High level description

Legacy Integrator for .NET enables organizations to
• Service-enable existing Natural or 3GL legacy applications by encapsulating program logic and transactions as ready-to-use .NET services
• Enable Natural or 3GL legacy applications to use .NET services transparently as if they were subprograms

Depending on your needs, Legacy Integrator for .NET is available in one of 2 options:
1. **Natural** or
2. **3GL** (for COBOL, PL/I, ...)

Software components included

• EntireX .NET Wrapper
• EntireX .NET RPC Server
• **With Natural option:**
  ▪ Software AG IDL Extraction Tool for Natural
  ▪ Natural RPC clients; Natural RPC servers on a single machine
• **With 3GL option:**
  ▪ Software AG IDL Extraction Tools for COBOL or rather PL/I
  ▪ 3GL RPC clients; 3GL RPC servers on a single machine
• One instance of EntireX Broker on a single machine
• EntireX security features (authentication, authorization, encryption)
• EntireX administration tools - excluding SNMP features

Description of software components

EntireX .NET Wrapper and .NET RPC Server

**Overview**

The .NET Wrapper is integrated into the Eclipse-based EntireX Workbench, which is the central design-time environment of the EntireX Software Developer’s Kit. It supports .NET client applications accessing Natural or 3GL applications. Additionally, in conjunction with the .NET RPC Server, Natural or 3GL applications can access RPC servers written in one of the .NET programming languages.

For MS Visual Studio 2005, application wizards for .NET Wrapper exist. These support code-generation on the .NET platform directly.
**Client-Side Wrapping**

Starting with a server’s interface description specified in Software AG IDL, the .NET Wrapper generates a C# client adapter, also called “wrapper”, that can be used by .NET applications to access any EntireX RPC server (via **Context menu** of your IDL file >> **Generate .NET from Software AG IDL >> RPC Client**).

The C# client adapter source can be added to a Visual Studio .NET C# project by application developers to develop a .NET client application. The EntireX Workbench offers an easy-to-use method to build a stand-alone assembly from the adapter source (via **Context menu** of your IDL file >> **Generate .NET from Software AG IDL >> RPC Client Assembly**). This is especially convenient for application programmers who are implementing their client application in a .NET language other than C#, for example Visual Basic .NET. They can simply add the assembly reference to their project and use it without having to look at the generated code.

.NET Wrapper Code Generation in EntireX Workbench (Eclipse; left-hand) and MS Visual Studio 2005 (right-hand)
**Server-Side Wrapping**

The starting point for application programmers is again an interface description in Software AG IDL that describes the interface that the server should expose. The .NET wrapper can now generate a C# server adapter, or “wrapper”, that is a code skeleton in which the application programmer can add code that implements the server logic (via **Context menu** of your IDL file >> **Generate .NET from Software AG IDL >> RPC Server**).

Unlike for the client wrapper, the application programmer now needs to add code to the generated C# source. It is still possible to implement the server logic in a language other than C#, but as a minimum - calls to the server implementation must be added to the generated code skeleton in C#. As for the client, the Workbench offers an easy-to-use method to build a .NET assembly from the adapter source.

The server implementation is accessed by EntireX clients through the Broker and the .NET RPC server. The latter acts as a container for .NET server implementations.

**Software AG IDL Extraction Tools**

**Natural IDL Extractor**

The EntireX Natural IDL Extractor enables automatic generation of Software AG IDL files from subprograms held on a Natural RPC server. It is integrated in the EntireX Workbench design-time environment and cooperates with a Natural RPC server component (library SYSIDL).

**COBOL & PL/I IDL Extractors**

The EntireX COBOL and PL/I IDL Extractors enable automatic generation of Software AG IDL files from the COBOL and PL/I data definitions (e.g. the linkage section, the PROC statement) of a COBOL or PL/I program’s source code. The extractors are integrated in the EntireX Workbench design-time environment, as shown on the following screenshot.
Extraction from mainframe source members is possible locally and even from mainframe Partitioned Data Sets (PDS) directly.

EntireX RPC server and client for legacy applications

**Natural Option**
The Natural Server provides RPC (Remote Procedure Call) techniques in a Natural environment.

The Natural RPC client enables Natural to call .NET server implementations on a Windows machine. A Natural program performs a CALLNAT <name of service> to send a request to the .NET RPC server, which calls the .NET server implementation that provides the service. Request transmission is executed through the network via EntireX Broker using the components that have been generated using the tools described above.

The Natural RPC server enables a Natural subprogram to be called from a .NET client. The .NET client sends a service request to the Natural RPC server, which calls the Natural subprogram that provides the service. Request transmission is executed through the network via EntireX Broker using the components that have been generated using the tools described above.

**3GL Option**
The 3GL Server provides RPC (Remote Procedure Call) techniques for applications written in COBOL, PL/I, Assembler, RPG, C, CL, or other 3GL.
3GL RPC clients enable a 3GL program to call .NET server implementations on a Windows machine. The 3GL program performs a normal subroutine call to `<name of service>` to send a request to the .NET RPC server, which calls the .NET server implementation that provides the service. Request transmission is executed through the network via EntireX Broker using the components that have been generated using the tools described above.

3GL RPC servers enable a 3GL subroutine or transaction to be called from a .NET client. The .NET client sends a service request to the 3GL RPC server, which calls the 3GL subprogram that provides the service. Request transmission is executed through the network via EntireX Broker using the components that have been generated using the tools described above.

**EntireX Broker**

EntireX Broker provides the messaging infrastructure for Legacy Integrator for .NET. It acts as a central service broker assuring that service requests from clients are passed to appropriate server implementations.

The Broker infrastructure consists of the following components:
- a *stub* (i.e., application binding), which resides within the process space of each application component;
- a Broker *kernel*, which resides in a separate process space, managing all the communication between application components.

From the broad variety of communication models supported by EntireX Broker only the RPC communication model (request / reply) is available with Legacy Integrator for .NET. Other supported models, such as, message queuing (asynchronous communication), units of work, publish and subscribe, as well as message persistence, require a license upgrade.

EntireX Broker provides server replication and automatic load balancing between replicated servers. Its scalable internal architecture (adjustable number of worker tasks) is proven to be able to handle any load, ensuring that SLAs are met even in peak times. The Attach Service that allows for automatic, dynamic adjustment of the number of server replicates is not included with Legacy Integrator for .NET but would require a license upgrade.
EntireX Security

EntireX Security enables distributed application components to be executed securely. EntireX Security control is located in the kernel of EntireX Broker. As central component the EntireX Broker is responsible for authenticating and authorizing client and server applications.

Security checks are performed using your choice of security repositories, including:

- RACF
- ACF2
- Top Secret
- Windows and UNIX security systems (LDAP, ActiveDirectory, Local User)

Using Software AG’s Integrated Authentication Framework (IAF) even distributed security scenarios can be setup, so that security databases can be reached remotely. For making use of the IAF framework a full EntireX license is prerequisite.

Encryption of message data - by means of a generic RC4 compatible algorithm or SSL - is also available to protect sensitive information flowing between different application components. Since EntireX was designed to operate together with a security system, there is no additional application programming necessary.

EntireX Administration Tool (SMH)

The System Management Hub (SMH) is Software AG's cross-product and cross-platform product management framework. It provides a uniform, easy-to-use means of configuring, operating and monitoring EntireX Broker and the various RPC Servers provided by Legacy Integrator for .NET. As such it is the single point of configuration for the EntireX Broker infrastructure.

The SNMP plug-ins for the System Management Hub provided by EntireX are not included with Legacy Integrator for .NET. As such it is the single point of configuration for the EntireX Broker infrastructure.

EntireX Developer Community

When developing projects with EntireX, you will also be interested in the EntireX Developer Community. It is a public portal with and for developers that contains:

- Product News
- Technical Articles
- Product Demonstrations
- Newest Product Documentation
- Moderated live forums around EntireX technology


Customer Support - ServLine24

ServLine24 is Software AG’s web-based Customer Support System, designed to proactively assist customers by providing timely information and problem resolutions. E.g. you can:

- Download product fixes, documentation and technical papers
- Submit technical problems and support requests
- Submit product enhancement proposals
- View product availability notices
- Read about early product announcements
- Access to Software AG’s User Groups worldwide and developer communities