Second Choice	Third Choice	Fourth Choice
DN:	DN Contract Note: See page 31 for the types of DNs that can have Cost Contracts	Target's Site contract	Tenant Contract	

Target, as used in the first column does not always refer to the object specified on the Target Selection tab of the Routing Selection object. Here *Target* refers to any objects to which URS applies cost statistics. For example, if the target is a skill expression, URS selects from among agents that satisfy the skill criteria. If the target is the result of function CreateSkillGroup, then URS selects from among qualified agents. In this case, agents are derived from some agent group so URS can use the agent group in selecting the Cost Contract. Function CreateSkillGroup function is the most common way to "involve" groups when getting the cost for agents.

The next step depends on whether a `IT Contract` object exists for the Interaction Type.

- If URS does not find an associated IT Contract, it considers the Resource cost to be 0 (zero).
- If URS does find an associated IT Contract, cost calculation proceeds to the next phase as described in "Variable Rate Cost Calculation".

If URS finds an associated IT Contract, it determines whether the contract is a Volume Contract or a Variable Rate Contract.

Variable Rate Cost Calculation

If the IT Contract specifies a Variable Rate Contract (see page 54) that uses a flat rate, then Resource cost is a direct property value as set in the subcontract (`Flat` field in Figure 20 on page 54).

If the IT Contract specifies a Variable Rate Contract that uses agent hourly cost (see Figure 20 on page 54), then URS calculates Resource cost as follows:

$$\textbf{Cost per call = agent hourly rate} * \frac{\text{AHT}}{3{,}600}$$

Where:

- *Agent hourly rate* is taken from the `Agent Hourly` field shown in Figure 20 on page 54
- *AHT* is an `AverHandleDNStatusTime` statistic taken from Stat Server for the Interaction Type, Customer Segment, and Media Type for a one-hour period. See Warning on page 55.
- 3,600 is number of seconds in an hour.

Note: When implementing a CBR solution, you must define the following statistic in the properties of the Stat Server that URS uses: `AverHandleDNStatusTime` with the following properties: `Category=AverageTime, MainMask=CallInbound, CallOutbound, OfflineWorkType1, Objects=RegDN, Agent, Place, GroupAgents, GroupPlaces,RelMask=CallInbound, CallOutbound, Subject=DNStatus`.

Volume Contract Cost Calculation

If the IT Contract specifies a Volume Contract (see page 56), then URS makes an additional search for this contract's current Day properties (See "Day Contracts" on page 58).

Time Zone

URS must know the time zone that applies to a Contract. The time zone is taken directly from the properties of Contracts. URS converts the time into a Statistical Day (in the same way as is done for the SelectTarget functionality described in the *Universal Routing 7.6 Reference Manual)*.

Volume Period

After getting the Statistical Day, URS checks the current interval (in the same time zone) for the following volume period properties:

- Base rate per interaction (Rb) (See the description of `Base Rate` in Table 12 on page 64).
- Underflow (Rl) penalty per interaction (See the description of `Penalty for Interaction for Under Forecast` in Table 12 on page 64).
- Overflow (Ru) penalty per interaction (See the description of `Penalty for Interaction for Over Forecast` in Table 12 on page 64).
- Actual volume (Va) of interactions routed during the current time interval (URS gets this).
- Number of forecasted interactions (Vf) for current interval (See the description of `Forecasted Volume` in Table 12 on page 64).
- Lower boundary volume (Vl) without penalty for current time interval (see the description of `Under forecasted penalty` in Table 11 on page 61).
- Upper boundary volume (Vu) without penalty for current time interval (See the description of `Over` in Table 11 on page 61).

Notes: Rb and Vf are properties of intervals during the day.

Rl: If UnderForecastPenaltyFromStatDay > 0 then UnderForecastPenaltyFromStatDay/100*Rb else it is a property of the interval.

Ru: If OverForecastPenaltyFromStatDay > 0 then OverForecastPenaltyFromStatDay /100*Rb else it is a property of the interval.

Va is counted by URS.

Vl = Vf _ (No penalty allowance) * Vf/100. No penalty allowance is property of the current day.

Vu = Vf + (No penalty allowance) * Vf/100. No penalty allowance is property of the current day.

Volume Contract Cost Calculation

URS calculates the Resource cost for a Volume Contract as follows:

- If Vl <= Va < Vu then Resource cost = Rb.

  In other words, if the actual volume during the time interval is greater than/equal to Vl (lower boundary volume without penalty) and less than Vu (upper boundary volume without penalty) the Resource cost equals the base rate (Rb).

- If Va >= Vu then Resource cost = Rb + Ru.

  In other words, if the number of interactions routed in the current interval is greater than or equal to the maximum number of interactions that can be routed during this interval without an overflow penalty, the Resource cost equals the base rate per interaction plus any overflow penalty per interaction.

- If Va < Vl then Resource cost = Rb – Rl.

  In other words, if the actual volume routed during the time interval is less than Vl (lower boundary volume without penalty) the Resource cost equals base rate minus the underflow penalty (Rb _ Rl).

Chapter

4 Activating a CBR Solution

If you wish to immediately start the configuration process, go to "Using the Wizard" on page 83.

This chapter summarizes how to activate a cost-based routing (CBR) solution. It also describes how you can define different cost calculation parameters for different Interaction Types within a Cost Contract, and how to optimize routing for each Interaction Type based on the cost or the performance and service level.

The information in this chapter is divided among the following topics:

Activating CBR in Strategies

After you use the cost-based routing wizard to create the Configuration Layer objects discussed in Chapter 1, "Overview," on page 17, the next step in creating a CBR solution is to create or modify strategies that, when executed by URS, activate cost-based routing during target selection.

There are two methods to activate cost-based routing during strategy execution:

- Method #1: Use function TargetSelectionTuning.
- Method #2: Use IRD predefined statistic `RStatCost` on the `Target Selection` tab of the Routing Selection object (this method is also known as *Direct Selection*).

The following sections summarize each of these methods. For more detailed explanations, see Appendix B, "Sample Strategies," on page 193.

Method #1: TargetSelectionTuning

Function TargetSelectionTuning enables you to activate CBR without the need to modify existing strategies other than by adding a Function object that sets TargetSelectionTuning to `true` for some or all of the routing targets. TargetSelectionTuning works together with regular statistics-based target selection.

Figure 27 shows the `costbasedrouting_sample` strategy supplied by Universal Routing 7.6. The strategy first segments interactions to take different paths and sets the function UseAgentStatistics to `true` for the lower segment. The strategy then places a Function object, specifying TargetSelectionTuning as `true`, immediately before each Routing Selection object.

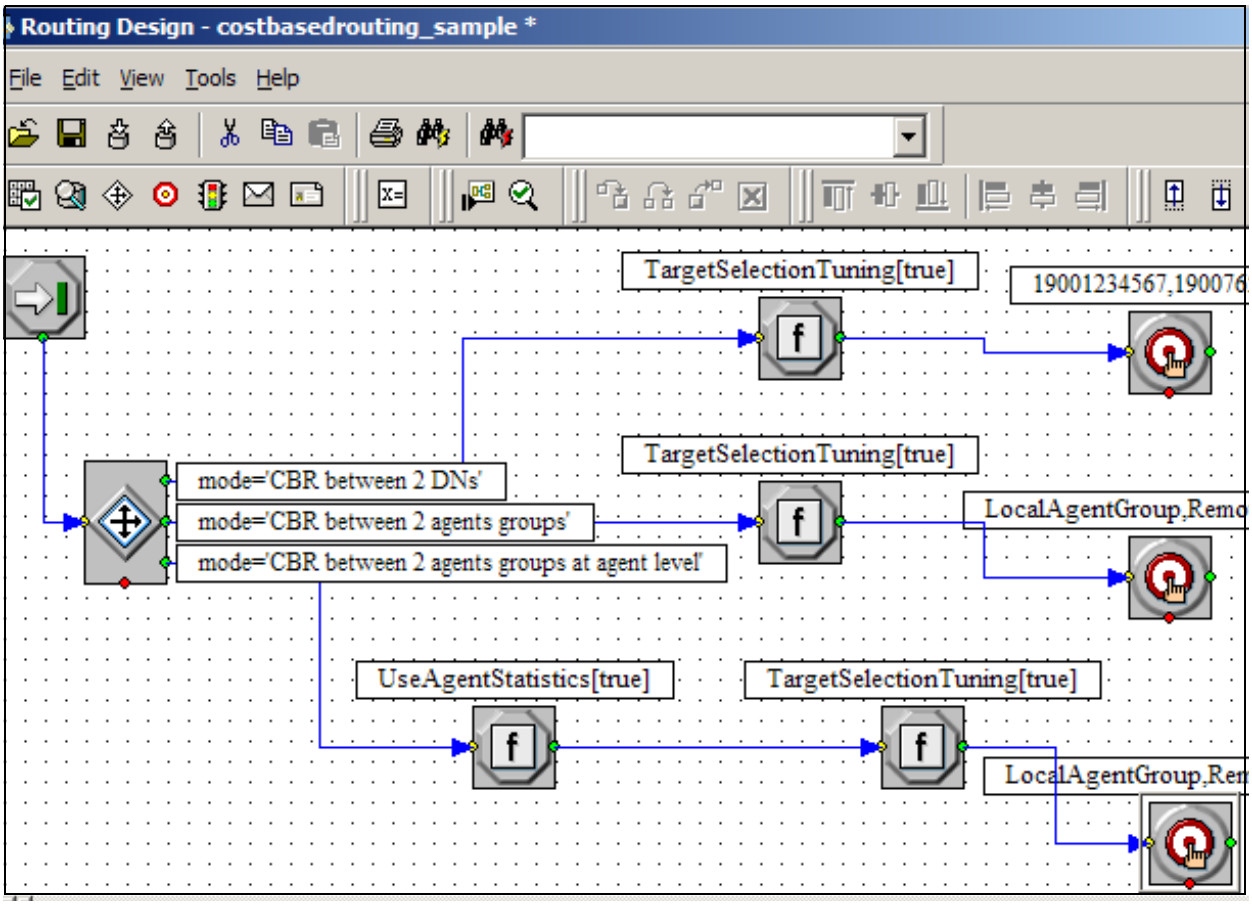


Figure 27: Strategy costbasedrouting_sample in IRD's Routing Design Window

Note: Although the preceding example strategy sets TargetSelectionTuning to `true` for all of its target Selection objects, you can also create strategies that set TargetSelectionTuning to `true` only in certain Selection objects.

Note the top port in the Generic Segmentation object in Figure 27 (`mode='CBR between 2 DNs'`), which directly connects to a Function object. Figure 28 shows the properties dialog box for this Function object with function TargetSelectionTuning set to `true`.

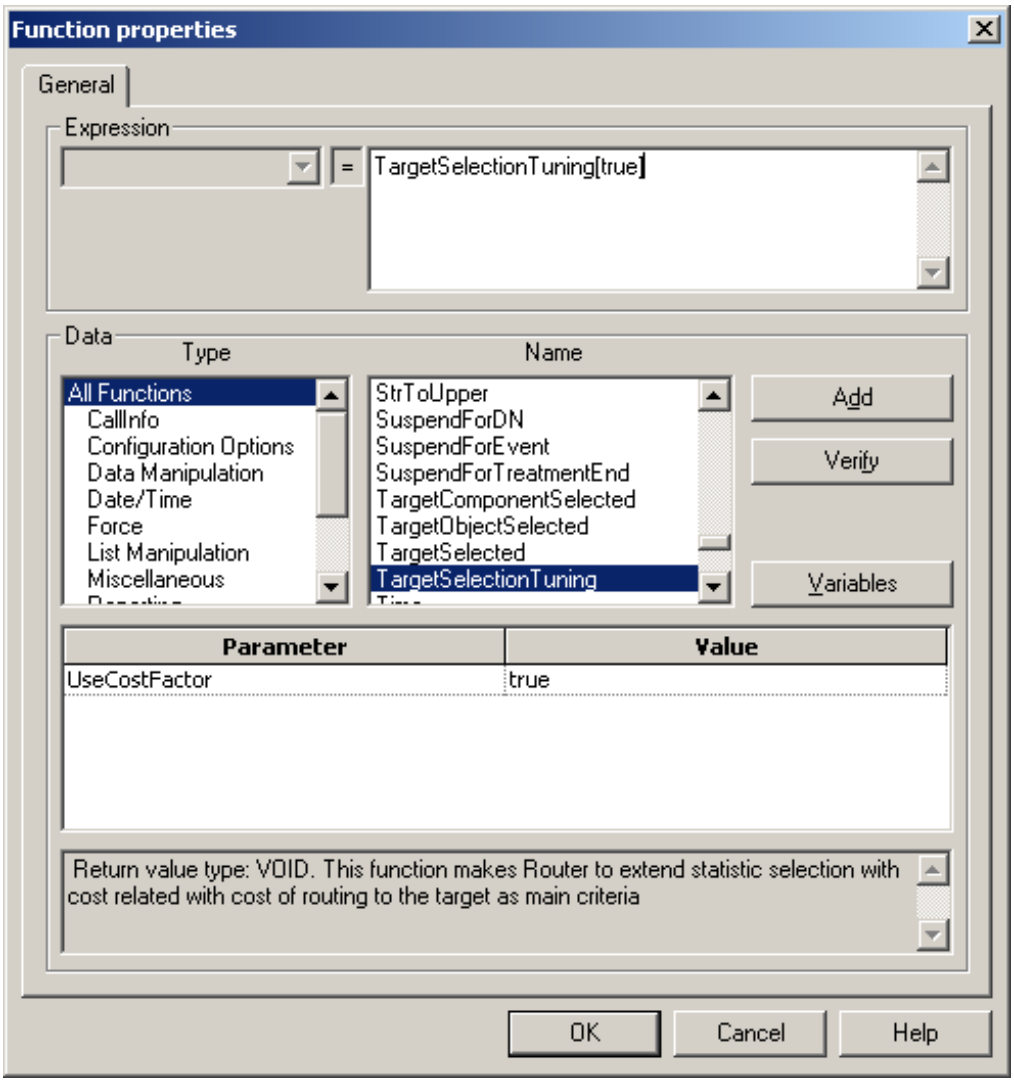


Figure 28: Function Object Using TargetSelectionTuning

Function TargetSelectionTuning has only one parameter: `UseCostFactor`. This parameter can be set to either be `true` or `false`. When this parameter is set to `true`, URS selects the target with the minimum cost.

As a result, when URS executes the top segment of the strategy shown in Figure 27 on page 74, the Function object turns on cost-based routing for the targets specified in top Routing Selection object. This causes URS to consider cost as additional selection criteria.

Figure 29 shows the `Target Selection` tab for the top Routing Selection object.

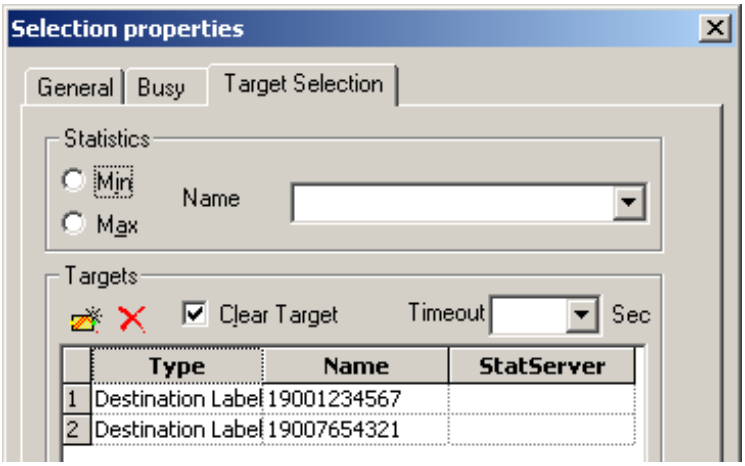


Figure 29: Routing Selection Object 3

In Figure 29, note that `Destination Label` is selected under `Type`. A `Network Destination` DN (called `Destination Label` in IRD) is a type of DN that can have an associated Cost Contract and Site. So that you can see the association, Figure 30 shows the `Advanced` tab of the properties dialog box for a DN of type `Network Destination`.

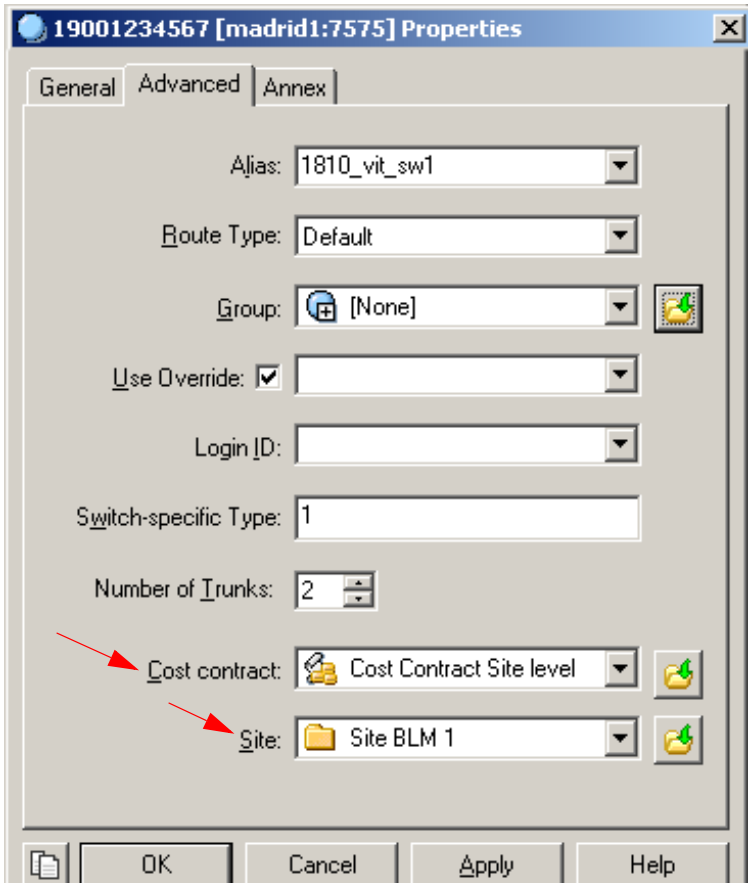


Figure 30: Advanced Tab, Destination Label DN Type

Note: A `Destination Label` target type is defined for a Network Switch and is controlled by Network T-Servers. It enables interactions to be routed to a remote destination. See Appendix B, "Sample Strategies," on page 193, for more detail.

Method #2: RStatCost

You can also activate cost-based routing in a strategy by selecting the predefined IRD statistic `RStatCost` on the `Target Selection` tab of the Routing Selection object (see Figure 31).

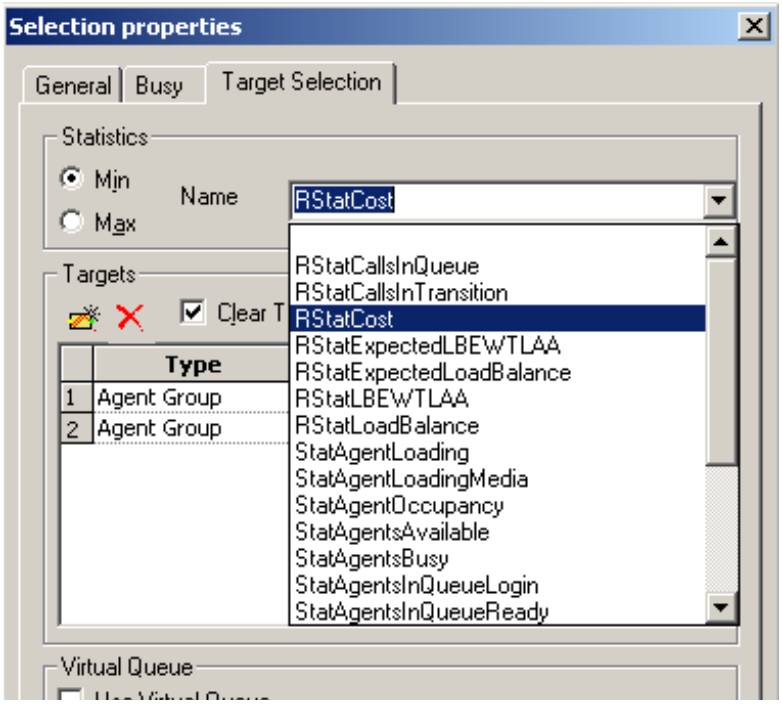


Figure 31: Activating CBR Via RStatCost Statistic

In this case, URS uses cost as additional target selection criteria.

Interaction Types

As described on page 27, a Cost Contract is comprised of different Interaction Type records, with each Interaction Type being a unique combination of:

`Media Type` + `Service Type` + `Customer Segment`.

As described on page 31, a routing target can have associated `Site` and `Cost Contract` objects.

When you activate cost-based routing for a target, URS can calculate cost differently for each Interaction Type in a Cost Contract. The following sections describe how this is done.

Example Interaction Type

Assume that a company sets up its IVR to prompt callers for:

- Their account number, stored in the interaction as Caller Entered Digits.
- The type of service being requested (`Service Type`): Banking, Stocks, or Insurance.

Assume also that the strategy looks up the customer in the database using the entered account number and gets the `Customer Segment` (Gold, Silver, or Bronze in this example). When the strategy processes the interaction, it now contains a `Media Type` (voice), `Service Type`, and `Customer Segment`—the same information required for Interaction Type records within a Cost Contract (see Figure 4 on page 28).

Using IT Contracts for Resource Cost

Assume that the target specified on the `Target Selection` tab of the Routing Selection object is a DN of type `Destination Label` (see Figure 29 on page 76) and that the DN has an associated Cost Contract and Site (see Figure 30 on page 76).

In order to calculate the Resource cost of routing this interaction:

1. URS looks up the `Cost Contract` object associated with the DN in the Configuration Database and tries to find an Interaction Type record that matches the interaction's `Media Type`, `Service Type`, and `Customer Segment`. Assume that the `Media Type`, `Service Type`, and `Customer Segment` are the same as that shown in Figure 4 on page 28: `voice`, `Banking`, and `Gold`.
2. Once URS finds the Interaction Type record, it uses the `IT Contract` field (see Figure 4 on page 28) for the name of an `IT Contract` object. The `IT Contract` object contains the processing parameters:
   - If the IT Contract is a Variable Rate Contract (see page 29), a flat rate or an agent hourly rate will be specified.
   - If the IT Contract is a Volume Contract (see page 30), URS will use a Day Contract record with a forecasted volume for each volume period, a base rate per interaction for each volume period, and over/under penalties (if applied).

URS can then use this information to calculate the Resource cost of the interaction.

Chapter

5 Cost as an Agent Property

Configuring a full-scale cost-based routing (CBR) solution may not always be the best approach. Deploying and maintaining a full-scale CBR solution can be a complex task. For example, some Sites may want only simple cost-based routing. In such cases, Universal Routing provides a lighter alternative to a full-scale solution. You may wish to use this if:

- There is no need to define Cost Contracts for different Interaction Types as described on page 46.
- Agent cost is based on a flat rate per call.
- You do not plan to use Infrastructure cost (see page 35).

This chapter describes the steps to implement cost as an agent property. The information in this chapter is divided among the following topics:

Specifying Cost in the Annex Tab

Figure 32 shows an example of how agent cost might look when specified on the `Annex` tab of the `Person Properties` dialog box.

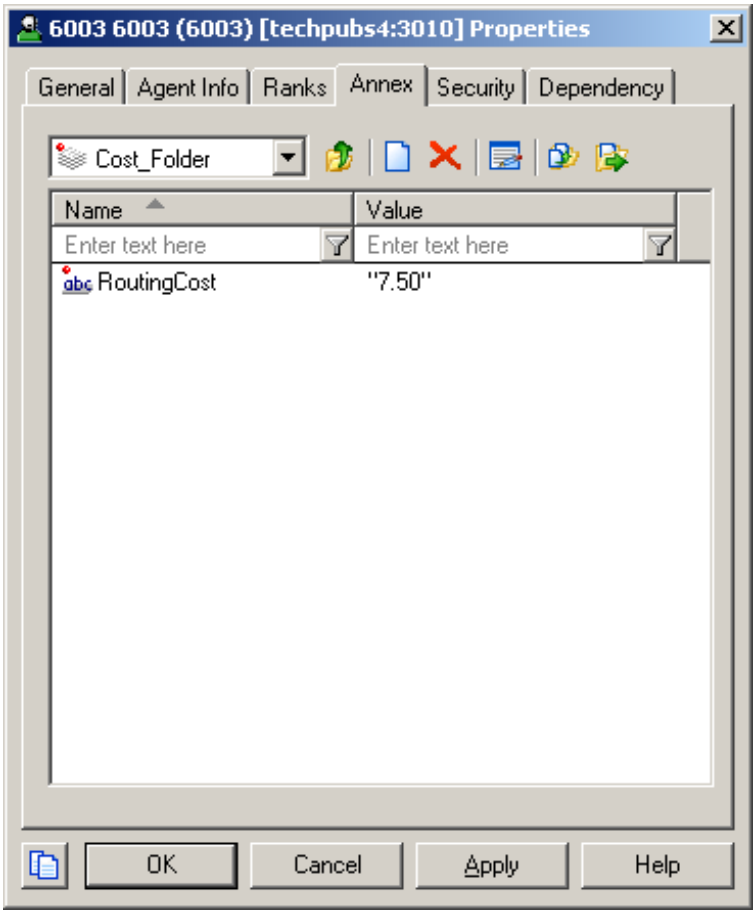


Figure 32: Person Properties Dialog Box, Annex Tab—Agent Cost

Note: The names of the folder (the section called `Cost_Folder`) and the property (the option called `RoutingCost`) are user-defined.

The hourly rate specified under `Value` applies to all Interaction Types that the agent can handle.

Using Function cfgdata

The next step is to make Universal Routing Server (URS) select based on the cost property of the agent (`Person`) object. To make URS behave in this way, you create a special "pseudo statistic" by using function `cfgdata` and the Assign object. To do this:

1. Create a text string. Start with a single quotation mark, a bracket, `cfgdata` and then the following in brackets separated by commas:
   - Folder name as specified on the `Annex` tab of `Person Properties` dialog box
   - Property name
   - Default value if the target has no such property

Use the Assign object to store the output as the value of some variable. Figure 33 shows an example Assign object specifying `cfgdata` and assigning the output to a variable called `x`.

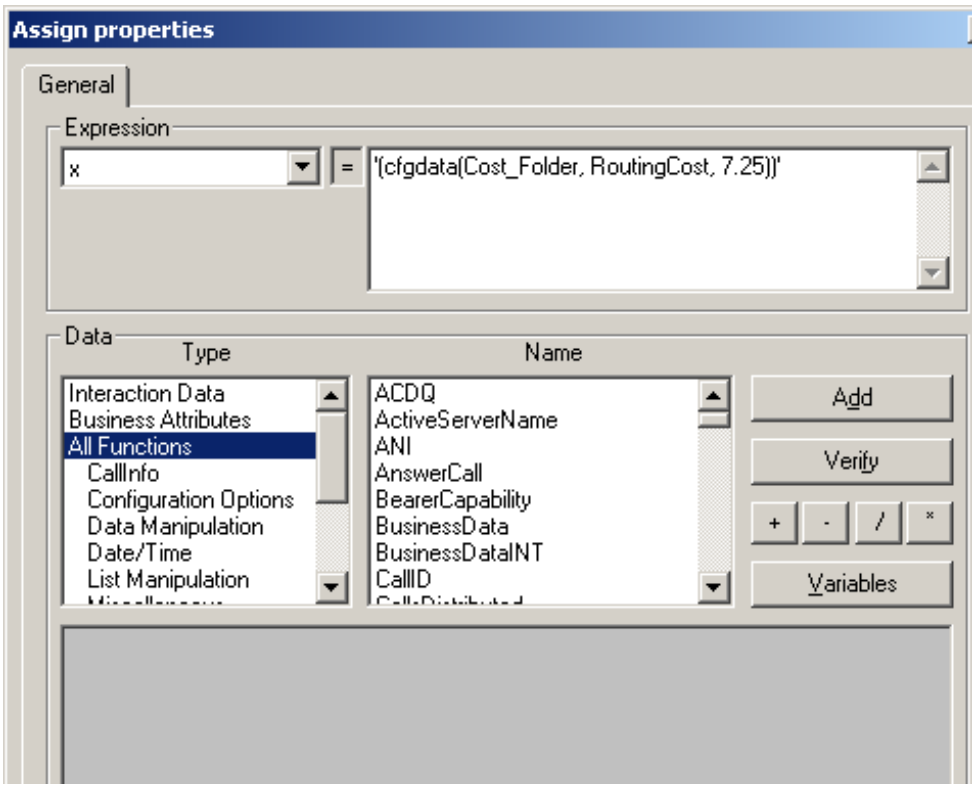


Figure 33: Assign Object—Cfgdata Pseudo Statistic

2. Use `x` as the target selection criteria. In this example, in the Statistics list on the `Target Selection` tab of the Routing Selection object, select `x` (see Figure 34).

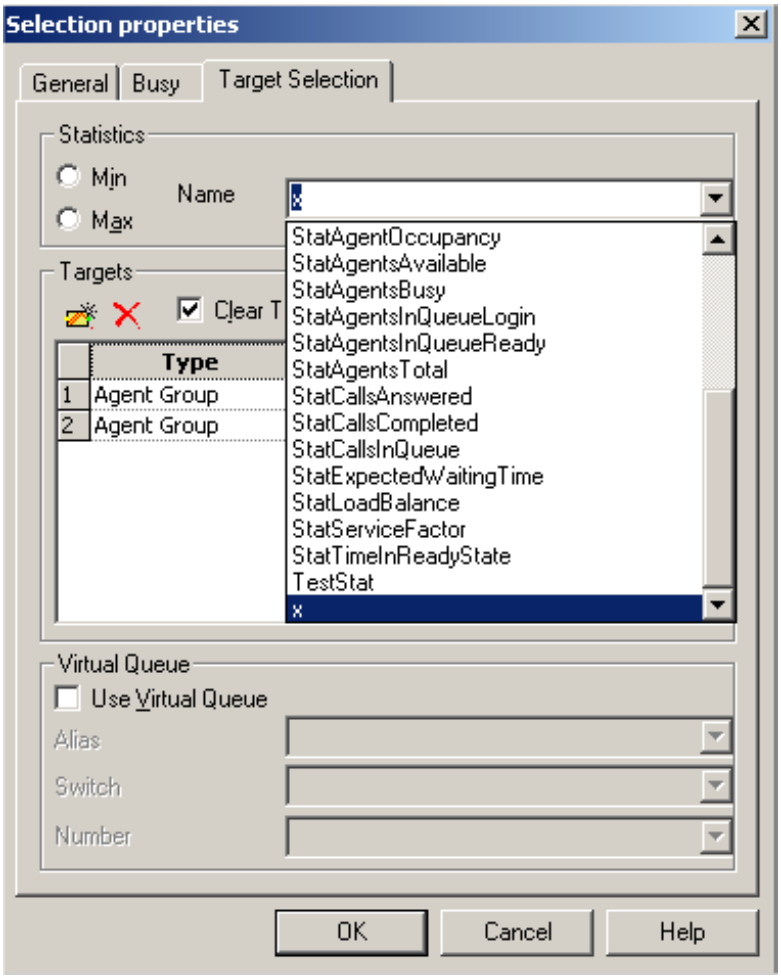


Figure 34: Routing Selection Object, Selecting Pseudo Variable

3. At the top of the Target Selection tab, select `Min`. This instructs URS to use the minimum value of the selected statistic (`x`).

In this example, URS will use the minimum value of property `RoutingCost` for the target (as specified in `Cost_Folder`) as additional selection criteria. If a target has no such property, URS will use the default value of `7.25`.

Note: When you use a pseudo statistic in this manner, URS does not automatically attach CBR reporting information to interactions (although you can retrieve the cost information in other ways).

When using Contact cost in a CBR solution, you can also enter an agent hourly rate in an Interaction Type (IT) Contract (see Figure 20 on page 54).

Chapter

6 Using the Wizard

This chapter prepares you for using the cost-based routing (CBR) wizard, which is a child of the Universal Routing Wizard. It also provides step-by-step instructions for completing the wizard screens. Many wizard screens requiring data entry are keyed to tables in previous chapters that contain field definitions.

The information in this chapter is divided among the following topics:

Defining Sites

The first worksheet in this section ("Site Worksheet" on page 87) is where you define the Sites that Universal Routing Server (URS) can potentially route to. General information on Sites was previously presented on pages 24 and 36. The following presents some additional information to help you configure `Sites`.

- A *Site* is similar to a *Switch*, but it is more generic in that a Site is not limited to voice DNs. Because a Switch is strongly voice-dependent, Configuration Layer 7.5 introduced the `Site` object, which is media-independent. In many cases, a Switch can be represented by a Site in Configuration Layer.

- If you are using Infrastructure cost (the cost to transfer an interaction from one Resource to another) in a CBR solution, you must use Site objects. In other words, if a CBR solution involves Infrastructure cost, the use of Sites to define the Infrastructure cost is mandatory. In this case, any Resource that an interaction can be routed to must have an association with some Site. The same holds true for any Resource (usually Routing Points) that an interaction can potentially be routed from: you must define the Site that the interaction can be routed from.
- Although a Site is defined in the Configuration Layer as special type of folder, the association of Resources (`Persons`, `Places`, and so on) with Sites is specified as a direct property of Resources in the object's properties dialog box. Therefore, Resources not need to be included in a Site folder in order to be associated with the Site. The properties dialog boxes for certain Resources (see "Site and Cost Contract Associations" on page 31) are extended to include the possibility of referencing a Site. The folder structure used to organize Resources in Configuration Manager may or may not reflect their association with Sites.
- You can use a Site to represent distributed switches (such as the Avaya S8700 switch or SIP/IP-based switches).
- You may or may not want to configure the Enterprise as a Site. It all depends on the contact center structure and whether you want URS to consider the cost for routing back to the Enterprise (single-tenant) from another Site. The same holds true in a multi-tenant Environment. Resource organization within a `Tenant` object is completely transparent to URS. In other words, URS does not take into account how Resources are organized within Configuration Unit folders, Site folders, and so on.).

About Outsourcers

To represent an outsourcer in Configuration Manager, use a `DN` object, which represents the number you need to call to reach the outsourcer. This DN represents the whole outsourcer and is not related to any particular outsourcer Resource.

Using the same Configuration Database (or its replica) is one option when you configure outsourcers in a CBR solution. This results in full visibility/monitoring of all outsourcer Resources from the main Site. Sometimes, using the same Configuration Database is the only option. For example, assume that you want to send a call to the agent with the minimal cost among agents from different outsourcers. In this case, URS must analyze every possible agent, so all of them must be in one Configuration Database.

Distributing Calls to a Routing Point

In a routing scenario where it is possible for URS to select an outsourcer from a group of outsourcers without the necessity of knowing detailed configuration

information for each outsourcer (such as agent cost), distributing calls to a Routing Point is a better approach. Each outsourcer will have its own T-Server(s) and URS(s) so that it can distribute a call to any of its local Resources based on any criteria (such as cost). In this case, the main Site (Site A) requires certain configuration information (a copy of objects from Site B) that will enable Site A to distribute calls to some Routing Point belonging to the outsourcer (Site B). Site A requires the following information:

- T-Server from Site B.
- Switch from Site B and some of the Switch DNs. Site A does not require all of them, however; most likely, Site A will require only those Routing Points dedicated to calls that arrive at Site B from the outside.
- The External Routing (extrouting) in the Site A configuration should be properly configured between the Site A T-Server and the Site B T-Server. For additional information. see the Multi-Site Support chapter in any *Genesys T-Server Deployment Guide*.
- The routing strategy must route calls to a Site B Routing Point.
- Routing Points from different Sites (B, C, and so on) must have some `Cost Contracts/Sites` associated with them in order to make cost-based selection possible.

Nonmonitored Destinations

You can define the Infrastructure cost for interactions being sent from Switch A to a destination (such as an outsourcer) whose Resources (Persons, DNs, software, and so on) are not defined by Genesys. You do this via the `Transfer Cost` field (see Figure 11 on page 39). URS can then use the Infrastructure cost information as the basis for routing decisions.

In a case where Site B is not controlled by Genesys at all (there are no T-Servers, no URSs, no information in the Configuration Layer), the main Site should still define some DN(s). The most appropriate type of DN will be `Network Destination`, but the DN can be any of those DN types listed in "Site and Cost Contract Associations" on page 31. Configure the routing strategy to target those DNs. In Site B:

- In order to route by Infrastructure cost, those DNs need to be associated with a Site (the outsourcer Site, which can be empty inside).
- In order to route by Resource cost, those DNs need to be associated with a Cost Contract.

A DN in the Configuration Layer that is used to associate a Contract with a nonmonitored DN must have an alias identical to the name of the nonmonitored DN (the name of the DN is its name in the strategy, in the format `DN@switch`).

Note: The `CBR-Hourly rate.AverHandleDNStatus` statistic is applicable only to a target where it makes sense. It is not applicable to nonmonitored DN's.

CBR and Network Routing

As described in the chapter on voice routing architecture and calls flows in the *Universal Routing 7.6 Deployment Guide*, Genesys Network Routing provides the environment for routing interactions from a network (for example, an 800 number) to Enterprise premise switches.

When configuring a Network Routing solution, you must define targets for CBR-enabled strategies within the `Tenant` the call belongs to. For example, you should not route from a premise T-Server to DNs defined under `Environment`. The scenario described in "Distributing Calls to a Routing Point" on page 84 applies to both Network Routing and Enterprise Routing. The difference is not so much in the strategies, but where the Routing Points that calls are routed from are located:

- If the Routing Points are located under the `Environment Tenant,` the scenario is Network Routing.
- If the Routing Points are under another `Tenant`, the scenario is Enterprise Routing.

Wizard Worksheets

Prior to using the CBR wizard, complete the worksheets in this section.

Note: Genesys recommends using the CBR wizard to initially create a CBR solution. Once the solution is created, you can always run Configuration Manager and edit the solution manually.

Site Worksheet

Use the worksheet in Table 14 to plan Sites for a cost-based routing solution prior to using the cost-based routing wizard described on page 99.

Table 14: Site Worksheet

Site Worksheet	
Site 1 Name (Figure 9 on page 37):	
Site Description:	
Cost Contract:	
Sites that can potentially be routed to From Site 1 (see Figure 11 on page 39):	
Transfer Cost to first Site:	Transfer Cost to third Site:
Transfer Cost to second Site:	Transfer Cost to fourth Site:
Site 2 Name:	
Site Description:	
Cost Contract:	
Sites that can potentially be routed to From Site 2	
Transfer Cost to first Site:	Transfer Cost to third Site:
Transfer Cost to second Site:	Transfer Cost to fourth Site:
Site 3 Name:	
Site Description:	
Cost Contract:	
Sites that can potentially be routed to From Site 3	
Transfer Cost to first Site:	Transfer Cost to third Site:
Transfer Cost to second Site:	Transfer Cost to fourth Site:

Table 14: Site Worksheet (Continued)

Site Worksheet	
Site 4 Name:	
Site Description:	
Cost Contract:	
Sites that can potentially be routed to From Site 4	
Transfer Cost to first Site:	Transfer Cost to third Site:
Transfer Cost to second Site:	Transfer Cost to fourth Site:
Site 5 Name:	
Site Description:	
Cost Contract:	
Sites that can potentially be routed to From Site 5	
Transfer Cost to first Site:	Transfer Cost to third Site:
Transfer Cost to second Site:	Transfer Cost to fourth Site:

Site Object Associations Worksheet

Use the worksheet in Table 15to plan Site associations as described in "Site and Cost Contract Associations" on page 31.

Table 15: Site Associations

Site Name	Persons	Agent Groups	Places	Place Groups	DNs

Cost Contracts Worksheet

Note: Before using the wizard to define Cost Contracts, make sure that the required `Service Types` and `Customer Segments` (see Table 5 on page 47) are set up in Configuration Manager under `Business Attributes` (`Media Types` are predefined). Once present in your Configuration environment, the codes will be selectable in the wizard.

Use the worksheet in Table 16 to plan Cost Contract Interaction Types (see page 46) prior to using the wizard.

Table 16: Cost Contracts Worksheet

Cost Contracts Worksheet	
Cost Contract 1 Name(Figure 14 on page 44):	
Tenant:	Start Date (see Figure 18 on page 51):
Description:	End Date:
Time Zone: (see Figure 18 on page 51)	Total Prepaid Cost ((see Figure 18 on page 51):
Interaction Types for Cost Contract 1 (see Figure 15 on page 46)	
Interaction Type definition #1	**Interaction Type definition #2**
Media Type: voice or voip (circle one)	Media Type: voice or voip
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:
Interaction Type definition #3	**Interaction Type definition #4**
Media Type: voice or ip (circle one)	Media Type: voice or ip (circle one)
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:

Table 16: Cost Contracts Worksheet (Continued)

Cost Contracts Worksheet (Continued)	
Cost Contract 2 Name:	
Tenant:	Start Date:
Description:	End Date:
Time Zone:	Total Prepaid Cost (optional):
Interaction Types for Cost Contract 2	
Interaction Type definition #1	**Interaction Type definition #2**
Media Type: voice or voip (circle one)	Media Type: voice or voip
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:
Interaction Type definition #3	**Interaction Type definition #4**
Media Type: voice or ip (circle one)	Media Type: voice or ip (circle one)
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:
Cost Contract 3 Name:	
Tenant:	Start Date:
Description:	End Date:
Time Zone:	Total Prepaid Cost:
Interaction Types for Cost Contract 3	
Interaction Type definition #1	**Interaction Type definition #2**
Media Type: voice or voip (circle one)	Media Type: voice or voip

Table 16: Cost Contracts Worksheet (Continued)

Cost Contracts Worksheet (Continued)	
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:
Interaction Type definition #3	**Interaction Type definition #4**
Media Type: voice or ip (circle one)	Media Type: voice or ip (circle one)
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:
Cost Contract 4 Name:	
Tenant:	Start Date:
Description:	End Date:
Time Zone:	Total Prepaid Cost (optional):
Interaction Types for Cost Contract 4	
Interaction Type definition #1	**Interaction Type definition #2**
Media Type: voice or voip (circle one)	Media Type: voice or voip
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:
Interaction Type definition #3	**Interaction Type definition #4**
Media Type: voice or ip (circle one)	Media Type: voice or ip (circle one)
Service Type:	Service Type:
Customer Segment:	Customer Segment:
Interaction Type Contract:	Interaction Type Contract:

Cost Contract Object Associations Worksheet

Use the worksheet in Table 17 to plan Cost Contract associations as described in "Site and Cost Contract Associations" on page 31.

Table 17: Cost Contract Object Associations Worksheet

Persons	Agent Groups	Places	Place Groups	DNs	Sites	Tenants
Cost Contract Name:						
Cost Contract Name:						
Cost Contract Name:						

IT Contracts Worksheet

Use the worksheet in Table 18 to plan each IT Contract (see page 52) for a CBR solution prior to using the wizard.

Table 18: Interaction Type Contracts Worksheet

<table>
<tr><th colspan="2">IT Contracts Worksheet</th></tr>
<tr><td colspan="2">IT Contract #1 Name:</td></tr>
<tr><td colspan="2">Variable Rate or Volume-Based (circle one)</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">If Variable Rate, circle one: Flat Rate or Agent Hourly
If Agent Hourly, enter Agent Hourly Rate:</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">If Volume-based, supply the Day Contract fields below using Table 11 on page 61 and Table 12 on page 64. Also see “Sample Data for Day Contract” on page 134.</td></tr>
<tr><td colspan="2">Day Contract #1 Name:</td></tr>
<tr><td colspan="2">Circle one: (any day) (day of week) (day of year:____) (specific date:____)</td></tr>
<tr><td>Business Day start</td><td>volume period intervals (Figure 89 on page 138)</td></tr>
<tr><td>Business Day end:</td><td rowspan="3">Interval 1 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Time Interval (number of minutes in each):</td></tr>
<tr><td>Flat Rate if applicable:</td></tr>
<tr><td>Forecast allowance without penalty %:</td><td rowspan="3">Interval 2 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Under forecasted penalty %:</td></tr>
<tr><td>Over forecasted penalty %:</td></tr>
<tr><td rowspan="2">• Note: After you supply the preceding percentage values, the wizard calculates Penalty for Over Forecast and Penalty for Under Forecast.</td><td>Interval 3 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:
(intervals continued on next page)</td></tr>
<tr><td>Interval 4 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
</table>

Table 18: Interaction Type Contracts Worksheet (Continued)

IT Contracts Worksheet (Continued)	
Day Contract #1 (Continued)	Interval 5 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 6 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 7 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 8 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 9 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 10 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 11 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 12 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:

Table 18: Interaction Type Contracts Worksheet (Continued)

<table>
<tr><th colspan="2">IT Contracts Worksheet (Continued)</th></tr>
<tr><td colspan="2">Day Contract #2 Name:</td></tr>
<tr><td colspan="2">Circle one: (any day) (day of week) (day of year:____) (specific date:____)</td></tr>
<tr><td>Business Day start</td><td>volume period intervals</td></tr>
<tr><td>Business Day end:</td><td rowspan="3">Interval 1 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Time Interval (number of minutes in each):</td></tr>
<tr><td>Flat Rate if applicable:</td></tr>
<tr><td>Forecast allowance without penalty %:</td><td rowspan="3">Interval 2 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Under forecasted penalty %:</td></tr>
<tr><td>Over forecasted penalty %:</td></tr>
<tr><td rowspan="5">• Note: After you supply the preceding percentage values, the wizard calculates Penalty for Over Forecast and Penalty for Under Forecast.</td><td>Interval 3 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 4 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 5 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 6 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 7 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
</table>

Table 18: Interaction Type Contracts Worksheet (Continued)

<table>
<tr><th colspan="2">IT Contracts Worksheet (Continued)</th></tr>
<tr><td rowspan="5">Day Contract #2 (Continued)</td><td>Interval 8 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 9 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 10 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 11 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Interval 12 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td colspan="2">Day Contract #3 Name:</td></tr>
<tr><td colspan="2">Circle one: (any day) (day of week) (day of year:____) (specific date:____)</td></tr>
<tr><td>Business Day start</td><td>volume period intervals</td></tr>
<tr><td>Business Day end:</td><td rowspan="3">Interval 1 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Time Interval (number of minutes in each):</td></tr>
<tr><td>Flat Rate if applicable:</td></tr>
<tr><td>Forecast allowance without penalty %:</td><td rowspan="3">Interval 2 number of minutes:
Forecasted Volume for this interval:
Base Rate per Interaction for this interval:</td></tr>
<tr><td>Under forecasted penalty %:</td></tr>
<tr><td>Over forecasted penalty %:</td></tr>
</table>

Table 18: Interaction Type Contracts Worksheet (Continued)

IT Contracts Worksheet (Continued)	
• Note: After you supply the preceding percentage values, the wizard calculates Penalty for Over Forecast and Penalty for Under Forecast.	Interval 3 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 4 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 5 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 6 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 7 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 8 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 9 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:
	Interval 10 number of minutes: Forecasted Volume for this interval: Base Rate per Interaction for this interval:

Wizard Configuration

This information in this section describes the wizard for cost-based routing, which you access from the Enterprise Routing Wizard (see Figure 35).

Procedure: Running Wizard Manager

Purpose: To bring up a wizard used to configure CBR solution objects.

Start of procedure

1. Complete the "Wizard Worksheets" on page 86.
2. Contact Genesys Technical Support before configuring a cost-based routing (CBR) solution.

   Depending on the number of features you implement, CBR can be complex to configure for the first-time user. Because of this, and in order to ensure successful first implementations, Genesys wants to initially track all customers implementing CBR via contact with Genesys Technical Support.
3. Run Genesys Wizard Manager:

   Select `Start > All Programs > Genesys Solutions > Routing > Universal Routing Configuration Wizard > Start Wizard Manger.` The `Welcome to Wizard Manager` screen appears (see Figure 35).

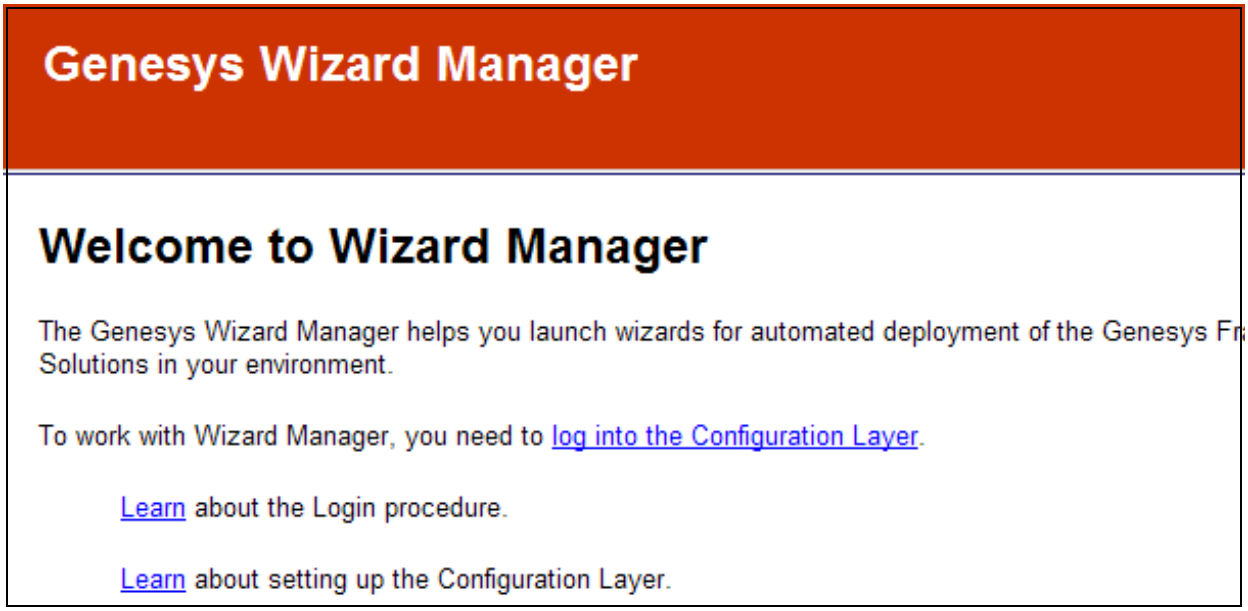


Figure 35: Welcome to Wizard Manager

4. Click the `Log into the Configuration Layer` link. The `Framework` screen appears (see Figure 36).

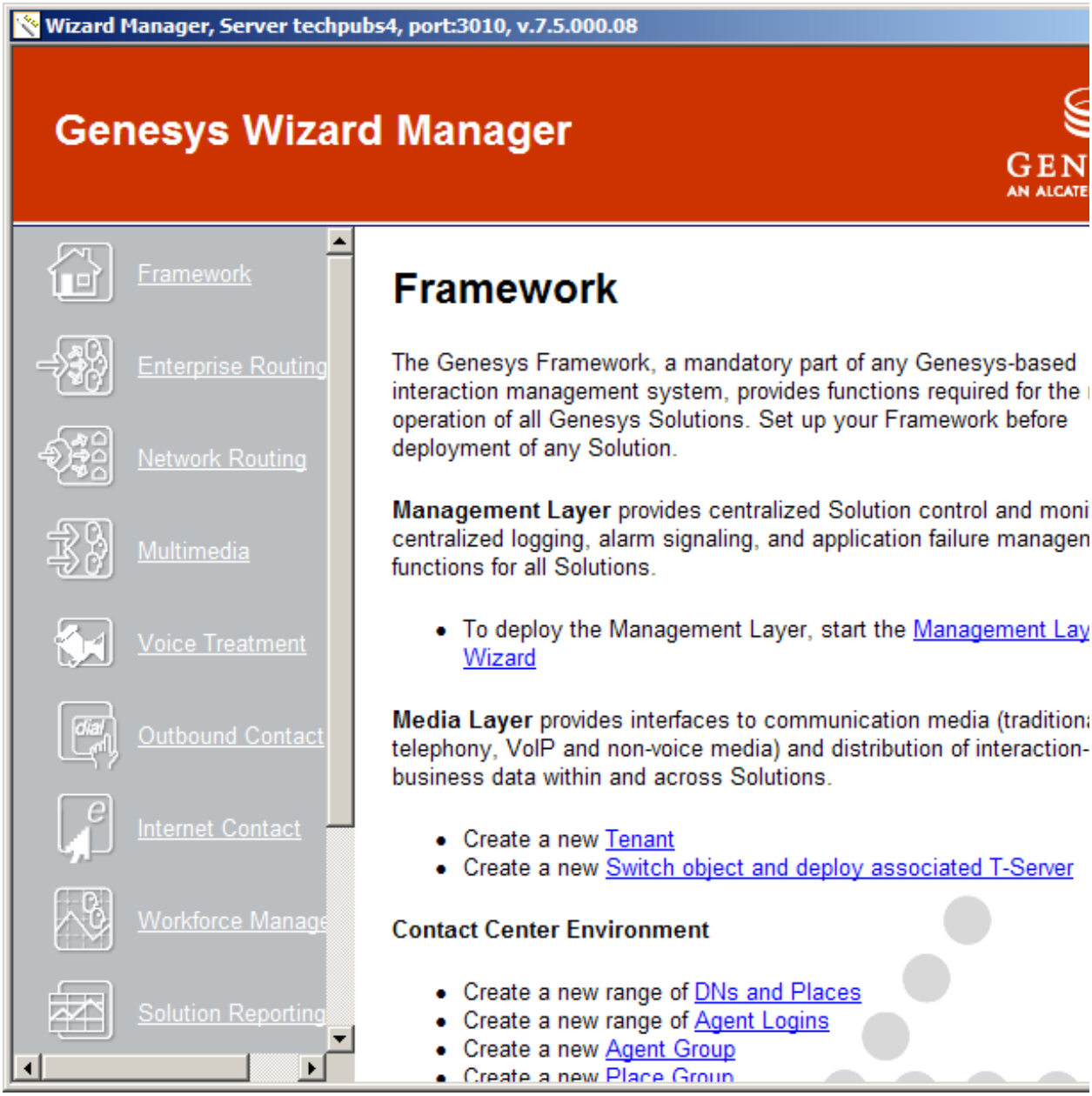


Figure 36: Starting Wizard Manager Screen (Framework)

5. Click the `Network Routing` or `Enterprise Routing` link on the left side of the screen. You can configure CBR for both Network Routing and Enterprise Routing.

   Assume that you click `Enterprise Routing`. The `Enterprise Routing` screen appears (see Figure 37).

Figure 37: Enterprise Routing Screen (No Solutions Configured)

6. Click one of the following links:
   - If a solution has not yet been configured, click the `Deploy Enterprise Routing in your contact center` link (see Figure 37).
   - If a solution has already been configured, click `Deploy Another Enterprise Routing Solution in your contact center` (link not shown).

Note: While these instructions describe creating a new CBR solution, you can also use the wizard to add CBR features to an existing routing solution.

End of procedure

Universal Routing Wizard

After you click the `Enterprise Routing` link, the `Welcome to the Universal Routing Wizard` screen appears (see Figure 38).

Figure 38: Welcome to the Universal Routing Wizard

Procedure: Using the Universal Routing Wizard for CBR

Purpose: To configure the objects required by a CBR solution.

Start of procedure

1. Click `Next` in the wizard screen shown in Figure 38. The `Solution Name` screen appears (see Figure 39).

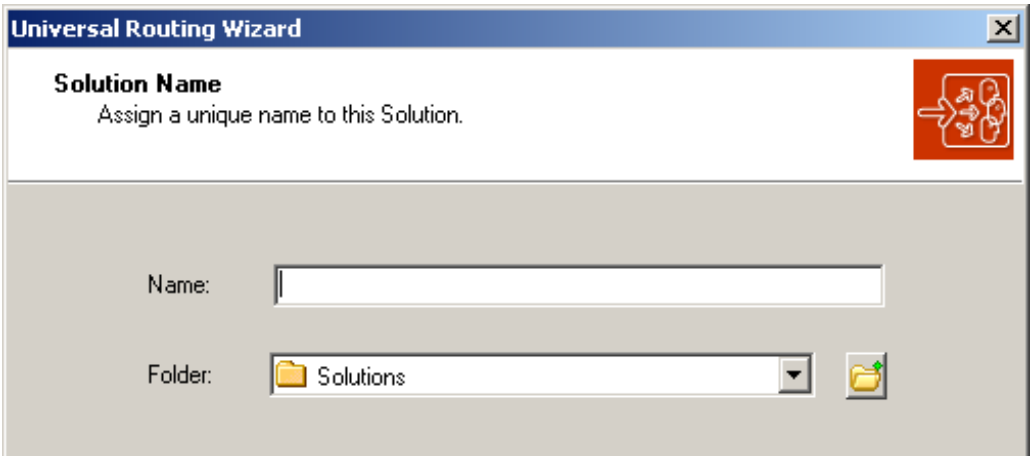


Figure 39: Solution Name

2. Name the solution, select a folder to store the solution executable (or keep the default), and then click `Next` (button not shown in Figure 39). The `Tenant` screen appears (see Figure 40).

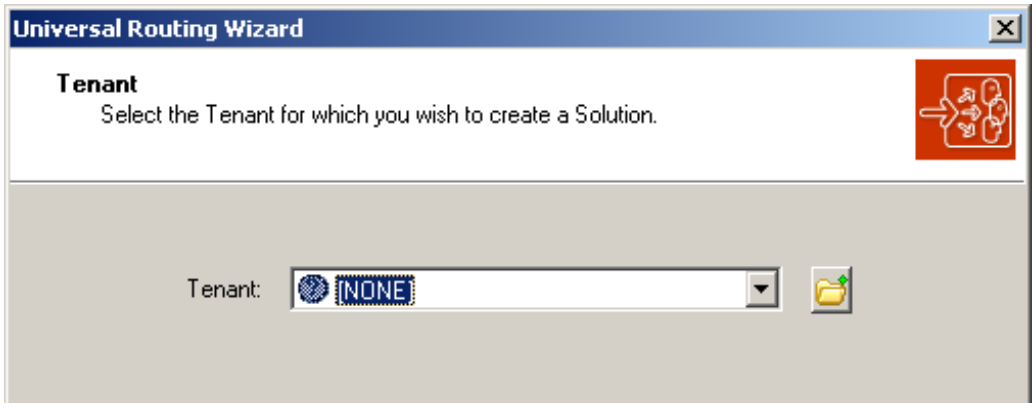


Figure 40: Tenant

3. If this is a single-tenant environment, leave the default value of `NONE`. If this is a multi-tenant environment, browse for and select a `Tenant`. In both cases, click `Next`.
   - If one or more Switches for the selected `Tenant` are not configured correctly, the wizard instructs you to use the Framework Configuration Wizard to correct configure a `Switch` object.
   - If `Switches` are configured correctly, the `Switches` screen appears (see Figure 41).

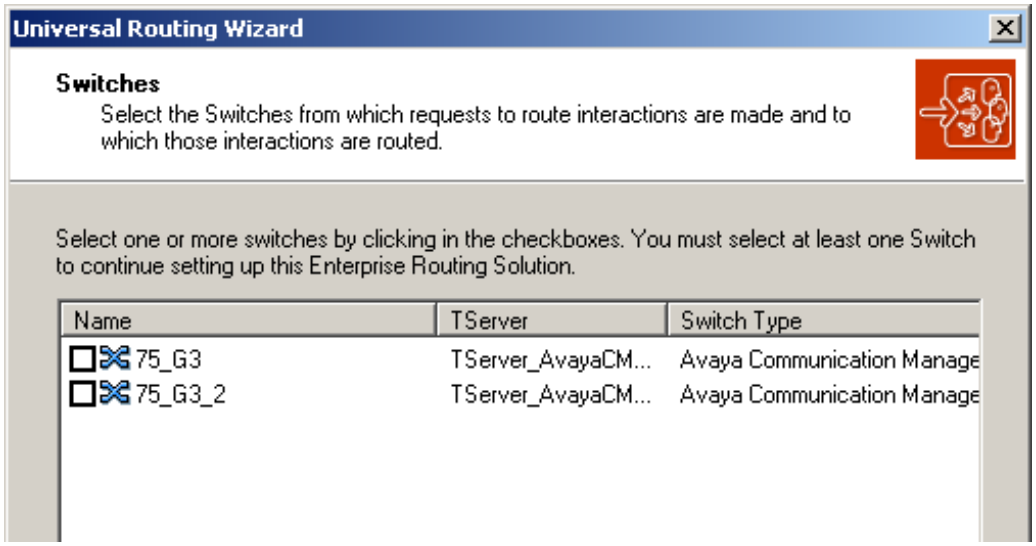


Figure 41: Switches

4. Select one or more Switches and then click `Next` (button not shown in Figure 41). The `Routing Features` screen appears. This screen selects the routing solutions you can configure in the wizard (see Figure 42).

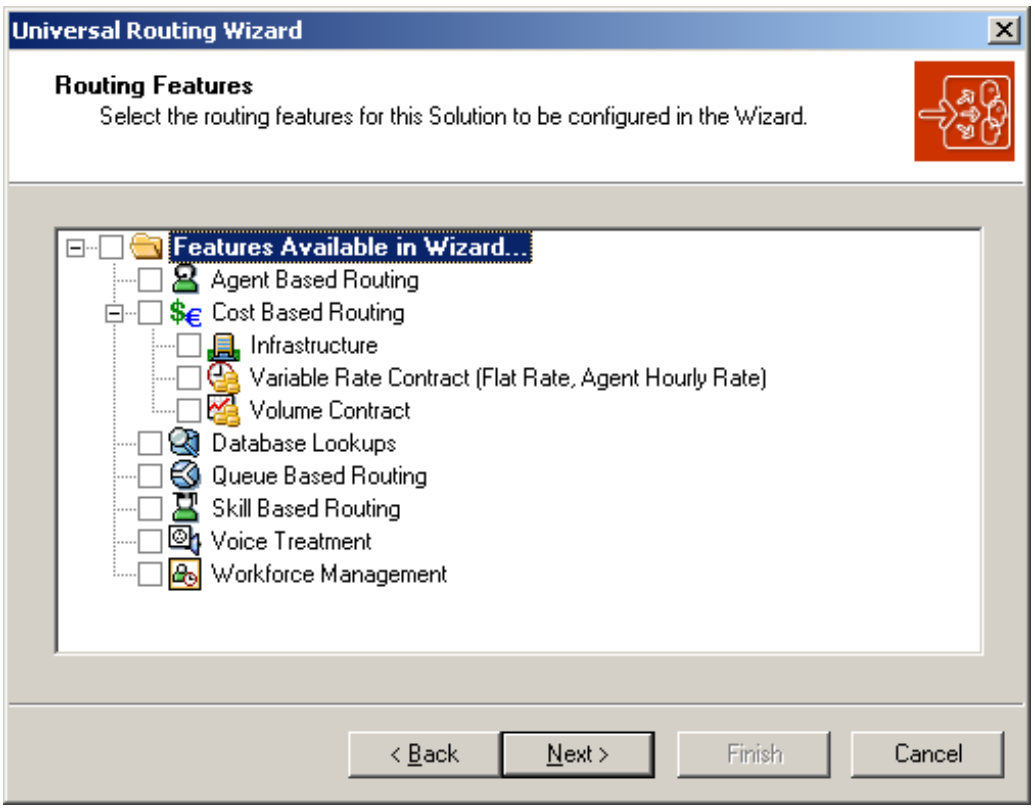


Figure 42: Routing Features

Note: If you select `Cost Based Routing`, do not select any other options during this particular wizard session.

5. Under `Cost Based Routing`, select the CBR features you want to implement:
   - `Infrastructure` simply defines the cost for transferring an interaction from one Site to another Site (see Figure 11 on page 39). Prior to configuring this feature, you should have complete the Site Worksheet on page 87.

Note: Prior to configuring either a Variable Rate or Volume Rate Contract, complete the Cost Contracts Worksheet on page 90.

   - `Variable Rate Contract` defines cost based on either based on a flat rate per Interaction Type or agent hourly cost (see Figure 20 on page 54).
   - `Volume Contract` is the most complex feature. It defines cost based on forecasted and actual interaction volume for specific days (see page 56).

Note: These instructions assume you clicked the `Cost Based Routing` for a full-scale solution. This automatically checks the `Infrastructure`, `Variable Rate Contract`, and `Volume Contract` check boxes.

6. Click. `Next` (Figure 42 on page 104). The `Framework Resources` screen appears. The content of the screen varies depending on your previous selections:
   - If you previously selected `Infrastructure` only, the screen prompts you to define `Site` objects if none are defined (see Figure 43).

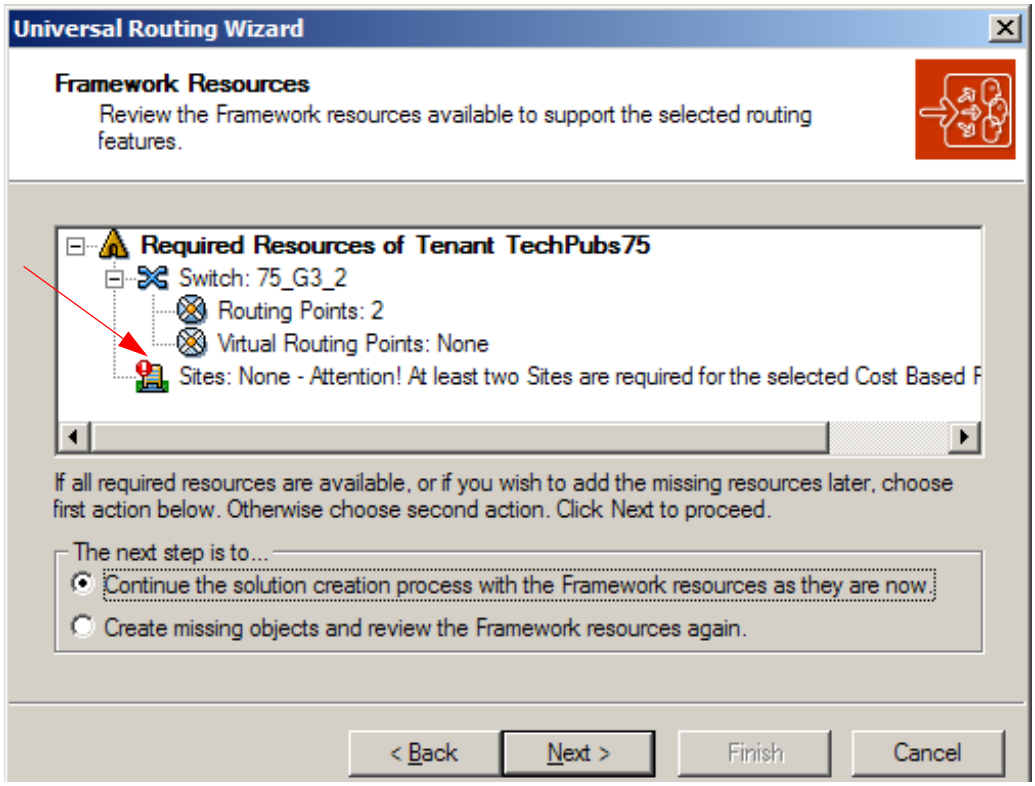


Figure 43: Framework Resources, Infrastructure Only Selected on Previous Screen

- If you selected Cost Based Routing (`Infrastructure, Variable Rate Contract,` and `Volume Contract` in Figure 42), the `Framework Resources` screen prompts you to create these objects (see Figure 44).

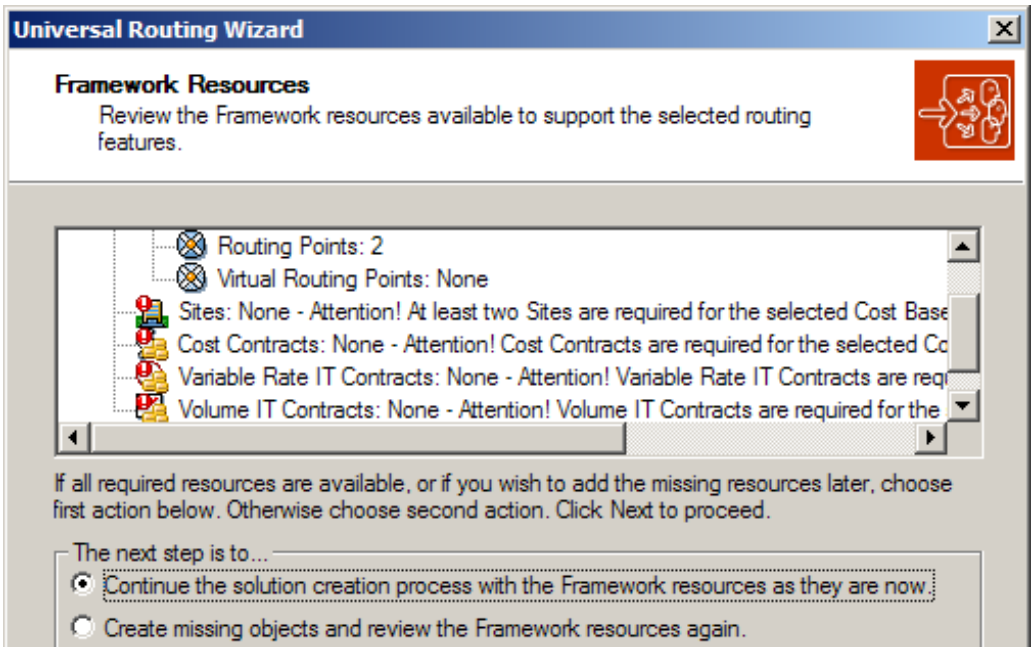


Figure 44: Framework Resources, Before Selecting Create Missing Objects

7. Select `Create missing objects and review the Framework resources again` and then click `Next`. The `Framework Objects` screen appears (see Figure 45).

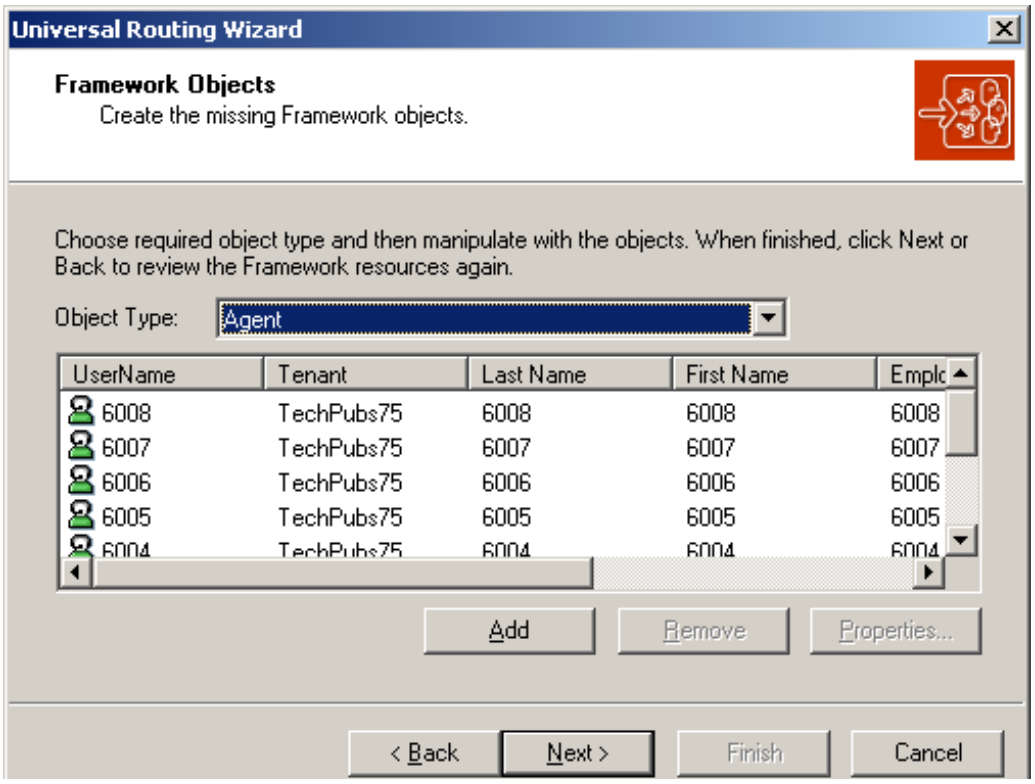


Figure 45: Framework Objects

End of procedure

Site Wizard

If you need a review of `Site` objects, see "Site Object" on page 24.

Procedure: Creating Sites

Purpose: To create the `Site` objects, which are required in order for URS to calculate "Infrastructure Cost" as described on page 35.

Start of procedure

1. On the `Framework Objects` screen shown previously, click the downward-pointing arrow (opposite `Agent` in Figure 45 on page 107), select `Site`, and then click `Add`. The `Welcome to the Site Wizard` screen appears (see Figure 46).

Figure 46: Welcome to the Site Wizard

Note: You can also open the Site Wizard from Configuration Manager.

2. Click `Next`. The `Site Name` screen appears (see Figure 47).

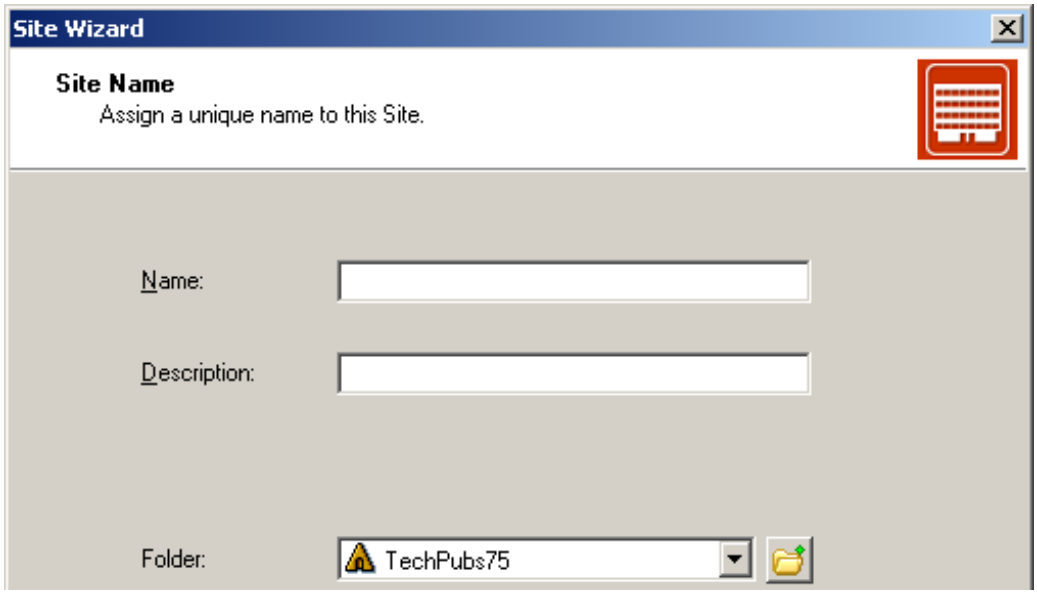


Figure 47: Site Name

> **Note:** This screen corresponds to the `General` tab of the `Site Properties` dialog box shown in Figure 9 on page 37.

3. Name and describe the Site, change the Tenant in the `Folder` field (if necessary), and then click `Next` (button not shown in Figure 47). The `Routing options` screen appears (see Figure 48).

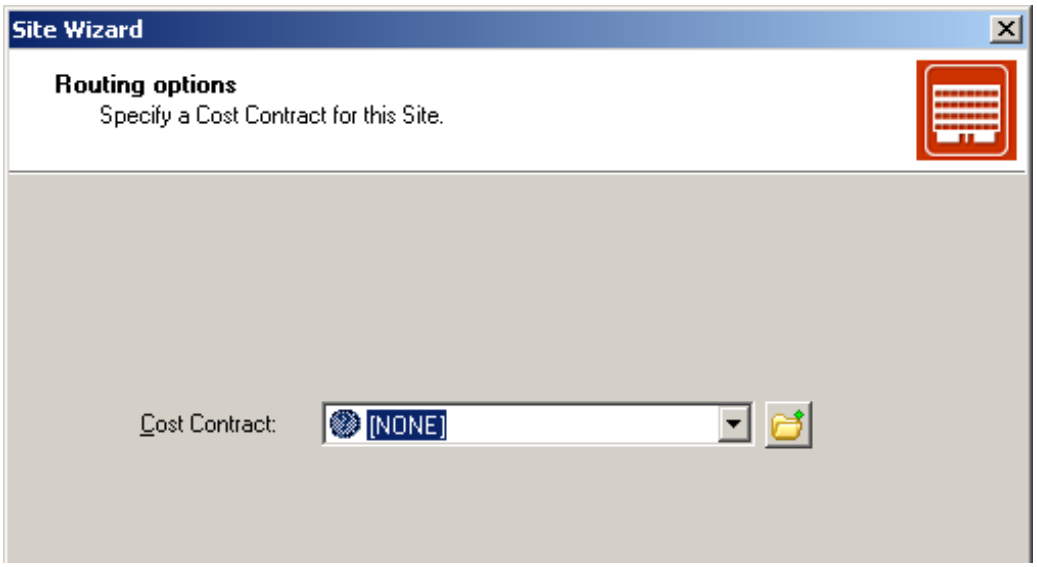


Figure 48: Routing Options

> **Note:** This screen corresponds to the `Advanced` tab of the Site properties dialog box as shown in Figure 10 on page 38.

4. These instructions assume that Cost Contracts are not yet defined, therefore leave the `Cost Contract` field empty for now.

   If Cost Contracts are already defined, click the downward-pointing arrow to open the `Browse for Objective Table (Cost Contract)` dialog box and then continue with the instructions in “” on page 145.)

5. Click `Next`. The `Transfer Costs` screen appears (see Figure 49).

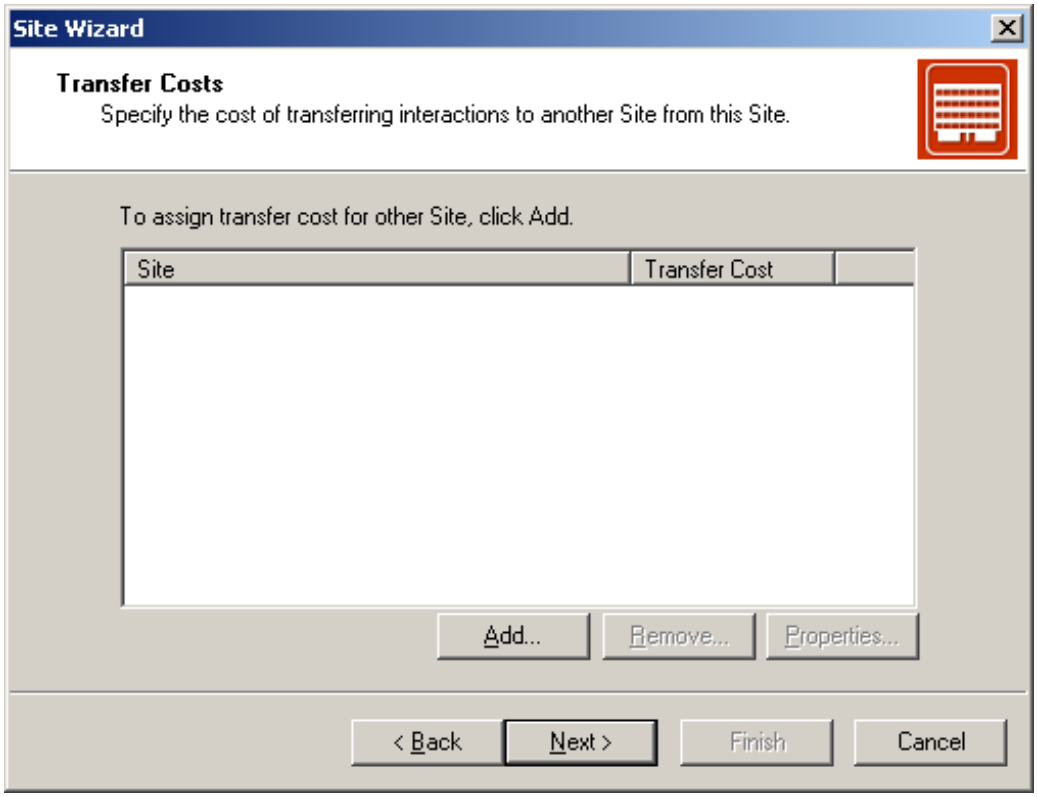


Figure 49: Transfer Costs

> **Note:** This screen corresponds to the `Advanced` tab in the `Site Properties` dialog box shown in Figure 10 on page 38.

6. These instructions assume that all Sites that can potentially be routed to must still be defined, therefore click `Next`. The `Site Summary` screen notifies that you are about to create a Site (see Figure 50).

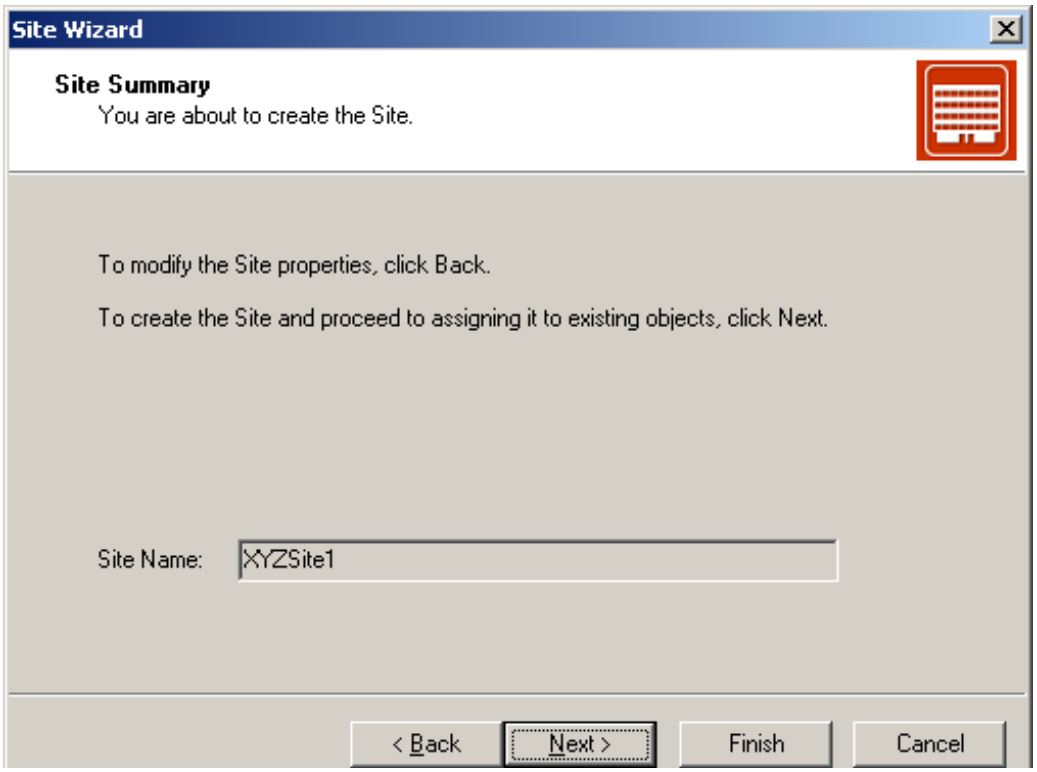


Figure 50: Site Summary

7. Click `Finish`. The `Framework Objects` screen appears with the newly created Site (see Figure 51).

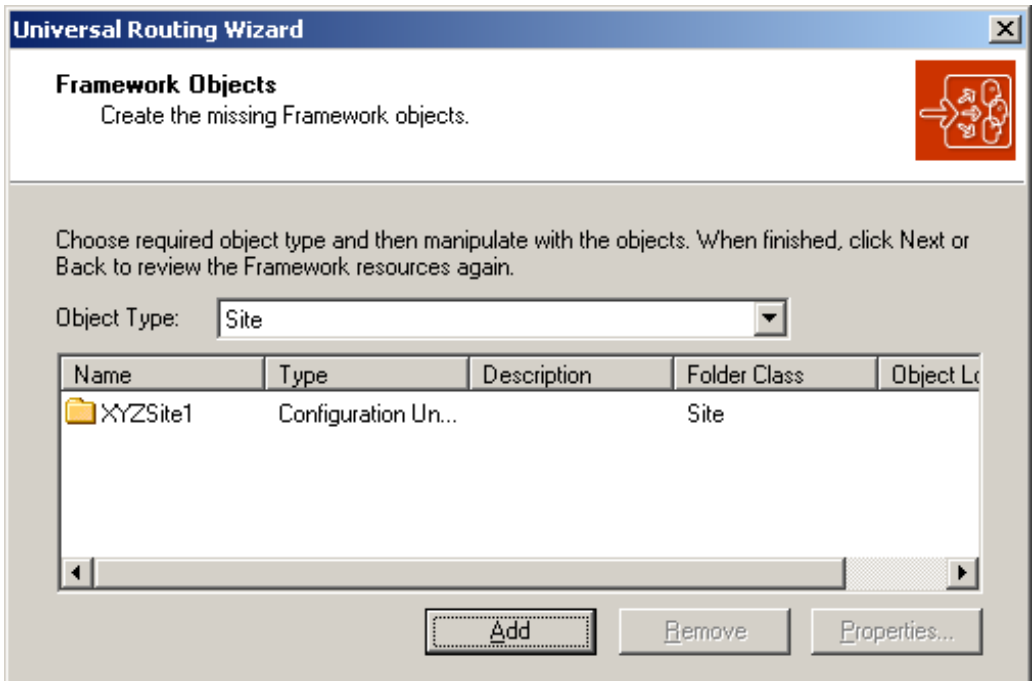


Figure 51: Framework Objects, One Site Created

8. Ensure that `Site` is already selected opposite `Object Type` (see Figure 51 on page 111), and then click `Add`. The `Welcome to the Site Wizard` screen appears as shown in Figure 46 on page 108.
9. Continue adding Sites that can potentially be routed to by repeating Steps 2 through 7.

End of procedure

Procedure:
Entering Site-to-Site Transfer Cost

Purpose: To define the Infrastructure cost for transferring an interaction from one Site to another Site (see Figure 10 on page 38).

Start of procedure

1. Select a Site on the `Framework Objects` screen (see Figure 52).

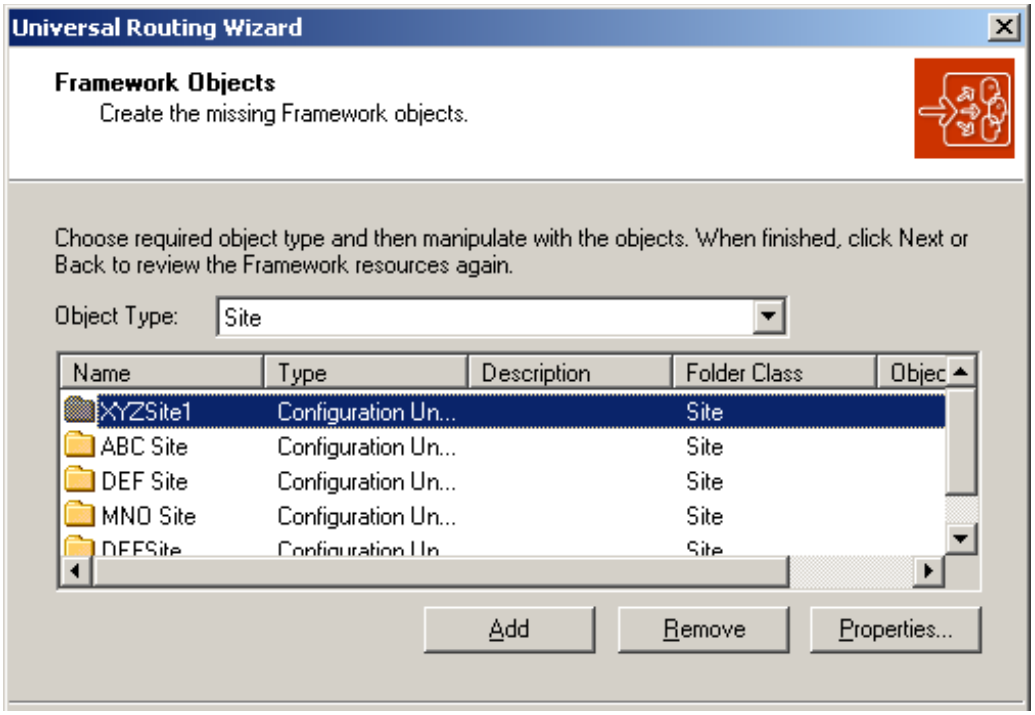


Figure 52: Framework Objects, Site Selected

2. Click `Properties`. The `Site Properties` dialog box opens with the `General` tab selected (see Figure 53).

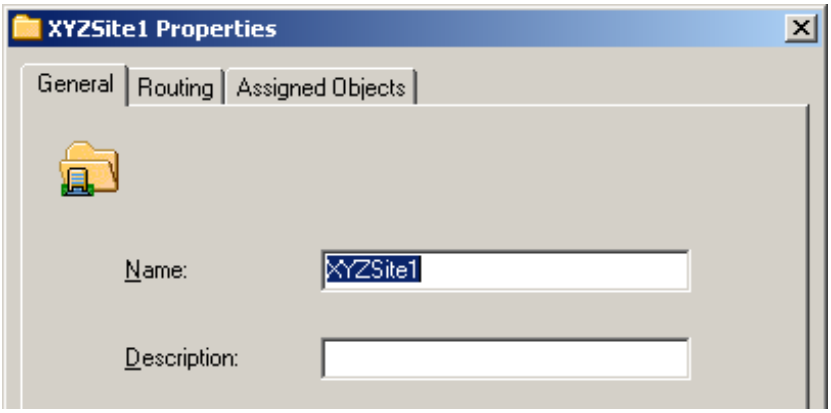


Figure 53: Site Properties, General Tab

3. Click the `Routing` tab (see Figure 54).

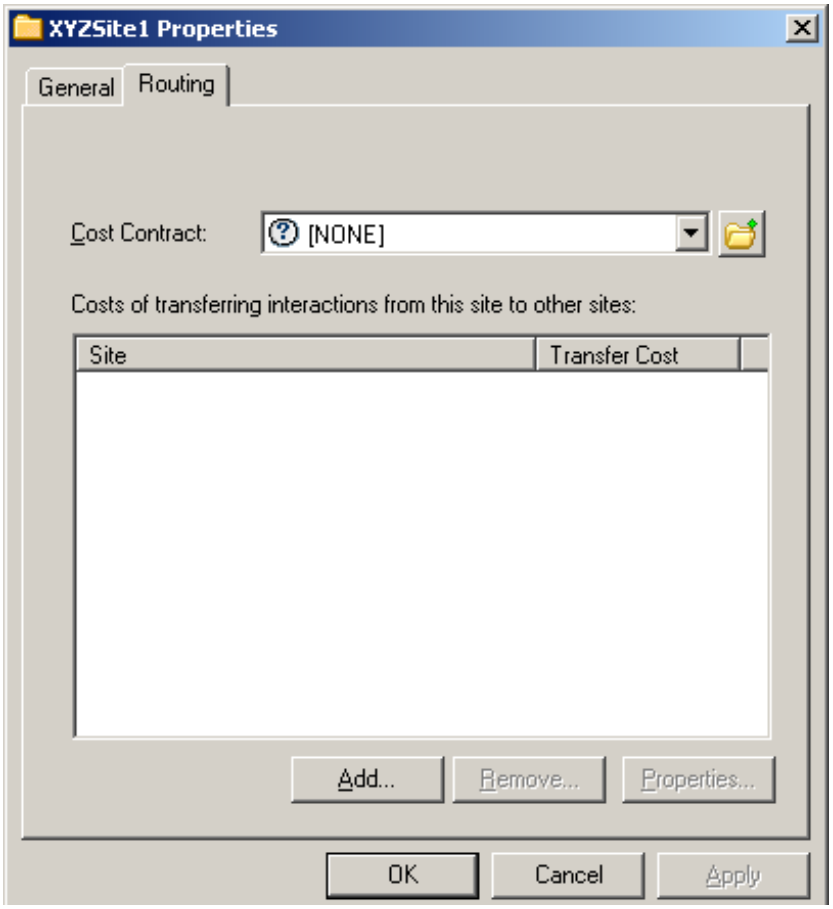


Figure 54: Site Properties, Routing Tab

4. Click `Add`. The `Transfer Cost` screen appears (see Figure 55).

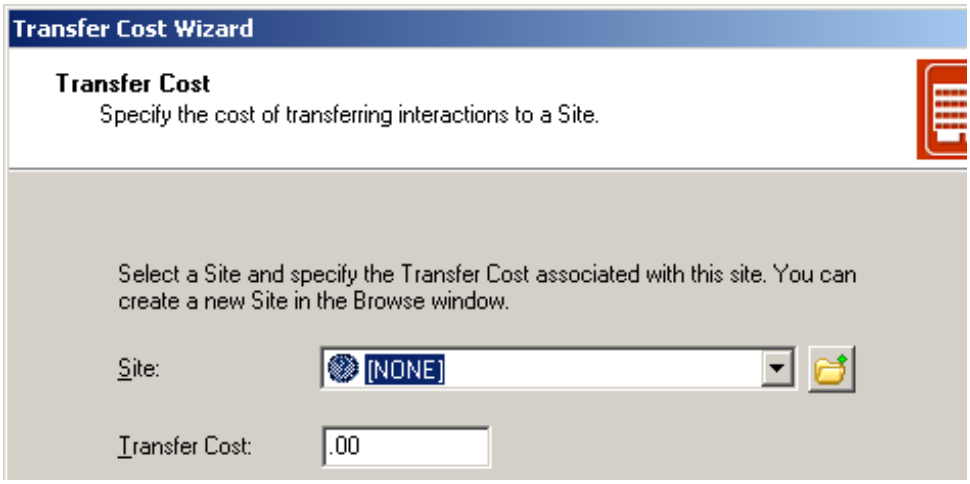


Figure 55: Transfer Cost

5. Click the folder icon to the right of the `Site` field.
6. Select a Site that can potentially be routed to. A `Browse for Folder (Site)` window appears (see Figure 56).

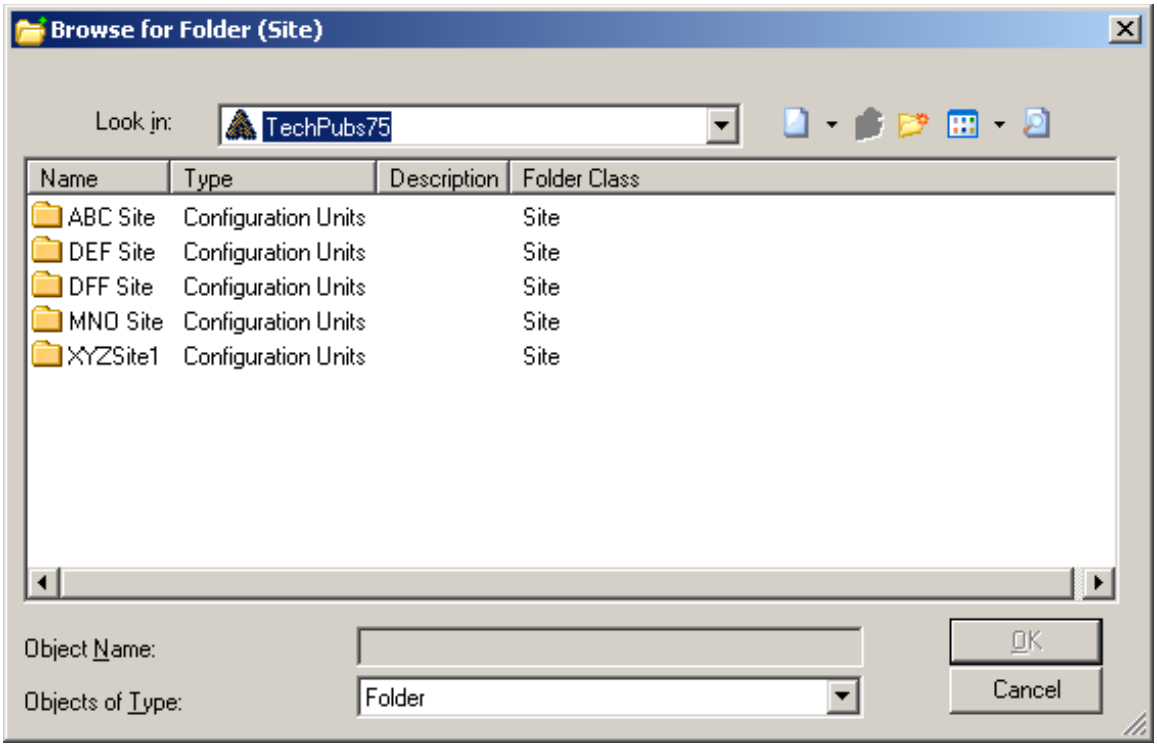


Figure 56: Browse For Folder (Site)

7. Select a Site and then click. `OK`. The `Transfer Cost` screen are appears (see page 115).

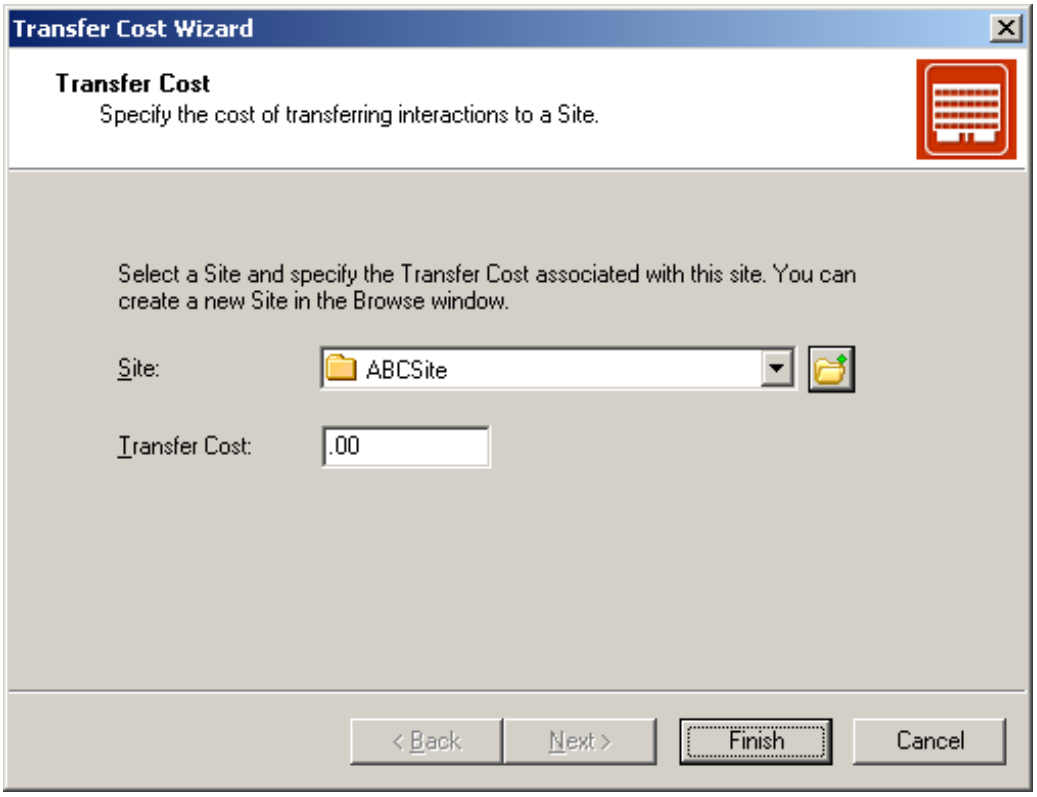


Figure 57: Entering Transfer Cost for Selected Site

> **Note:** This screen corresponds to the `New Transfer Cost` dialog box shown in Figure 11 on page 39.

8. Enter the Infrastructure cost for transferring an interaction to this `Site`.
9. Click `Finish`. The `Routing` tab shows the transfer cost from the first Site to the second Site (see Figure 58).

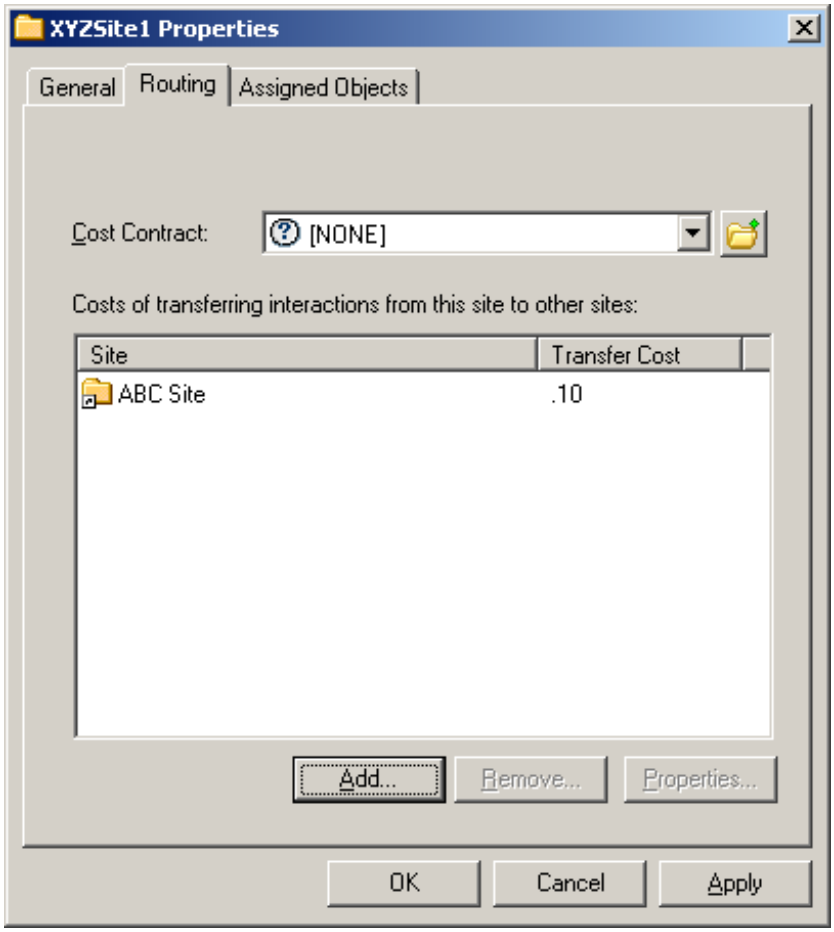


Figure 58: Site Properties, Routing Tab

> **Note:** In this example, the transfer cost is from `XYZ Site1` (Figure 52 on page 112) to `ABC Site`.

10. Click `Add`. The `Transfer Costs` screen appears as shown in Figure 55 on page 114
11. Continue adding transfer costs for Sites in this fashion by repeating steps 5 through 9. When you are done, the `Routing` tab in the Site properties dialog will look similar to the one shown in Figure 59.

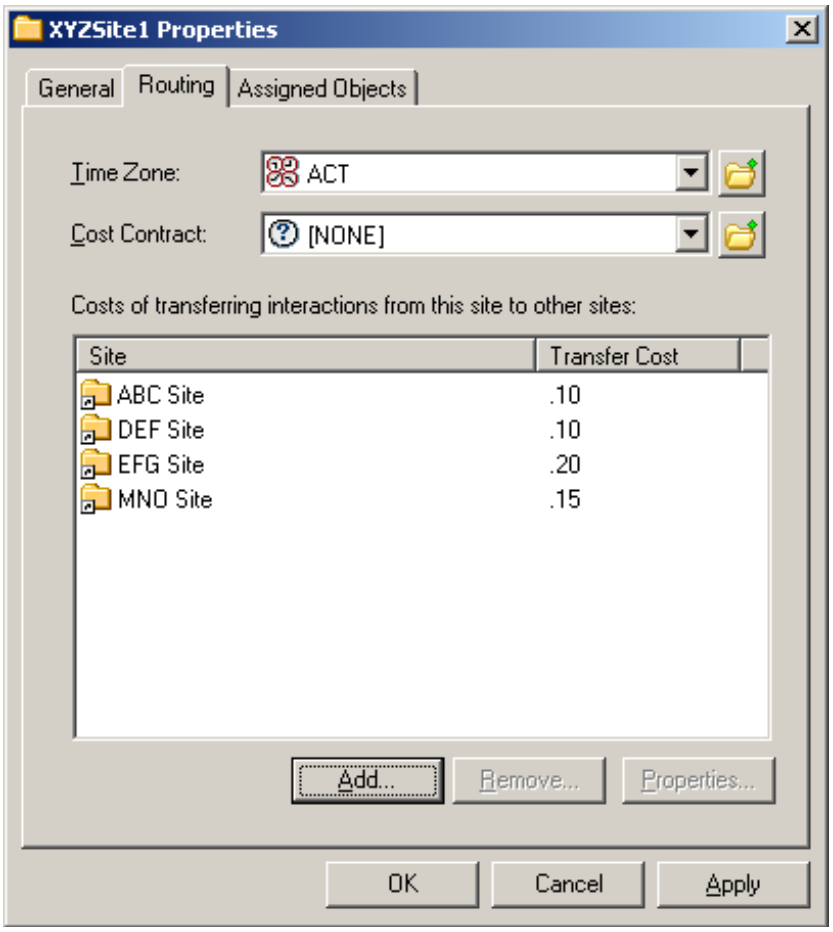


Figure 59: Site Properties After Adding Site Transfer Costs

Note that the `Site Properties` dialog box also has an `Assigned Objects` tab (see Figure 60).

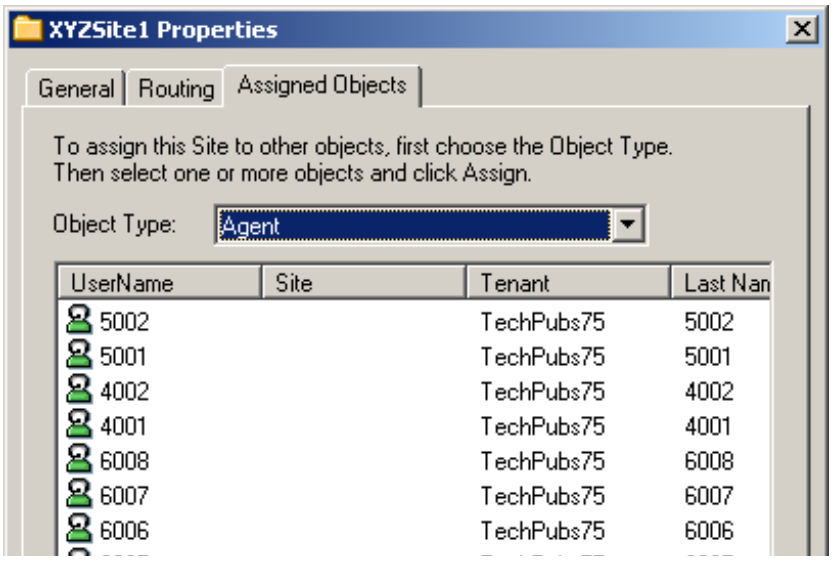


Figure 60: Site Properties, Assigned Objects Tab

Here you can assign the current Site to one of the objects listed in "Site and Cost Contract Associations" on page 31. For now, however, these instructions continue with creating Sites.

12. When through adding transfer costs for all Sites as shown in Figure 59 on page 117, click `OK`. The `Framework Objects` screen appears (see Figure 61).

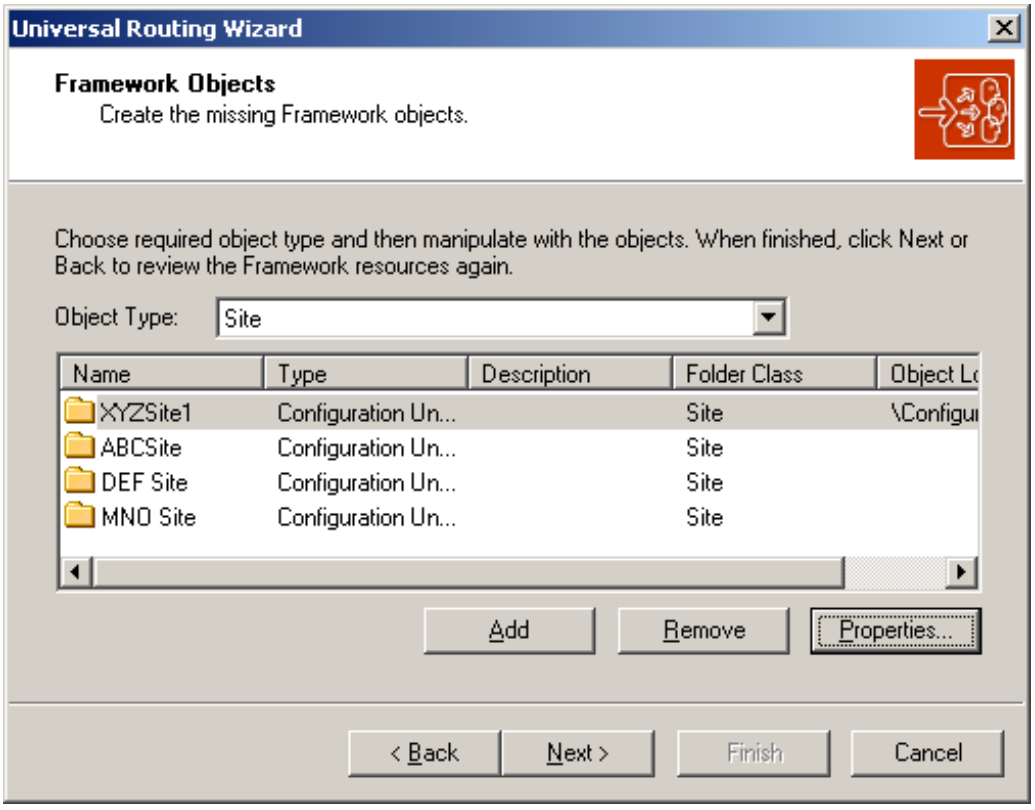


Figure 61: Framework Objects, All Site Objects Configured

13. Click `Next` in the `Framework Objects` screen. The wizard returns you to the `Framework Resources` screen, which shows the number of Sites configured (see Figure 62).

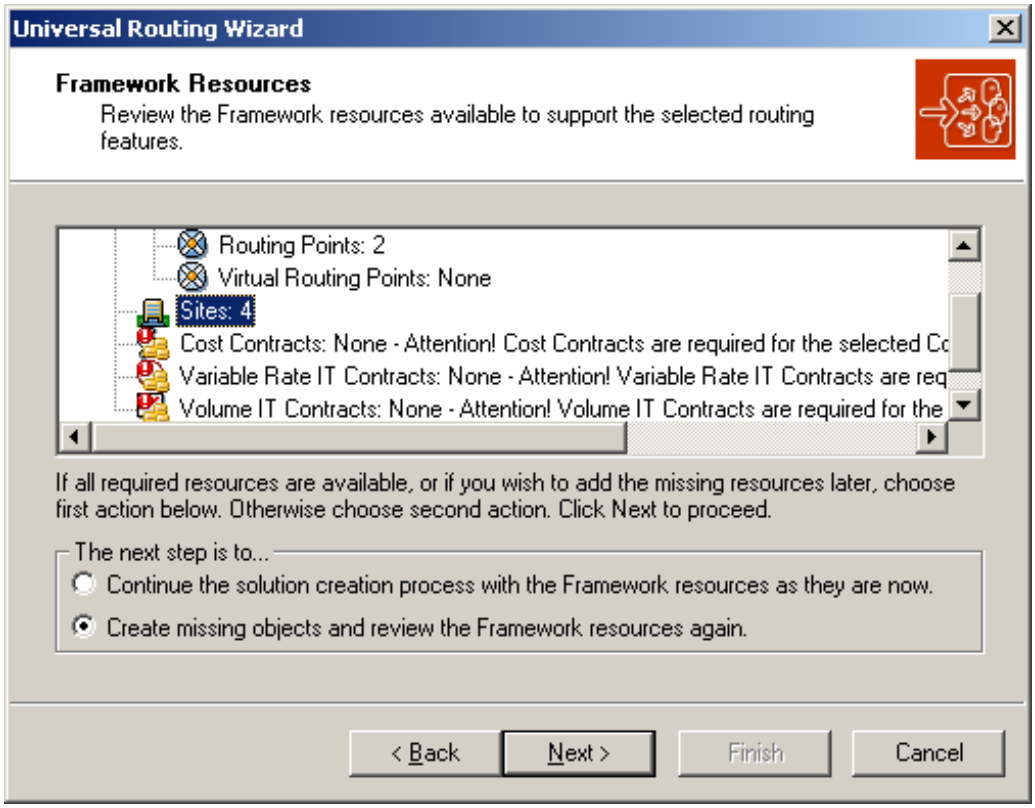


Figure 62: Framework Resources, Number of Site Objects Configured

End of procedure

Next Steps

- Now that you have configured Sites and the Site-to-Site Infrastructure cost, you have the option of configuring "Resource Cost" as described starting on page 43.

Cost Contract Wizard

As shown in Figure 62 under Sites, the next objects to configure are Cost Contracts (page 44).

Procedure: Configuring Cost Contract objects

Purpose: To calculate the cost of Resources, such as agents, knowledge workers, employees, or non-human resources such as IVRs.

Start of procedure

1. On the `Framework Resources` screen (Figure 62 on page 119), select `Create missing objects and review the Framework resources again` and then click `Next`. The Framework Objects screen appears.
2. Click the downward-pointing arrow to the right of `Object` and select `Cost Contract` (see Figure 63).

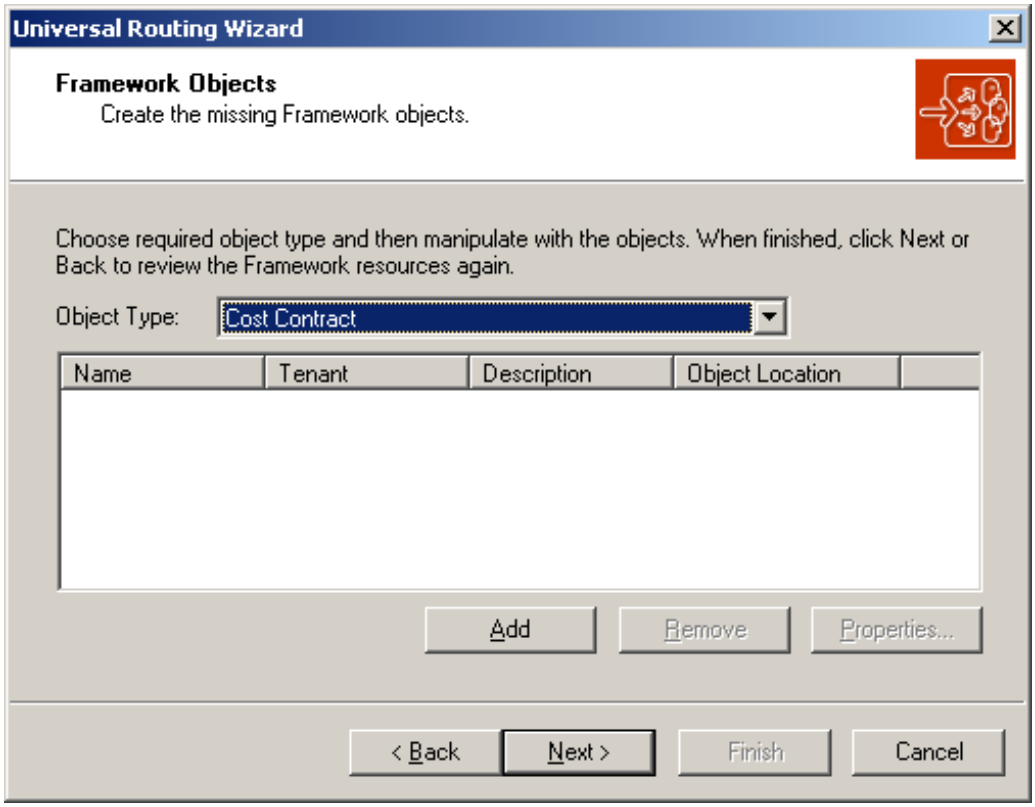


Figure 63: Framework Objects, Cost Contract Object Type

3. Click `Add`. The `Welcome to the Cost Contract Wizard` screen appears (see Figure 64).

Figure 64: Welcome to the Cost Contract Wizard

Note: You can also bring up the Cost Contract Wizard from Configuration Manager.

4. Click `Next`. The `Cost Contract Name` screen appears (see Figure 65).

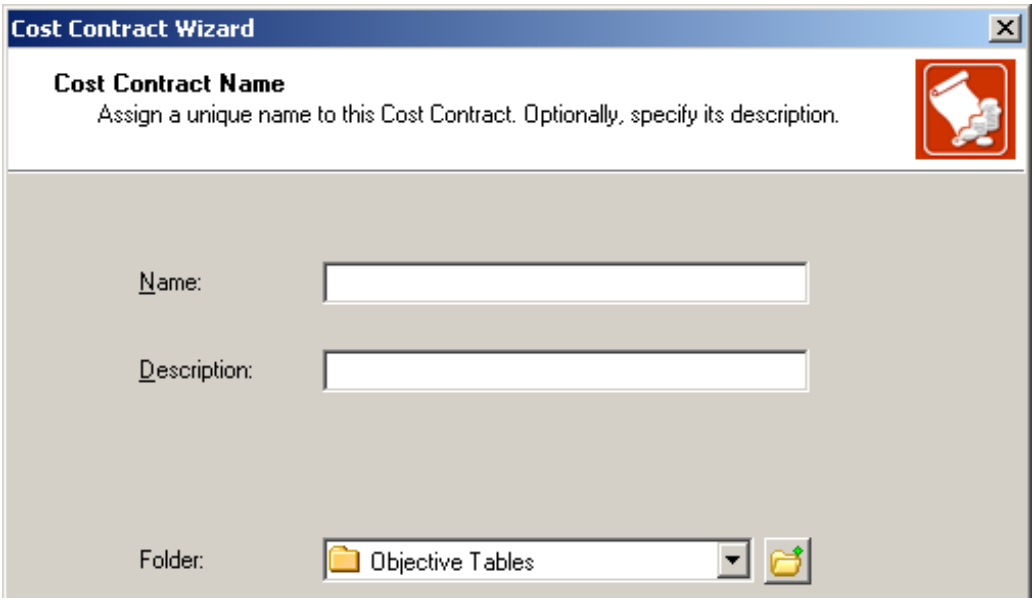


Figure 65: Cost Contract Name

Note: This screen corresponds to the upper half of the General tab of the Cost Contract Properties dialog box shown in Figure 14 on page 44.

5. Name the Cost Contract, describe it, and change the folder location if necessary. Once you enter a name for the Cost Contract, the Next button (not shown in Figure 65 on page 121) becomes enabled.
6. Click Next. The General Settings screen appears (see Figure 66).

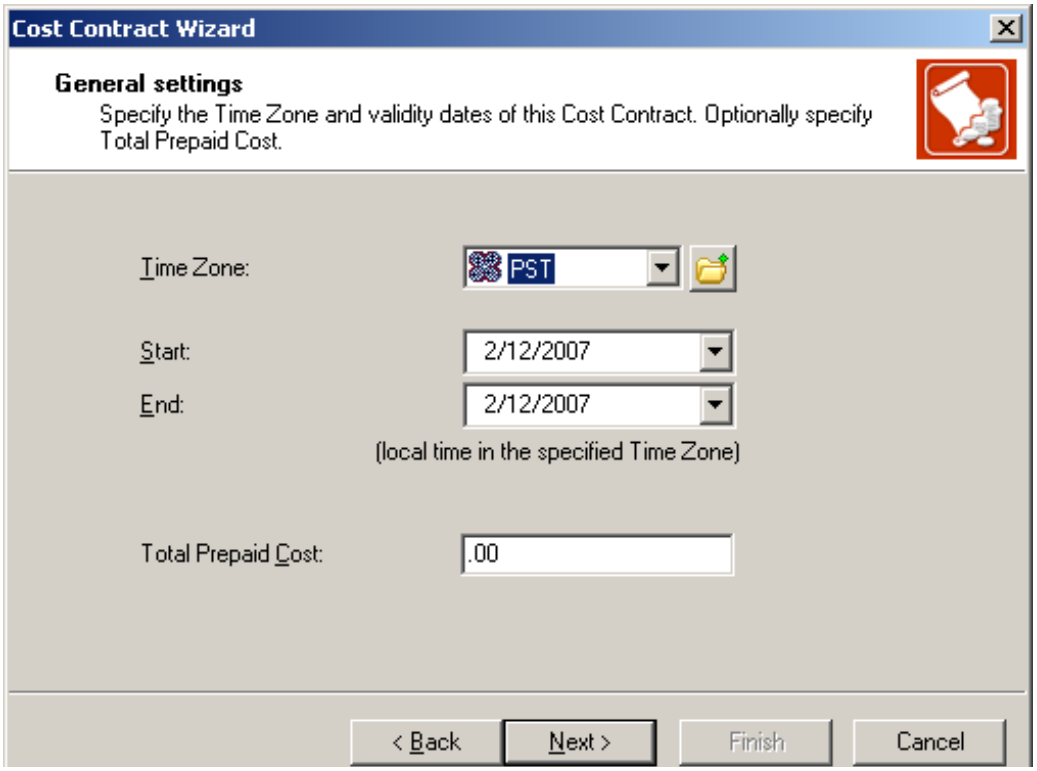


Figure 66: General Settings

Note: This screen corresponds to the Advanced tab in the Cost Contract Properties dialog box shown in Figure 18 on page 51. The format used for the Start and End fields depends on Local Regional Settings.

7. Complete the fields on this screen as follows:
   - Total Prepaid Cost is an optional field that you can use for reporting on Volume Contracts (see Table 6 on page 52) (URS does not use this field). It is the total prepaid cost in dollars and cents for a volume period.
   - Time Zone is a required field that URS uses for converting time into a Statistical Day.

- The `Start` and `End` fields are required fields that represent the start and end dates (respectively) for applying a Cost Contract.

8. When you are done, click `Next`. The `Interaction Type Records` screen appears (see Figure 67).

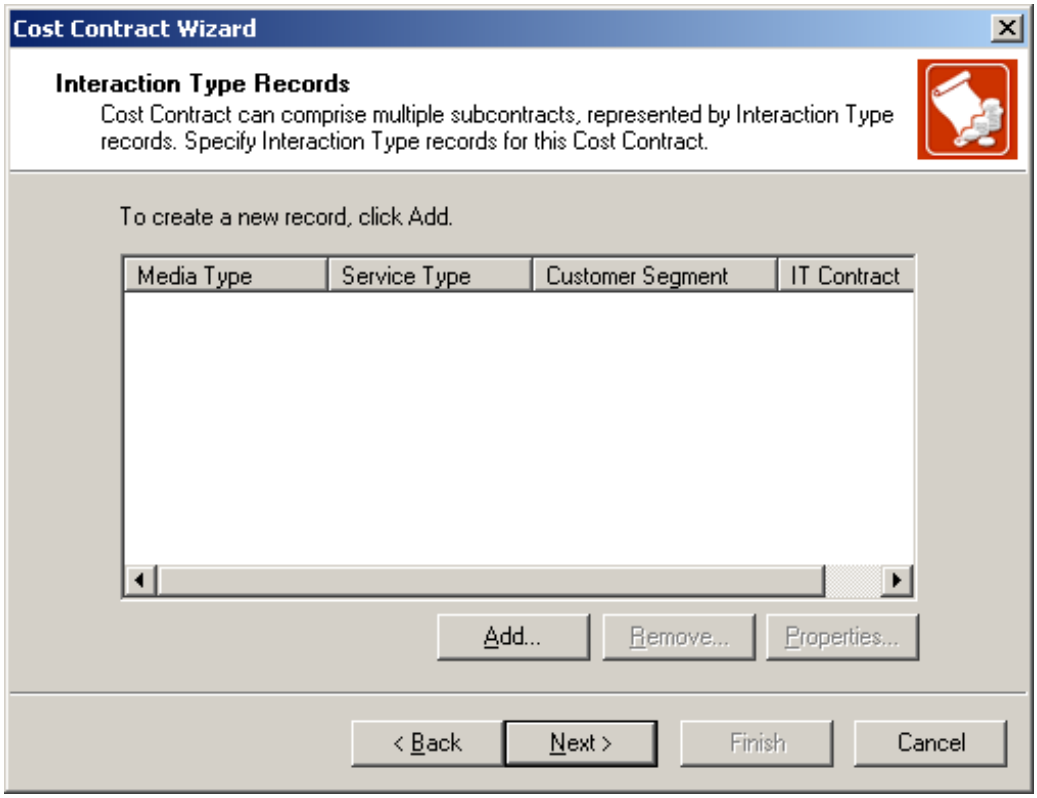


Figure 67: Interaction Type Records

Note: This screen corresponds to the lower half of the `General` tab in the `Cost Contract Properties` dialog box shown in Figure 14 on page 44.

9. Click `Add` to define the Interaction Types (see page 46) associated with this Cost Contract. The `Interaction Type Record` screen appears (see Figure 68).

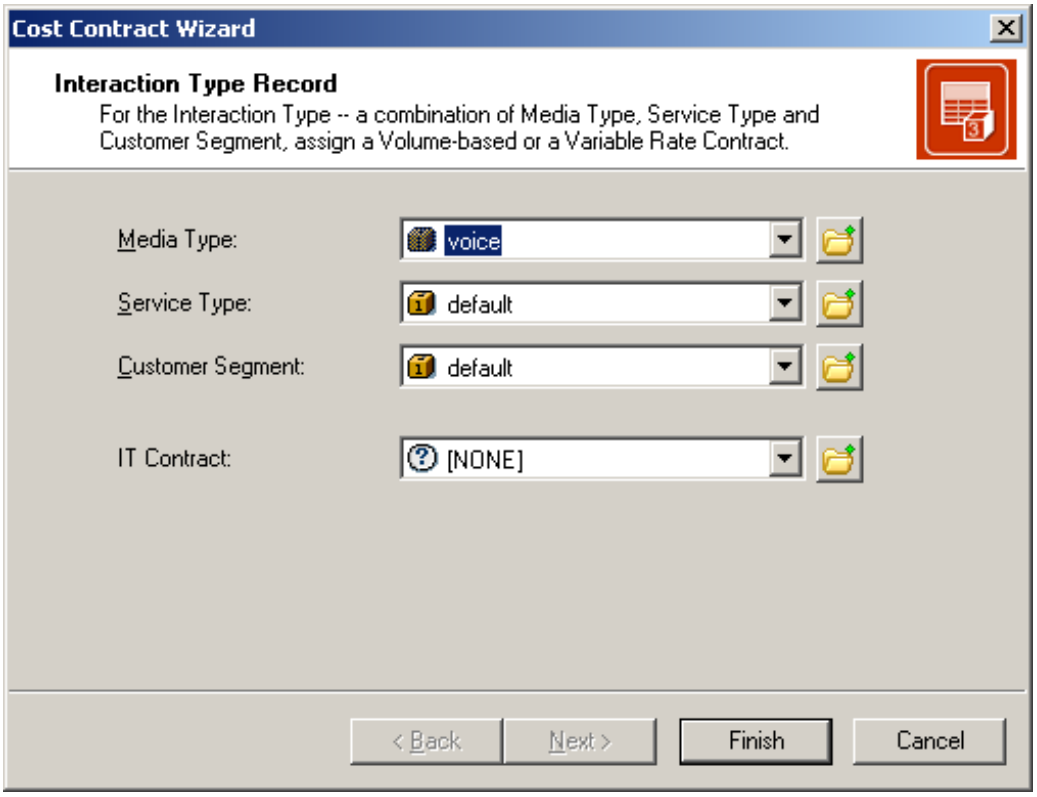


Figure 68: Adding New Interaction Type Record

> **Note:** This screen corresponds to the `Objective Table Record` dialog box shown in Figure 15 on page 46.

10. Complete the `Media Type`, `Service Type`, and `Customer Segment` fields as described in Table 5 on page 47. See important note on these fields on page 46. The next section describes the `IT Contract` field.

End of procedure

Next Steps

- Selecting a value for the `IT Contract` field in Figure 68, which involves creating the `IT Contract` objects associated with the `Cost Contract` object.

Interaction Type Contract Wizard

There are two types of Interaction Type (IT) Contracts: Variable Rate Contracts (see page 54) and Volume Contracts (see page 56). The following instructions assume you wish to create a Variable Rate Contract.

Procedure:
Creating a Variable Rate Contract

Purpose: To define an Interaction Type contract (`IT Contract` object) based on a flat rate or an agent hourly rate.

Start of procedure

1. Opposite `IT Contract` as shown in Figure 68, click the folder icon. The `Browse for Statistical Table` dialog box opens (see Figure 69).

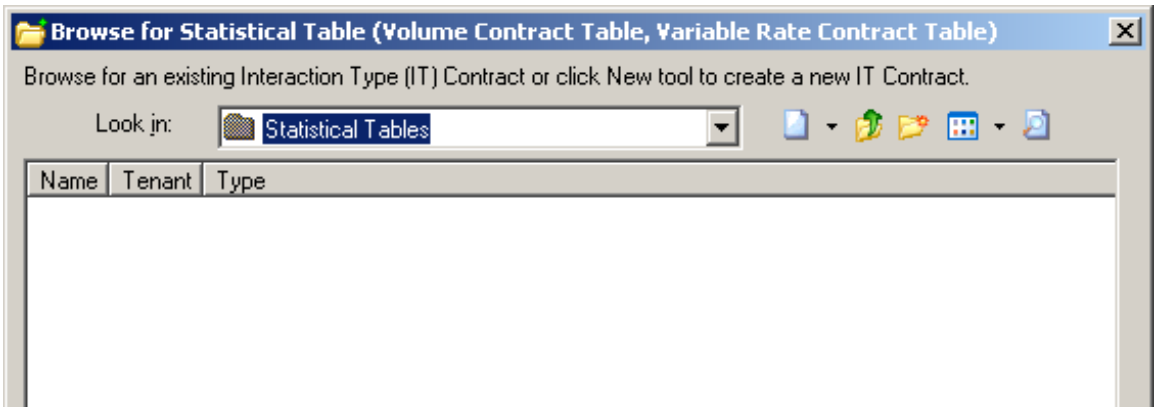


Figure 69: Browse for Statistical Table

2. Click downward-pointing arrow next to the icon and then select `New Variable Rate Contract Table` (see Figure 70).

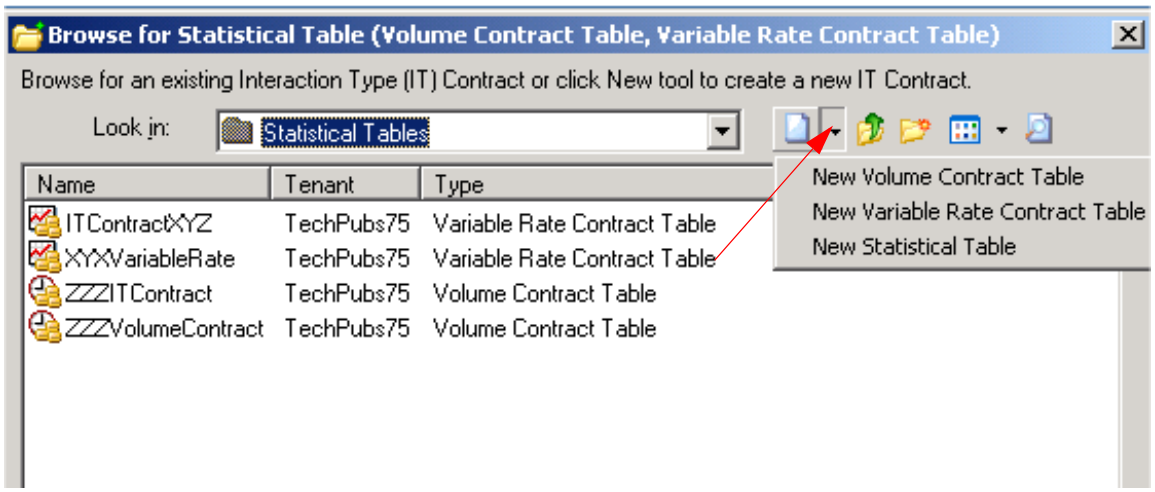


Figure 70: Browse for Statistical Table, Creating a New Variable Rate Contract

The `Welcome to the Interaction Type Contract Wizard` screen appears (see Figure 71).

Figure 71: Welcome to the Interaction Type Contract Wizard

3. Click `Next`. The `Interaction Type Contract Name` screen opens with `Variable Rate Contract Table` selected in the `Type` field (see Figure 72).

Figure 72: Interaction Type Contract Name, Variable Rate Contract

Note: This screen corresponds to the `General` tab of the `New IT Contract Properties` dialog box shown in Figure 19 on page 53.

4. Check that the `Type` field shows the correct selection. In this case, it is `Variable Rate Contract Table`.
5. Name the IT Contract and then click `Next`. The `Rate` screen appears (see Figure 73).

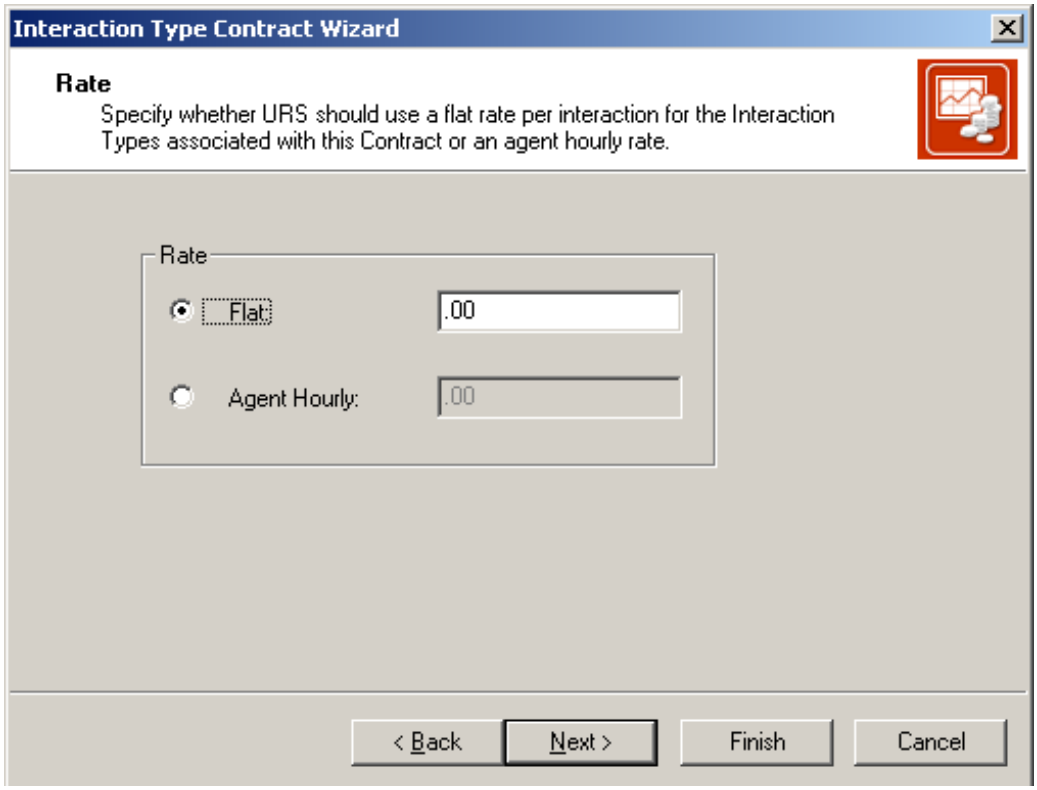


Figure 73: Rate for Variable Rate Contract

Note: This screen corresponds to the `Advanced` tab of the `Variable Contract Properties` dialog box shown in Figure 20 on page 54.

6. Under `Rate`, select either `Flat` or `Agent Hourly` and then enter a value as described in Table 8 on page 55.
7. Click `Next`. The `Completing the Interaction Type Contract Wizard` screen appears. It indicates you have completed the task of defining the Variable Rate Contract (see Figure 74).

Figure 74: Completing the Interaction Type Contract Wizard

4. Click **Finish**. The **Browse for Statistical Table** dialog box opens showing the newly created Variable Rate Contract (see Figure 75).

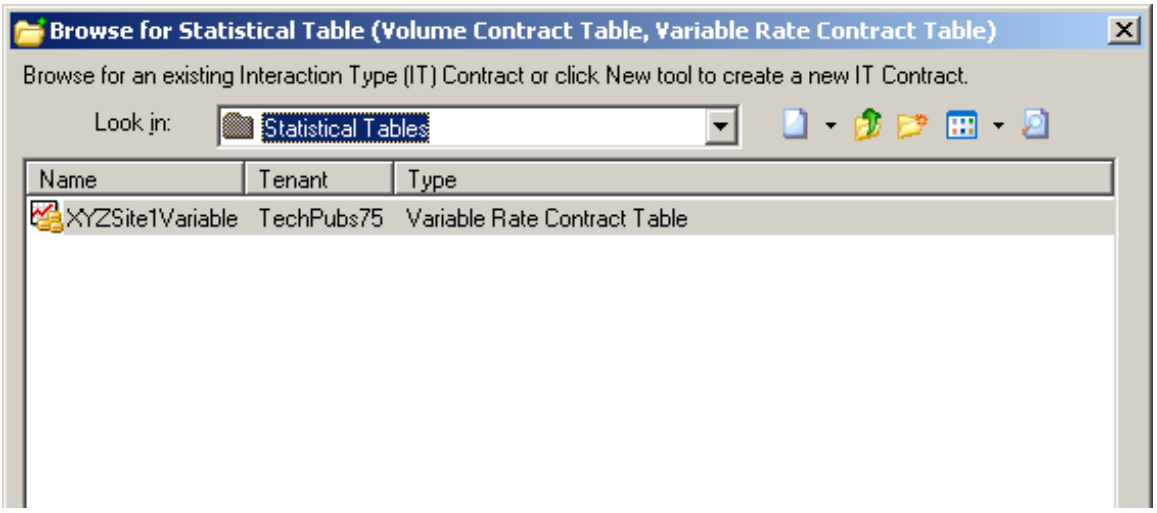


Figure 75: Browse for Statistical Table with New Variable Rate Contract

End of procedure

Procedure:
Creating a Volume Contract

Purpose: To define an Interaction Type contract (`IT Contract` object) based on volume.

Start of procedure

To create a Volume Contract (see page 56):

1. Click small downward-pointing arrow (see Figure 76) and select `New Volume-Contract Table`.

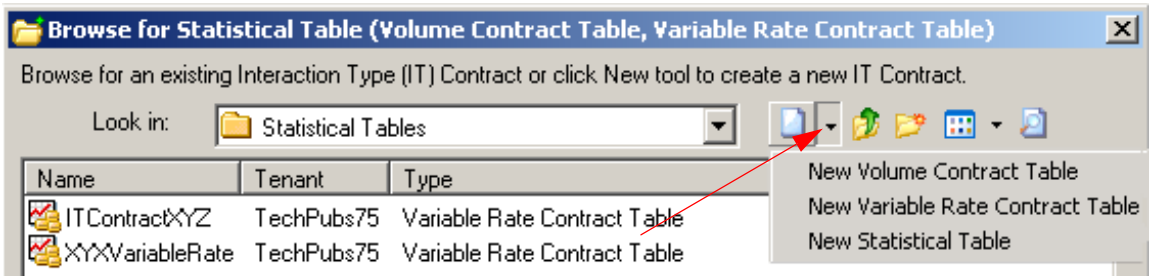


Figure 76: New Volume Contract Table

The `Welcome to the Interaction Type Contract Wizard` screen appears (see Figure 77).

Figure 77: Welcome to the Interaction Type Contract Wizard

2. Click Next. The Interaction Type Contract Name screen opens with Volume Contract Table selected as the Type (see Figure 78).

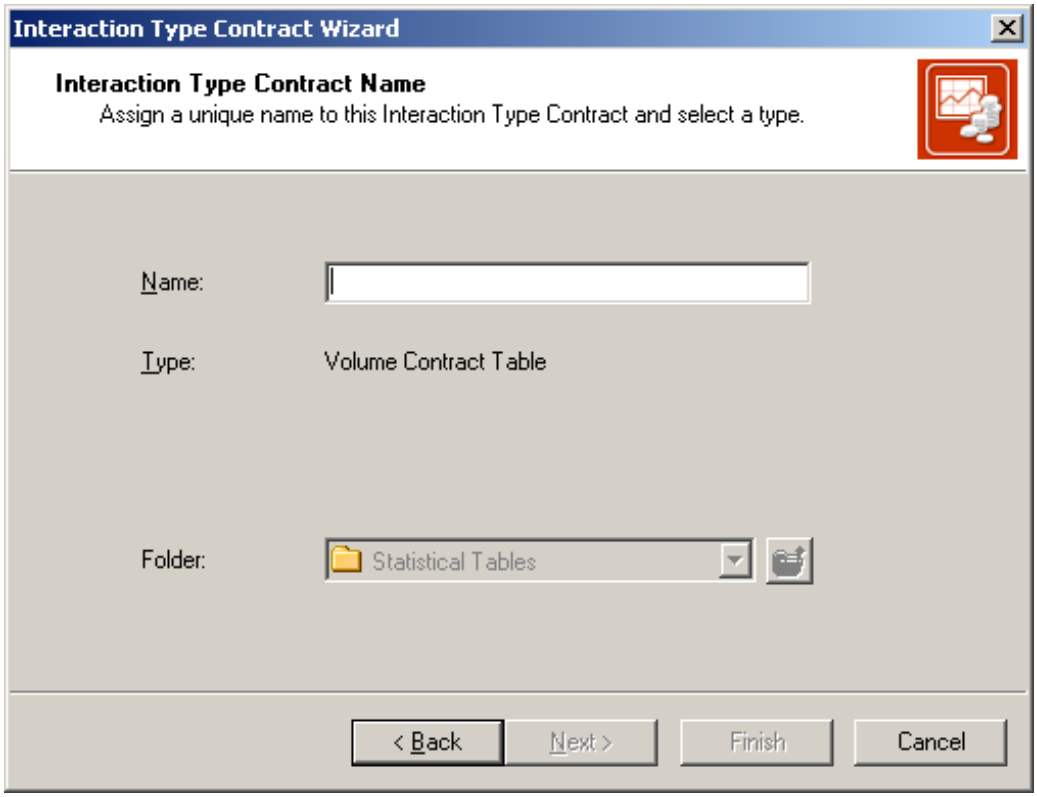


Figure 78: Interaction Type Contract Name, Volume Contract

Note: This screen corresponds to the General tab of the New IT Contract Properties dialog box shown in Figure 19 on page 53.

3. Name the IT Contract and then click Next. The Day Contracts screen appears (see Figure 79).

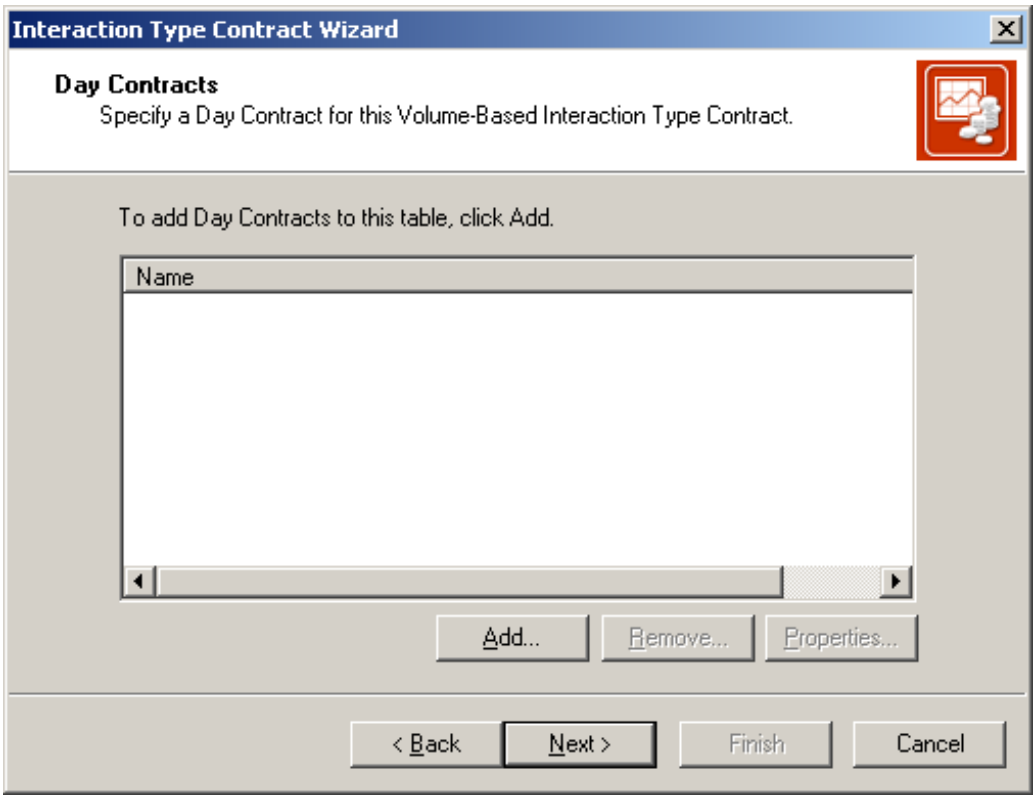


Figure 79: Day Contracts

End of procedure

Note: The screen in Figure 79 corresponds to the lower half of the `Advanced` tab of the `Day Contract Properties` dialog box shown in Figure 24 on page 61.

Day Contract Wizard

With a Volume Contract (see page 56), you define one or more Day Contracts (see page 58).

Procedure: Creating Day Contracts

Purpose: To create the `Day Contract` objects that are required by Volume Contracts.

Start of procedure

1. Click `Add` to define a Day Contract for the Volume Contract that you are creating. The `Browse for Statistical Day (Day Contract)` dialog box opens. The example below shows several Day Contracts already created.

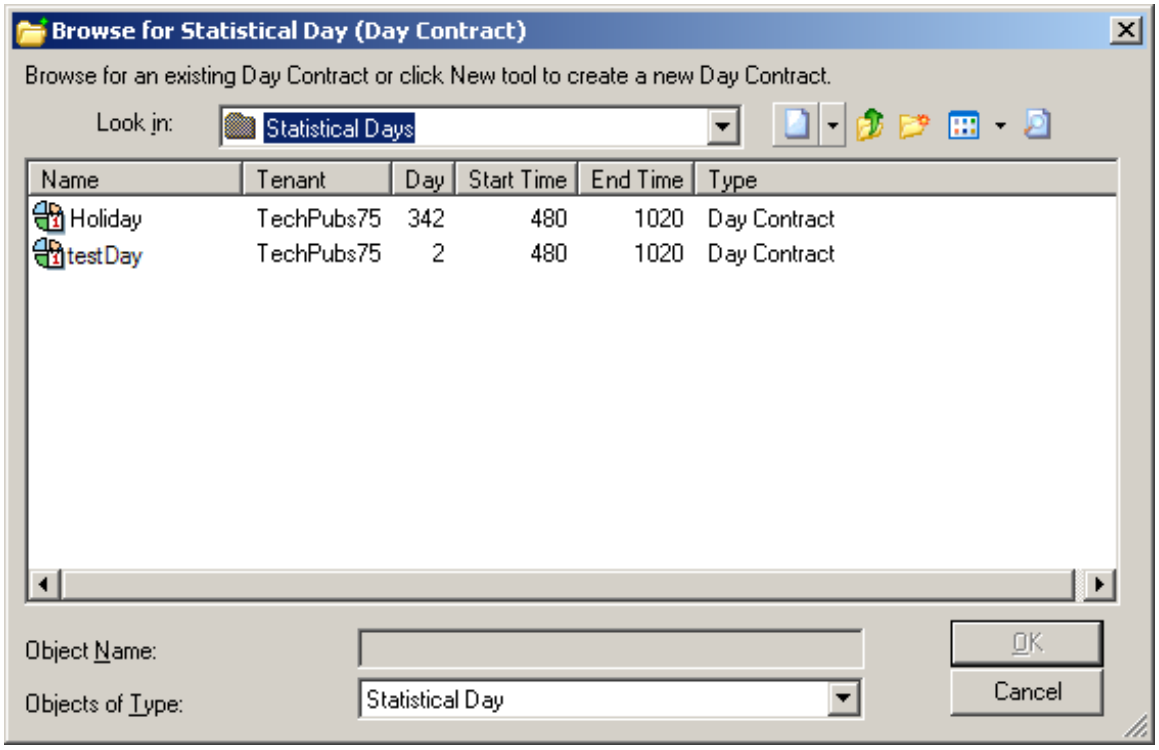


Figure 80: Browse for Statistical Day (Day Contract)

2. Click the downward-pointing arrow and select `New Day Contract` (see Figure 81).

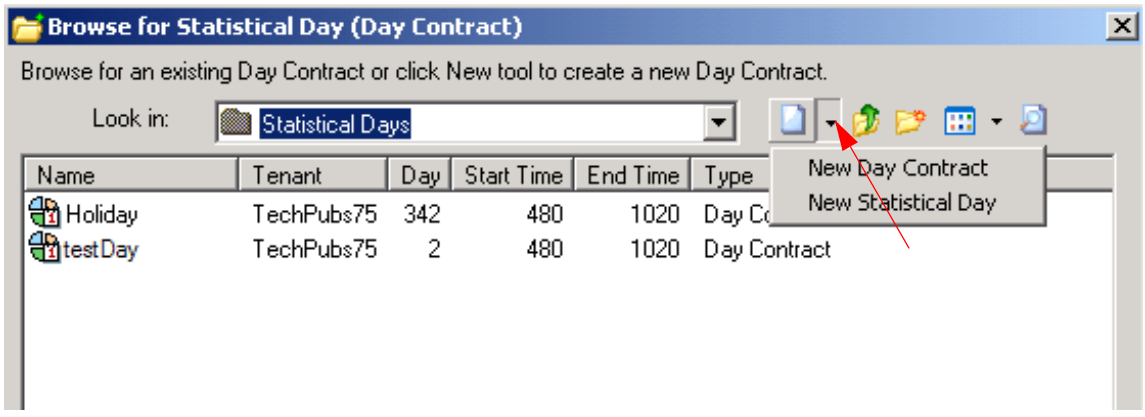


Figure 81: New Day Contract

The `Welcome to the Day Contract Wizard` screen appears (see Figure 82).

Figure 82: Welcome to the Day Contract Wizard

3. Click `Next`. The `Day Contract Name` screen appears. Figure 83 shows the screen with sample entries.

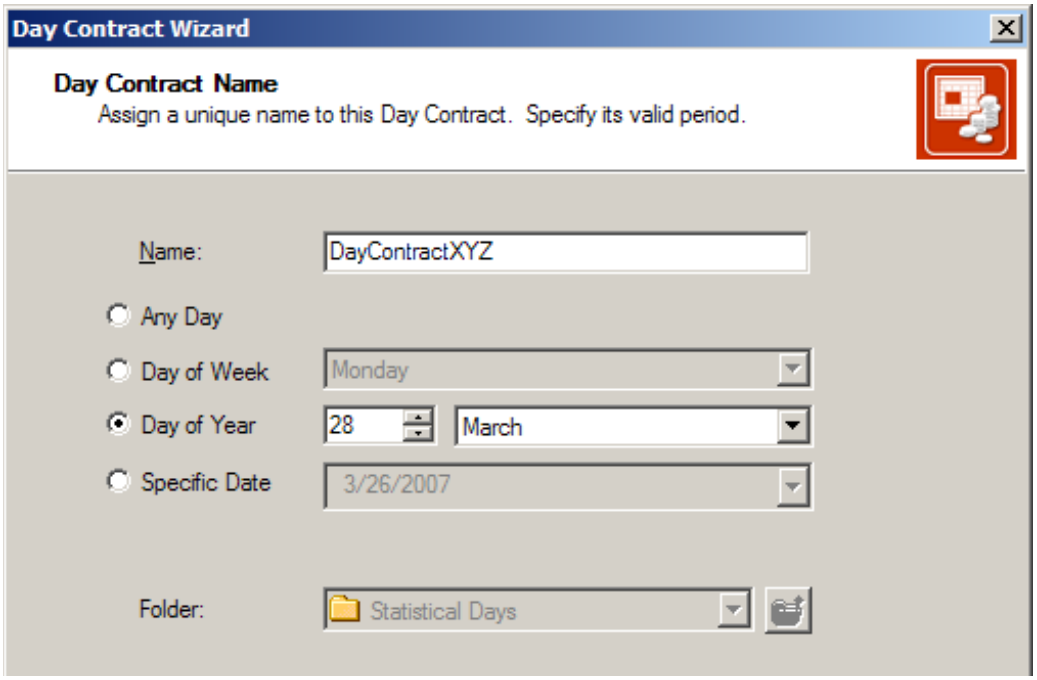


Figure 83: Day Contract Name

Note: The screen in Figure 83 corresponds to the `General` tab in the `Day Contract Properties` dialog box shown in Figure 23 on page 59. The format of the `Specific Date` field in Figure 83 depends on the Local Regional Settings.

4. Name the Day Contract, select one of the day/date radio buttons as described in Table 10 on page 60, and then click `Next`. The `Volume Contract Options` screen appears. Figure 84 shows the screen filled in with example entries.

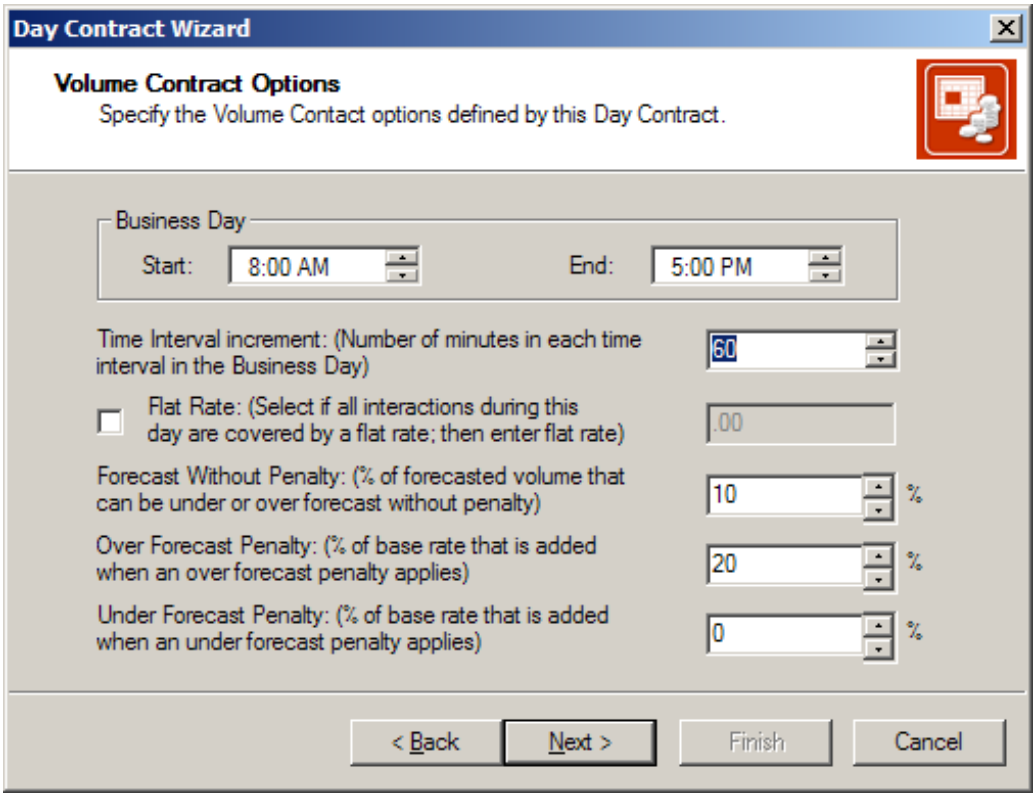


Figure 84: Volume Contract Options

Note: This screen corresponds to the upper half of the `Advanced` tab in the `Day Contract Properties` dialog box shown in Figure 24 on page 61.

Sample Data for Day Contract

Assume that the particular work day being configured includes five different periods of call volume. Based on historical contact center data, each period will have its own forecasted volume of calls as follows:

Forecasted Volume

The volume periods are as follows:

1. 8:00 AM to 9:00 AM are morning peak hours; expect 1,000 calls per hour.
2. 9:00 AM to 12:00 PM are low volume hours; expect 200 calls per hour.
3. 12:00 PM to 2:00 PM are lunch peak hours; expect 1,200 call per hour.
4. 2:00 PM to 4:00 PM are low volume hours; expect 200 calls per hour.
5. 4:00 PM to 5:00 PM are after work peak hours; expect 1,000 calls per hour.

Interval Configuration Data

Based on the preceding expected call volumes, we need to configure the following time intervals in the wizard:

- 8:00 AM to 9:00 AM Time Interval: Forecasted volume = 1000 interactions per hour, Base Rate (cost per interaction) = 7.25. Cost per interaction if actual volume exceeds penalty-free volume window = 8.70.
- 9:00 AM to 12:00 PM Time Interval: Forecasted volume = 200 interactions per hour, Base Rate = 10.00. Cost per interaction if actual volume exceeds penalty-free volume window = 12.00. The Day Contract will have this time interval divided into three 60-minute intervals, with a forecasted volume of 200 calls for each interval.
- 12:00 PM to 14:00 PM Time Interval: Forecasted volume = 1200 interactions per hour, Base Rate = 7.00. Cost per interaction if actual volume exceeds penalty-free volume window = 8.40. The Day Contract will have this time interval divided into two 60-minute intervals with a forecasted volume of 1,200 calls for each interval.
- 14:00 to 16:00 PM Time Interval: Forecasted volume = 200 interactions per hour, Base Rate = 10.00. Cost per interaction if actual volume exceeds penalty-free volume window = 12.00. The Day Contract will have this time interval divided into two 60-minute intervals, with a forecasted volume of 200 calls for each interval.
- 16:00 to 17:00 PM Time Interval: Forecasted volume = 1000 interactions per hour, Base Rate = 7.25. Cost per interaction if actual volume exceeds penalty-free volume window = 8.70.

Day Contract Options That Apply to All Intervals

The information on the `Volume Contract Options` screen shown in Figure 84 on page 134 applies to all intervals that will be defined in the following steps.

1. On the `Volume Contract Options` screen (Figure 84 on page 134), complete the fields as described in Table 11 on page 61, and then click `Next`. The `volume periods` screen appears (see Figure 85).

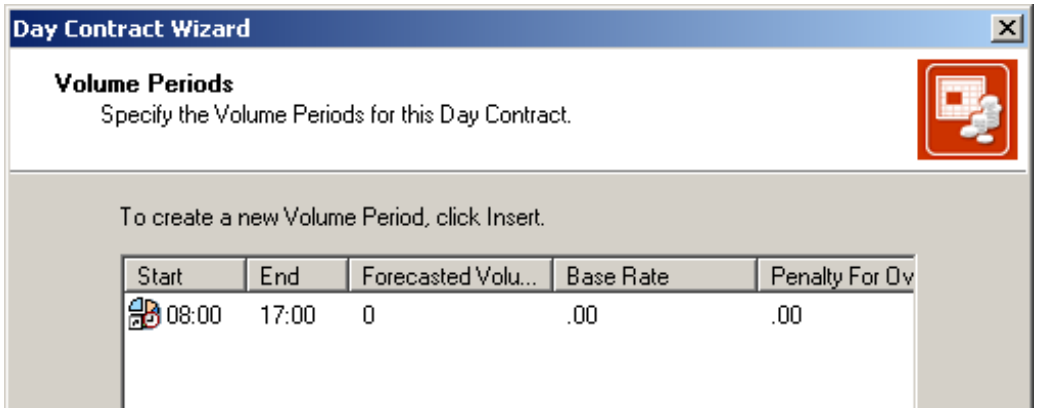


Figure 85: Volume Periods

> **Note:** This screen corresponds to the lower half of the `Advanced` tab in the `Day Contract Properties` dialog box shown in Figure 24 on page 61.

5. Click `Insert` to add a time interval for a volume period to this Day Contract. The `Volume Period` appears. Figure 86 shows the screen after entering data for the 8:00 AM to 9:00 AM interval described under "Interval Configuration Data" on page 135.

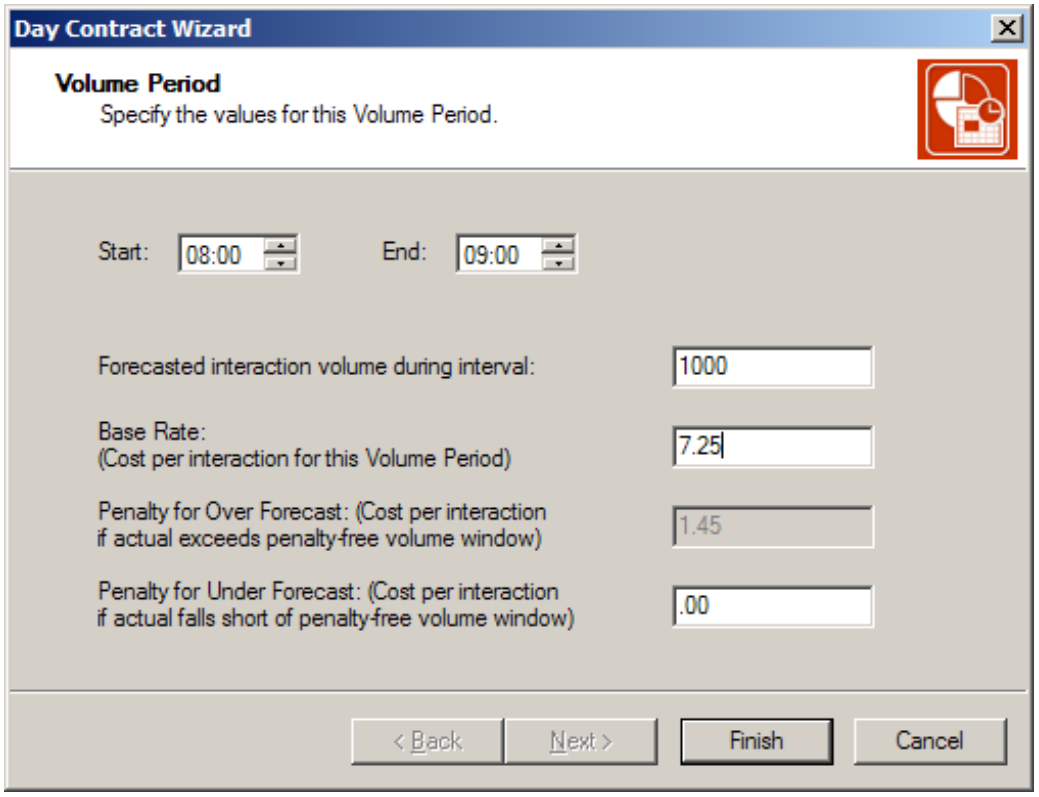


Figure 86: Volume Period Example

Note: This screen corresponds to the `General` tab in the `New volume period Properties` dialog box shown in Figure 25 on page 64.

6. Complete the fields on the Volume Period screen as described in Table 12 on page 64.
   - After you enter value in the `Base Rate field`, the wizard automatically calculates the value for the next field, `Penalty for OverForecast`, and disables the field.

     The wizard calculates the penalty amount based on the percent you previously entered in the `Over Forecast Penalty` field shown in Figure 84 on page 134.
   - The wizard also automatically calculates the `Penalty for Under Forecast` field and disables it if you entered a percent in the `Under Forecast Penalty` field shown in Figure 84 on page 134.
7. Click `Finish` as shown in Figure 86. The `volume periods` screen shows the time interval just defined (see Figure 87).

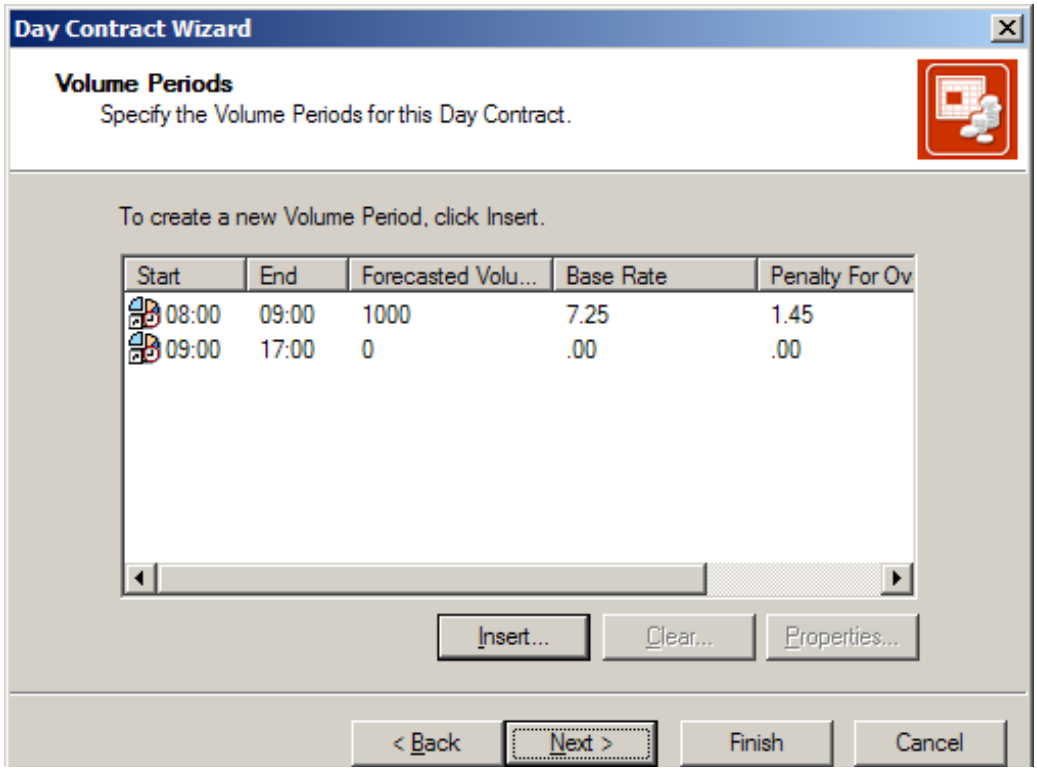


Figure 87: One Volume Period Defined

8. Click `Insert`. The `volume period` screen re-appears. Figure 88 shows that the `Start` value defaults to the `End` value of the previously entered interval (in this case, 9:00 AM as shown in Figure 86 on page 136).

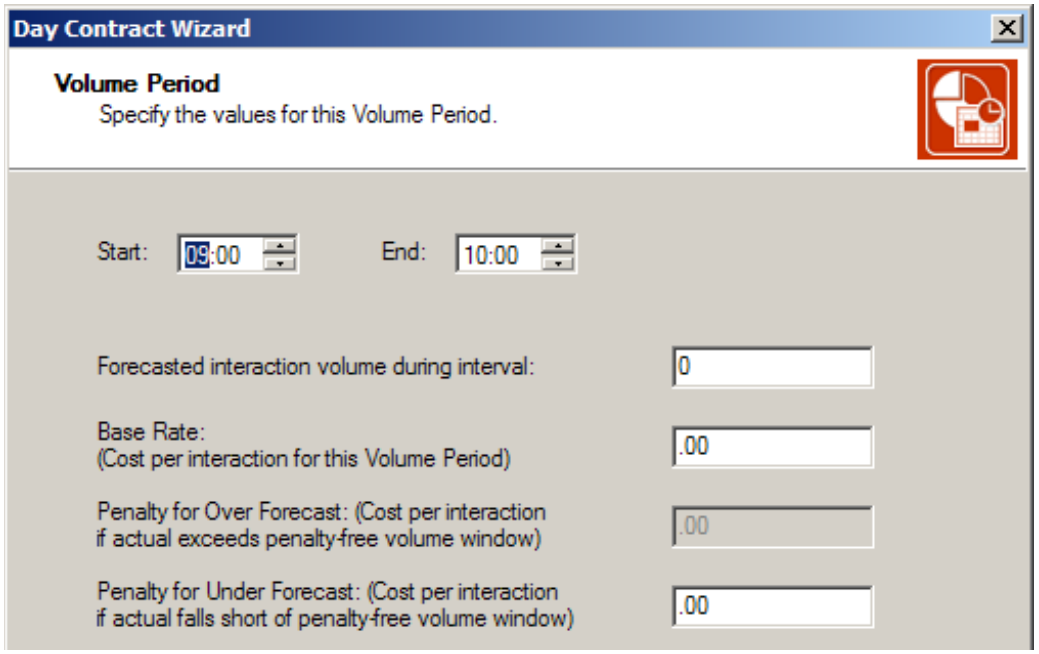


Figure 88: Volume Period, Defining Next

9. Continue defining all volume periods for the Day Contract by repeating Steps 5 and 6. When through, the `volume periods` screen lists all defined volume periods (see Figure 89).

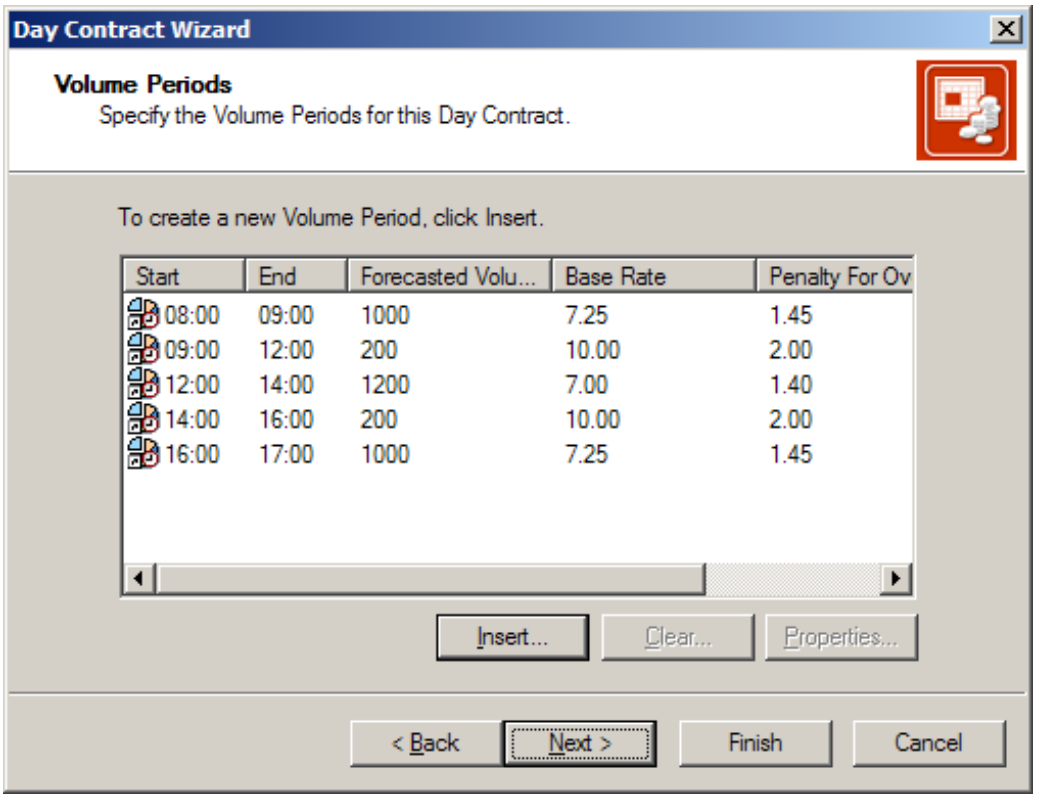


Figure 89: Five Volume Periods Defined

Note: In this example, a total of nine intervals were entered using the information in "Interval Configuration Data" on page 135. The `volume periods` screen summarizes the nine intervals into the five different periods of call volume as described in "Forecasted Volume" on page 135. Row 1 is comprised of one interval, row 2 (9:00 AM to 12:00 PM) is comprised of three intervals; row 3 (12:00 to 2:00 PM) is comprised of two intervals, row 4 (2:00 to 4:00 PM is comprised of two intervals, and row 5 is comprised of one interval.

Figure 90 shows how the preceding Day Contract configured in the wizard appears in Configuration Manager.

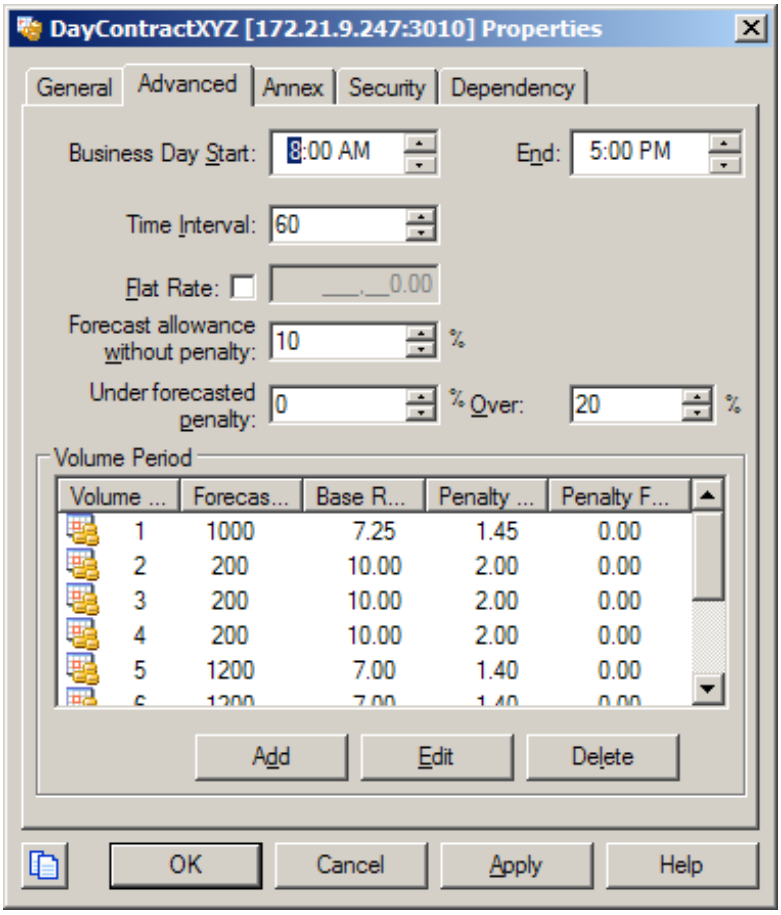


Figure 90: Day Contract in Configuration Manager

Note: Whereas the `Volume Periods` screen shown in Figure 89 on page 138 summarizes the nine intervals into five periods of call volume, the `Advanced` tab in the `Day Contract Properties` dialog box in Configuration Manager contains a row for each interval.

10. When through defining all volume periods, do one of the following:
    - To create the Day Contract in the Configuration Database but without yet assigning it to a Volume Contract, click `Finish`. The wizard returns you to the `Browse for Statistical Day (Day Contract)` dialog box (see Figure 80 on page 132).
    - To create the Day Contract and assign it to a Volume Contract at this time, click `Next` (see Figure 89 on page 138). The `Completing the Day Contract Wizard` screen appears (see Figure 91).

Figure 91: Completing the Day Contract Wizard

11. Click `Finish`. The `Browse for Statistical Day (Day Contract)` dialog box appears (see Figure 92).

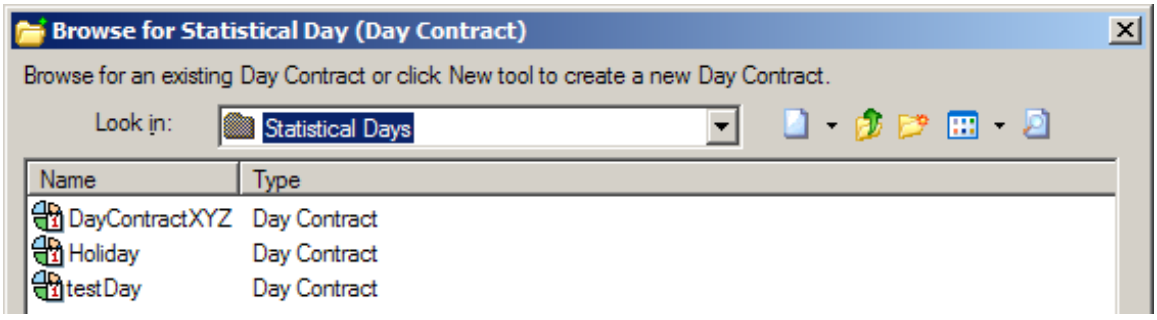


Figure 92: Browse for Statistical Day (Day Contract)

End of procedure

Procedure:
Assigning Day Contracts to an IT Contract

Start of procedure

1. In the `Browse for Statistical Day (Day Contract)` dialog box, hold down the `Ctrl` key to group-select the Day Contracts to be associated with this Volume Contract. The `OK` button becomes enabled (see Figure 93).

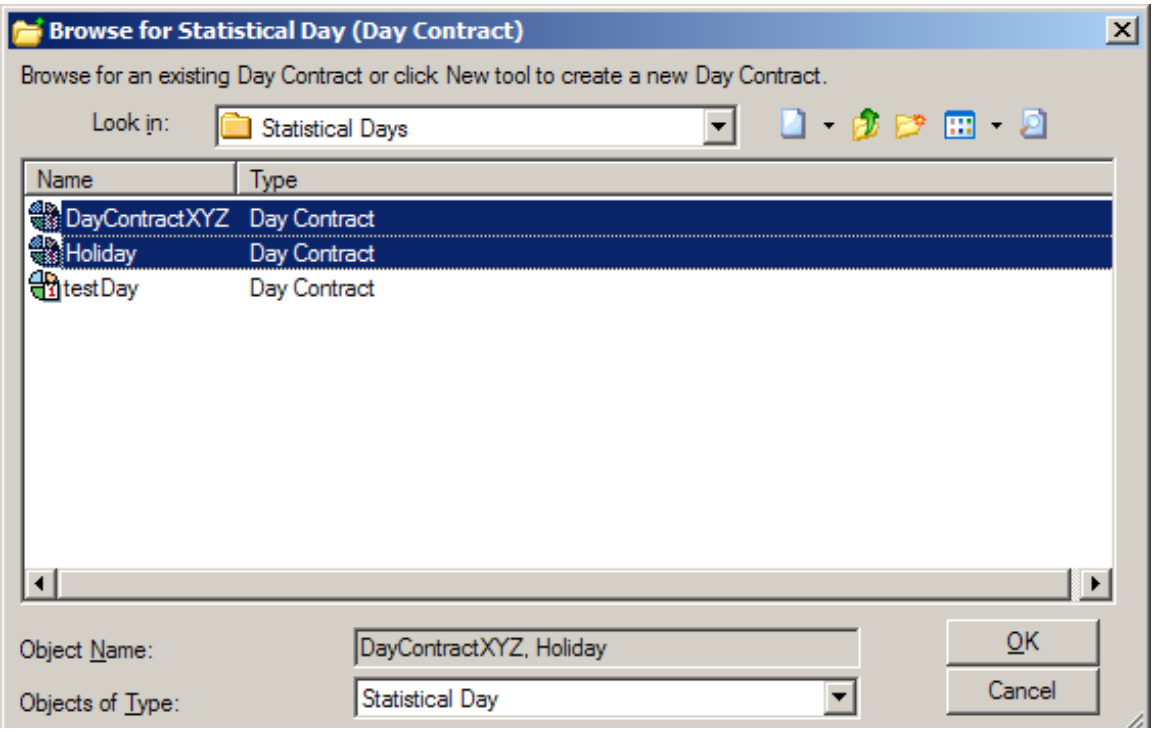


Figure 93: Day Contracts Selected for Volume Contract

2. Click `OK`. The `Day Contracts` screen shows the Day Contracts added to this Volume Contract (see Figure 94).

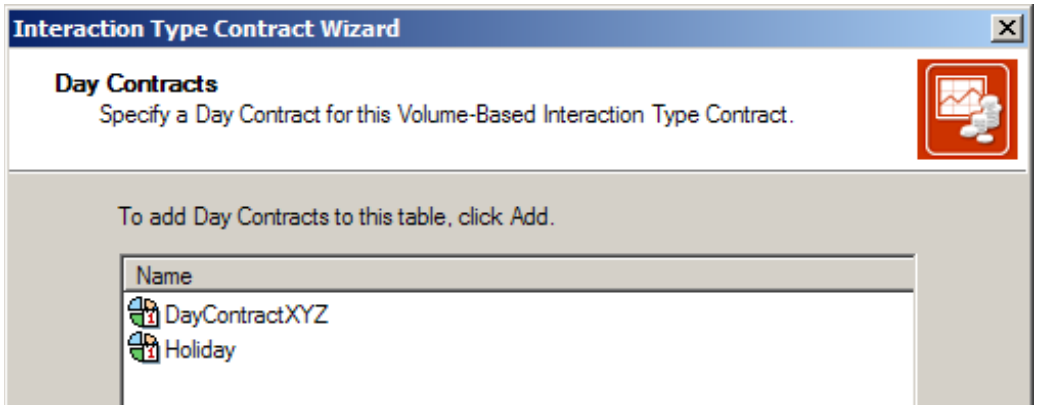


Figure 94: Day Contracts Added to Volume Contract

3. Click `Next` (button not shown above). The `Completing the Interaction Type Contract` screen appears (see Figure 95).

Figure 95: Completing the Interaction Type Contract

4. Click `Finish` (button not shown). The `Browse for Statistical Table` dialog box opens showing the existing IT Contracts (see Figure 96).

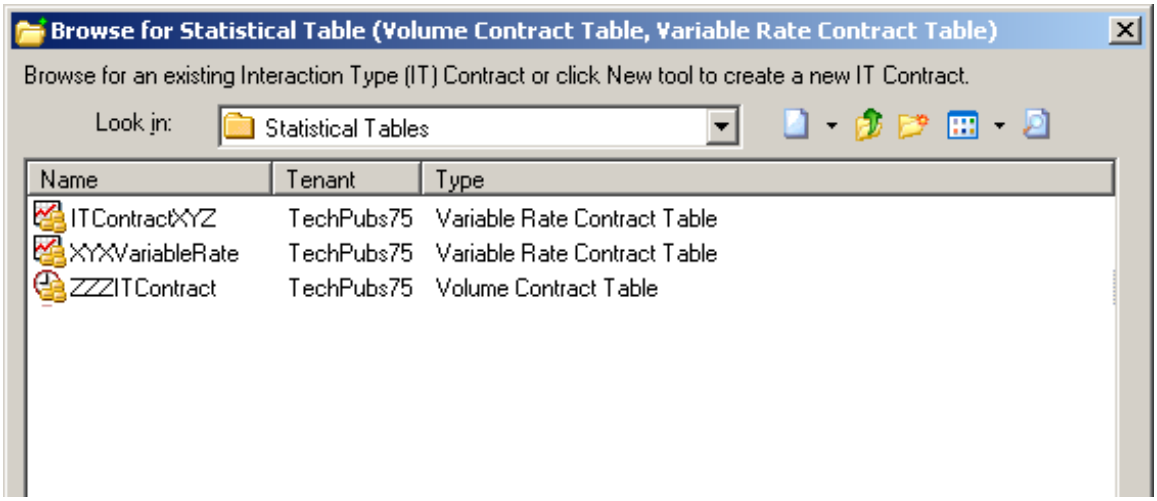


Figure 96: Existing Variable Rate and Volume Contracts

End of procedure

Procedure:
Assigning an IT Contract to an Interaction Type

Start of procedure

1. In the Browse for Statistical Table dialog box, select the IT Contract to be assigned to an Interaction Type, and then click `OK` (see Figure 97).

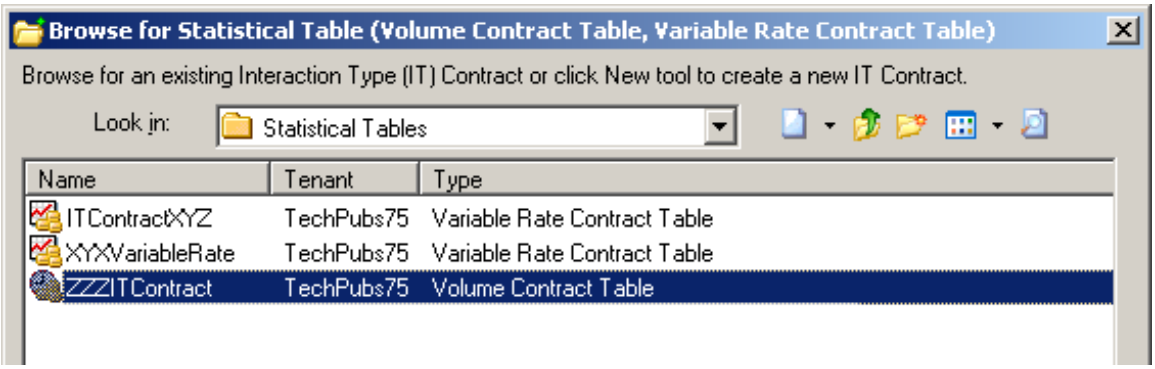


Figure 97: IT Contract Selected

The Interaction Type Contract appears in the `IT Contract` field of the `Interaction Type Record` dialog box (see Figure 98).

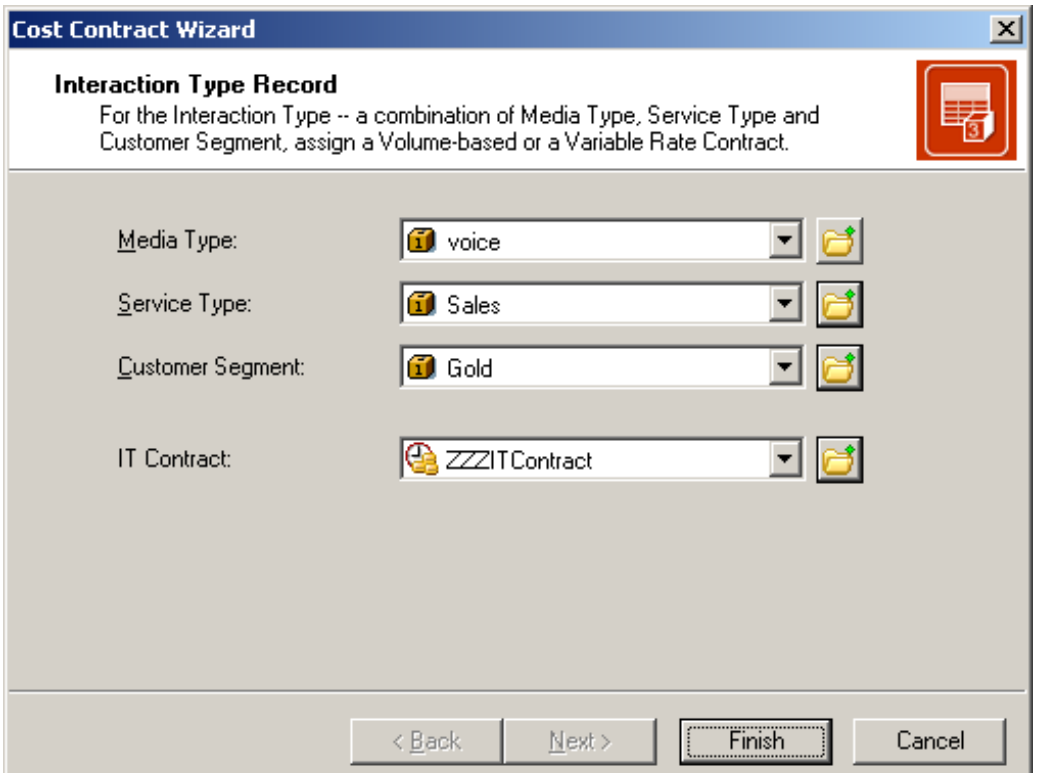


Figure 98: Interaction Type Record After Assigning IT Contract

2. Click `Finish`. The Interaction Type Records dialog box lists the Interaction Type record (see Figure 99).

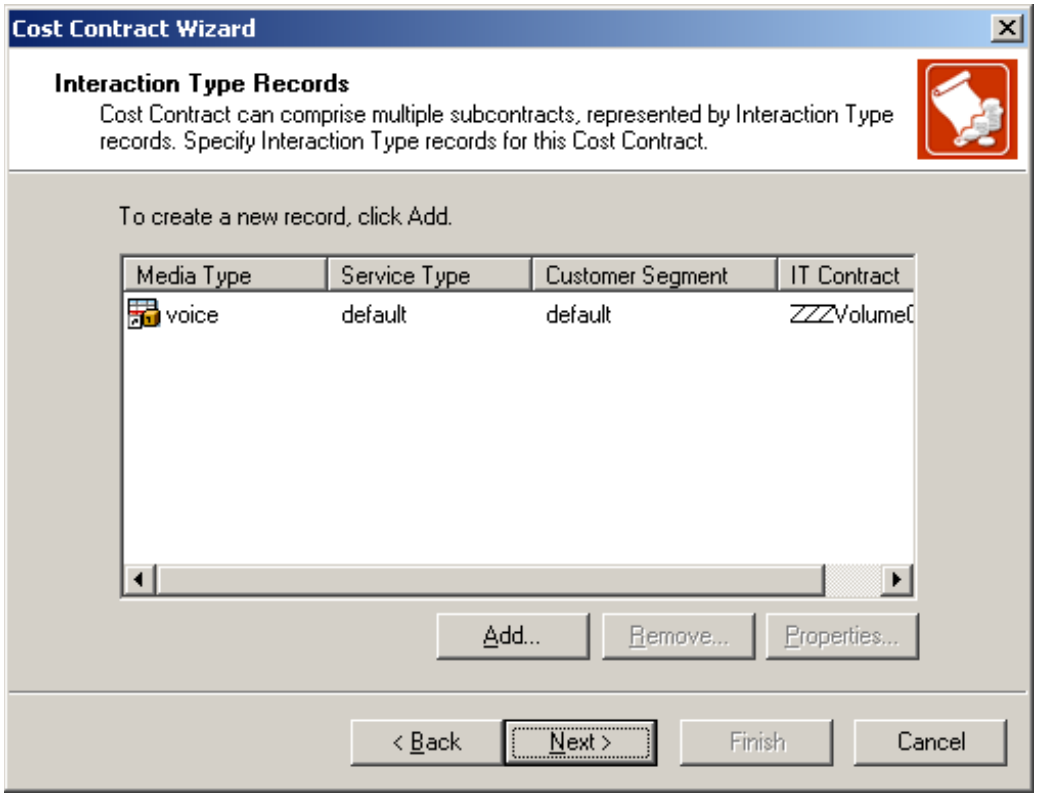


Figure 99: Cost Contract With One Interaction Type Record

Note: The process of creating Interaction Type records started in the Cost Contract creation phase as shown in Figure 67 on page 123.

3. Do one of the following:
   - Click `Add` to define another Interaction Type record for this Cost Contract (see Figure 99 on page 144). Then continue with Step 10 on page 124.
   - If through defining Interaction Type records for this Cost Contract, click `Next` The `Cost Contract Summary` screen appears (see Figure 100).

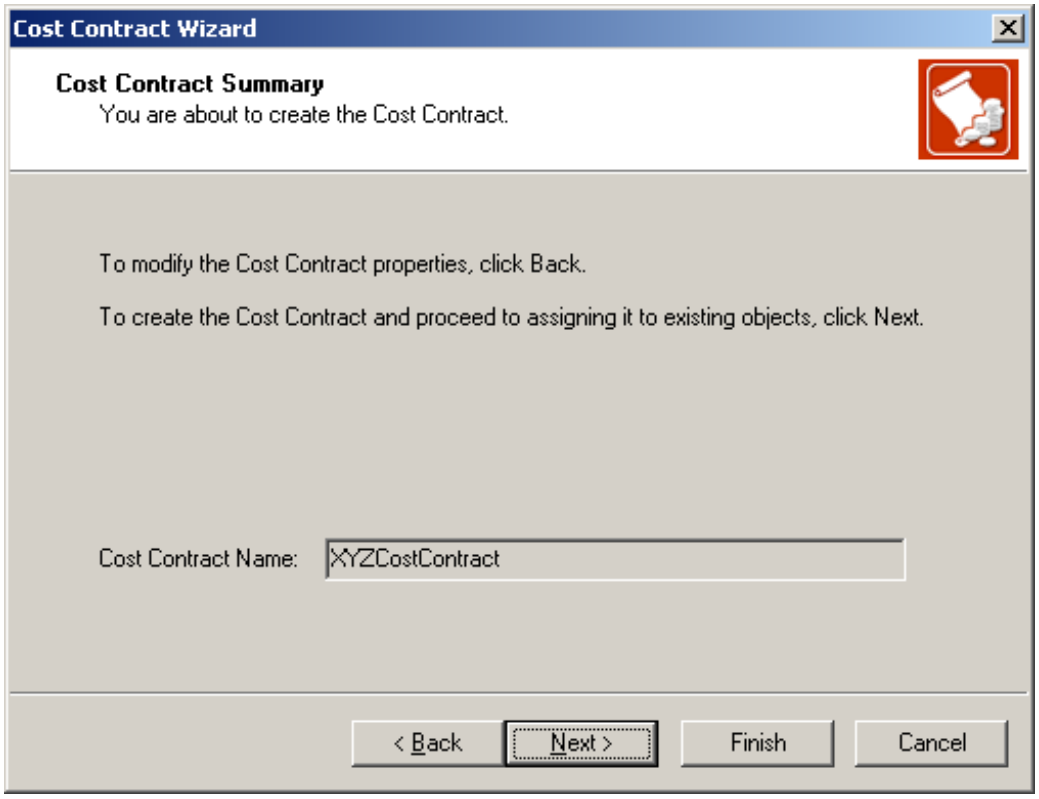


Figure 100: Cost Contract Summary

4. Do one of the following:
   - To modify the Cost Contract, click `Back`.
   - To return to the `Framework Objects` screen (see Figure 63 on page 120) and create other objects, click `Finish`.
   - To create the Cost Contract and assign it to an existing object (see "Site and Cost Contract Associations" on page 31), click `Next` and continue with the section below.

End of procedure

Procedure: Assigning a Cost Contract to Another Object

If you click `Next` in the `Cost Contract Summary` screen shown in Figure 100, the `Assigned Objects` screen appears (see Figure 101).

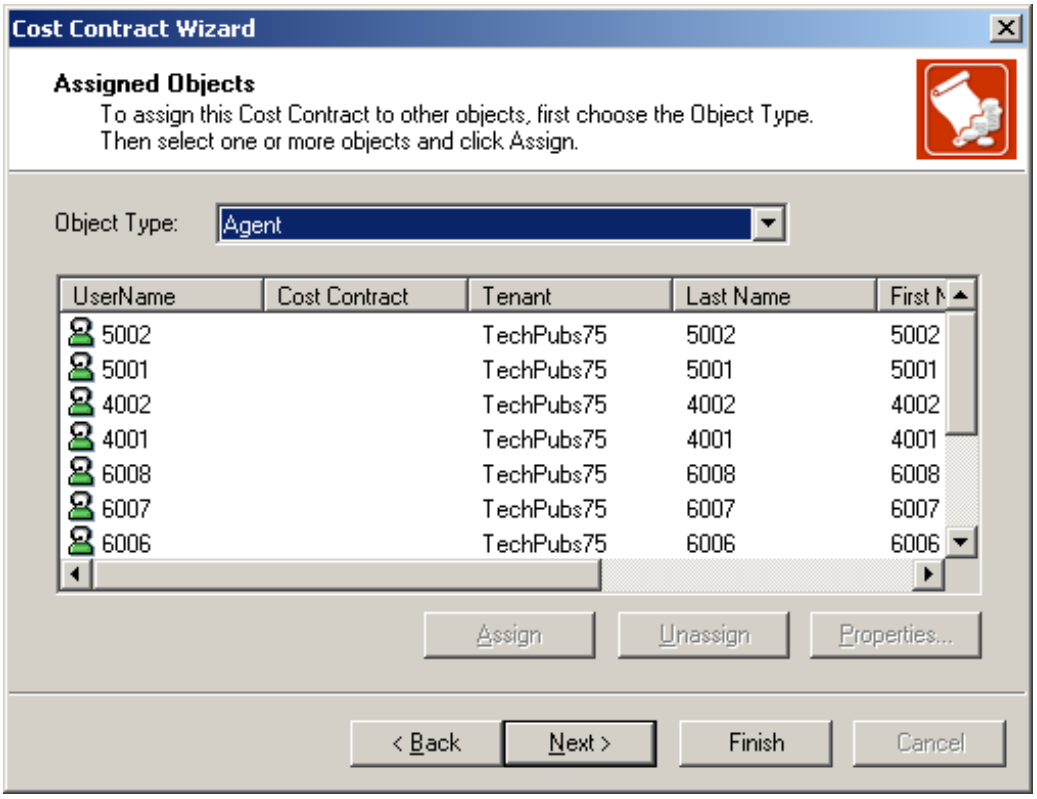


Figure 101: Assigned Objects

Start of procedure

1. Click the downward-pointing arrow to the right of `Object Type`. This brings up a list of objects of the type selected. Figure 101 shows a list of `Person` (Agent) objects, but the object could be one of the types described in "Site and Cost Contract Associations" on page 31.
2. Select one or more objects and click `Assign`.
3. When done, click `Finish`. The wizard returns you to the `Framework Objects` screen shown in Figure 63 on page 120.

End of procedure

Appendix

A Cost-Based Routing Reporting

Note: This release of cost-based routing (CBR) does not supply any preconfigured cost-based routing reports. Instead you can configure Genesys Interaction Concentrator (ICON) and Genesys Info Mart to capture sufficient data from Universal Routing to enable the building of CBR reports as a Genesys Professional Services engagement.

Universal Routing Server (URS) automatically attaches cost-based routing information to interactions that can be used for reporting when both the following are true:

- The URS option `report_targets` is set to `true` (as described in the *Universal Routing 7.6 Reference Manual*).
- You are implementing Infrastructure cost (see page 35) and/or Resource cost (see page 43).

The attached cost-based routing data (see page 150) is propagated into interaction-related event messages from the following sources:

T-Server (for voice interactions). For information on T-Server event messages, see the *Genesys 7 Events and Models Reference Manual.*

Interaction Server (for non-voice interactions).

In addition, URS uses `AttributeReason` of routing requests to automatically provide additional information for reporting purposes. For more information, see the `report_reasons` option description in the *Universal Routing 7.6 Reference Manual*.

The information in this Appendix is divided among the following topics:

Summary of Reporting Data Flow

When URS attaches CBR reporting information to interactions, the data flow for generating CBR reports is as follows:

- When it is configured to do so, ICON processes these events and stores interaction-specific details in its databases. For more information, see "Configuring ICON For CBR" on page 156.
- When it is configured to do so, Genesys Info Mart batch processes use ICON databases as inputs for loading into a Genesys Info Mart database. For more information, see "Interaction Attached Data" on page 150.
- The reporting tool of your choice (for example, Hyperion) extracts data from Genesys Info Mart and Genesys Configuration Databases and enables you to build custom reports as a Genesys Professional Services engagement.

Figure 102 depicts this data flow graphically.

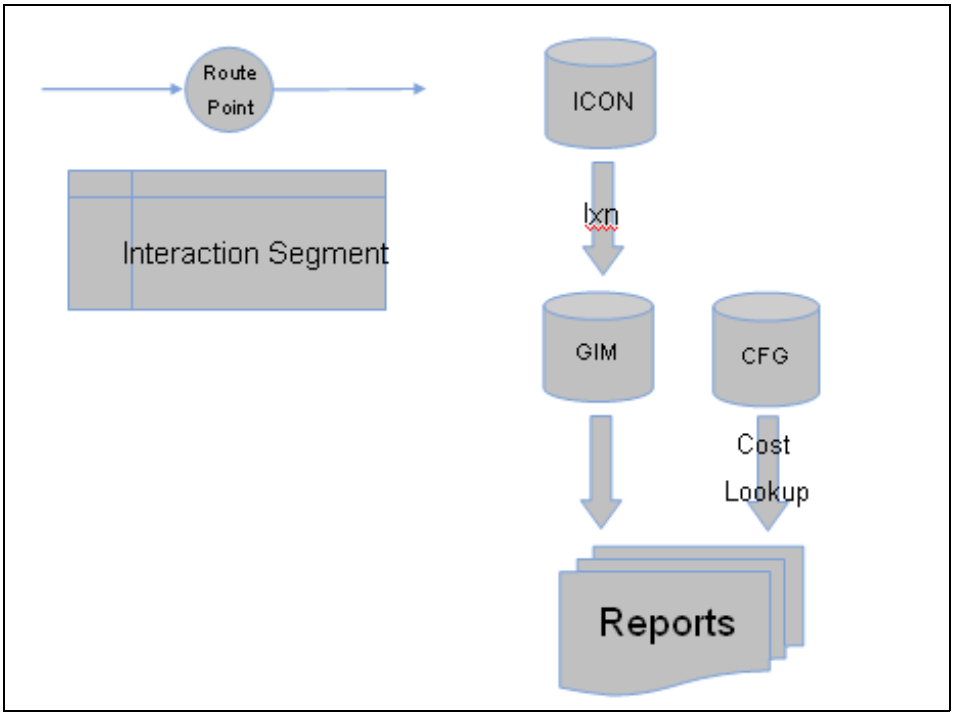


Figure 102: CBR Reporting Data Flow

Interaction Attached Data

When URS option `report_targets` is set to `true`, URS attaches CBR-related data to interactions before routing them. For information on this option, see the *Universal Routing 7.6 Reference Manual*.

Attached Data for Volume-Based Contract

Table 19 shows the attached data for a routing destination that uses a Volume Contract (see page 56):

Table 19: Volume-Based IT Contract, Attached Data

Type	Key Name	Explanation
string	CBR-contract_DBIDs	String in following format: CfgObjectiveTableDBID-CfgStatTableDBID-CfgStatDayDBID-volume period Where: • CfgObjectiveTableDBID = Cost Contract database identifier • CfgStatTableDBID = IT Contract database identifier • CfgStatDayDBID = Day Contract database identifier
string	CBR-actual_volume	Actual volume (number of routed interactions within the current volume interval)
string	CBR-IT-path_DBIDs	String in following format: OrigSiteDBID-DestSiteDBID Where: • OrigSiteDBID = Database identifier for the originating Site where interaction is being routed from. • DesSiteDBID = Database identifier for the destination Site to which the interaction is being routed.

Sample RequestUpdateUserData Message

The following is a section of an example `RequestUpdateUserData` message for a Volume Contract. The cost-based routing data is prefixed with `CBR`.

```
request to 65200(--) message RequestUpdateUserData
            AttributeReferenceID      32
            AttributeUserData          [556] 00 14 00 00..
                        'RVQID' ''
                        'RTargetTypeSelected'     '2'
                        'RTargetRuleSelected'      ''
                        'RTargetObjectSelected'   'Group1'
                        'RTargetObjSelDBID'        ''
                        'RTargetAgentSelected'    'UN_105_vit_sw2'
                        'RTargetPlaceSelected' 'Place_105_vit_sw2'
                        'RTenant'            'Vit'
                        'RStrategyName'             'z'
                        'RStrategyDBID' '3229'
                        'CBR-actual_volume'     '20' '
                        'CBR-Interaction_cost'   '14'
                        'CBR-contract_DBIDs'    '1031-114-121-3'
                        'CBR-IT-path_DBIDs'      '1122-1123'
                        'RRequestedSkillCombination'      ''
                        'RRequestedSkills'(list)
                        'RTargetRequested'         'Group1'
                        'RTargetRequested'         'Group2'
                        'CustomerSegment'         'default'
                        'ServiceType'       'default'
                        'ServiceObjective'             ''
            AttributeConnID 006b01695d4b300f
            AttributeThisDN '2203'
```

Note: The red text in this example indicates the database identifier (DBID) of the IT Contract.

In this example:

- URS routed a call to the target associated with a Cost Contract that has a DBID of 1031, an IT Contract that has a DBID of 114, and a Day Contract that has a DBID of 121.
- The call was routed within the third interval of mentioned Day Contract. This was the twentieth call that URS routed within this interval.
- The Resource cost of the interaction according to URS (although reporting does not need this for Volume Contracts) was 14.
- The call was routed from a Site with a DBID of 1122 to a Site with a DBID of 1123.

Attached Data for Variable Rate Contract—Agent Hourly

Table 20 shows the attached data for a routing destination that uses an agent hourly IT Contract (see Figure 20 on page 54):

Table 20: Variable Rate Contract—Agent Hourly Attached Data

Type	Key Name	Explanation
string	CBR-contract_DBIDs	String in the following format: CfgObjectiveTableDBID-CfgStatTableDBID Where: • CfgObjectiveTableDBID = Cost Contract database identifier • CfgStatTableDBID = IT Contract database identifier
string	CBR-Interaction_cost	Agent hourly interaction cost as entered on the Advanced tab of the IT Contract shown in Figure 20 on page 54.
string	CBR-IT-path_DBIDs	String in following format: OrigSiteDBID-DestSiteDBID Where: • OrigSiteDBID = Database identifier for the originating Site from which the interaction is being routed. • DesSiteDBID = Database identifier for the destination Site to which the interaction is being route.

Sample RequestUpdateUserData Message

The following is an example of attached data for a Variable Rate Contract.

```
request to 65200(--) message RequestUpdateUserData
           AttributeReferenceID      32
           AttributeUserData          [556] 00 14 00 00..
                       'RVQID' ''
                       'RTargetTypeSelected'     '2'
                       'RTargetRuleSelected'      ''
                       'RTargetObjectSelected'   'Group1'
                       'RTargetObjSelDBID'        ''
                       'RTargetAgentSelected'    'UN_105_vit_sw2'
                       'RTargetPlaceSelected' 'Place_105_vit_sw2'
                       'RTenant'            'Vit'
                       'RStrategyName'             'z'
                       'RStrategyDBID' '3229'
                       'CBR-actual_volume'     ''
                       'CBR-Interaction_cost'   '20'
                       'CBR-contract_DBIDs'    '1024-115'
                       'CBR-IT-path_DBIDs'      '1122-1123'
```

```
                    'RRequestedSkillCombination'     ''
                    'RRequestedSkills'(list)
                    'RTargetRequested'         'Group1'
                    'RTargetRequested'         'Group2'
                    'CustomerSegment'         'default'
                    'ServiceType'      'default'
                    'ServiceObjective'            ''
          AttributeConnID 006b01695d4b300f
          AttributeThisDN '2203'
```

In this example:

- A call was routed to a target associated with Variable Rate Contract with a DBID of 1024, and an IT Contract that has a DBID of 115.
- According to URS, the Resource cost of the interaction is 20.
- The call was routed from a Site with a DBID of 1122 to a Site with a DBID of 1123.

Note: If you plan to implement CBR that uses agent hourly rates, Genesys recommends that you assign Cost Contracts (pointing to IT Contacts that use `Agent Hourly` (see Figure 20 on page 54) to *all* agents that are potential routing targets.

Making sure that each agent has an associated agent hourly IT Contract prevents the scenario in which URS evaluates a potential routing target, does not find a Cost Contract specifying an agent hourly rate, and therefore uses a default Cost Contract as defined in Table 13 on page 68.

Attached Data For a Variable Rate Contract—Flat Rate

Table 21 shows the attached data for a routing destination that uses a Flat Rate per interaction IT Contract:

Table 21: Variable Rate Contract—Flat Rate Attached Data

Type	Key Name	Explanation
string	CBR-contract_DBIDs	String in the following format: CfgObjectiveTableDBID-CfgStatTableDBID Where: • CfgObjectiveTableDBID = Cost Contract database identifier • CfgStatTableDBID = IT Contract database identifier
string	CBR-Interaction_cost	Flat rate per interaction cost according to the contract, as entered on the Advanced tab of the IT Contract object (see Figure 20 on page 54).
string	CBR-IT-path_DBIDs	String in following format: OrigSiteDBID-DestSiteDBID Where: OrigSiteDBID = Database identifier for the originating Site from which the interaction is being routed. DesSiteDBID = Database identifier for the destination Site from which the interaction is being routed.

Note: The attached data for flat and hourly rates is identical.

Configuration Database Lookup

To get information about the Contract type, as well as any other details about the Contract that was used, you must perform a Configuration Database lookup—for example, a lookup is required for:

- Penalty information for Volume Contracts (see Figure 103).

Field Name	Data Type	Description
CC_ITC_SD_VP_Key	Text	Composite key including Cost Contract dbid, IT Contract dbid, Stat Day dbid, Volume period ID (number)
CC name	Text	Cost Contract name sourced from Cost Contract Objective table
CC_dbid	Text	dbid of Cost Contract Objective table
ITC name	Text	IT Contract name sourced from IT Contract Stat Table
ITC_dbid	Text	dbid of IT Contract Stat Table
SD name	Text	Stat Day name
SD_dbid	Text	Stat Day dbid
Ixn_Type	Text	Interaction type: Costomer Segment, Service Type, Media Type combination sourced from Cost Contract record associated with IT Contract
VP_ID	Number	Volume period ID, index
VP_Duration	Number	Duration of volume perion in min, property of stat day
VF	Number	Volume Forecast, property of Volume Period
BR	Number	Base cost per interaction, property of Volume Period
PO	Number	Penalty per inteaction for overforecast, property of Volume Period
PU	Number	Penalty per inteaction for underforecast, property of Volume Period
FAWP	Number	Forecast allowance without penalties %, property of Stat Day

Figure 103: Cost Contract Lookup

- The name of the IT Contract (the DBID of the IT Contract is attached; see the red text and Note on page 151).

Reporting on Infrastructure Cost

A lookup is required to get the Infrastructure part of the interaction cost (URS does not attach the Infrastructure cost, but instead uses Site DBIDs (see Figure 104).

ITC_Lookup : Table

Field Name	Data Type	Description
S2S_dbids	Text	compaund key including from/to dbid
From_dbid	Text	dbid of Site folder from which interaction is distributed
To_dbid	Text	dbid of Site folder to which interaction is distributed
From_Name	Text	Name of Site folder from which interaction is distributed
To_Name	Text	Name of Site folder to which interaction is distributed
ITCost	Number	Infastructure transfer cost

Figure 104: Infrastructure (Transfer) Cost Lookup

Note: For more information on creating Info Mart tables to contain Configuration Database information, see page 160.

Attached Data Comparison by Contract Type

Volume-based cost reporting can get Cost Contract information from the Configuration Layer (from `CfgObjectiveTableDBID-CfgStatTableDBID-CfgStatDayDBID-volume period`). Then, knowing `CBR-actual_volume`, the cost of an interaction can be derived.

In contrast, cost reporting for a Variable Rate Contract using agent hourly cost, depends on the Average Handling Time statistic. For reporting purposes, knowing `CfgObjectiveTableDBID-CfgStatTableDBID` is not enough. URS must explicitly attach cost to an interaction.

Note: For a Variable Rate Contract using a flat rate, the reporting process can calculate the interaction cost from `CfgObjectiveTableDBID-CfgStatTableDBID`. It is not necessary to attach cost to the interaction. URS does this only to simplify the reporting process.

Configuring ICON For CBR

When it is configured to do so, ICON processes interaction-related event messages from T-Server (for voice interactions) and stores interaction-specific details in its databases.

About ICON

Interaction Concentrator is a Genesys product that collects and stores detailed data from various sources in a contact center that use the Genesys software. Downstream reporting systems can access ICON data in near real time.

Operating on top of Genesys Framework, ICON consists of the Interaction Concentrator server application and a database called *Interaction Database* (IDB). The server receives data from the data sources such as Configuration Server, T-Server, or particular Genesys solutions; it then stores this data into IDB through Genesys DB Server.

This section assumes you have installed Interaction Concentrator as described in the *Interaction Concentrator Deployment Guide*.

Note: In a contact center that has a large Genesys configuration environment, and/or that processes high call volumes with large amounts of attached data, you can improve Interaction Concentrator performance by deploying multiple ICON instances, each of which collects data only of a certain type. You may wish to dedicate an instance of ICON to store T-Server data including the CBR attached data associated with calls.

Tables for Storing Attached Data

IDB stores in its tables all reporting data that ICON provides. The tables related to attached data (also sometimes referred to as *UserData*) contain data that T-Server attaches to a call, and that ICON selects from TEvents, based on its configuration. IDB contains two types of tables for `UserData` collection:

- *Flat* tables are used when data corresponding to a particular key name is stored into a particular field in a table.
- *Generic,* or *historical,* tables are used when each attached data value is stored in a separate row with the corresponding context.

Table 22 lists the IDB tables that are used for storage of user data attached to voice calls.

Table 22: Attached Data Storage Tables for Voice

Table Name	Type	Description
G_CALL_USERDATA	call	Designed for predefined `UserData` collected during the entire duration of a call.
G_CALL_USERDATA_CUST	call	Designed for custom `UserData` collected during the entire duration of a call.
G_CALL_USERDATA_CUST1	call	Designed for custom `UserData` collected during the entire duration of a call.
G_CALL_USERDATA_CUST2	call	Designed for custom `UserData` collected during the entire duration of a call.
G_USERDATA_HISTORY	historical	Designed to keep historical changes of `UserData`.
G_SECURE_USERDATA_ HISTORY	historical	Designed to keep historical changes of `UserData`. Permissions for this table must be set at your particular Site.

Figure 105 depicts the ICON schema for the attached data storage.

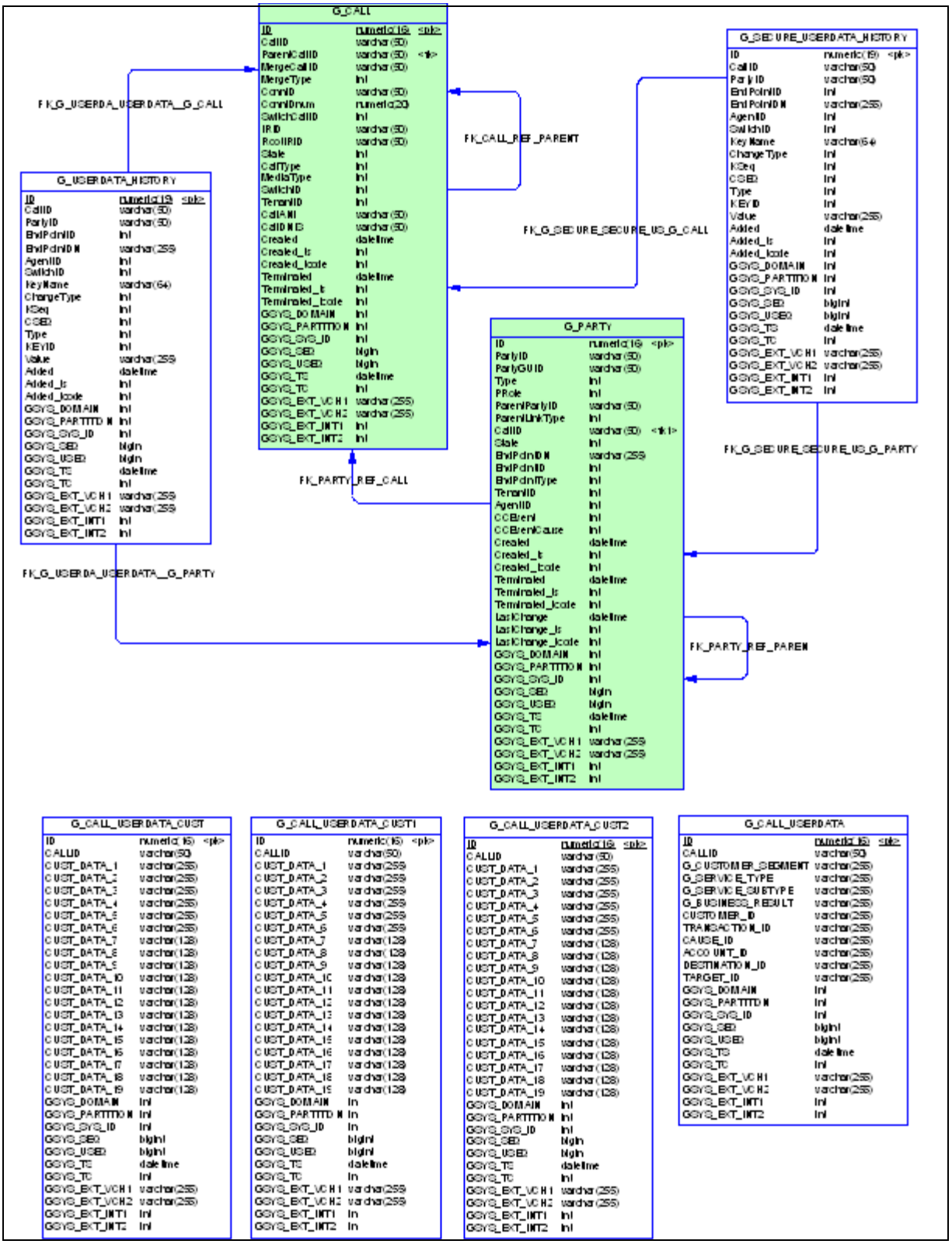


Figure 105: Attached Data Related Tables

Mapping Attached Data Key-Value Pairs to IDB Schema

Installing ICON puts an empty version of an attached data XML specification file in the installation directory. The default file name is `ccon_adata_spec.xml` (although an ICON configuration option enables you to use a different file name).

The attached data XML specification file maps the key-value pairs (KVPs) (see Tables 19—21 starting on page 150) from event attributes to tables in the IDB schema. Below is an example `adata_spec.xml` file for voice calls, where the `call-cust` section (in bold type) has been edited for cost-based routing.

Example XML Specification File

```
<?xml version="1.0" encoding="utf-8" ?>
<adata_spec>
<public>
   <key name = "u_key1" source="userdata"    history ="all"/>
</public>
<secure>
   <key name = "u_key2" source="userdata"    history ="all"/>
</secure>
<call>
   <key name = "customer-segment" source="userdata" history ="first" field="customer-segment"/>
<key name = "svc_class_cd" source="userdata" history ="first" field="service-type"/>
<key name = "CCTP_CALLTYPE" source="userdata" history ="first" field="service-subtype"/>
<key name = "cid" source="userdata" history ="first" field="customer-id"/>
<key name = "transact_tn_final" source="userdata" history ="first" field="transaction-id"/>
</call>
<call-cust>
   <call-cust>
<key name = "CBR-actual_volume" source="userdata" history ="first" field="cust-data-1"/>
<key name = "CBR-Interaction_cost" source="userdata" history ="first" field="cust-data-2"/>
<key name = "CBR-contract_DBIDs" source="userdata" history ="first" field="cust-data-3"/>
<key name = "RRequestedSkillCombination"  source="userdata" history ="first" field="cust-data-4"/>
<key name = "RRequestedSkills" source="userdata" history ="last" field="cust-data-5"/>
<key name = "CustomerSegment" source="userdata" history ="first" field="cust-data-6"/>
<key name = "ServiceType" source="userdata" history ="first" field="cust-data-7"/>
<key name = "ServiceObjective" source="userdata" history ="first" field="cust-data-8"/>
</call-cust>
<call-cust1>
   <key name = "customer-segment" source="userdata"  history ="first" field="cust-data-1"/>
<key name = "PegTD" source="userdata"  history ="last" field="cust-data-2"/>
</call-cust1>
<call-cust2>
   <key name = "customer-segment" source="userdata"  history ="first" field="customer-segment"/>
<key name = "vrapp_ctl_lang" source="userdata"  history ="last" field="cust-data-3"/>
</call-cust2>
</adata_spec>
```

Note: In the case of the `call-cust` section shown above, the data will be written to the `G_CALL_USERDATA_CUST` table. For information on the `call-cust` section and other attributes in the attached data XML specification file, see the *Interaction Concentrator Deployment Guide*.

To configure the CBR key-value pairs described in "Interaction Attached Data" on page 150:

1. In Configuration Manager, open the ICON Application object. Update the value of `adata-userdata-history` option, changing it from `none` to `first`.
2. Review the appendix "Attached Data" in the *Interaction Concentrator Deployment Guide*. This appendix describes how to make user data that is attached to interactions available in IDB. It also includes an XML schema definition for processing KVPs from the attached data that T-Server provides with TEvents.
3. Edit the attached data XML specification file according to instructions in the chapter on attached data processing in the *Interaction Concentrator Deployment Guide*.

Configuring Genesys Info Mart for CBR

Genesys Info Mart produces a "data mart" containing several star schemas you can use for contact center historical reporting. Genesys Info Mart includes a software platform and a set of predefined extraction, transformation, and loading (ETL) jobs. The reporting tool configures these jobs to extract and transform data from Genesys relational databases, such as a relational database containing cost-based routing historical data. The transformed data is then loaded into Dimension and Fact database tables in Genesys Info Mart.

Genesys Info Mart ships with a utility for configuring jobs, the Genesys Info Mart Administration Console, which is activated by Genesys Configuration Manager. The reporting tool can extract, transform, and load CBR data from Genesys database applications.

Fact and Dimension Tables

There are two types of tables that make up the Genesys Info Mart star schemas mentioned above.

1. *Fact tables* are the large tables in the middle of a star schema. They represent business measures, such as how long customers waited in a queue, how long and how often agents put customers on hold, or how long agents talked to customers.
2. A set of slowly-changing Dimension tables surround the fact tables. Dimension tables describe the attributes of the associated fact table. For example, dimensions related to interactions might include the date and time each interaction started, the required skills for various service types requested by customers, and the value of various customers to the business.

Figure 106 on page 163 depicts an example `Interaction_Segment_Fact` table for cost-based routing reporting, along with its related Dimension tables that could be created after running the ETL batch jobs.

You can see that the `Interaction_Segment_Fact` table is related to many Dimension tables. There are many data fields in each Fact and Dimension table; however, for the sake of illustration Figure 105 on page 158 does not show all of the fields in the Fact and Dimension tables. To view the specific fields that make up the Facts and Dimensions tables, see the figures that follow Figure 106 on page 163.

You can query the data in these tables by using predefined SQL queries. These queries enable you to display detailed data, reveal patterns, and predict trends.

Genesys Info Mart Database Schema

The Genesys Info Mart database schema contains the dimensions, facts and aggregates the ETL job load. Specifically, this database schema contains:

- Dimension tables.
- Intraday Fact tables.
- Historical Fact tables.
- Intraday Aggregate tables (hour level).
- Historical Aggregate tables (hour, day, and month levels).
- Historical Aggregate views (week, quarter, and year levels).

All the Fact and Aggregates tables share the Dimension tables. The ETL jobs load the Dimension tables and Intraday Fact tables frequently during the day to enable reporting on recent contact center activity. Once a day, generally overnight, the ETL jobs move the data from the Intraday Fact tables to the historical Fact tables. The historical Fact tables enable reporting on historical contact center activity.

Other Info Mart Schemas

Info Mart also contains the following schemas:

- Genesys Info Mart Views Database Schema. Contains read-only views on the Dimensions, Facts and Aggregate tables in the Genesys Info Mart database schema.
- Genesys Info Mart Tenant Views Database Schema. Supplies a separate database schema for each Tenant (including the Environment Tenant), to give each Tenant access to only its own data.

For information on these schemas, consult the Genesys Info Mart Reference Manual for your database type; for example, the *Genesys Info Mart MS SQL Reference Manual*.

Database Schema for Cost-Based Routing

Figure 106 shows the CBR reporting database schema from a very high-level perspective (it does not exactly correspond to the SQL statements starting on page 168.

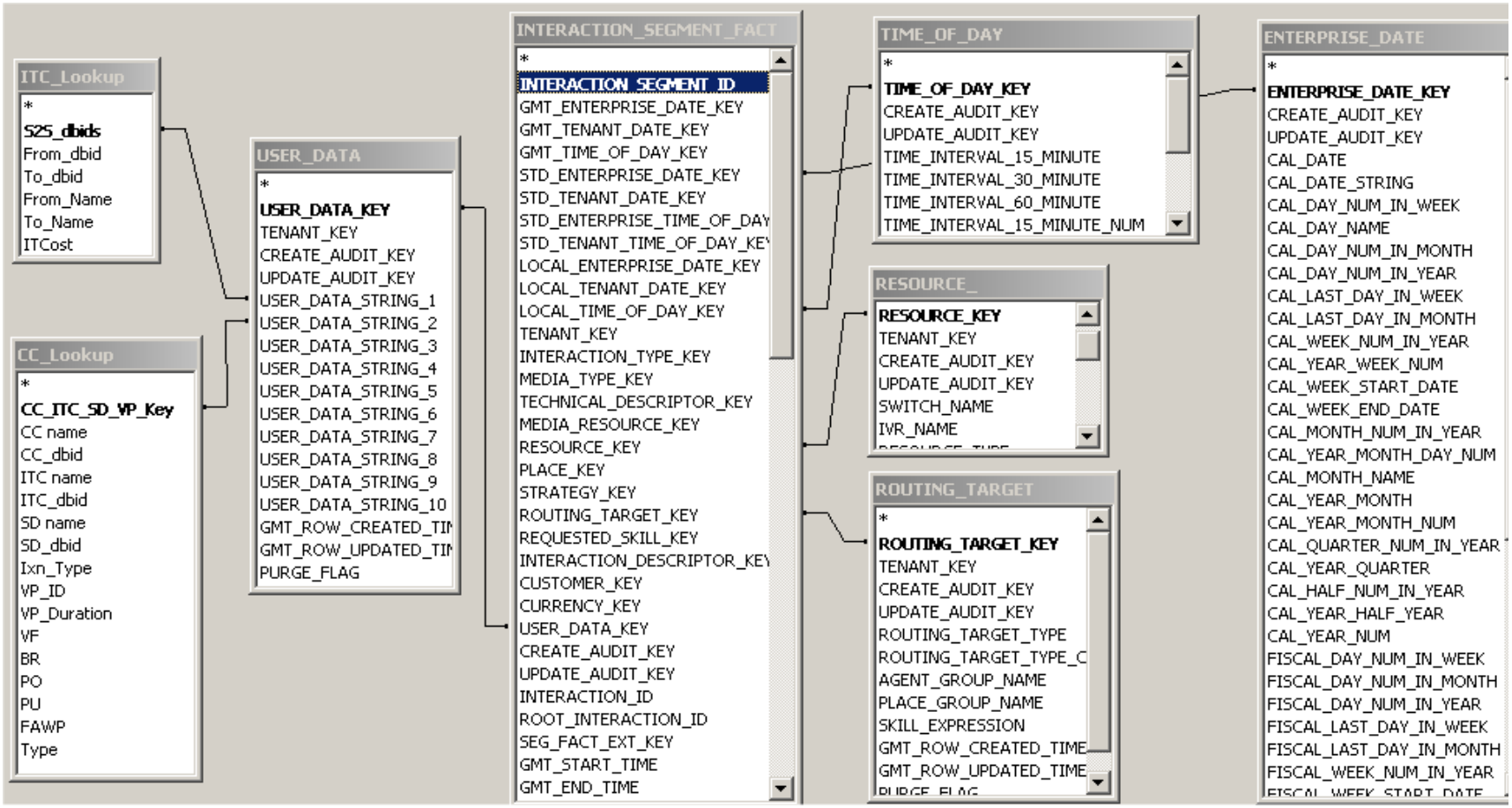


Figure 106: Schema for Cost-Based Routing Reporting

Figure 106 on page 163 shows all fields in the first three Dimension tables. This section shows the fields in the remaining tables.

Interaction Segment Table

Note the `Interaction_Segment_Fact` table in Figure 106 on page 163. This table is comprised of the fields shown in Figure 107.

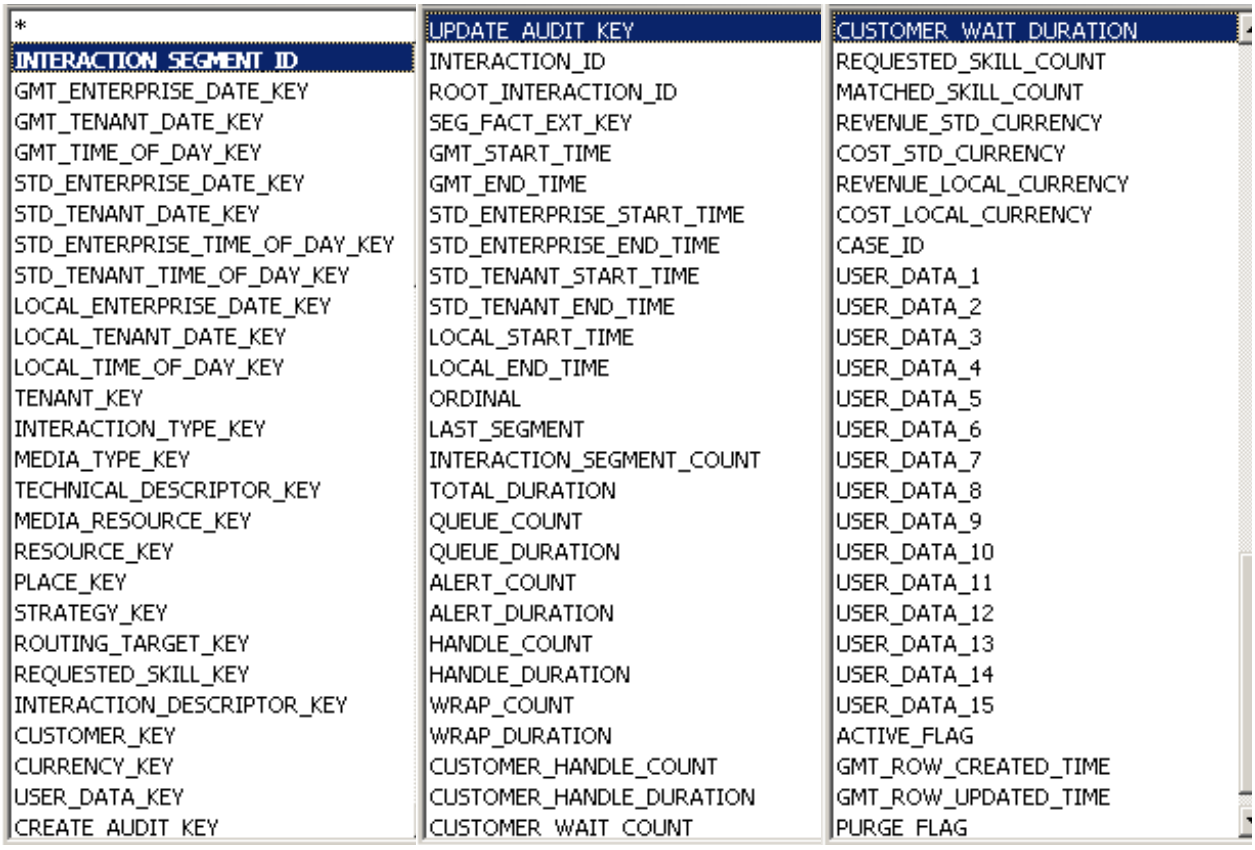


Figure 107: Interaction_Segment_Fact Table

Time_Of_Day Table

Note the `Time_Of_Day` table in Figure 106 on page 163. This table is comprised of the fields shown in Figure 108:

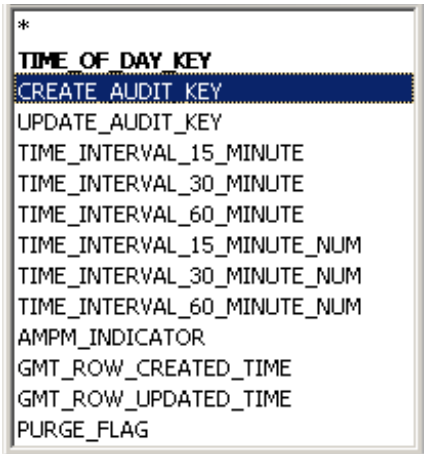


Figure 108: Time_Of_Day Table

Resource_ Table

Note the `Resource` table in Figure 106 on page 163. This table is comprised of the fields shown in Figure 109:

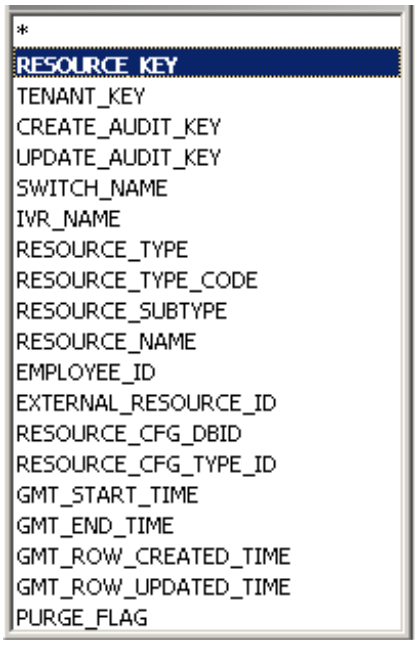


Figure 109: Resource Table

Routing_Target Table

Note the `Routing_Target` table in Figure 102 on page 149. This table is comprised of the fields shown in Figure 110:

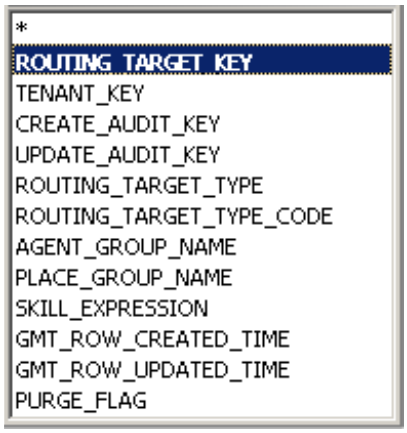


Figure 110: Routing Target Table

Enterprise_Date Table

Note the `Enterprise _Date` table in Figure 102 on page 149. This table is comprised of the fields shown in Figure 111:

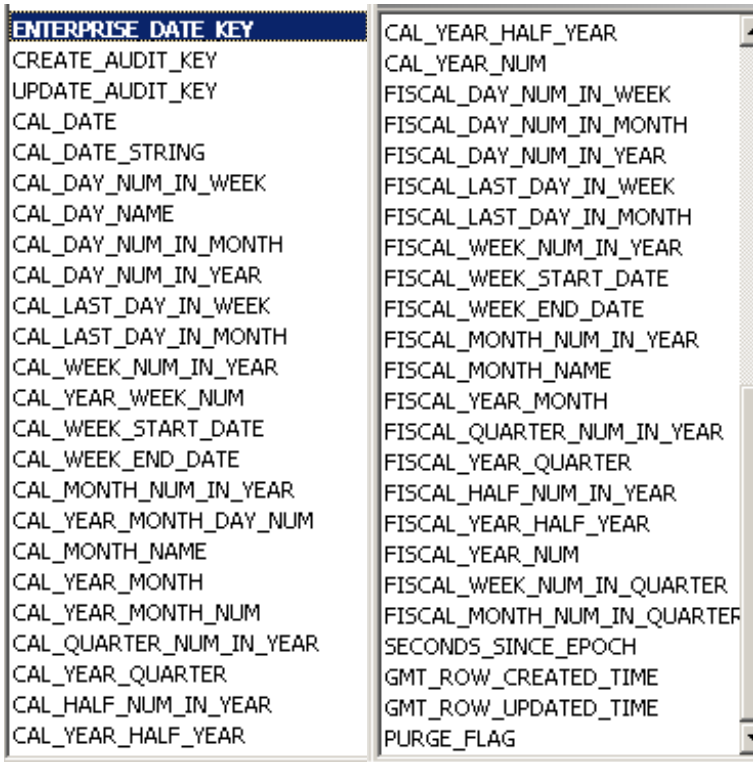


Figure 111: Routing_Target Table

Genesys Info Mart uses IDB as a data source, and so it gets its attached data from the IDB tables. You must modify ICON's attached data specification file for some additional mapping. This required modification is described in the *Genesys Info Mart Deployment Guide*.

Extensions to Info Mart Database Schema

In the initial release of CBR, the T-Server/URS/ICON/Info Mart chain just described provides essential cost-based routing reporting information. However, in some cases, you may wish to generate more specialized reports, such as the those described in "Reports That Can Be Configured" on page 175.

In this case, you must add four tables to the Genesys Info Mart database schema. These tables will contain Infrastructure, Volume Contract, and Variable Rate Contract information from the Genesys Configuration Database. This guide names the tables as follows:

- `CBR_INFRASTRUCTURE`
- `CBR_VOLUME`
- `CBR_VARIABLE`
- `CBR_VOLUME_DATE`

The last table in this list, CBR_Volume_Date, marks calendar days with applicable Volume Contracts. This is needed in order to cover border cases where no calls were made within a particular volume period. In such cases, the total cost of calls within the interval is 0 (zero) but, based on the `Day Contract` object, the cost of the interval is not 0 (zero).

The sections that follow provide:

- The required database schemas for all four tables.
- The SQL `CREATE TABLE` commands to create the tables.
- The SQL `INSERT` commands to populate the tables.
- The SQL `SELECT` statements to extract the data needed for the reports described in "Reports That Can Be Configured" on page 175.

Note: The database schemas shown in the following sections illustrate one possible approach; they not represent schemas to be used in a Production environment.

Required Database Schemas

Figure 112 shows the required database schema to contain Cost Contract and other information looked up in the Configuration Database.

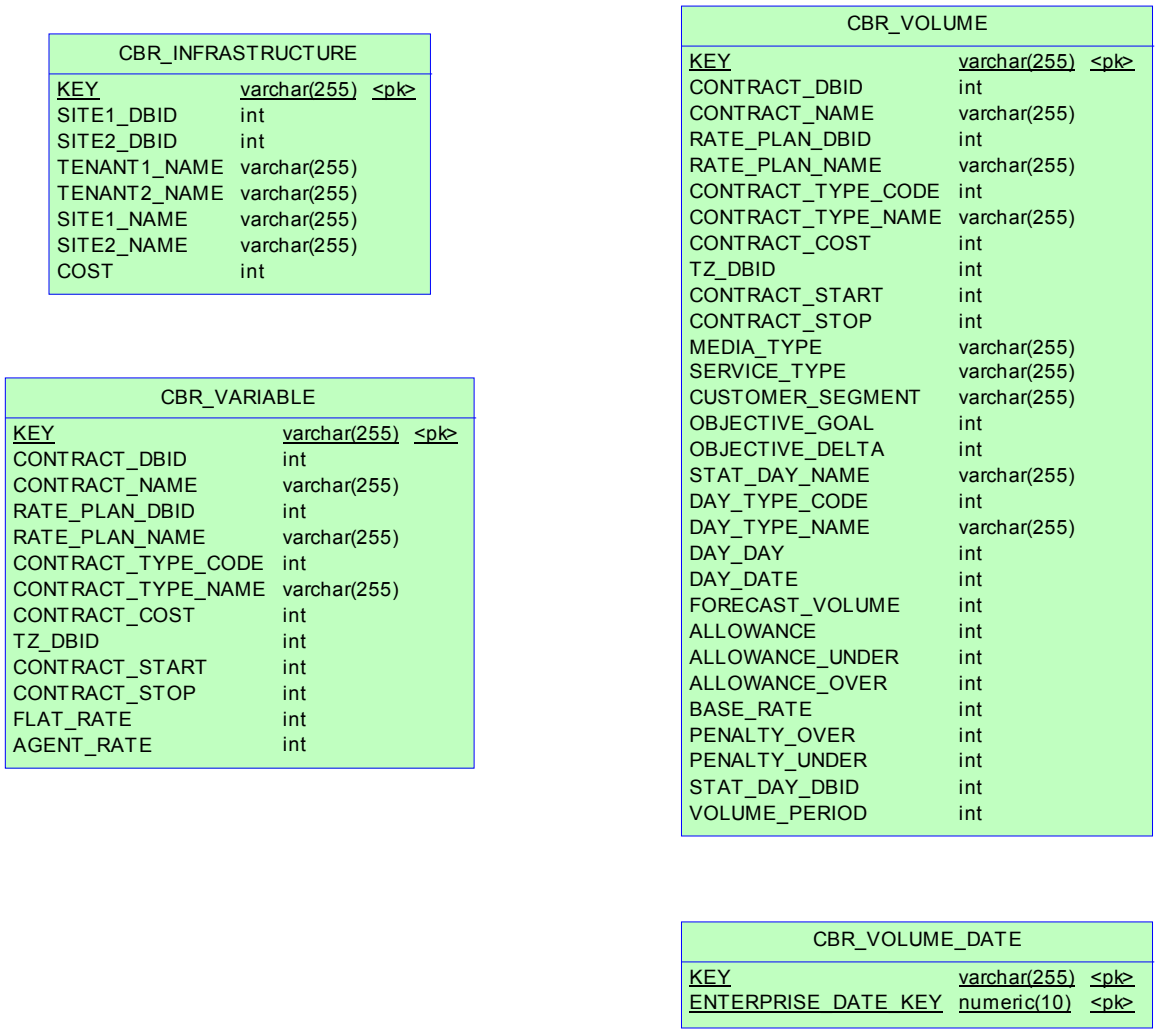


Figure 112: Required Database Schemas for Configuration DB Lookup

SQL Create Table Commands

The following are the SQL `CREATE TABLE` commands to create the tables.

CBR_INFRASTRUCTURE

```
create table CBR_INFRASTRUCTURE (
   "KEY"                varchar(255)         not null,
   SITE1_DBID           int                  not null,
   SITE2_DBID           int                  not null,
   TENANT1_NAME         varchar(255)         not null,
   TENANT2_NAME         varchar(255)         not null,
   SITE1_NAME           varchar(255)         not null,
   SITE2_NAME           varchar(255)         not null,
   COST                 int                  not null,
```

```
   constraint PK_CBR_INFRASTRUCTURE primary key  ("KEY")
```

CBR_VOLUME

```
create table CBR_VOLUME (
   "KEY"                varchar(255)         not null,
   CONTRACT_DBID        int                  not null,
   CONTRACT_NAME        varchar(255)         not null,
   RATE_PLAN_DBID       int                  not null,
   RATE_PLAN_NAME       varchar(255)         not null,
   CONTRACT_TYPE_CODE   int                  not null,
   CONTRACT_TYPE_NAME   varchar(255)         not null,
   CONTRACT_COST        int                  not null,
   TZ_DBID              int                  not null,
   CONTRACT_START       int                  not null,
   CONTRACT_STOP        int                  not null,
   MEDIA_TYPE           varchar(255)         not null,
   SERVICE_TYPE         varchar(255)         not null,
   CUSTOMER_SEGMENT     varchar(255)         not null,
   OBJECTIVE_GOAL       int                  not null,
   OBJECTIVE_DELTA      int                  not null,
   STAT_DAY_NAME        varchar(255)         not null,
   DAY_TYPE_CODE        int                  not null,
   DAY_TYPE_NAME        varchar(255)         not null,
   DAY_DAY              int                  not null,
   DAY_DATE             int                  not null,
   FORECAST_VOLUME      int                  not null,
   ALLOWANCE            int                  not null,
   ALLOWANCE_UNDER      float                not null,
   ALLOWANCE_OVER       float                not null,
   BASE_RATE            int                  not null,
   PENALTY_OVER         float                not null,
   PENALTY_UNDER        float                not null,
   STAT_TABLE_DBID      int                  not null,
   STAT_DAY_DBID        int                  not null,
   VOLUME_PERIOD        int                  not null,
   constraint PK_CBR_VOLUME primary key  ("KEY")
)
```

CBR_VARIABLE

```
create table CBR_VARIABLE (
   "KEY"                varchar(255)         not null,
   CONTRACT_DBID        int                  not null,
   CONTRACT_NAME        varchar(255)         not null,
   RATE_PLAN_DBID       int                  not null,
   RATE_PLAN_NAME       varchar(255)         not null,
   CONTRACT_TYPE_CODE   int                  not null,
```

```
   CONTRACT_TYPE_NAME   varchar(255)         not null,
   CONTRACT_COST        int                  not null,
   TZ_DBID              int                  not null,
   CONTRACT_START       int                  not null,
   CONTRACT_STOP        int                  not null,
   FLAT_RATE            int                  not null,
   AGENT_RATE           int                  not null,
   STAT_TABLE_DBID      int                  not null,
   constraint PK_CBR_VARIABLE primary key  ("KEY")
)
```

CBR_VOLUME_DATE

```
create table CBR_VOLUME_DATE (
   "KEY"                varchar(255)         not null,
   ENTERPRISE_DATE_KEY  numeric(10)          not null,
   constraint PK_CBR_VOLUME_DATE primary key  ("KEY",
ENTERPRISE_DATE_KEY)
```

Extracting Data from Configuration Database

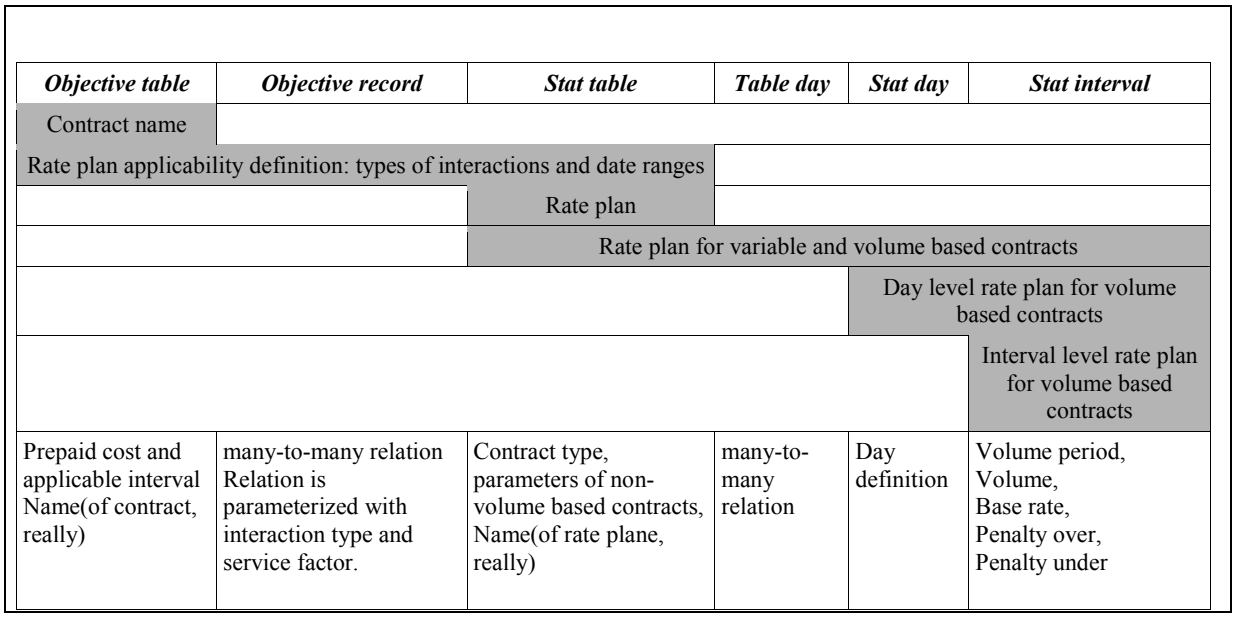
This example extracts data by directly accessing the Configuration Database.

Warning! This approach is not suitable for a Production environment because the database schema may change while the Configuration Server protocol stays the same.

The SQL extraction scripts shown in this section are run against the Info Mart database with a connection to Configuration Server database implemented as a database link with the following parameters:

- `esther-2000` = Name of the link
- `cfg75-2` = Name of the Configuration Database
- `dbo` = Schema name

Figure 113 illustrates how Volume and Variable Rate Contracts are represented in the Configuration Database database.



Objective table	*Objective record*	*Stat table*	*Table day*	*Stat day*	*Stat interval*
Contract name					
Rate plan applicability definition: types of interactions and date ranges					
		Rate plan			
		Rate plan for variable and volume based contracts			
				Day level rate plan for volume based contracts	
					Interval level rate plan for volume based contracts
Prepaid cost and applicable interval Name(of contract, really)	many-to-many relation Relation is parameterized with interaction type and service factor.	Contract type, parameters of non-volume based contracts, Name(of rate plane, really)	many-to-many relation	Day definition	Volume period, Volume, Base rate, Penalty over, Penalty under

Figure 113: Volume and Variable Rate Contracts in Configuration Database

SQL Insert Commands

The following are the SQL `INSERT` commands to populate the tables.

CBR_INFRASTRUCTURE

```
insert into CBR_INFRASTRUCTURE ("KEY", SITE1_DBID, SITE2_DBID,
TENANT1_NAME, TENANT2_NAME, SITE1_NAME, SITE2_NAME, COST)
SELECT ltrim(str(r.object_dbid))+'-'+ltrim(str(r.resource_dbid))
, r.object_dbid SITE1_DBID
, r.resource_dbid SITE2_DBID
, t1.name TENANT1_NAME
, t2.name TENANT2_NAME
, s1.name SITE1_NAME
, s2.name SITE2_NAME
, r.long_field_1 COST
FROM cbr1..cfg_obj_resource r
, cbr1..cfg_folder s1
, cbr1..cfg_folder s2
, cbr1..cfg_tenant t1
, cbr1..cfg_tenant t2
WHERE r.object_type   = 22
  and r.resource_type = 22
  and r.object_dbid  <> r.resource_dbid
  and r.type          = 3
  and r.object_dbid   = s1.dbid
and r.object_type   = s1.type
  and s1.owner_type   = 7
```

```
  and s1.owner_dbid   = t1.dbid
  and r.resource_dbid = s2.dbid
  and r.resource_type = s2.type
  and s2.owner_type   = 7
  and s2.owner_dbid   = t2.dbid
```

CBR_VOLUME

```
insert into CBR_VOLUME ("KEY", CONTRACT_DBID, CONTRACT_NAME,
CONTRACT_TYPE_CODE,
CONTRACT_TYPE_NAME, CONTRACT_COST, RATE_PLAN_DBID, RATE_PLAN_NAME,
TZ_DBID, CONTRACT_START,
CONTRACT_STOP, MEDIA_TYPE, SERVICE_TYPE, CUSTOMER_SEGMENT,
OBJECTIVE_GOAL, OBJECTIVE_DELTA,
STAT_DAY_NAME, DAY_TYPE_CODE,  DAY_TYPE_NAME, DAY_DAY, DAY_DATE,
FORECAST_VOLUME, ALLOWANCE,
ALLOWANCE_UNDER, ALLOWANCE_OVER, BASE_RATE, PENALTY_OVER,
PENALTY_UNDER, STAT_TABLE_DBID,
STAT_DAY_DBID, VOLUME_PERIOD)
SELECT ltrim(str(ot.dbid))+'-'+ltrim(str(st.dbid))+'-
'+ltrim(str(sd.dbid))+'-'+ltrim(str(si.interval_count))
, ot.dbid CONTRACT_DBID
, ot.name CONTRACT_NAME
, 1 CONTRACT_TYPE_CODE
, 'Volume' CONTRACT_TYPE_NAME
, ot.prepaid_cost CONTRACT_COST
, st.dbid RATE_PLAN_DBID
, st.name RATE_PLAN_NAME
, ot.timezone_dbid TZ_DBID
, ot.time_start CONTRACT_START
, ot.time_end CONTRACT_END
, enum1.name MEDIA_TYPE
, enum2.name SERVICE_TYPE
, enum3.name CUSTOMER_SEGMENT
, otr.obj_threshold OBJECTIVE_GOAL
, otr.obj_delta OBJECTIVE_DELTA
, sd.name STAT_DAY_NAME
, case
    when sd.is_day_of_week = 2 then 1
    when sd.day = -1 then 2
    when sd.date_ <> 0 then 3
    else 4
  end
  DAY_TYPE_CODE
, case
    when sd.is_day_of_week = 2 then 'DAY OF WEEK'
    when sd.day = -1 then 'ANY DAY'
    when sd.date_ <> 0 then 'DATE'
    else 'DAY OF YEAR'
```

```
  end
  DAY_TYPE_NAME
, sd.day DAY_DAY
, sd.date_ DAY_DATE
, si.stat_value1 FORECAST_VOLUME
, sd.min_value ALLOWANCE
, (1-cast(sd.min_value as float)/100)*si.stat_value1 ALLOWANCE_UNDER
, (1+cast(sd.min_value as float)/100)*si.stat_value1 ALLOWANCE_OVER
, si.stat_value2 BASE_RATE
, case when sd.max_value <> 0 or sd.target_value<> 0
      then cast(si.stat_value2 as float)*sd.max_value/100 /*
base_rate * percentage */
      else cast(si.stat_value3 as float) /* exact value */
  end PENALTY_OVER
, case when sd.max_value <> 0 or sd.target_value<> 0
      then cast(si.stat_value2 as float)*sd.target_value/100 /*
base_rate * percentage */
      else cast(si.stat_value4 as float) /* exact value */
  end PENALTY_UNDER
, st.dbid STAT_TABLE_DBID
, sd.dbid STAT_DAY_DBID
, si.interval_count VOLUME_PERIOD
FROM "esther-2000"."cfg75-2".dbo.cfg_obj_table ot, "esther-
2000"."cfg75-2".dbo.cfg_obj_record otr
,    "esther-2000"."cfg75-2".dbo.cfg_stat_table st, "esther-
2000"."cfg75-2".dbo.cfg_table_day td
,    "esther-2000"."cfg75-2".dbo.cfg_stat_day sd, "esther-
2000"."cfg75-2".dbo.cfg_stat_interval si
,    "esther-2000"."cfg75-2".dbo.cfg_enum_value enum1, "esther-
2000"."cfg75-2".dbo.cfg_enum_value enum2
,    "esther-2000"."cfg75-2".dbo.cfg_enum_value enum3
WHERE ot.dbid           = otr.obj_table_dbid
  and st.dbid           = otr.contract_dbid
  and st.type           = 4
  and st.dbid           = td.stat_table_dbid
  and sd.dbid           = td.stat_day_dbid
  and sd.dbid           = si.stat_day_dbid
  and otr.media_type_dbid = enum1.dbid
and otr.svc_type_dbid   = enum2.dbid
  and otr.cust_segm_dbid  = enum3.dbid
```

CBR_VARIABLE

```
insert into CBR_VARIABLE ("KEY", CONTRACT_DBID, CONTRACT_NAME,
CONTRACT_TYPE_CODE,
CONTRACT_TYPE_NAME, CONTRACT_COST, RATE_PLAN_DBID, RATE_PLAN_NAME,
TZ_DBID, CONTRACT_START,
CONTRACT_STOP, FLAT_RATE, AGENT_RATE, STAT_TABLE_DBID)
SELECT ltrim(str(ot.dbid))+'-'+ltrim(str(st.dbid))
```

```
, ot.dbid CONTRACT_DBID
, ot.name CONTRACT_NAME
, CASE
    WHEN st.type = 5 and st.use_flat_rate = 2 THEN 2
                                              ELSE 3
  END
  CONTRACT_TYPE_CODE
, CASE
    WHEN st.type = 5 and st.use_flat_rate = 2 THEN 'Variable flat'
                                             ELSE 'Variable hourly'
  END
  CONTRACT_TYPE_NAME
, ot.prepaid_cost CONTRACT_COST
, st.dbid RATE_PLAN_DBID
, st.name RATE_PLAN_NAME
, ot.timezone_dbid TZ_DBID
, ot.time_start CONTRACT_START
, ot.time_end CONTRACT_END
, case when st.type = 5 and st.use_flat_rate = 2 then st.flat_rate
else 0 end FLAT_RATE
, case when st.type = 5 and st.use_flat_rate = 1 then st.agent_rate
else 0 end AGENT_RATE
, st.dbid STAT_TABLE_DBID
FROM cbr1..cfg_obj_table ot, cbr1..cfg_obj_record otr,
cbr1..cfg_stat_table st
WHERE ot.dbid           = otr.obj_table_dbid
  and otr.contract_dbid = st.dbid
  and st.type          = 5
```

CBR_VOLUME_DATE

```
insert into CBR_VOLUME_DATE ("KEY", ENTERPRISE_DATE_KEY)
SELECT vtable."KEY", edate.ENTERPRISE_DATE_KEY
FROM CBR_VOLUME vtable, ENTERPRISE_DATE edate
where edate.CAL_DATE between dateadd(second,vtable.CONTRACT_START,
'1/1/1970') and dateadd(second,vtable.CONTRACT_STOP, '1/1/1970')
and ( vtable.DAY_TYPE_CODE = 2
   OR vtable.DAY_TYPE_CODE = 1 and vtable.DAY_DAY =
edate.CAL_DAY_NUM_IN_WEEK
   OR vtable.DAY_TYPE_CODE = 4 and vtable.DAY_DAY =
edate.CAL_DAY_NUM_IN_YEAR
   OR vtable.DAY_TYPE_CODE = 3 and (vtable.DAY_DATE -
datediff(second,'1/1/1970',edate.CAL_DATE)) between 0 and (24*3600-
1) )
```

Reports That Can Be Configured

This section describes the types of reports that can be configured.

Volume Contract Type

When a routing destination uses a "Volume Contract" as described on page 56, the reporting tool can be used to generate the types of data listed in the following section.

Genesys Non-Monitored Resource

When Volume Contract type is used for a Non-Monitored Resource, such as an outsourcer whose resources (Persons, DNs, software, and so on) are not defined by Genesys, you can report on the following types of data.

For each volume period of each Day Contract, you can report on:

- Forecasted volume for a period.
- Actual volume of the period.
- Volume delta (plus or minus). This is the difference between the forecasted volume and the actual volume.
- Penalty paid during the volume period (if any).
- Total Infrastructure cost of the volume period.
- Base rate of the volume period.
- Total Resource cost of the volume period, which is the sum of the base rate and penalty paid for the volume period.
- Total routing plan cost of the volume period, which is the sum of the Infrastructure cost and Resource cost.
- Total prepaid cost associated with the Contract.

During custom report creation, you can group data as follows:

- Group by From Site/To Site, for example from Site X to Site Y
- Subgroup by Contract
- Subggroup by Volume Contract
- Subgroup by volume period (based on Day Contracts)

Sample SQL to Generate

```
select edate.CAL_DATE_STRING,
       coalesce( infr.SITE1_NAME, 'Unspecified') SITE_FROM,
       coalesce( infr.SITE2_NAME, 'Unspecified') SITE_TO,
       vol.CONTRACT_NAME,
       vol.RATE_PLAN_NAME,
       vol.VOLUME_PERIOD,
       sum(vol.FORECAST_VOLUME) over (partition by agg.VOL_KEY,
agg.ENTERPRISE_DATE_KEY) FORECAST_VOLUME,
       sum(agg.TCOUNT) over (partition by agg.VOL_KEY,
agg.ENTERPRISE_DATE_KEY) ACTUAL_VOLUME,
       sum(
         case when agg.TCOUNT < vol.ALLOWANCE_UNDER then
ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
              when agg.TCOUNT > vol.ALLOWANCE_OVER  then
ceiling(agg.TCOUNT-vol.ALLOWANCE_UNDER)
              else 0
          end
       ) over (partition by agg.VOL_KEY, agg.ENTERPRISE_DATE_KEY)
DELTA,
       sum(
        (case when agg.TCOUNT < vol.ALLOWANCE_UNDER
              then ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
else 0
         end) * vol.PENALTY_UNDER/100
        +
        (case when agg.TCOUNT > vol.ALLOWANCE_OVER
              then ceiling(agg.TCOUNT-vol.ALLOWANCE_OVER)
              else 0
         end) * vol.PENALTY_OVER/100
       ) over (partition by agg.VOL_KEY, agg.ENTERPRISE_DATE_KEY)
PAID_PENALTY,
       sum(agg.INFRASTRUCTURE_COST) over (partition by agg.VOL_KEY,
agg.ENTERPRISE_DATE_KEY) INFRASTRUCTURE_COST,
       sum(cast(vol.BASE_RATE as float)/100*agg.TCOUNT) over
(partition by agg.VOL_KEY, agg.ENTERPRISE_DATE_KEY) /*base cost*/ +
       sum(
        (case when agg.TCOUNT < vol.ALLOWANCE_UNDER
              then ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
              else 0
         end) * vol.PENALTY_UNDER/100
        +
        (case when agg.TCOUNT > vol.ALLOWANCE_OVER
              then ceiling(agg.TCOUNT-vol.ALLOWANCE_OVER)
              else 0
         end) * vol.PENALTY_OVER/100
       ) over (partition by agg.VOL_KEY, agg.ENTERPRISE_DATE_KEY)
CONTRACT_COST,
```

```
       sum(agg.INFRASTRUCTURE_COST) over (partition by agg.VOL_KEY,
agg.ENTERPRISE_DATE_KEY) +
       sum(cast(vol.BASE_RATE as float)/100*agg.TCOUNT) over
(partition by agg.VOL_KEY, agg.ENTERPRISE_DATE_KEY) /*base cost*/ +
       sum(
        (case when agg.TCOUNT < vol.ALLOWANCE_UNDER
              then ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
              else 0
         end) * vol.PENALTY_UNDER/100
        +
        (case when agg.TCOUNT > vol.ALLOWANCE_OVER
              then ceiling(agg.TCOUNT-vol.ALLOWANCE_OVER)
              else 0
         end) * vol.PENALTY_OVER/100
        ) over (partition by agg.VOL_KEY, agg.ENTERPRISE_DATE_KEY)
CONTRACT_COST_WITH_INFR,
        vol.CONTRACT_COST/100 PREPAID_COST

FROM (
    select  vold."KEY" VOL_KEY,
            infr."KEY" INFR_KEY,
            vold.ENTERPRISE_DATE_KEY,
            cast(sum(coalesce(infr.COST,0)) as float)/100
INFRASTRUCTURE_COST,
            sum(case when seg2.USER_DATA_12 is null then 0 else 1
end) TCOUNT

    from            CBR_VOLUME_DATE vold
    left outer join INTERACTION_SEGMENT_FACT seg2 on
(seg2.USER_DATA_12 = vold."KEY"
                                                    and
seg2.STD_ENTERPRISE_DATE_KEY = vold.ENTERPRISE_DATE_KEY
                                                    and
seg2.ROUTING_TARGET_KEY not in (select tgt.ROUTING_TARGET_KEY from
ROUTING_TARGET tgt where tgt.ROUTING_TARGET_TYPE_CODE in
('UNSPECIFIED','DEFAULT')))
    left outer join CBR_INFRASTRUCTURE infr on (seg2.USER_DATA_11 =
infr."KEY")

    where vold.ENTERPRISE_DATE_KEY in (select ENTERPRISE_DATE_KEY
from
ENTERPRISE_DATE where CAL_DATE < getdate())

    group by vold."KEY", infr."KEY", vold.ENTERPRISE_DATE_KEY
) agg
inner join CBR_VOLUME vol on (agg.VOL_KEY =  vol."KEY")
inner join ENTERPRISE_DATE edate on (agg.ENTERPRISE_DATE_KEY =
edate.ENTERPRISE_DATE_KEY)
left outer join CBR_INFRASTRUCTURE infr on (agg.INFR_KEY =
infr."KEY")
```

```
order by 1, 4, 6, 2, 3
```

Genesys-Monitored Resource

When the Volume Contract type is used for a Genesys-monitored Resource (Agent, Agent Group, Place, Place Group, DN, ACD, Routing Point), you can report on the following types of data.

For each volume period of each Day Contract, you can report on:

- Forecasted volume for a period.
- Actual volume of the period.
- Volume delta plus or minus. This is the difference between the forecasted volume and the actual volume.
- Penalty paid during the volume period (if any).

> **Note:** Penalty is calculated based on contract attributes in the Configuration Database.

The recommended formula for calculating penalty paid is as follows:

- If the actual volume of the volume period is over the forecasted volume, penalty paid = {[forecast volume*(100% + forecast volume without penalty %)] - actual volume} * Over forecast penalty where Over forecast penalty is $Per Interaction or (forecast volume/ $Base Rate) * (100% + %addition rate for over forecast)
- If the actual volume of the volume period is under the forecast volume, penalty paid = {actual volume - [forecast volume*(100% - forecast volume without penalty%)]} * Under forecast penalty where Under forecast penalty is $Per Interaction or (forecast volume/ $Base Rate) * (100% + %addition rate for under forecast).

> **Note:** Under forecast penalty paid only applies for non-prepaid contract types.

- The Infrastructure cost of routing from a Resource in Site A to a Resource in Site B.
- Base rate for the volume period.
- Total Resource cost of the volume period, which is the base rate and penalty paid for the volume period.
- Total routing plan cost of the volume period, which is the sum of the Infrastructure cost and Resource cost.
- Total prepaid cost associated with the Contract.

Sample SQL to Generate

This is similar to the sample SQL for the previous report (see page 176).

Period Reports

For each Volume Contract, you can create daily, weekly, quarterly, and yearly period reports at the Contract type-level with the following data:

- Forecast volume of the period. This is the sum of what is specified in the volume period.
- Actual volume of the period.
- Volume delta (plus or minus) of the period, which is the difference between the forecasted volume and the actual volume.
- Penalty paid for a period.
- Total Infrastructure cost for a period.
- 'Total Resource cost for a period, which is the sum of base rate and penalty paid.
- Total routing plan cost of the period, which is the sum of the Infrastructure cost and Resource cost.
- Total prepaid cost associated with a contract.

Sample SQL to Generate

```
SELECT vol.CONTRACT_NAME,
       edate.CAL_DATE_STRING,
       sum(vol.FORECAST_VOLUME) FORECAST_VOLUME,
       sum(agg.TCOUNT) ACTUAL_VOLUME,
       sum(
         case when agg.TCOUNT < vol.ALLOWANCE_UNDER then
ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
              when agg.TCOUNT > vol.ALLOWANCE_OVER then
ceiling(agg.TCOUNT-vol.ALLOWANCE_UNDER)
              else 0
          end
       ) DELTA,
       sum(
        (case when agg.TCOUNT < vol.ALLOWANCE_UNDER
              then ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
              else 0
         end) * vol.PENALTY_UNDER/100
        +
        (case when agg.TCOUNT > vol.ALLOWANCE_OVER
              then ceiling(agg.TCOUNT-vol.ALLOWANCE_OVER)
              else 0
         end) * vol.PENALTY_OVER/100
       ) PAID_PENALTY,
```

```
       sum(agg.INFRASTRUCTURE_COST) INFRASTRUCTURE_COST,
       sum(cast(vol.BASE_RATE as float)/100*agg.TCOUNT) /*base
cost*/ +
       sum(
        (case when agg.TCOUNT < vol.ALLOWANCE_UNDER
              then ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
              else 0
         end) * vol.PENALTY_UNDER/100
        +
        (case when agg.TCOUNT > vol.ALLOWANCE_OVER
              then ceiling(agg.TCOUNT-vol.ALLOWANCE_OVER)
              else 0
         end) * vol.PENALTY_OVER/100
       ) CONTRACT_COST,
       sum(agg.INFRASTRUCTURE_COST) +
       sum(cast(vol.BASE_RATE as float)/100*agg.TCOUNT) /*base
cost*/ +
       sum(
        (case when agg.TCOUNT < vol.ALLOWANCE_UNDER
              then ceiling(vol.ALLOWANCE_UNDER-agg.TCOUNT)
              else 0
         end) * vol.PENALTY_UNDER/100
        +
        (case when agg.TCOUNT > vol.ALLOWANCE_OVER
              then ceiling(agg.TCOUNT-vol.ALLOWANCE_OVER)
              else 0
end) * vol.PENALTY_OVER/100
        ) CONTRACT_COST_WITH_INFR,
        min(vol.CONTRACT_COST/100) PREPAID_COST

FROM (
    select  vold."KEY" VOL_KEY,
            vold.ENTERPRISE_DATE_KEY,
            cast(sum(coalesce(infr.COST,0)) as float)/100
INFRASTRUCTURE_COST,
            sum(case when seg2.USER_DATA_12 is null then 0 else 1
end) TCOUNT

    from            CBR_VOLUME_DATE vold
    left outer join INTERACTION_SEGMENT_FACT seg2 on
(seg2.USER_DATA_12 = vold."KEY"
                                                    and
seg2.STD_ENTERPRISE_DATE_KEY = vold.ENTERPRISE_DATE_KEY
                                                    and
seg2.ROUTING_TARGET_KEY not in (select tgt.ROUTING_TARGET_KEY from
ROUTING_TARGET tgt where tgt.ROUTING_TARGET_TYPE_CODE in
('UNSPECIFIED','DEFAULT')))
    left outer join CBR_INFRASTRUCTURE infr on (seg2.USER_DATA_11 =
infr."KEY")

    where vold.ENTERPRISE_DATE_KEY in (select ENTERPRISE_DATE_KEY
```

```
from ENTERPRISE_DATE where CAL_DATE < getdate())

    group by vold."KEY", vold.ENTERPRISE_DATE_KEY
) agg
inner join CBR_VOLUME vol on (agg.VOL_KEY =  vol."KEY")
inner join ENTERPRISE_DATE edate on (agg.ENTERPRISE_DATE_KEY =
edate.ENTERPRISE_DATE_KEY)

group by vol.CONTRACT_NAME, edate.CAL_DATE_STRING
```

Variable Rate Contract Type

When a routing destination uses an Variable Rate Contract as described on page 54, the reporting tool can be used to generate the data listed in the following section.

Contract Based on Agent Hourly Cost

When a monitored Resource is an Agent or Place, the collected data for a Contract using Agent Hourly cost enables you to create a custom report that drills down to more detailed information.

For each Agent (or Place), you can create a report that drills down to (in chronological order):

- Each interaction handled by this Agent/Place.
- For each interaction, the From Site and To Site.
- For each interaction, the Variable Rate Contract name, and the IT Cost Contract name.
- For each interaction, the media type (`voice` or `voip` in 7.6).
- For each interaction, the routing plan cost used. This is the sum of the Infrastructure cost and Resource cost.
- For each interaction, the Infrastructure cost alone.
- For each interaction, the Agent Hourly cost.

Sort the list first by From Site/To Site, then by Cost Contract name, and then by Variable Rate Contract name.

Sample SQL to Generate

```
SELECT  res.RESOURCE_NAME,
        edate.CAL_DATE_STRING,
        seg2.INTERACTION_ID,
        coalesce( infr.SITE1_NAME, 'Unspecified') SITE_FROM,
        coalesce( infr.SITE2_NAME, 'Unspecified') SITE_TO,
        var.CONTRACT_NAME,
        var.RATE_PLAN_NAME,
        id.CUSTOMER_SEGMENT,
```

```
        id.SERVICE_TYPE,
        coalesce(cast(infr.COST as float)/100,0) +
coalesce(cast(var.AGENT_RATE as
float)*seg2.HANDLE_DURATION/3600/100,0) RATE_PLAN_COST,
        coalesce(cast(infr.COST as float)/100,0)
INFRASTRUCTURE_COST,
        coalesce(cast(var.AGENT_RATE as
float)*seg2.HANDLE_DURATION/3600/100,0) VARIABLE_COST

FROM INTERACTION_SEGMENT_FACT seg
inner join INTERACTION_SEGMENT_FACT seg2 on (seg.INTERACTION_ID =
seg2.INTERACTION_ID
                                        and seg.ORDINAL <
seg2.ORDINAL
                                        and seg.GMT_END_TIME <=
seg2.GMT_START_TIME
                                        and
seg2.TECHNICAL_DESCRIPTOR_KEY in (select td.TECHNICAL_DESCRIPTOR_KEY
from TECHNICAL_DESCRIPTOR td where td.RESOURCE_ROLE_CODE =
'ROUTEDTO'))
inner join RESOURCE_ res on (seg2.RESOURCE_KEY = res.RESOURCE_KEY
and res.RESOURCE_TYPE_CODE = 'AGENT')
inner join ENTERPRISE_DATE edate on (seg2.STD_ENTERPRISE_DATE_KEY =
edate.ENTERPRISE_DATE_KEY)
inner join INTERACTION_DESCRIPTOR id on
(id.INTERACTION_DESCRIPTOR_KEY = seg2.INTERACTION_DESCRIPTOR_KEY)
inner join CBR_VARIABLE var  on (seg.USER_DATA_12 = var."KEY" and
var.CONTRACT_TYPE_CODE = 3)
left outer join CBR_INFRASTRUCTURE infr on (seg.USER_DATA_11 =
infr."KEY")

where seg.ROUTING_TARGET_KEY not in (select tgt.ROUTING_TARGET_KEY
from ROUTING_TARGET tgt where tgt.ROUTING_TARGET_TYPE_CODE in
('UNSPECIFIED'))
 and  seg.TECHNICAL_DESCRIPTOR_KEY in (select
td.TECHNICAL_DESCRIPTOR_KEY from TECHNICAL_DESCRIPTOR td where
td.TECHNICAL_RESULT_CODE = 'ROUTED')
 and  seg.MEDIA_TYPE_KEY in (select MEDIA_TYPE_KEY from MEDIA_TYPE
where MEDIA_NAME_CODE = 'VOICE')
order by 1, seg.GMT_START_TIME
```

Agent Group/Place Group Drilldown

For contracts based on an agent hourly cost, you can create a custom report that drills down to more detailed information.

For each Agent Group (or Place Group), you can create reports that drill down to (in chronological order):

- Each interaction handled by this Agent.
- For each interaction, the From Site and To Site.

- For each interaction, the Variable Rate Contract name, and the IT Contract name.
- For each interaction, the media type (`voice` or `voip` in 7.6).
- For each interaction, the routing plan cost. This is the sum of the Infrastructure and Resource cost.
- For each interaction, the Infrastructure cost alone.
- For each interaction, the Agent Hourly Cost used for cost accounting.

Sort the list first by From Site/To Site and then by Cost Contract name, and then by Variable Rate Contract name.

Sample SQL to Generate

This is similar to the previous sample SQL (see page 181) except for one dimension, which is Group instead of Agent/Person.

Period Reports for Agent Hourly Rate

When the monitored Resource is Agent, Place the collected data for a Variable rate IT Contract using Agent Hourly Cost enables period summarization.

Agent/Place Period Reports

For each Agent (or Place), you can create daily, weekly, quarterly, and yearly period reports (up to the point where the contract applies), grouped by From Site and To Site then sub-grouped by Contract type then by media type.

The reports can show:

- Total number of interactions handled by an Agent (or Place) for the period.
- Total routing plan cost for the period, which is the sum of the Infrastructure cost and Resource cost.
- Average routing plan cost per interaction for the period.
- Total Resource cost alone for the period.
- Total Infrastructure cost alone for the period.

Sample SQL to Generate

```
select  res.RESOURCE_NAME,
        ed.CAL_DATE_STRING,
        coalesce( infr.SITE1_NAME, 'Unspecified') SITE_FROM,
        coalesce( infr.SITE2_NAME, 'Unspecified') SITE_TO,
        var.CONTRACT_NAME,
        var.RATE_PLAN_NAME,
        id.CUSTOMER_SEGMENT,
        id.SERVICE_TYPE,
        TCOUNT TOTAL_IXN_NUMBER,
```

```
        coalesce(cast(infr.COST as float)/100*TCOUNT,0)
/*INFRASTRUCTURE_COST*/ +
        coalesce(cast(var.AGENT_RATE as
float)*agg.HANDLE_DURATION/3600/100,0) /*VARIABLE_COST*/
        RPLAN_COST,
        (coalesce(cast(infr.COST as float)*TCOUNT/100,0)
/*INFRASTRUCTURE_COST*/ +
         coalesce(cast(var.AGENT_RATE as
float)*agg.HANDLE_DURATION/3600/100,0) /*VARIABLE_COST*/
        )/TCOUNT AVERAGE_COST,
        coalesce(cast(infr.COST as float)*TCOUNT/100,0)
INFRASTRUCTURE_COST,
        coalesce(cast(var.AGENT_RATE as
float)*agg.HANDLE_DURATION/3600/100,0) VARIABLE_COST

from    (SELECT seg2.INTERACTION_DESCRIPTOR_KEY,
                seg2.STD_ENTERPRISE_DATE_KEY,
                infr."KEY" INFR_KEY,
                var."KEY" VAR_KEY,
                seg2.RESOURCE_KEY,
                sum(seg2.HANDLE_DURATION) HANDLE_DURATION,
                count(*) TCOUNT
        FROM INTERACTION_SEGMENT_FACT seg
        inner join INTERACTION_SEGMENT_FACT seg2 on
(seg.INTERACTION_ID = seg2.INTERACTION_ID
                                                  and seg.ORDINAL <
seg2.ORDINAL
                                                 and seg.GMT_END_TIME
<= seg2.GMT_START_TIME
                                                  and
seg2.TECHNICAL_DESCRIPTOR_KEY in (select td.TECHNICAL_DESCRIPTOR_KEY
from TECHNICAL_DESCRIPTOR td where td.RESOURCE_ROLE_CODE =
'ROUTEDTO'))
        inner join CBR_VARIABLE       var  on (seg.USER_DATA_12 =
var."KEY" and var.CONTRACT_TYPE_CODE = 3) -- make it outer join to
include interactions which had no associated variable rate contract
       left outer join CBR_INFRASTRUCTURE infr on (seg.USER_DATA_11
= infr."KEY")
        where seg.ROUTING_TARGET_KEY not in (select
tgt.ROUTING_TARGET_KEY from ROUTING_TARGET tgt where
tgt.ROUTING_TARGET_TYPE_CODE in ('UNSPECIFIED'))
         and  seg.TECHNICAL_DESCRIPTOR_KEY in (select
td.TECHNICAL_DESCRIPTOR_KEY from TECHNICAL_DESCRIPTOR td where
td.TECHNICAL_RESULT_CODE = 'ROUTED')
         and  seg.MEDIA_TYPE_KEY in (select MEDIA_TYPE_KEY from
MEDIA_TYPE where MEDIA_NAME_CODE = 'VOICE')
        group by seg2.INTERACTION_DESCRIPTOR_KEY,
seg2.STD_ENTERPRISE_DATE_KEY, infr."KEY", var."KEY",
seg2.RESOURCE_KEY
        ) agg
```

```
inner join INTERACTION_DESCRIPTOR id on
(id.INTERACTION_DESCRIPTOR_KEY = agg.INTERACTION_DESCRIPTOR_KEY)
inner join ENTERPRISE_DATE ed on (ed.ENTERPRISE_DATE_KEY =
agg.STD_ENTERPRISE_DATE_KEY)
inner join RESOURCE_ res on (res.RESOURCE_KEY = agg.RESOURCE_KEY and
res.RESOURCE_TYPE_CODE = 'AGENT')
left outer join CBR_INFRASTRUCTURE infr on (agg.INFR_KEY =
infr."KEY")
left outer join CBR_VARIABLE       var  on (agg.VAR_KEY  =
var."KEY" and var.CONTRACT_TYPE_CODE = 3)

order by 1, 2, 3, 4, 5, 6, 7, 8, 9
```

Agent Group/Place Group Period Reports

When the monitored Resource is an Agent Group or Place Group, the collected data for a Variable Rate Contract using an agent hourly cost enables period summarization.

For each Agent Group (or Place Group), you can create hourly, daily, weekly, quarterly, and yearly (or up to the point where the contract period ends) period reports, grouped by From/To Site; subgrouped by Cost Contract and then by Interaction Type.

The reports can show:

- Total number of interactions handled by an Agent Group or Place Group for the period.
- Total routing plan cost for the period.
- Average routing plan cost per interaction for the period.
- Total Resource cost alone.
- Total Infrastructure cost alone.

Sample SQL to Generate

This is similar to the previous sample SQL (see page page 183) except for one dimension, which is Agent Group instead of Agent/Person.

Contract Based on Flat Rate

During custom report creation for a Variable Rate Contract using a flat rate per interaction, you can create interaction-level reports that drill down to more detailed information.

Based on the strategy, each interaction has a routing target. This can be an Agent, Agent Group, Place, Place Group, a DN such as ACD or Routing Point, or a non-monitored DN.

You can create reports that drill down as follows:

- For each interaction, the From Site and To Site.

- For each interaction, the Contract name, Variable Rate Contract Name, and media type.
- For each interaction, the routing plan cost, which is the sum of the Infrastructure and Resource cost.
- For each interaction, the Infrastructure cost alone.
- For each interaction, the flat rate per interaction cost alone.

You can sort by From Site and To Site, then by Cost Contract type, and then by IT Contract.

Sample SQL to Generate

```
SELECT edate.CAL_DATE_STRING,
        seg.INTERACTION_ID,
        tgt.ROUTING_TARGET_TYPE,
        coalesce( infr.SITE1_NAME, 'Unspecified') SITE_FROM,
        coalesce( infr.SITE2_NAME, 'Unspecified') SITE_TO,
        var.CONTRACT_NAME,
        var.RATE_PLAN_NAME,
        id.CUSTOMER_SEGMENT,
        id.SERVICE_TYPE,
        coalesce(cast(infr.COST as float)/100,0) +
coalesce(cast(var.FLAT_RATE as float)/100,0) RATE_PLAN_COST,
        coalesce(cast(infr.COST as float)/100,0)
INFRASTRUCTURE_COST,
        coalesce(cast(var.FLAT_RATE as float)/100,0) VARIABLE_COST

FROM       INTERACTION_SEGMENT_FACT seg
inner join INTERACTION_SEGMENT_FACT seg2 on (seg.INTERACTION_ID =
seg2.INTERACTION_ID
                                        and seg.ORDINAL <
seg2.ORDINAL
                                        and seg.GMT_END_TIME <=
seg2.GMT_START_TIME
                                        and
seg2.TECHNICAL_DESCRIPTOR_KEY in (select td.TECHNICAL_DESCRIPTOR_KEY
from TECHNICAL_DESCRIPTOR td where td.RESOURCE_ROLE_CODE =
'ROUTEDTO'))
inner join ENTERPRISE_DATE edate on (seg.STD_ENTERPRISE_DATE_KEY =
edate.ENTERPRISE_DATE_KEY)
inner join ROUTING_TARGET tgt on (seg.ROUTING_TARGET_KEY =
tgt.ROUTING_TARGET_KEY and tgt.ROUTING_TARGET_TYPE_CODE not in
('UNSPECIFIED'))
inner join INTERACTION_DESCRIPTOR id on
(id.INTERACTION_DESCRIPTOR_KEY = seg.INTERACTION_DESCRIPTOR_KEY)
inner join CBR_VARIABLE var  on (seg.USER_DATA_12 = var."KEY" and
var.CONTRACT_TYPE_CODE = 2)
left outer join CBR_INFRASTRUCTURE infr on (seg.USER_DATA_11 =
infr."KEY")
```

```
where seg.ROUTING_TARGET_KEY not in (select tgt.ROUTING_TARGET_KEY
from ROUTING_TARGET tgt where tgt.ROUTING_TARGET_TYPE_CODE in
('UNSPECIFIED'))
 and  seg.TECHNICAL_DESCRIPTOR_KEY in (select
td.TECHNICAL_DESCRIPTOR_KEY from TECHNICAL_DESCRIPTOR td where
td.TECHNICAL_RESULT_CODE = 'ROUTED')
 and  seg.MEDIA_TYPE_KEY in (select MEDIA_TYPE_KEY from MEDIA_TYPE
where
MEDIA_NAME_CODE = 'VOICE')

order by 1, seg2.GMT_START_TIME
```

Period Reports for Flat Rate Contract

When Variable Rate Contract with flat rate per interaction is used, the collected data enables period summarization.

For each media type, you can create hourly, daily, weekly, quarterly, and yearly (up to the point where the contract period ends) period reports grouped by From Site and To Site, and then subgrouped by Cost Contract name and then by IT Contract name.

The reports can show:

- Total number of interactions handled for the period
- Total routing plan cost for the period, which is the sum of the Infrastructure and Resource cost.
- Average routing plan cost per interaction for the period.
- Total Resource cost alone.
- Total Infrastructure cost alone.

You can configure Genesys Info Mart to create Interaction Segment/Routing Point information for reports using:

- Interaction ID
- Custom keys (sourced from UserData):
- Cost Contract\IT Contract\Stat Day\Volume Period
- From Site\To Site
- Cost per interaction for Variable Rate Contracts

Sample SQL to Generate

```
select ed.CAL_DATE_STRING,
        id.CUSTOMER_SEGMENT,
        id.SERVICE_TYPE,
        coalesce( infr.SITE1_NAME, 'Unspecified') SITE_FROM,
        coalesce( infr.SITE2_NAME, 'Unspecified') SITE_TO,
        var.CONTRACT_NAME,
        var.RATE_PLAN_NAME,
        TCOUNT TOTAL_IXN_NUMBER,
```

```
        coalesce(cast(infr.COST as float)*TCOUNT/100,0)
/*INFRASTRUCTURE_COST*/ +
        coalesce(cast(var.FLAT_RATE as float)*TCOUNT/100,0)
/*VARIABLE_COST*/
        RPLAN_COST,
        (coalesce(cast(infr.COST as float)/100,0)
/*INFRASTRUCTURE_COST*/ +
         coalesce(cast(var.FLAT_RATE as float)/100,0)
/*VARIABLE_COST*/
        ) AVERAGE_COST,
        coalesce(cast(infr.COST as float)*TCOUNT/100,0)
INFRASTRUCTURE_COST,
        coalesce(cast(var.FLAT_RATE as float)*TCOUNT/100,0)
VARIABLE_COST

from    (SELECT seg2.MEDIA_TYPE_KEY,
                seg2.INTERACTION_DESCRIPTOR_KEY,
                seg2.STD_ENTERPRISE_DATE_KEY,
                infr."KEY" INFR_KEY,
                var."KEY" VAR_KEY,
                count(*) TCOUNT
        FROM INTERACTION_SEGMENT_FACT seg
        inner join INTERACTION_SEGMENT_FACT seg2 on
(seg.INTERACTION_ID = seg2.INTERACTION_ID
                                                  and seg.ORDINAL <
seg2.ORDINAL
                                                 and seg.GMT_END_TIME
<= seg2.GMT_START_TIME
                                                  and
seg2.TECHNICAL_DESCRIPTOR_KEY in (select td.TECHNICAL_DESCRIPTOR_KEY
from TECHNICAL_DESCRIPTOR td where td.RESOURCE_ROLE_CODE =
'ROUTEDTO'))
        inner join CBR_VARIABLE       var  on (seg.USER_DATA_12 =
var."KEY" and var.CONTRACT_TYPE_CODE = 2) -- make it outer join to
include interactions which had no associated variable rate contract
       left outer join CBR_INFRASTRUCTURE infr on (seg.USER_DATA_11
= infr."KEY")
        where seg.ROUTING_TARGET_KEY not in (select
tgt.ROUTING_TARGET_KEY from
ROUTING_TARGET tgt where tgt.ROUTING_TARGET_TYPE_CODE in
('UNSPECIFIED'))
         and  seg.TECHNICAL_DESCRIPTOR_KEY in (select
td.TECHNICAL_DESCRIPTOR_KEY from TECHNICAL_DESCRIPTOR td where
td.TECHNICAL_RESULT_CODE = 'ROUTED')
         and  seg.MEDIA_TYPE_KEY in (select MEDIA_TYPE_KEY from
MEDIA_TYPE mt where mt.MEDIA_TYPE_KEY = seg.MEDIA_TYPE_KEY)
        group by seg2.MEDIA_TYPE_KEY,
seg2.INTERACTION_DESCRIPTOR_KEY, seg2.STD_ENTERPRISE_DATE_KEY,
infr."KEY", var."KEY"
        ) agg
```

```
inner join INTERACTION_DESCRIPTOR id on
(id.INTERACTION_DESCRIPTOR_KEY = agg.INTERACTION_DESCRIPTOR_KEY)
inner join ENTERPRISE_DATE ed on (ed.ENTERPRISE_DATE_KEY =
agg.STD_ENTERPRISE_DATE_KEY)
left outer join CBR_INFRASTRUCTURE infr on (agg.INFR_KEY =
infr."KEY")
left outer join CBR_VARIABLE       var  on (agg.VAR_KEY  =
var."KEY")

order by 1, 2, 3, 4, 5, 6, 7, 8
```

CBR Reporting Limitations

In addition to the limitations listed on page 32, the 7.6 release of CBR has following reporting limitations:

- If default routing occurs, such as when the Switch handles an interaction instead of URS routing, attached data (such as reporting data) can become outdated. This occurs for all types of reporting based on interaction attached data, not just cost-based data. For this reason, Genesys recommends that you work with Professional Services to handle this situation for the purpose of reporting. You may wish to set the URS option `default-destination` to a value that Genesys can monitor.
- In multi-tenant deployment, if a reporting application is designed in accordance with the Genesys Interaction Management data model, some limitations may occur. Limitations may also occur when an interaction is propagated to several routing strategies. Consult your Genesys Representative for the details.
- In order to automatically attach reporting information to a call (option `report_targets=true`), URS requires that a call specify both the `CustomerSegment` and `ServiceType` attributes. If one of these attributes is not specified, URS treats the call as not fully classified, and it reports the default `CustomerSegment` and `ServiceType`.
- When the Average Handling Time statistic is not opened, URS does not attach the agent hourly rate data to interactions.

Example Report Formats

This section shows types of cost-based routing reports that can be created using Info Mart data.

Contract Based on a Flat Rate

Flat Rate Contract Report.
For the Day of: 19 September 2006

					Routing Cost Plan Used	Flat Rate /Interaction	Infrastruct-ure Cost
From Site	To Site						
San Fran.	Dallas						
	Contract A Name						
		IT contract Name (or actual list of service type, customer segment, media type)	IT Type				
			ConnID	Routing Target 1			
			ConnID	Routing Target 2			
		Sub Total					

Contract Based on an Agent Hourly Rate

Agent Hourly Cost Contract Report.

For the Day of: 19 September 2006

Agent 1						Routing Cost (infrastructure cost + contract cost of Interaction)	Agent Hourly Cost	Infrastructure Cost
	From Site	To Site						
	San Fran.	Dallas						
		Contract A Name						
			IT contract Name (or actual list of service type, customer segment, media type)	IT Type				
					ConnID			
					ConnID			
				Sub Total				

Contract Based on Volume

Volume Period Report.

For the Day of: 19 September 2006

				Forecast Volume	Actual Volume	Penalty Paid of vol period	Total infrast. Cost paid in volume period	Base Rate	Total Contract Cost	Total Routing Plan Cost	Total Prepaid
From Site	**To Site**										
San Fran.	Dallas										
	Contract A Name										
		IT contract Name (or actual list of service type, customer segment, media type)									
			Vol. Period 1	10000	5000						
			Vol. Period 2								
Sub Total											
		IT contract Name (or actual list of service type, customer segment, media type)									
			Vol. Period 1	10000	5000						
			Vol. Period 2								
Sub total											

Appendix

B Sample Strategies

There are two methods to activate a cost-based routing (CBR) solution:

1. "Method #1: TargetSelectionTuning" in a Function object (see page 195).
2. "Method #2: RStatCost" in a strategy Selection object (see page 210).

The information in this appendix is divided among the following topics:

Sample Strategies

Universal Routing 7.6 provides the sample strategies described in the chapter on manually configuring routing in the *Universal Routing 7.6 Deployment Guide*. This chapter describes two of the sample strategies:

- `cbr_enabled_sample`
- `costbasedrouting_sample`

Both of these sample strategies demonstrate cost-based routing between DNs. You can use either of the strategies in a configuration environment that defines both Infrastructure cost (see page 35) and Resource cost (see page 43). The Cost Contracts can include Interaction Types (see page 46) that have associated IT Contracts (see page 52) that specify either Volume Contracts (see page 56) or Variable Rate Contracts (flat rate or agent hourly as described on page 54).

The two samples described in this section assume that you have already defined the required Sites, Cost Contracts, and IT Contracts. The samples cannot provide the required Configuration Database objects since these objects will be specific to your particular environment.

For example, note the Routing Selection object used in `cbr_enabled_sample`, as shown in Figure 120 on page 200. In this case, the samples assume that each

`Destination Label DN` is associated with both a `Cost Contract` object and a `Site` object.

Figure 114 shows an example properties dialog box for a `Network Destination DN` that has an associated Cost Contract and Site.

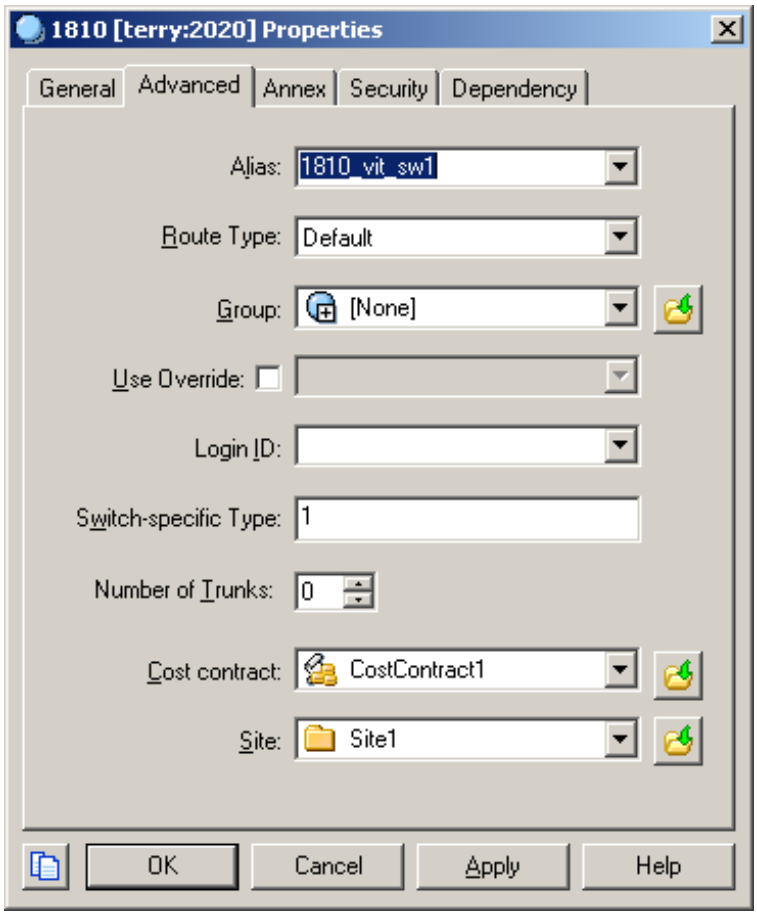


Figure 114: Network Destination DN With Associated Cost Contract and Site

When evaluating a target and considering cost:

- Universal Contact Server (URS) uses the Cost Contract specified in the `Cost contract` field (see Figure 114) to calculate the Resource cost. Within the Cost Contract, it gets the IT Contract for the Interaction Type (see Figure 4 on page 28), which can specify a Volume Contract or a Variable Rate Contract -based (the strategy sample works for both types).
- To calculate the Infrastructure cost, URS uses the Transfer cost (see Figure 11 on page 39) to route to the destination specified in the `Site` field in Figure 114.

Method #1: TargetSelectionTuning

Function TargetSelectionTuning enables you to activate CBR without the need to modify existing strategies (other than by adding a Function object that sets TargetSelectionTuning to `true` for routing targets). This function works together with regular statistics-based target selection.

Sample CBR Strategy #1

Figure 115 shows the `costbasedrouting_sample` strategy supplied by Universal Routing 7.6. It uses three Function objects, each specifying TargetSelectionTuning as `true`.

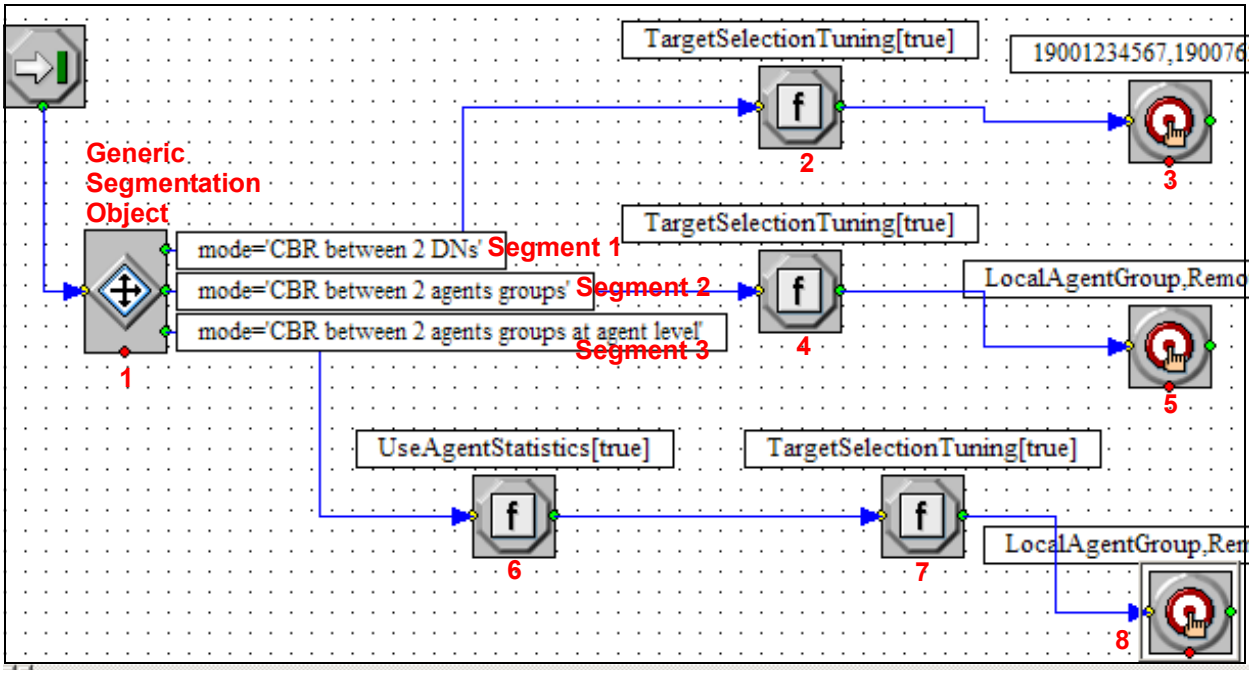


Figure 115: Strategy costbasedrouting_sample

When TargetSelectionTuning is set to `true`, URS selects the target with the minimum cost.

- If a target has no associated Infrastructure cost, URS considers that cost to be 0 (zero).
- If a target has no associated Cost Contract, URS considers Resource cost to be 0 (zero).

If more then one target happens to have the minimum cost, URS performs normal statistics-based selection on this subset of targets. You specify the selected statistic (to be applied in addition to URS's `RStatCost` statistic) on the `Target Selection` tab of the Routing Selection object (see Figure 124 on page 204).

Note: See the *Universal Routing 7.6 Deployment Guide* for instructions on obtaining the sample strategies.

Processing Flow

Note: The numbers in each of the subheadings that follow are keyed to the strategy in Figure 115 on page 195.

Segment 1

The information in this section is grouped by segment. Each segment corresponds to one of the interaction paths coming out the right side of the Generic Segmentation object shown in Figure 115 on page 195.

1. Generic Segmentation Object

After the Entry object, the first object in the strategy shown in Figure 115 on page 195 is a Generic Segmentation object. This object causes interactions to take different paths in the strategy based on the value of a variable called `mode`.

You can verify that `mode` is a predefined variable by clicking the `X=` icon on the `Routing Design` window toolbar. The `Variable list` dialog box opens showing that `mode` is defined as a variable (see Figure 116).

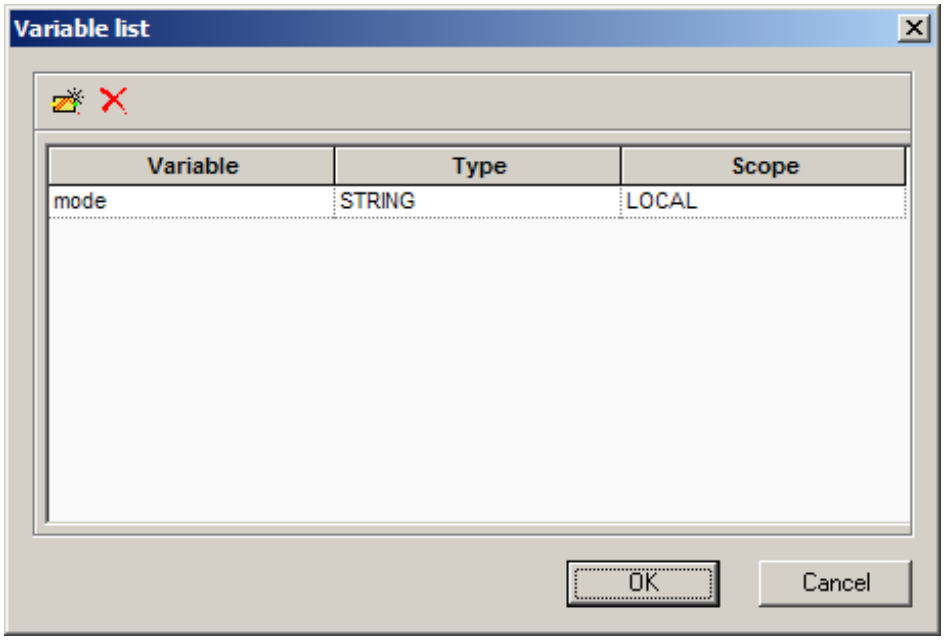


Figure 116: Variable List Dialog Box

Note: Using `mode` in the sample strategy demonstrates that incoming interactions can be segmented to take different paths based on the value of a variable. In this case, the content of the variable reflects the type of CBR being demonstrated.

Figure 117 shows the properties dialog box for the Generic Segmentation object (object 1 in Figure 115 on page 195) as well as the `Expression Builder` dialog box used to build Segment 1.

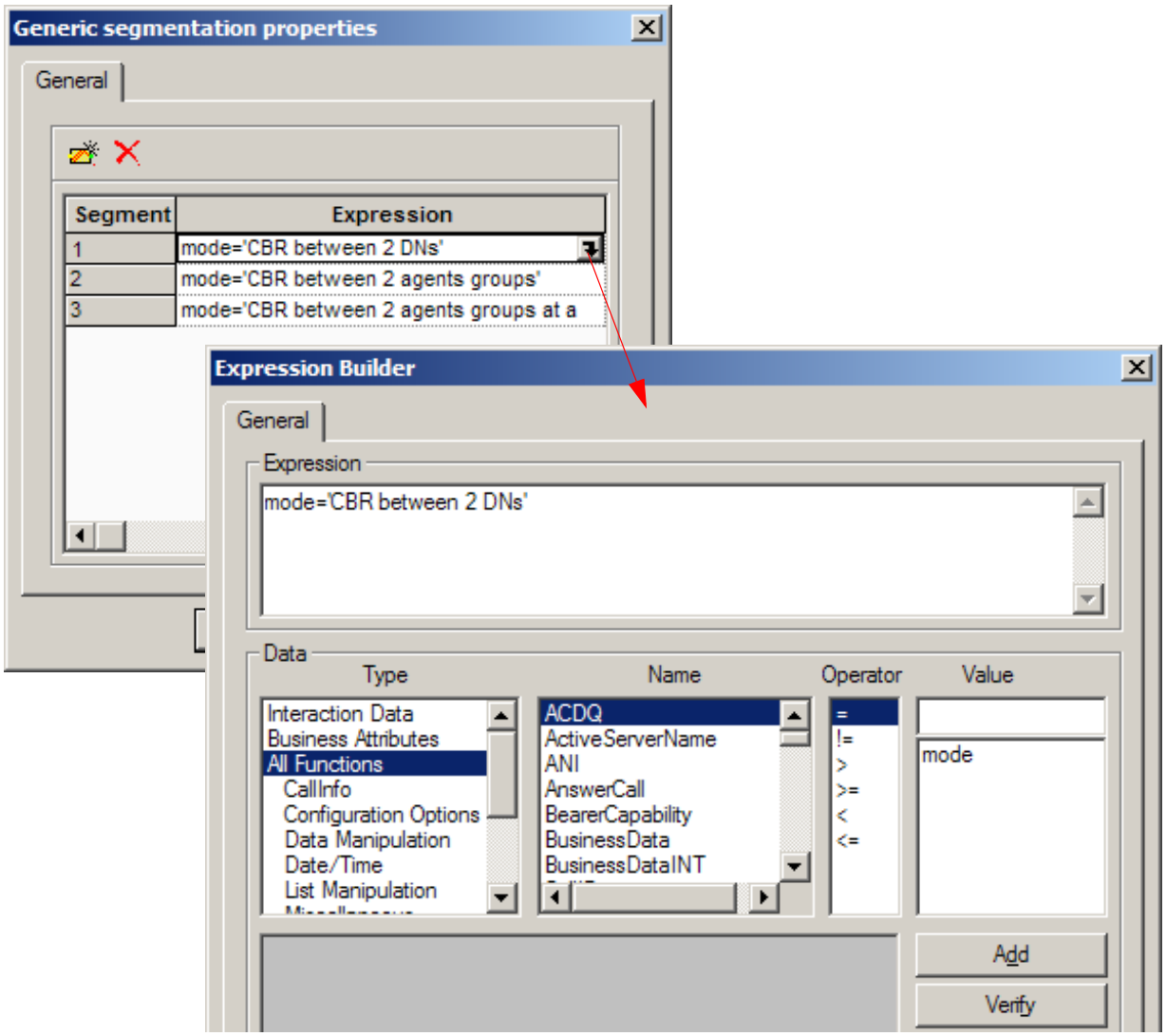


Figure 117: Generic Segmentation 1 and Expression Builder Dialog Boxes

Note: Note that `ACDQ` is highlighted in Figure 117. This is because when the `Expression Builder` dialog box first opens, `All Functions` is selected and `ACDQ` just happens to be the first function listed. The sample strategy does not use the this function.

Each segment in the Generic Segmentation object shown in Figure 115 on page 195 demonstrates a slightly different type of cost-based routing.

- The first segment, `mode='CBR between 2 DNs'` demonstrates cost-based routing where URS must choose the least expensive of two DNs. As described in "Site and Cost Contract Associations" on page 31, you can assign `Cost Contract` objects to certain types of DNs, such as a Routing Point DN (see Figure 118).

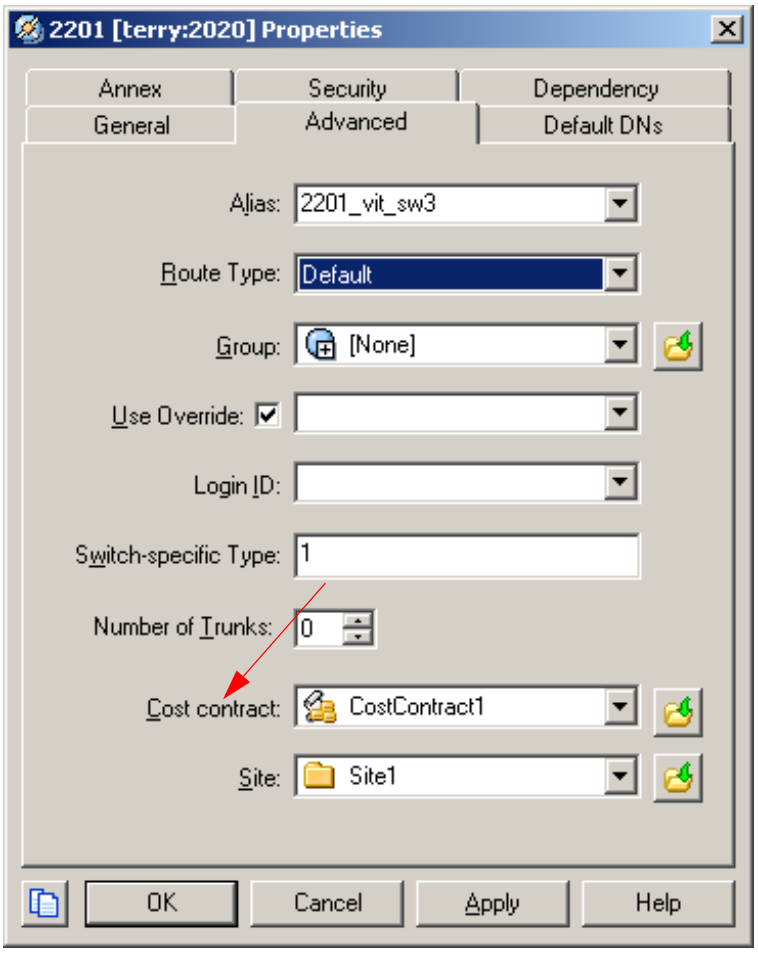


Figure 118: Example Properties Dialog Box for a Switch DN

- The second segment, `mode='CBR between 2 agent groups'` demonstrates cost-based routing where URS must choose the least expensive Agent Group. As described in "Site and Cost Contract Associations" on page 31, you can assign `Cost Contract` objects to agents (`Person` objects) (see Figure 7 on page 31) and `Agent Group` objects.
- The third segment, `mode='CBR between 2 agent groups at agent level'` demonstrates cost-based routing where URS must choose the least expensive agent within all `Agent Group` objects used.

2. Function Object

The top port in the Generic Segmentation object shown in Figure 115 on page 195 (`mode='CBR between 2 DNs'`) connects to a Function object. Figure 119 shows the properties dialog box for this object.

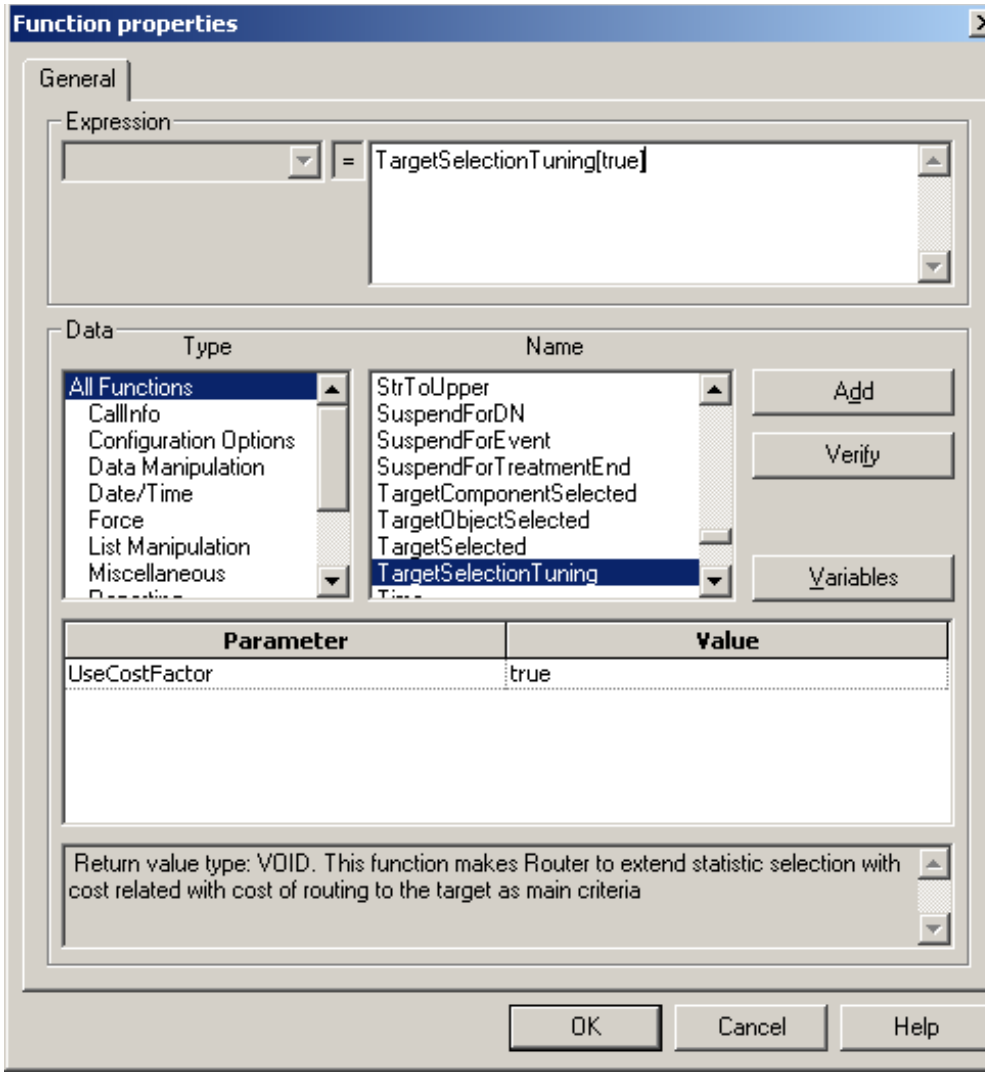


Figure 119: Function Object 2 Properties Dialog Box

The Function object (2) is placed before the Routing Selection object (3) in the strategy shown in Figure 115 on page 195. With TargetSelectionTuning is set to `true`, this placement tells URS to consider as additional selection criteria any cost information that is associated with targets specified in the Routing Selection object.

3. Routing Selection Object

The side port of the Function object (2) shown in Figure 115 on page 195 connects to a Routing Selection object (3). Figure 120 shows the `Target Selection` tab of the properties dialog box for this object (the `General` and `Busy` tabs in the sample are empty).

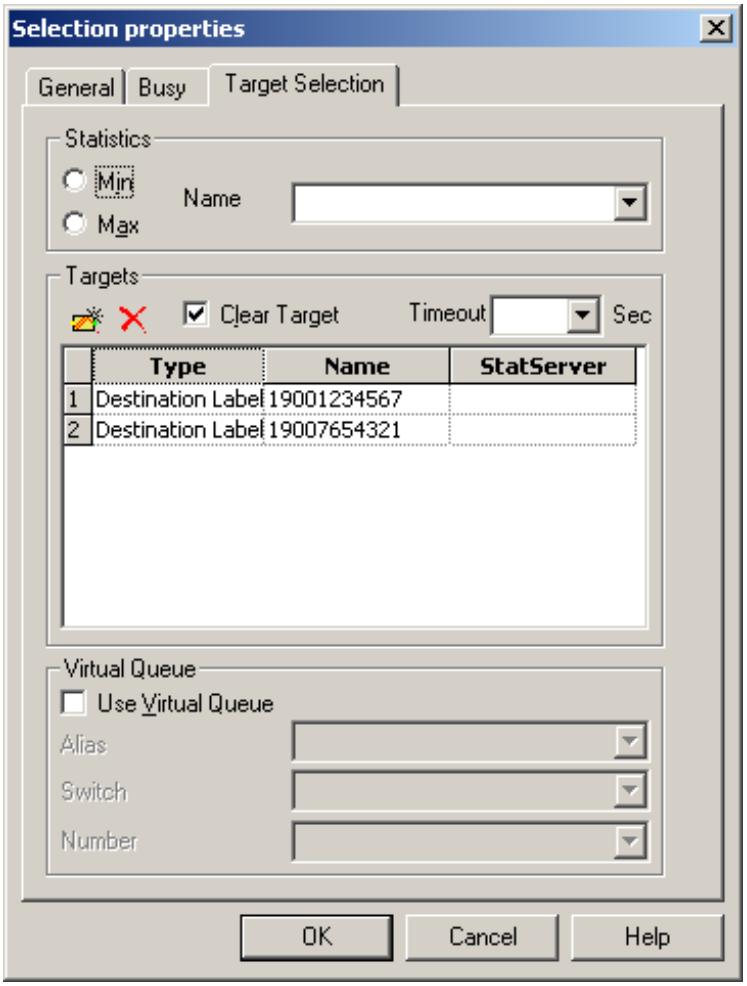


Figure 120: Routing Selection Object 3 Properties Dialog Box

Note: The sample in Figure 120 does not specify a timeout value for the `Timeout` field, which means URS will use a timeout of 0 (zero). Normally you will always want to specify a non-zero timeout period, which specifies the number of seconds that URS is given to make a routing decision.

In Figure 120, note that `Destination Label` is selected under `Type`. `Destination Label` is another type of DN that can have an associated Cost Contract. Figure 121 shows an example properties dialog box for a DN of type `Destination Label`.

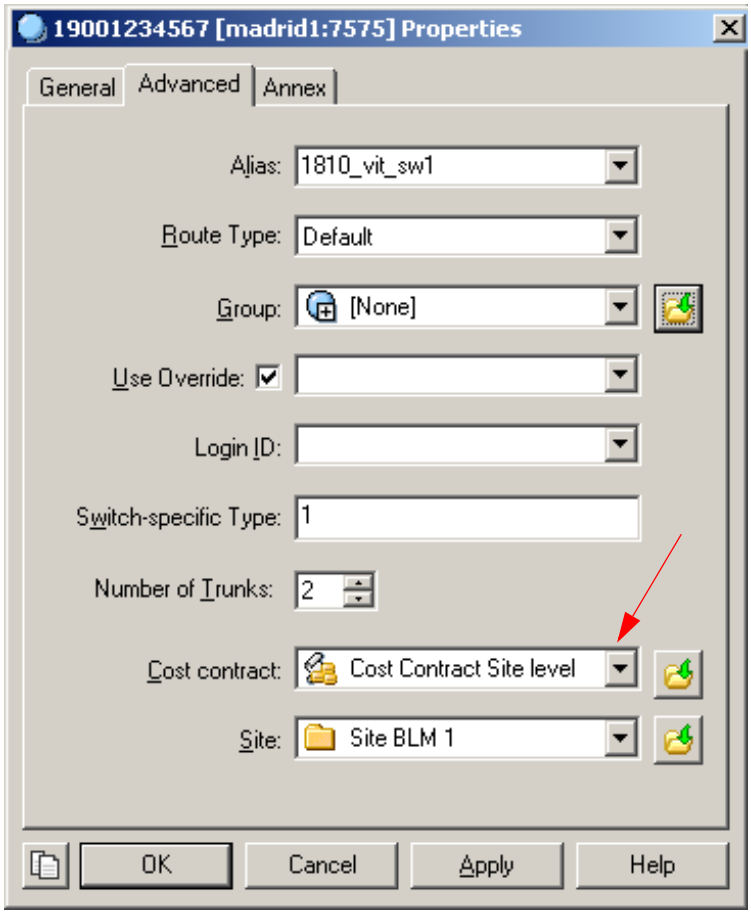


Figure 121: Example Destination Label DN Properties Dialog Box

A `Destination Label` target type is defined on a Network Switch, and it is controlled by Network T-Servers. It enables interactions to be routed to a remote destination.

Note: For more on this target type, see the section on statistical objects in Chapter 2 of the *Universal Routing 7.6 Reference Manual*.

Segment 1 Summary

When URS executes the Segment 1 in the strategy shown in Figure 115 on page 195, the Function object (see Figure 119 on page 199) turns on cost-based routing for the targets specified in the Routing Selection object (see Figure 121 on page 201). *This causes URS to consider cost as additional selection criteria.*

Segment 2

Segment 2 in the strategy shown in Figure 115 on page 195 is similar to Segment 1.

4. Function Object

The Function properties dialog box is the same as that shown in Figure 119 on page 199.

5. Routing Selection Object

In Segment 1, the target objects are DNs of type `Destination Label`. In the Routing Selection object (5) in Segment 2, the targets are `Agent Groups` (see Figure 122).

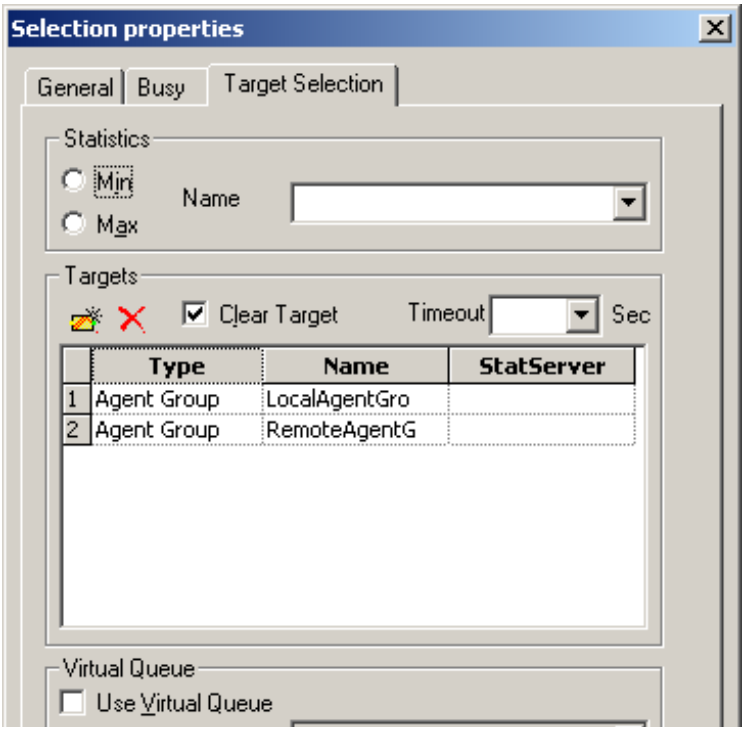


Figure 122: Routing Selection Object 5 Properties Dialog Box

Segment 2 Summary

Similar to Segment 1, the Function object (4) is placed before the Routing Selection object (5) in the strategy shown in Figure 115 on page 195. This placement tells URS to consider as additional selection criteria any cost information that is associated with targets specified in the Routing Selection object.

Segment 3

Segment 3 (`mode='CBR between 2 agents groups'`) in the strategy shown in Figure 115 on page 195 is almost the same Segment 2. The difference is that there are two Function objects before the Routing Selection object instead of one.

6. Function Object

Figure 123 shows the properties dialog box for Function object 6 in Figure 115 on page 195, which specifies a value of `true` for function UseAgentStatistics.

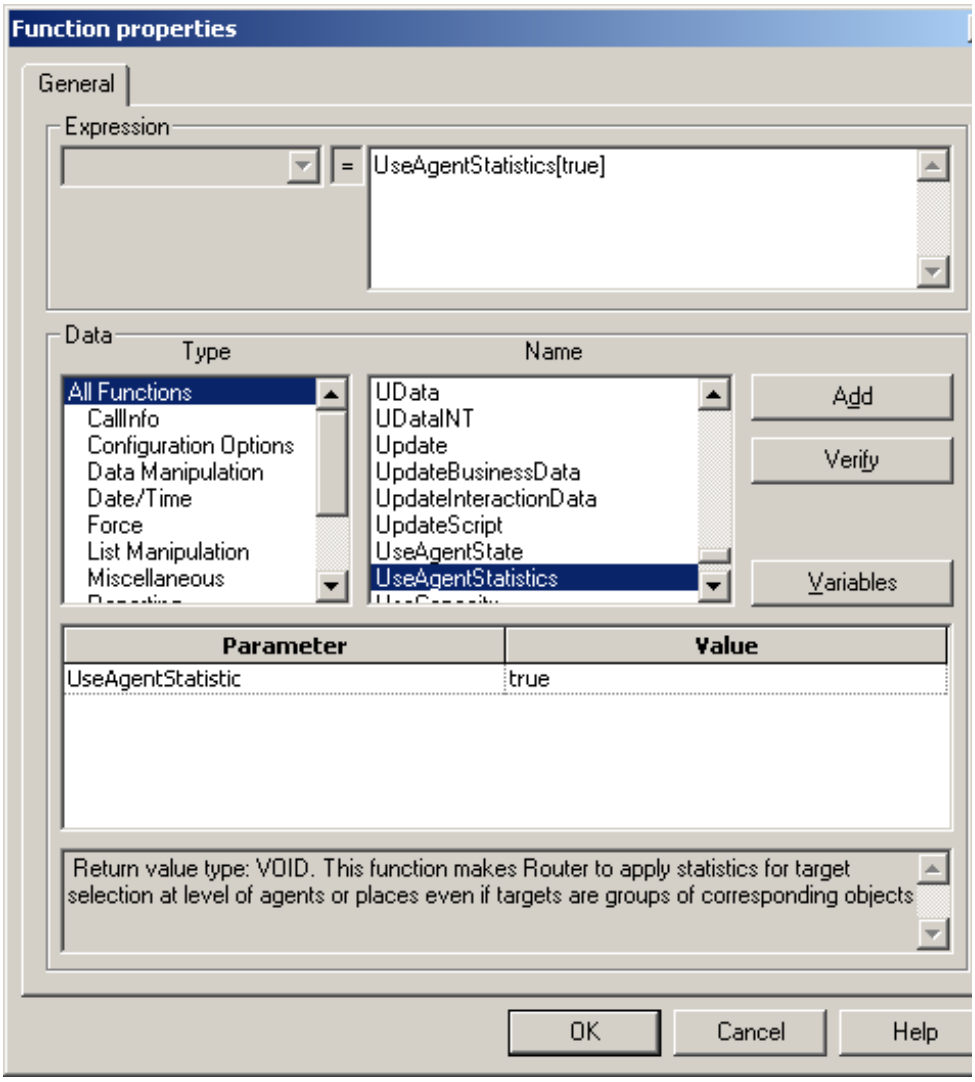


Figure 123: Function Object 6 Properties Dialog Box

Setting UseAgentStatistics to `true` causes URS to apply the statistic for target selection at the level of individual Agents (`Persons`) or Places, even if targets are groups of corresponding objects, such as `Agent Groups` or `Place Groups`.

7. Function Object

The properties dialog box for the Function object (7 in Figure 115 on page 195) is the same as that used in Segment 1 (see Figure 119 on page 199).

8. Routing Selection Object

Figure 124 shows the `Target Selection` tab of the properties dialog box for the Routing Selection object (object 8 in Figure 115 on page 195).

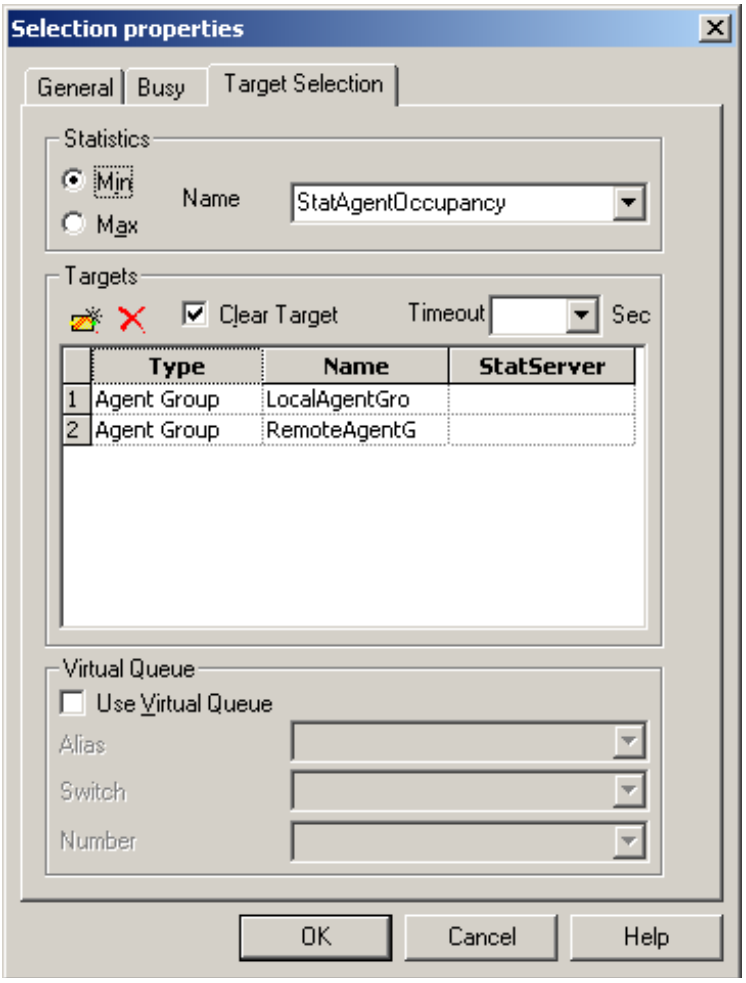


Figure 124: Routing Selection Object 8

In Figure 124, note that statistic `StatAgentOccupancy` is selected.

> Statistic `StatAgentOccupancy` enables URS to route interactions to the least occupied agent, which is the agent with the lowest *occupancy rate* (the ratio between the time the agent has been busy since his or her last login and the agent's total login time). It also enables URS to evaluate multiple available agents and select the least occupied agent so that the workload among available agents is balanced.

As stated in "6. Function Object" on page 203, `StatAgentOccupancy` will be applied at the level of individual agents as a result of function UseAgentStatistics. As a result, if more than one target is available, URS performs normal statistic-based selection (in this case, using `StatAgentOccupancy`) in addition to cost-based selection.

Sample CBR Strategy #2

Figure 125 shows the `cbr_enabled_sample` strategy supplied by Universal Routing.

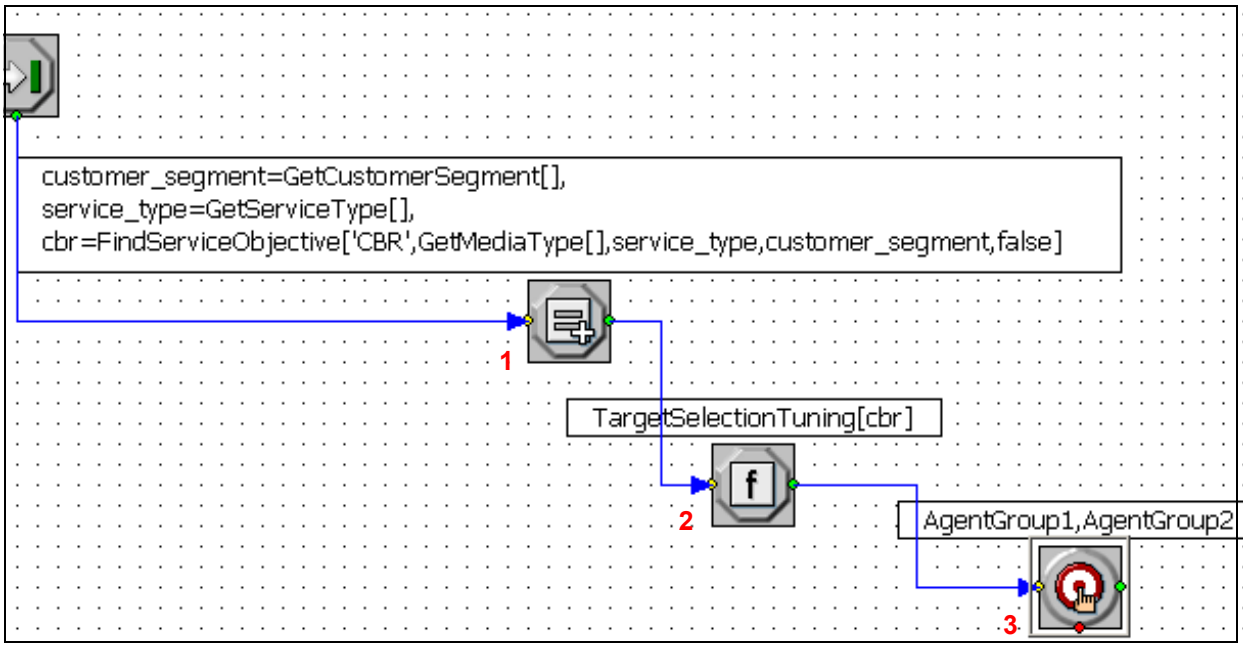


Figure 125: Strategy cbr_enabled_sample

Like the `costbasedrouting_sample` strategy (see Figure 115 on page 195), it also uses the TargetSelectionTuning function, but in a slightly different fashion

Processing Flow

Note: The numbers in each of the subheadings that follow are keyed to the strategy in Figure 125.

The `cbr_enabled_sample` strategy uses the following variables:

- `cbr`
- `customer_segment`
- `service_type`

These were previously defined in the `Variable list` dialog box, which opens by click the `X=` icon in the `Routing Design` window (see Figure 126).

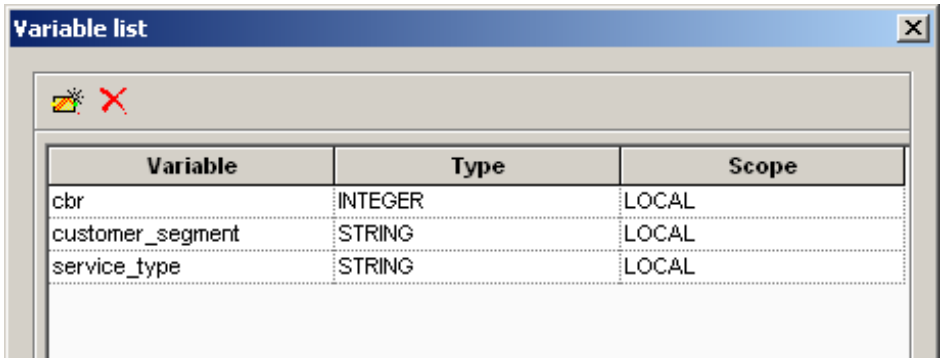


Figure 126: Variable List Dialog Box

1. MultiAssign Object

After the Entry object, the first object shown in the strategy in Figure 125 is a Multi Assign object where you assign values to the three variables (see Figure 127).

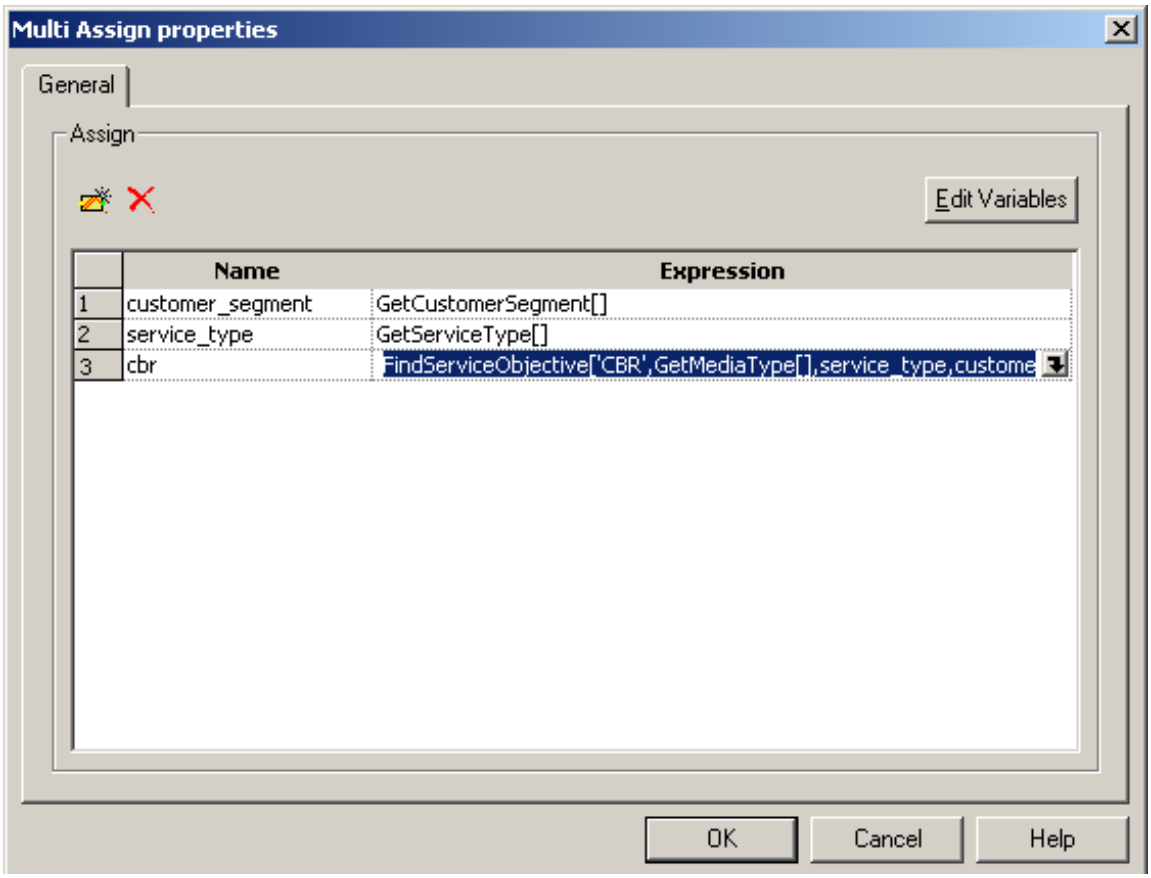


Figure 127: Multi Assign Object Properties Dialog Box

The `customer_segment` and `service_type` variables will contain output from the GetCustomerSegment and GetServiceType functions respectively. As

described in the *Universal Routing 7.6 Reference Manual*, these functions (which do not have parameters) get the Customer Segment and Service Type from interactions (see Table 5 on page 47).

Figure 128 shows the `Assign Properties` dialog box where the content of the cbr_variable is defined (to open this dialog box, click the downward-pointing arrow under `Expression` in Figure 127 on page 206).

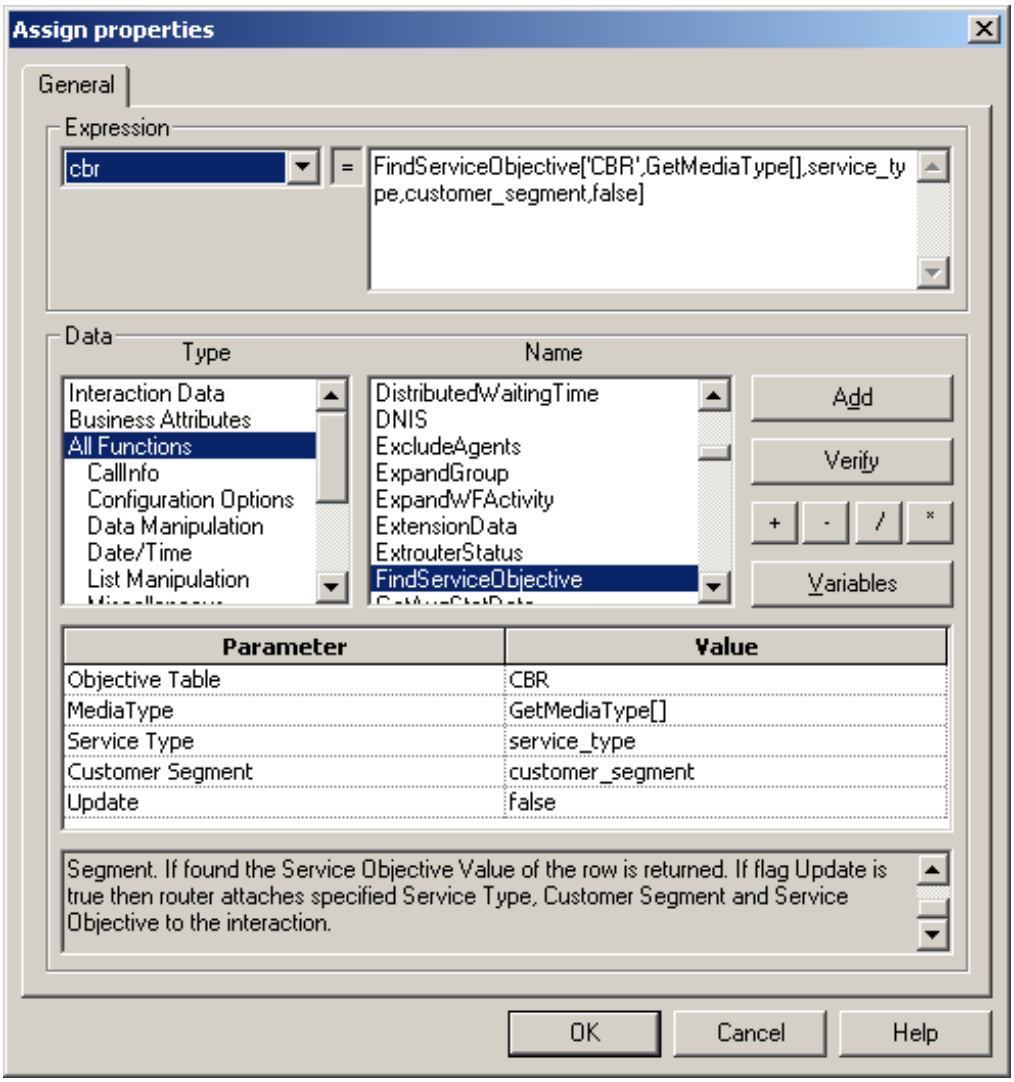


Figure 128: Assign Properties Dialog Box

The `cbr` variable will contain the output from the FindServiceObjective function. In this example, the function:

1. Checks an `Objective Table object` named `CBR`, which holds `Cost Contract` information (see "Creating a Cost Contract Object" on page 44).

2. Finds a Service Objective for a given combination of Customer Segment (obtained from the `customer_segment` variable), Service Type (obtained from the `customer_segment` variable), and Media Type (obtained from the function GetMediaType).
3. Instructs URS not to attach the Service Objective to the interaction because the `Update` parameter set to `false`.
4. The expression shown in Figure 128 on page 207 does not disable or enable CBR by itself. It simply returns the Service Objective for a given combination of Customer Segment, Service Type and Media Type. The corresponding field of the `Objective Table` named `CBR` (see page 207) must be set to one of the following:
   - `1` to have CBR activated for this interaction type.
   - `0` to have CBR de-activated off.

If the search is successful, the interaction goes out the green port to a Function object.

2. Function Object

The second object in the strategy shown in Figure 125 on page 205 is a Function object. Figure 129 shows the properties dialog box of this object.

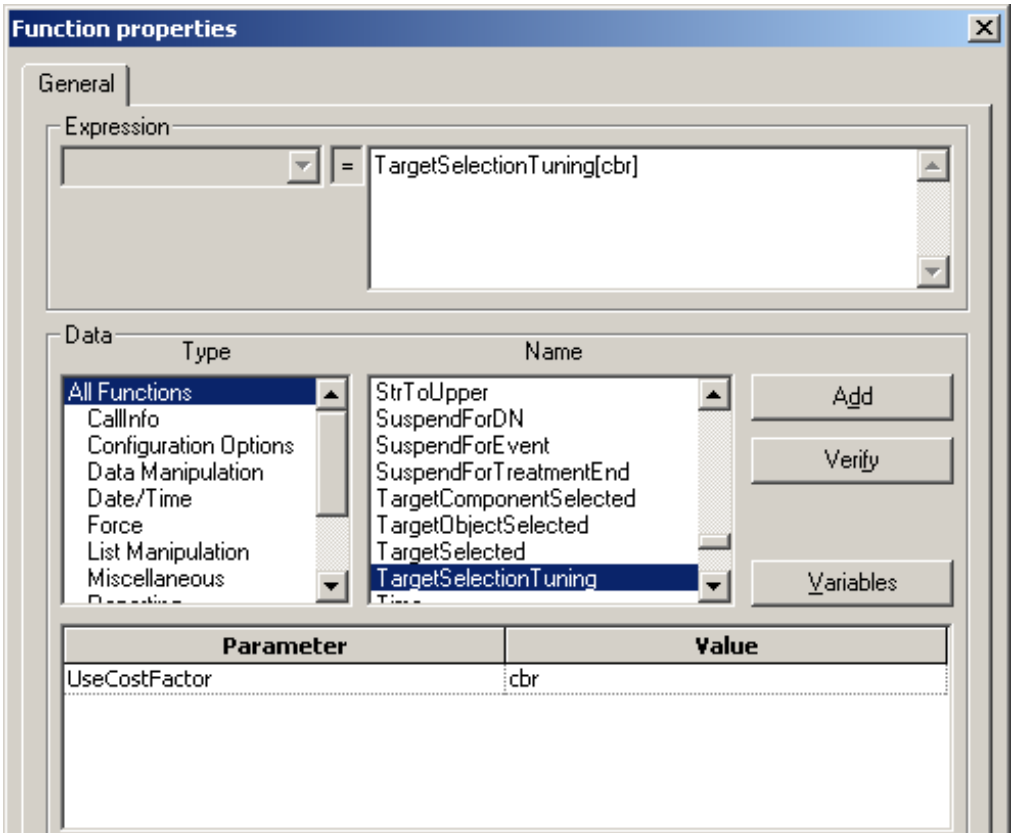


Figure 129: Function Object with TargetSelectionTuning

In this example, the value of the `UseCostFactor` parameter (`1` or `0`) is contained in the variable `cbr`. Function TargetSelectionTuning switches CBR on or off depending on value of this variable.

- If the value is `1`, CBR is activated for the current interaction. The interaction goes out the green port to a Selection object.
- If the value is `0`, CBR is deactivated.

3. Routing Selection Object

The third object in the strategy shown in Figure 125 on page 205 is a Routing Selection object.

As in the `costbasedrouting_sample` strategy (see Figure 115 on page 195), the placement of a Function object specifying TargetSelectionTuning before the Routing Selection object tells URS to consider as additional selection criteria any cost information associated with the specified targets.

Figure 130 shows the `Target Selection` tab of the Routing Selection object with the `Name` drop-down list expanded to show the statistics (both regular and pseudo) that are available for selection (see Figure 130 on page 209).

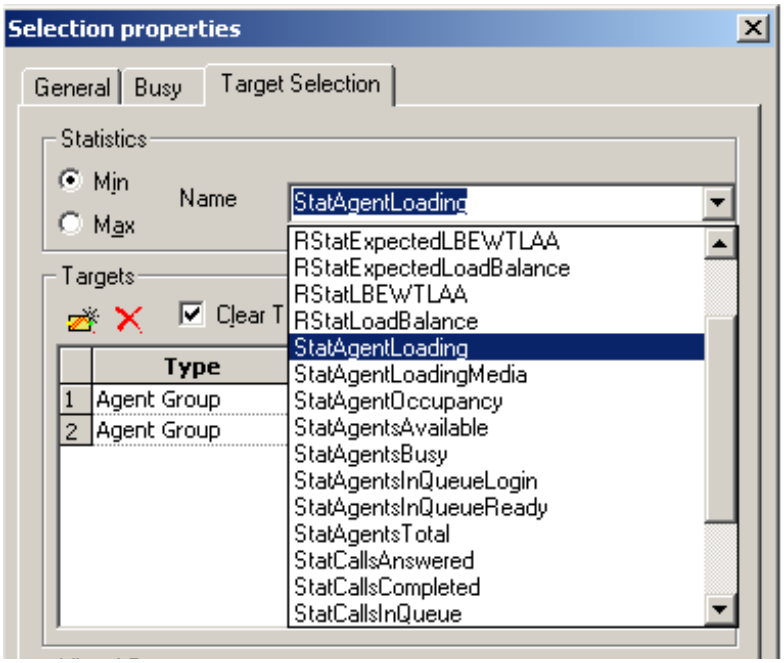


Figure 130: Routing Selection Object Properties Dialog Box, Statistic Selection

Note: No matter how a CBR solution is activated, URS always looks for both the Infrastructure cost and Resource cost. If one of these is not configured, URS ignores that part.

Method #2: RStatCost

In addition to Method #1, which uses function TargetSelectionTuning (see page 195), you also activate a CBR solution by selecting the predefined IRD statistic `RStatCost` on the `Target Selection` tab of the Routing Selection object (see Figure 131).

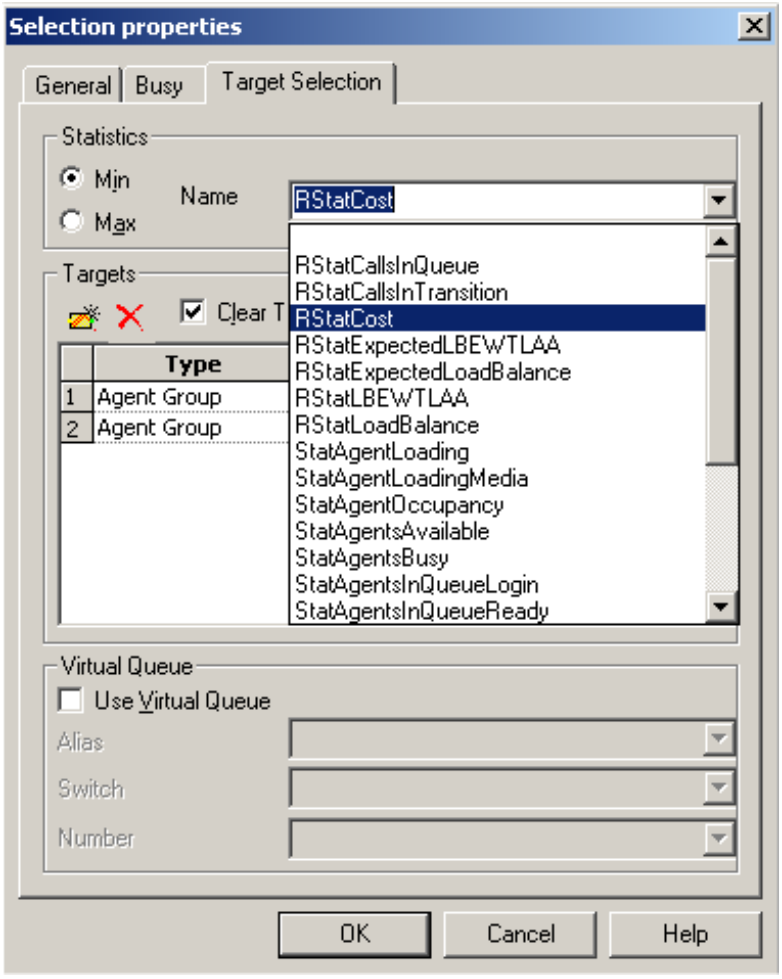


Figure 131: Activating CBR Via RStatCost Statistic

Activating CBR in this way causes URS to consider both the Infrastructure and Resource costs when evaluating a target. No matter how a CBR solution is activated, URS always looks for both the Infrastructure cost and Resource cost. If one of these is not configured, then URS ignores that part.

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