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Synthesys Classic Technical Summary

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Overview

This document provides a technical introduction to Synthesys. It is suitable for anyone with a technical background who wishes to understand how Synthesys works. It assumes that the reader is familiar in general with call centre processes and Synthesys. The Synthesys user guide should be referred to if necessary.

Document History

Luke Harris	1st June 2001	New for v2.1 of Synthesys
Luke Harris	25th October 2005	Updated for v3.2
Luke Harris	3 January 2013	Reviewed for v4.3

Introduction

Synthesys comprises of a suite of modules dedicated to the call handling processes within a call centre environment. These modules fall into several categories, which are:

> Callflow design
> Agent's Workstation
> Customer Relationship Management
> Call Tracker
> Computer Telephony Integration
> Outbound Campaign Management
> Reporting
> Personnel Management
> System Housekeeping

The key element of Synthesys is the ability to provide a scripted callflow that will guide agents through a call process, efficiently and effectively. To achieve this a callflow must be designed that mirrors the call process. To complete this process database tables must also be created to collect the data during the call.   The Synthesys Callflow Editor provides a simple drag-and-drop environment, which allows non-technical staff to create the required (simple or complex) callflows. The supporting database tables are automatically built to store the data that is to be collected. To further enhance the call handling process Synthesys will interface with switch (telephone) hardware, middleware and other applications. Integration allows further efficiencies to be gained allowing calls to be comprehensively dealt with at the first point of contact.

Additionally Synthesys Call Tracker caters for post call processes that are common in many call centres.

Comprehensive information is collected per call together with management information on the call centre activity.

Synthesys Architecture

Synthesys is a full 32-bit application written in Visual C++ using Microsoft Foundation Classes (MFC). The design is based on open standards including ODBC and XML and component based architectures such as ActiveX and Java. Synthesys also has Internet/Intranet links and provides all call data in an open ODBC database. For more details on these, see 'Synthesys for Systems Integrators' which provides details for those implementing systems where Synthesys must work within a wider framework of other applications.

Synthesys runs in a client/server configuration, with a 'fat' client taking most of the load. This reduces the load on the Server and network whilst increasing the resilience of the installation. Workstations must run 2000 or above. The Synthesys server should run a Microsoft Windows Server platform. See the section 'Hardware and Software Requirements' for more details. A TCP/IP network connects clients with the server.
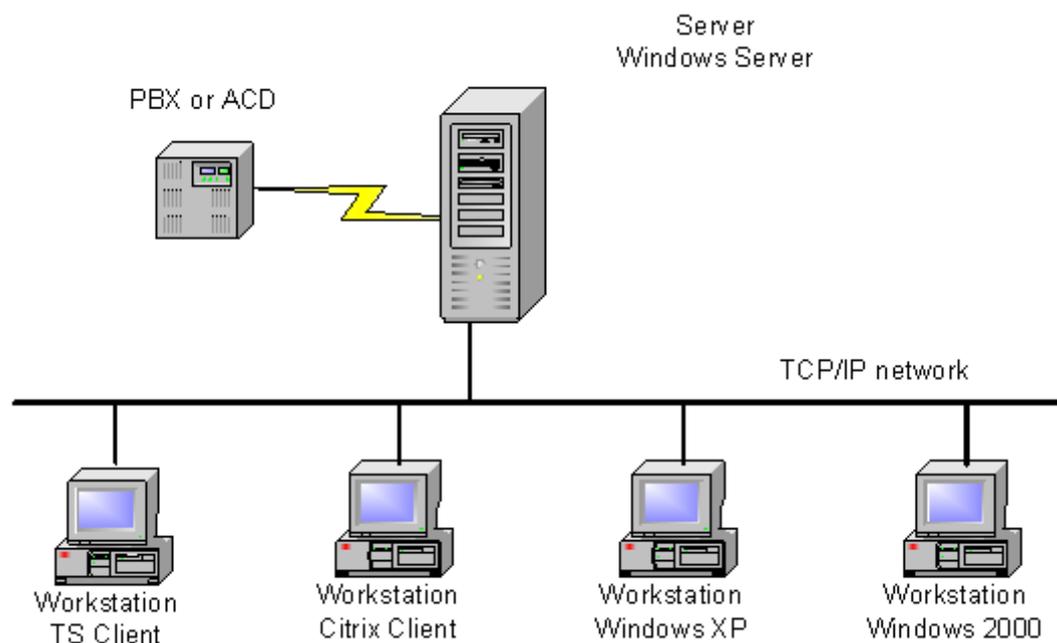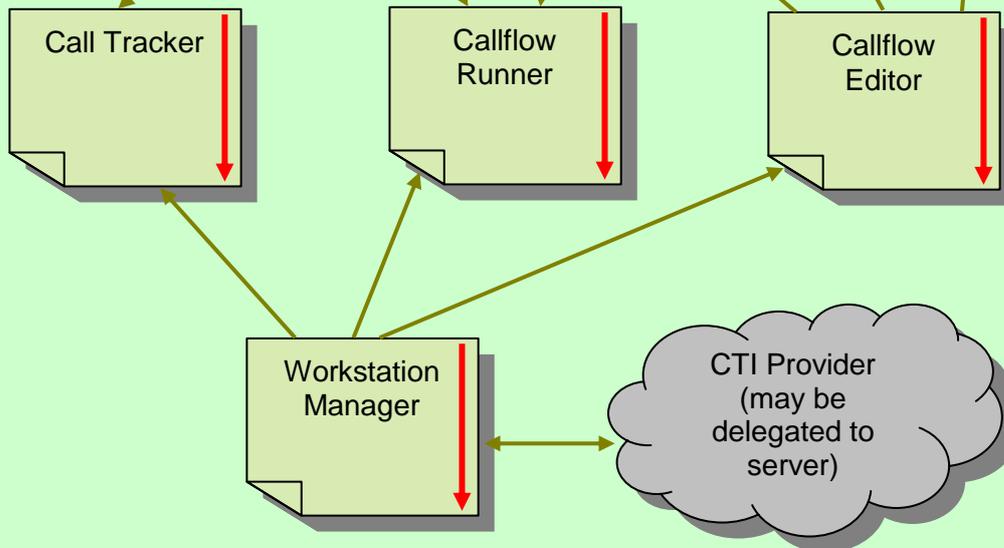

Most components of Synthesys Server can be run on any machine. If a service is used heavily (such as, for example, rapid post coding) this service can be relocated to its own dedicated server allowing application load balancing ensuring that optimum response times are maintained.

For resilience, Synthesys can run on a cluster of servers, providing fail-over in the event of hardware failure.

Client and Server Architecture of Synthesys

The following diagram outlines the main components and interactions of Synthesys modules on the server and the client. Following this section is a description of some of the major components on Workstation and Server. The Customer Relationship Management (CRM) and Outbound subsystems are discussed in more details later.

Synthesys Server

Transaction Service

Sequence Manager Service

CRM Service

Other Services

Phoenix

Live Database

Spider

Phoneyx

Test Database

Synthesys Workstation

Call Tracker

Callflow Runner

Callflow Editor

Workstation Manager

CTI Provider (may be delegated to server)
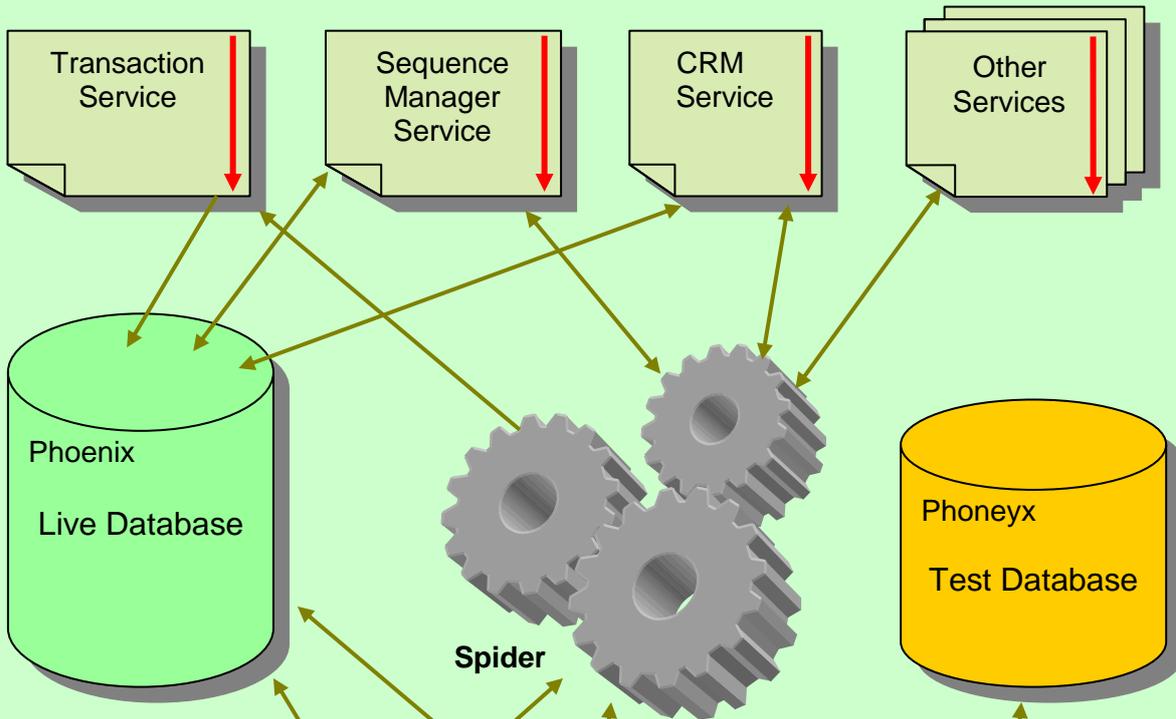
Server Components

Database Servers
There are two database engines running on the Synthesys Server called Phoenix and Phoneyx respectively

Phoneyx is the test database and when callflows are designed or modified they are tested on this database. This ensures the integrity of the main (Phoenix) database. When a callflow is completed and ready to be deployed it is 'Released', the callflow is copied automatically to every workstation.

Phoenix is the live database and contains all the information collected during each callflow. Any SQL compliant Report Writer can collect the data and produce information in the required formats from this database.

Spider
This is very much the core of the system; the Spider is a TCP/IP switchboard and Remote Procedure Call (RPC) service. The Spider is responsible for all communications between Synthesys modules. It automatically does load-balancing when more than one service is able to deal with an RPC. It also monitors providers of RPCs to ensure they are still running.

Other Services
More details are provided later in the document. Not all Synthesys installations will have all services running.

Service	*Function*
Crystal Service	Operates in conjunction with the Report Starter Service for automatic production of scheduled or instant reports.
DB Service	Controls and manages database tables created by the DB Table ActiveX control.
CRM Service	For accessing Customer Relationship Management information in Synthesys and other Enterprise databases.
CTI Service	Centralised CTI and telephony manager.
ECS	Automatically sends e-mail and handles confirmation response.
E-mail Service	Automatically dispatches scheduled reports via e-mail.
Event Log Service	Centralised error and event logging.
Exe Service	Automatically invokes scheduled executable files.
Export Service	Exports data from the Synthesys database in various formats e.g. delimited, database, CATI etc.
Housekeeper	Scheduled database maintenance and cleaning.
Impromptu Service	Operates in conjunction with the Report Starter Service for automatic production of scheduled or instant reports.

Licence Service	Controls Synthesys licensing.
Media Service	Supports the workstation client and manages media codes for campaigns
MOTD Service	Message Of The Day Service allows agents to broadcast and receive messages to or from Synthesys users on the network
Postcode Service	Supports rapid addressing within the Address ActiveX component from various suppliers such as Capscan - Matchcode and QAS - Rapid Address
Queue Manager	Manages queues for outbound dialling campaigns.
Ref Number Service	Guarantees a unique reference number in conjunction with the Reference Number ActiveX control.
Report Starter Service	Post processing after calls, such as running reports automatically; also running scheduled reports.
Rota Service	Rota processing for Call Tracker (e.g. for duty engineers).
Spider Service	Network communications manager supports both broadcast and RPC mechanisms.
Sequence Manager Service	Supports queuing, reminders and attaches new events for Call Tracker functions.
Sequence Search Service	Provides database searches on completed calls in the Call Tracker module.
Spell Checker Service	Manages the global dictionary for the Auto correct ActiveX control.
Theatre Service	Supports the Theatre Allocation control, provides database searches for theatres based on postcode or search string.
Ticket Service	Supports the Ticket control, allocates venues, performances, bookings etc.
Token Service	Avoids multiple users simultaneously queuing calls for outbound campaigns.
Transaction Service	Commits complete transaction files to the database.
UMS	Universal Message Service provides automatic paging, e-mail, and SMS facilities.

Workstation Components

Workstation Manager

The Workstation Manager module provides two main functions. When Synthesys is first invoked it will ensure that the most recent callflow definitions and binary files are installed. If not, the latest versions will be automatically updated from the Server. When Synthesys is running, the Workstation component is then responsible for starting the Callflow Runner, the Callflow Editor, and mediating CTI activity.

Callflow Editor

The Callflow Editor is designed to be an intuitive GUI front end. It allows non-technical users to design a callflow that represents the process an agent will go through when handling a call for a campaign. The Callflow Editor creates a textual (XML style) representation of the sections, ActiveX components and flow logic shown on screen.

The flexibility of Synthesys is provided by the ActiveX components that are available within the Callflow Editor's component gallery. All data capture is done using ActiveX components. Synthesys ships with a broad range of components designed to meet the needs of a call centre environment. The open standards of ActiveX technology also allow customers to use off-the-shelf or bespoke controls for additional functionality.

Context sensitive help pages can be introduced within any part of a callflow. This is achieved by allowing a web page to be associated with a campaign, or a section or an ActiveX component. At its simplest this provides context sensitive help for an agent during a call. However this facility can also be used to link the agent to an Intranet or even the Internet providing the agent with access to a vast amount of information increasing the level of service that can be provided to customers.

Each time a callflow is amended and the supervisor creating the callflow is ready to deploy it, 'Release' function is invoked. This creates a new version of the callflow and then automatically updates all workstations.

ActiveX components available from Noetica

Active X controls are mini programmes and essentially the building blocks of your Callflow. The combination of an *ActiveX Control* and *Agent Prompt Box* text constitutes a question within the section, used to collect data from campaign calls.

Each *ActiveX Control* defines how a section is presented when the Callflow is run. They also control related background tasks, such as building database tables and retrieving specific data. Ten *Noetica Controls* are shipped as standard with the *Synthesys* software:

Address Control, allows a postal address to be entered either manually, or in conjunction with rapid addressing software applications such as Matchcode or Quick address.

Application Launcher Control allows non-Synthesys applications to be launched at strategic points in the Callflow during Talking Calls.

Appointment Control allows the agent to select any date in the present and future from a diary page and to select a time.

Auto Correct Control is a Text box with automatic correction of misspelled words. The dictionary is supplied with 1000 common misspellings, additional words can be added as required.

Checkbox Control*,* displays a group of *Windows* style check boxes. Any number of boxes can be selected.

ComboList Control, displays a Windows style drop down list. The list of available items is referenced from the database.

CRM Properties Control enables the modification of customer details set-up in Customer Relationship Management.

Data Pairs Control allows specific data fields to be retrieved from external databases to be used at strategic points during the callflow.

Date of Birth Control, allows the capture of a callers date of birth.

Date Picker Control enables the capture of dates in the present, past or future.

Date Time Control allows the capture of any date and time (past, present and future).

DBTable Control typically used to maintain lists of clients and sites. Allows searches on all fields of available data. Often used in conjunction with call rotas allowing correct contact data to be displayed based on location and time of day.

Diary Control used for managing the allocation of resources over time. Resources can be people, rental items etc.. The diaries of specific resources can be displayed and appointments, meetings, or rental periods created.

Discount Control used for automatic calculation of discounts, based on an initial price and selectable discount percentage.

Do Not Call removes a customer from an outbound call queue. This is useful when a customer phones in before the scheduled outbound call is due.

Edit Control a text box can accommodate numerical, currency, text or alphanumeric input. Masks can be created which force the agent to enter data in a specific format.

Elapsed Control calculates the elapsed period between two dates and/or times.

Media Code Control allows the capture of a media source code. Based on a reference number or name, full media details can be displayed and supports campaign start and end dates.

Monthly Payment Control calculates instalment repayments based on the total cost, initial payment and time period.

Name Control, allows the capture of a caller's title, initials, forename and surname.

Nearest Store Control identifies the closest store or office to the callers address. Based on the caller's postcode or their postal town up to four stores/offices can be displayed in order of proximity. Can include details such as opening times and directions.

Order Control allows product details to be displayed with calculation for totals, VAT, P&P, invoice sub-totals and totals. Also allows discounts, price matching and product warranties. Products can be selected by part number, product category or manufacturer.

Payment Control, allows various methods of payment and their related details to be specified, such as card number, expiry date etc.

Picture Control allows JPEG, GIF, or PNG pictures to be displayed in a section, together with other controls.

Radio Control, allows a mutually exclusive selection to be made from a number of configurable buttons.

ReferenceNumber Control, allocates a system-wide unique reference number according to a predefined configurable format.

Reschedule Control allows an agent to schedule (or reschedule) an outbound call. Calls can also be rescheduled automatically so customers are called after a pre-selected period or at a time selected by the agent.

Telephone Control, used to capture up to two telephone numbers.

Text Control, used to allow an agent to enter free format text.

Radio Text Control combines the functions of a Radio control and a Text box control. A mutually exclusive selection can be made from a number of options and comments for each selection can be added into an associated text box, does not create a separate table for the text.

Rota Viewer Control displays available person(s) currently available based on rota details and the relevant area.

The agent can select the most appropriate service representative, based on skill level or proximity to the caller, (be it an engineer or doctor) to take the call, as well as informing the caller of the contact name of the service representative.

Theatre Allocation Control identifies a specific office from postcode or area details. Provides the agent with the office opening times and associated call out procedures of employees.

Ticket Control manages the sale of tickets for specified venues. Provides data regarding each venue with details of individual events, seating arrangements, seating plan and prices.

UMS (Unified Messaging Service) consists of two ActiveX controls, the message text box and the address books. Allows an agent to automatically send a fax, email, SMS or pager, message to several recipients selected from the address book or ad hoc.

Web 'Call Me' Button placed on a web page it allows the web surfer to request a call back. The details entered by the web surfer are seamlessly inserted into an outbound campaign and the call back is automatically scheduled.

Callflow Runner

This takes the files created by the Callflow Editor and presents them to the agent to capture data. The resulting transaction files are in fact the same format as callflow files; the only difference is that the transaction files have data entered in them. When data entry is finished for a call, the entire transaction file is sent to the Transaction Service for entry into the database.

The Runner is also responsible for parking a call in progress, unparking calls or transferring the callflow together with the collected data to another agent.

Call Tracker

This deals with any calls that need follow up actions. A typical example would be when a call is taken for a doctor; the follow up callflow will indicate who should be called, and escalation procedures if no one can be contacted. The call tracker uses the Sequence Manager Service to manage centralised timers and agent reminders.

Campaign Manager

This is used to setup scheduled reports on campaigns, to change details of reports, and to remove old campaigns.

Personnel

The personnel module allows users to be added, and can also be used to set rates of pay for use as part of a payroll system.

Teams Manager

Allows a supervisor to determine which outbound campaigns agents will be associated with. Teams Manager supports the set up and management of outbound campaigns.
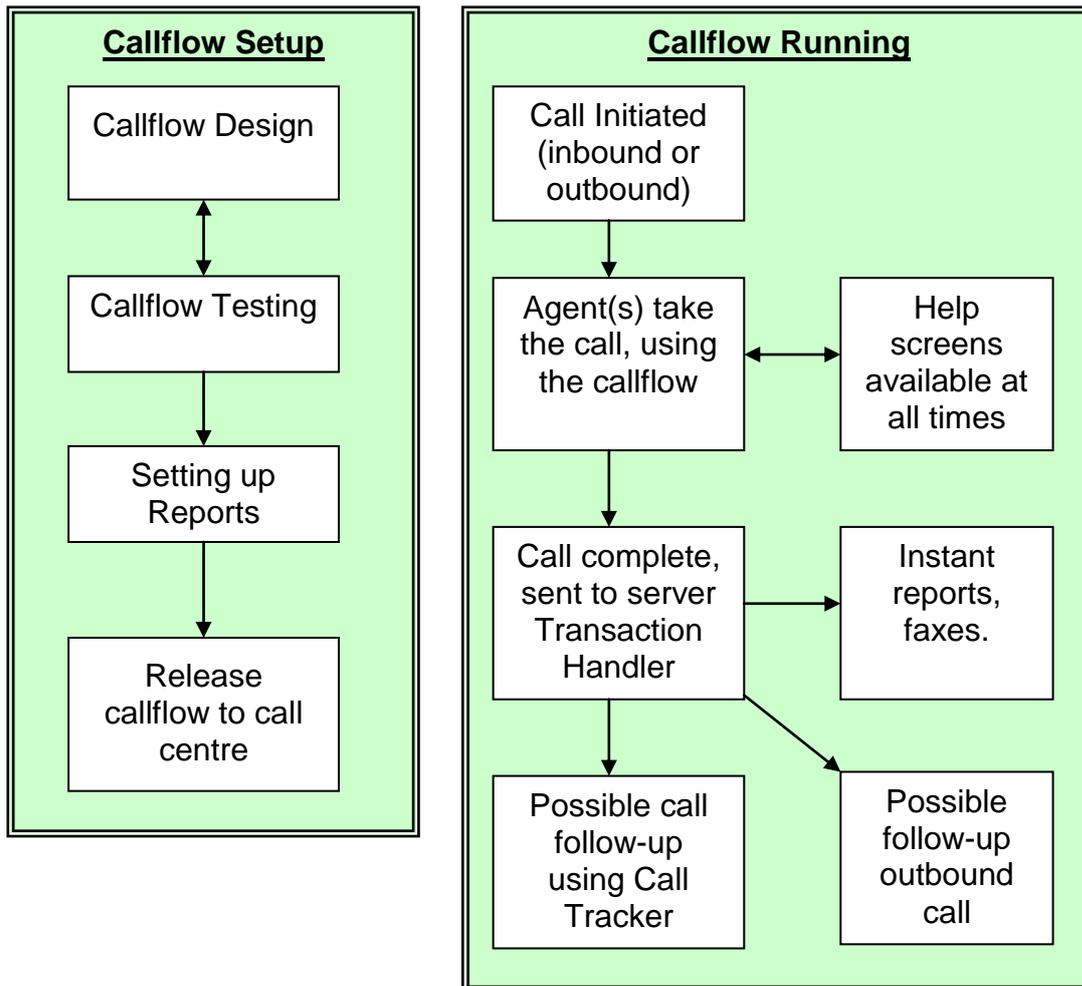
Generating Reports on Call Data

Synthesys data is stored in an ODBC compliant database therefore any 3rd party-reporting tool can thus be used to generate reports. Noetica have added additional functionality to the reporting process by integrating Impromptu (from Cognos) and Crystal Reports (from Seagate) into the Synthesys reporting process as reports generated by Impromptu or Crystal can be invoked immediately a callflow is

completed providing an 'instant report'. Also, when any type of report is run Synthesys will log the report status details in the database.

The Report Service is responsible for running reporting jobs, either at the end of every call ('Instant Reports') or at scheduled times.

Synthesys Process in a Call Centre

This diagram indicates some of the typical steps taken when designing a callflow and taking a call in a call centre. It is for illustration only but shows the fundamental steps that are taken.

<table>
<tr><td colspan="1">Callflow Setup</td><td colspan="2">Callflow Running</td></tr>
<tr><td>Callflow Design</td><td>Call Initiated (inbound or outbound)</td><td></td></tr>
<tr><td>Callflow Testing</td><td>Agent(s) take the call, using the callflow</td><td>Help screens available at all times</td></tr>
<tr><td>Setting up Reports</td><td>Call complete, sent to server Transaction Handler</td><td>Instant reports, faxes.</td></tr>
<tr><td>Release callflow to call centre</td><td>Possible call follow-up using Call Tracker</td><td>Possible follow-up outbound call</td></tr>
</table>

Customer Relationship Management (CRM)

CRM allows callflows to be created in a customer-centric fashion. Agents will be presented with existing customer information avoiding unnecessary duplication of questions, making the call handling process more efficient and raising the level of service to the customer.

CRM Designer
This allows a user to create a structure to hold Customer information. Typically, this would be name, address and one or more telephone numbers. It is also possible to have 'grouped' sub-properties. For example, we might have a number of customers who each work at a particular site belonging to a company. This grouping mechanism

allows a non-technical callflow designer to create one-to-many relationships between several tables.
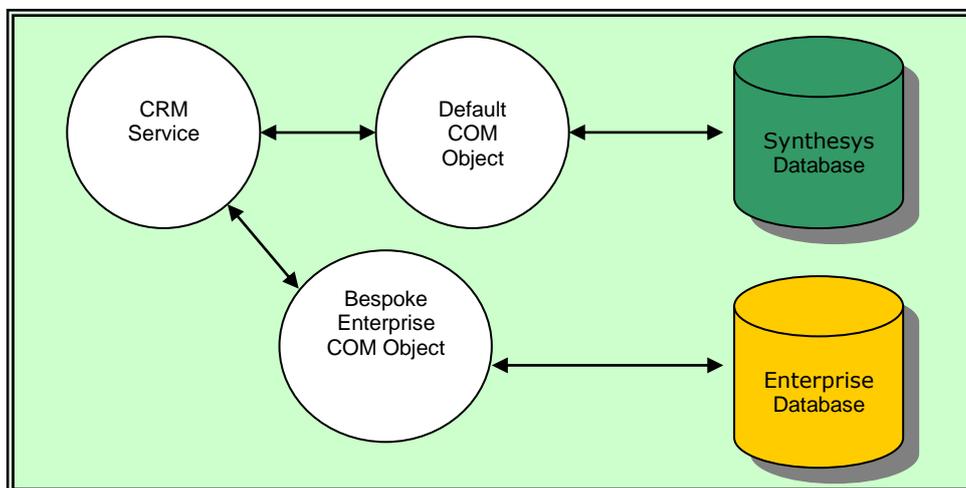
CRM ActiveX

This is an ActiveX component that can be used in the Callflow Editor to introduce Customer Relationship Management interaction to the agent.

For an outbound call the customer will already have been identified. The CRM ActiveX shows details of the selected customer, which (depending on the callflow settings), can be modified by the call centre agent.

For an inbound call, the customer database can be automatically searched for Calling Line Identity (CLI), if available. The agent can also search on any available CRM fields to identify the caller; alternatively a new customer record can be created.

Customer History

Customer History is recorded for each customer. This is displayed, and can be sorted or filtered for particular types of history events. This enables the agent to check on past activity for each customer.

Enterprise Database Support

All CRM activity is passed through the CRM Service. Normally, this will use the default COM object supplied by Noetica to insert and retrieve data from the Synthesys database.

However, to communicate with an enterprise database, all that is required is the development (or adaptation) of a COM object, which instead communicates with the enterprise system. This would typically be via ODBC, or alternatively perhaps using the 3270 protocol or indeed any other mechanism available.

Outbound Campaigns

An outbound campaign is associated with a list of customers using the CRM module. The Outbound Campaign Manager is used to set-up the various parameters for each campaign including the active times of the campaign, agent affinity, number of redials and campaign priority.

Once the campaign is activated, the Queue Manager is responsible for selecting the next call to be assigned to an agent; it is then the responsibility of the Workstation to initiate outbound dialling.

Personnel Manager

The Synthesys Personnel module allows the System Administrator to maintain details about each Synthesys user. All users are assigned an account and given permissions to access the relevant modules. Accounts are grouped by User, People and Miscellaneous.

User Groups: All staff members are assigned to a particular user group, which indicates their role or responsibilities within the company. The predefined user groups include, among others, Administrator, Agent, Supervisor and Account Manager. Each standard user group has a default set of permissions assigned to it, which can be changed if required.

People: All personal information of call centre staff is kept under the *People* branch. Details recorded include name, address, telephone number and date of birth etc.

Users: This area contains details of each user account that has been set up. A user account is created for each member of staff that uses *Synthesys* and contains their user name, password, the user group they belong to and the permissions that have been assigned to them.

Miscellaneous: Details such as payment rates and hours worked are recorded and can be calculated and exported into payroll applications.

Teams Manager

In conjunction with the Outbound Campaign Manager, Teams Manager allows individual agents to be assigned to particular outbound campaigns. Team Manager controls the workload distribution throughout the call centre and ensures agents are linked to campaigns commensurate with their skill level and expertise.