# Synthesys.NET Architecture Overview

## Introduction – what is Synthesys.NET?

Synthesys.NET is a complete web based Call Centre solution. It contains CTI (Computer Telephone Integration), CRM and Webflow capabilities, as well as extensive capabilities for communicating with other systems.

A Webflow is something like an intelligent script used to guide a call centre agent through taking a call. A user designs a Webflow in an intuitive graphical environment. They then release this application to the Synthesys.NET Servers, which builds a Web application. This is then made available to call centre agents via their browser.

Releasing the Webflow also automatically creates Database structures on the Synthesys.NET Database Server to hold data captured at runtime, which can then be used to create reports and other 'Outputs'.

A Webflow may include components called 'Input Actions' and 'Output Actions' that interact with external systems. 'Input Actions' retrieve data from external sources during a call (this is performed in the background without the agent 'being aware' where the data came from). 'Ouput Actions' can send data to Enterprise systems (CRM, SAP, Siebel, Microsoft Biztalk etc) and are performed in a single transaction at the end of a call.

Releasing new versions of Webflows is seamless and has no down time on the agents' behalf. Synthesys.NET supports web farms where a single release of a webflow may be deployed to any number of web servers.

**Typical Workflow - Synthesys.NET in action**
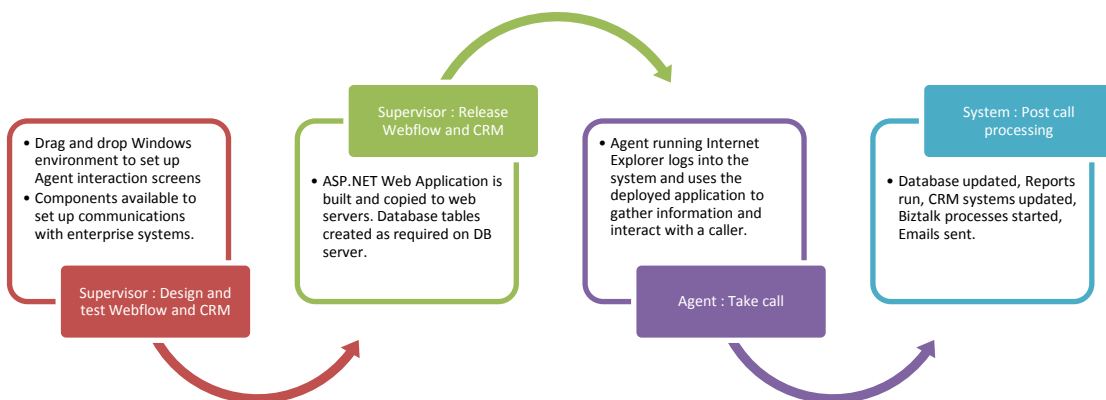
## High Level Architecture

Synthesys.NET has three major components.

| Synthesys.NET Design Workstation | → | Synthesys.NET Server[s] | → | Synthesys.NET Agent Workstation |
|---|---|---|---|---|
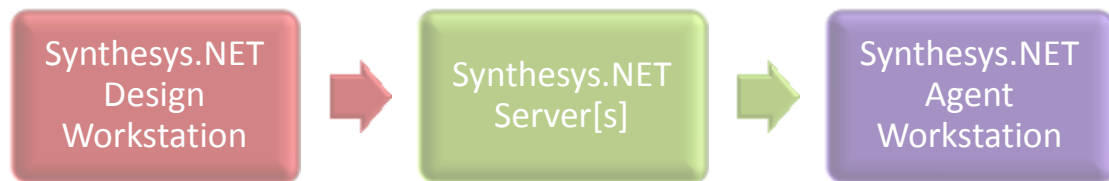
**Synthesys.NET Integrated Design Environment**
This is a Windows application. It is used to design Webflows for use with Synthesys.NET. These can be designed offline, and then released to the Synthesys.NET Servers when convenient. Communication with the Synthesys.NET Application Servers is via HTTP or HTTPS. The Integrated Design Environment is also used to customise CRM screens and for providing translations for Webflow and CRM applications.

**Synthesys.NET Agent Workstation**
No software needs to be installed on the Synthesys.NET Agent Workstation. The agent runs Microsoft Internet Explorer, and browses to an Agent Portal application running on the Synthesys.NET Servers.
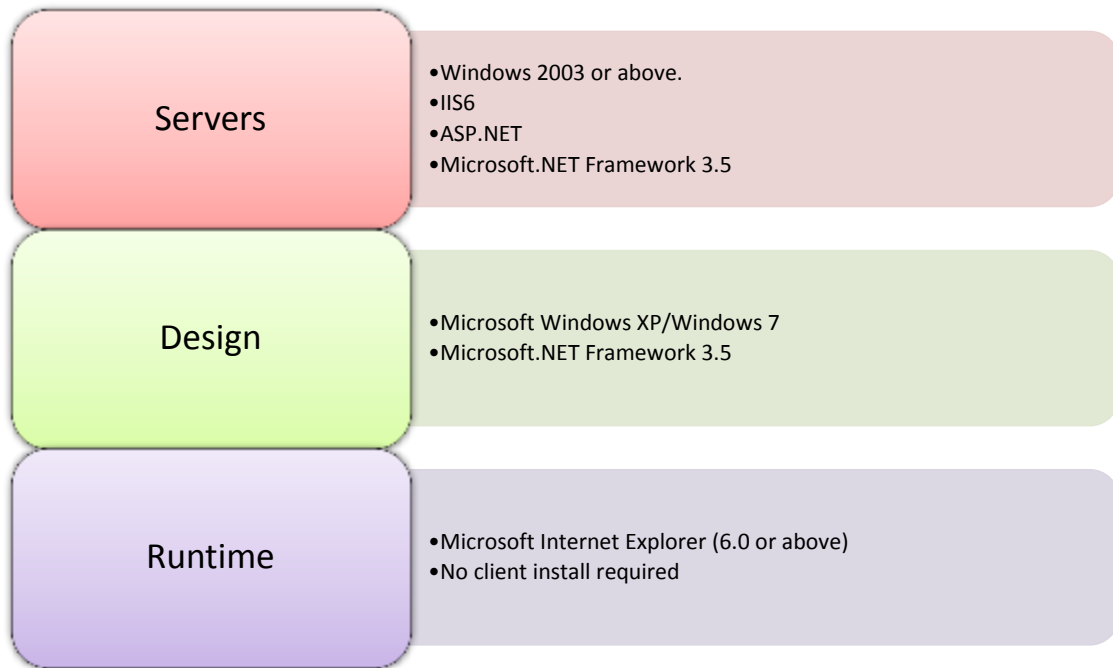
**Synthesys.NET Server[s]**
The Synthesys.NET servers run a number of ASP.NET applications and WCF (Windows Communication Foundation) services, Microsoft Windows Services and Microsoft SQL Server 2005 stored procedures to provide the complete Agent front end, as well as integration with telephone systems, enterprise CRM systems and other external systems.

For a small call centre, this may be one physical server; for a large call centre, it might be dozens of physical servers.

The rest of this document explains in more detail the components running on the Synthesys.NET Server.

**Technologies Used**
Synthesys.NET uses the latest Microsoft technologies, and as such requires Microsoft Windows servers and clients.

| Servers | •Windows 2003 or above.<br>•IIS6<br>•ASP.NET<br>•Microsoft.NET Framework 3.5 |
|---|---|
| Design | •Microsoft Windows XP/Windows 7<br>•Microsoft.NET Framework 3.5 |
| Runtime | •Microsoft Internet Explorer (6.0 or above)<br>•No client install required |

## Synthesys.NET Server Components

There are three broad areas of Synthesys.NET server components. Note that this division also represents one common deployment scenario for Synthesys.NET in larger call centres, where there is one (possibly clustered) SQL Server machine, one (possibly clustered) Synthesys.NET Application Server, and one or more Synthesys.NET Web servers running in a web farm.

| Synthesys.NET Web Applications | Synthesys.NET Server Applications | SQL Databases |
|---|---|---|
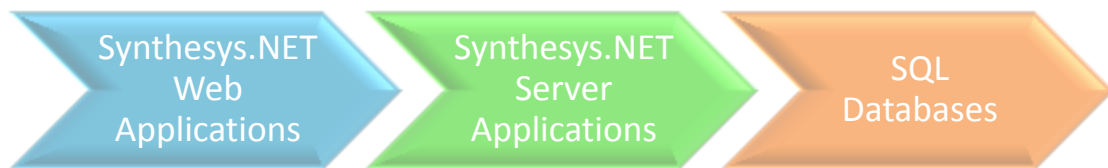
Note that the Synthesys.NET Web Applications don't communicate directly with the SQL Databases, all this is handled indirectly through the Synthesys.NET Server Applications.

**Web Applications**

These are all Microsoft ASP.NET applications.
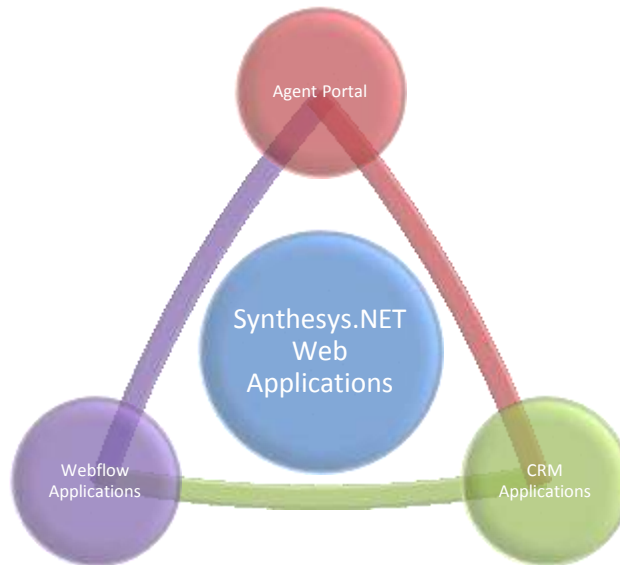


The agent portal handles agent logon, and also displays work pending for the agent as well as status information. It is from the portal that a CRM is launched, allowing display of customer data and if necessary the ability to modify or add new records. Webflows can be launched from CRM or (for calls where CRM is not necessary) directly from the Agent Portal.

**Server Components**
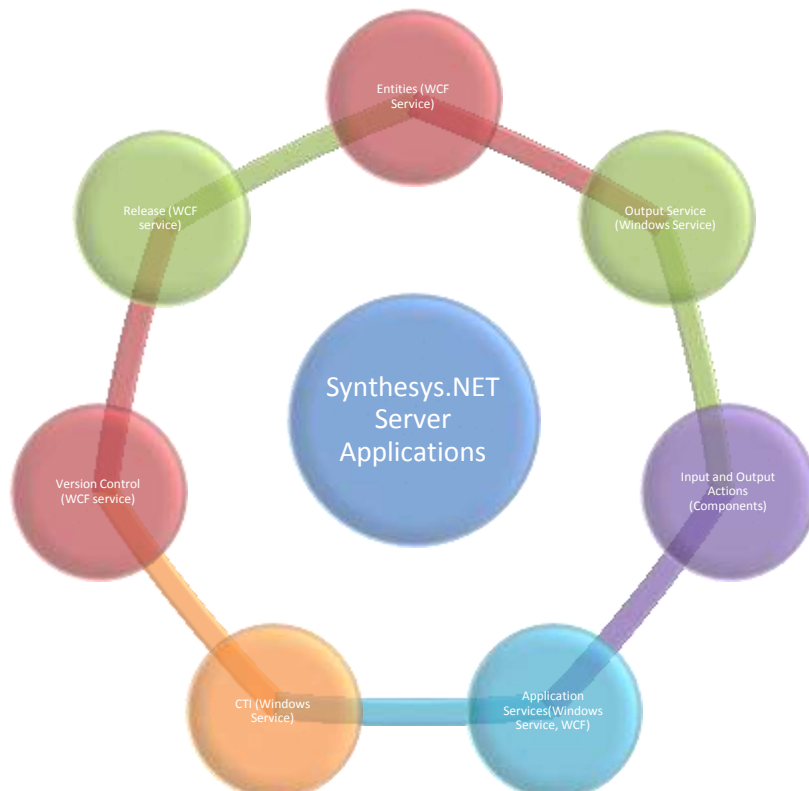
Taken from the top and working clockwise:

| | |
|---|---|
| **Entities (WCF)** | • Deals with entity and CRM information |
| **Output Service [Windows Service]** | • Windows Service processes data from the MSMQ transactionally, inserting it into the database or invoking other appropriate output actions. |
| **Output Actions [Components]** | • For example, write to database, write to Enterprise CRM, run a report, send an email, write to a file, send message to Biztalk or Windows Workflow |
| **Application Services [Windows Service, WCF]** | • Manage logged on users; hand out work, communicate with CTI to provide screen pops through Agent Portal, interact with Predictive Dialler. |
| **CTI [Windows Service]** | • Responsible for communication with different switch platforms (contact Noetica for up to date list) |
| **Version Control [WCF service]** | • Provides version control for Webflow and CRM documents. |
| **Release [WCF service]** | • Responsible for converting a Webflow document into an ASP.NET Webflow application. |

# Integration Points

There are a number of integration points that Synthesys.NET provides to enable operation with other systems.

**CTI**
Synthesys.NET has a pluggable CTI architecture, enabling communications to most telephone systems. Synthesys.NET ships with a number of CTI implementations out of the box, including TAPI, TSAPI, Cisco and dozens of others – contact Noetica for details.

**Input Actions and Output Actions**
These are used in Webflows to either pull data from external systems, or push data into external systems. Actions are customisable and new ones can be plugged into the system, but Synthesys.NET ships with standard actions out of the box:

| Database | • Input - Select data from external databases.<br>• Output - Write data to external databases.<br>• Miscellaneous - invoke stored procedures/T-SQL commands. |
|---|---|
| Web Services | • Input - Invoke web services to retrieve data.<br>• Output- Invoke web services to update enterprise systems.<br>• Miscellaneous - can communicate with internal or any discoverable external web services. |
| Messaging | • Send email via Exchange or SMTP<br>• Send Faxes<br>• Send SMS text messages or pages. |
| File | • Read and write text and XML files. |
| Custom | • SAP<br>• Siebel<br>• Biztalk<br>• Microsoft |

Please contact Noetica for more examples.

**Web Controls**
Synthesys.NET ships with a standard palette of Web Controls which are the individual building blocks of the Webflows which the call centre agent interacts with. But we also have a gallery of more advanced controls, and can provide customised Web Controls for special purposes. For example, we have a postcode and address lookup component, also a Bank Details verification control. Contact Noetica to discuss any particular requirements you might have.

**Encryption**
Any data captured by an agent or retrieved from external sources (using 'Input Actions') may be encrypted. The Synthesys.NET encryption infrastructure is pluggable. Synthesys.NET comes with a default method of encryption but if a customer requires a different type of encryption then third party security systems can be integrated into Synthesys.NET. We have currently successfully integrated with Safenet's Luna Security Appliance for example.

**Security**

Synthesys.NET communications are highly. Any passage of data between computers in Synthesys.NET, whether on the internet or inside a DMZ between the various Synthesys.NET servers, are both encrypted and signed by certificates, which ensures that sensitive data cannot be traced or tampered with. (Web communication security requires a customer supplied certificate for SSL)

## Conclusion

Synthesys.NET is designed in accordance with the latest Microsoft .NET design guidance, and hence it provides a reliable, secure and scalable system, which can be used in a small call centre or rolled out to thousands of agents in distributed call centres around the world.

Synthesys.NET is a modular and extensible system. It is very easy to get Synthesys.NET to interoperate with any enterprise systems are already in place in a call centre, and provides a future proof component in the enterprise.

Its ease of use for the call centre supervisor means that day to day running of the call centre can be handled without expensive technical resources.

For the agent, it provides an easy to learn unified front end to existing enterprise CRM and other systems, thus reducing training costs as well as improving the quality of the interactions.