New Features in Neuron ESB 2.6

This release significantly extends the Neuron ESB platform by introducing new capabilities that will allow businesses to more easily scale, develop, connect and operationally manage their solutions. Businesses turn toward Neuron ESB to solve their service and integration problems while reducing the total cost of ownership of their solutions. Neuron ESB accomplishes this by continually refining and extending its core capabilities in ways that can be effectively leveraged in agile environments by Microsoft .NET developers.

## Neuron ESB 2.6 introduces many new features and enhancements, some of which include:

- Multi Instance Runtime
    - Side by side x86/x64 Runtimes
    - PowerShell 2.0 Support
- Process Designer
    - While/For/Break Process Steps
    - Microsoft Excel To Xml Parser
- Adapters and Connectivity
    - Event Based SharePoint 2010 Publication
    - Event Based Dynamics CRM 2010 Publication
    - FTP/FTPS Adapter
    - ODBC Enhancements
    - Topics using Named Pipes
- Monitoring and Reporting
    - Performance Counters for Topics and Endpoints
    - Total Time for Request/Reply calls
    - Failed Message Events
    - Database Enhancements for Custom Reporting
    - Filter Query User Interface for Reporting
- Deployment Management
    - Environment Variable support for Neuron Database
    - Environment Variable support for Service Endpoint ACL
    - Neuron Database shareable across Deployment Groups
- Service Endpoints

- o Azure Service Bus Integration
- o Delegation Support for REST
- o WCF Service Behaviors
- ❋ [Additional Enhancements](#)

Multi Instance Runtime

Neuron ESB offers powerful runtime and scalability features that allow businesses to quickly deploy solutions. Solutions can scale both vertically and/or horizontally using the Neuron ESB Runtime Service across one or more servers. The Neuron ESB Runtime Service loads a Neuron ESB Configuration store (*.ESB), which can contain one or more business solutions. In previous versions of Neuron ESB, only one instance of the Neuron ESB Runtime Service could be deployed on a server. This required organizations to maintain all of their business solutions within one Neuron ESB Configuration store. If partitioning of business solutions was necessary, or one of the solutions required a 32 bit versus a 64 bit execution environment, the only solution was to export that business solution to a unique Neuron ESB Configuration store and deploy it to a dedicated server, as pictured below.
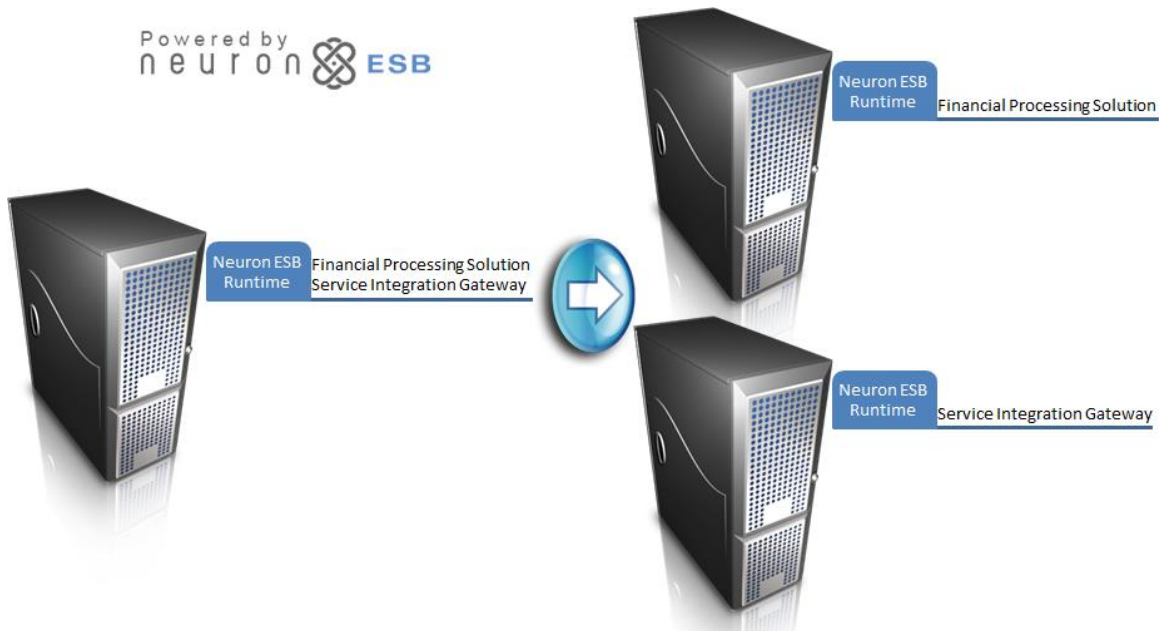
Neuron ESB 2.6 Introduces Multi Instance support for the Neuron ESB Runtime Service. This capability allows organizations to install and run multiple instances of the Neuron ESB Runtime Service on a single server. Each instance can be configured as either a 32 or 64 bit process, capable of running side by side. Each instance of the runtime can load an independent Neuron ESB Configuration store. This allows organizations to easily partition business solutions to run on a single server, effectively eliminating prior constraints, as depicted below.
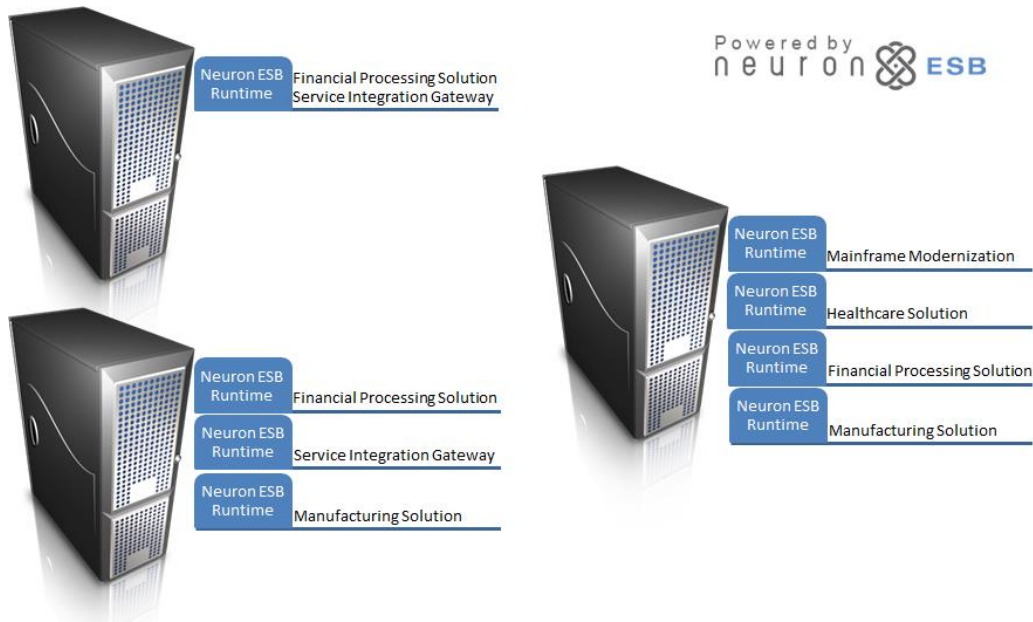
Neuron ESB 2.6 Multi Instance support enables a number of powerful scenarios including:

- 64 bit and 32 bit processes side by side – Businesses may have solutions that require ODBC connectivity. Many ODBC drivers require 32 bit process execution environments. Using Neuron ESB, businesses can run elements of one solution under a 64 bit process, while running ODBC elements of another solution using a 32 bit process.
- Business Solution Partitioning – Departments within an organization may require partitioning of applications for management, security or policy compliance. Individual departments may require their own Neuron ESB Configuration store so that they can be independently developed, administered and deployed.
- Performance Scale Out – Neuron ESB's Multi Instance support provides a new level of scale out by allowing organizations to separate and deploy more resource elements of a solution to dedicated servers.
- Multiple Developer Support – The ability to deploy many independent Neuron ESB Configuration stores to a single server enables developers to easily work on their own solutions while deploying to the same servers.

PowerShell 2.0 support is provided to ensure the appropriate level of administrative and operational support. Installing and maintaining multiple instances of Neuron ESB Runtime Service is accomplished through the use of PowerShell 2.0 scripts, installed at the root of the Neuron ESB installation folder. New instances of the Neuron ESB Runtime Services can be easily created as depicted below.

```
Administrator: Windows PowerShell Modules                                    _ □ ×
PS C:\Program Files (x86)\Neudesic\Neuron ESB> .\CreateInstance.ps1 MyNeuronInstance x64
Creating MyNeuronInstance Neuron instance.


    Directory: C:\Program Files (x86)\Neudesic\Neuron ESB


Mode                LastWriteTime     Length Name
----                -------------     ------ ----
d----         3/26/2012   9:44 AM            MyNeuronInstance
Copying Neuron files for x64 platform.
Updating the MyNeuronInstance configuration settings.
Registering the Windows service for MyNeuronInstance.

Status      : Stopped
Name        : Neuron ESB (MyNeuronInstance)
DisplayName : Neuron ESB (MyNeuronInstance)

Registering the MyNeuronInstance event log and event sources.
Creating the Programs menu shortcuts for MyNeuronInstance.


    Directory: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Neudesic


Mode                LastWriteTime     Length Name
----                -------------     ------ ----
d----         3/26/2012   9:44 AM            Neuron ESB (MyNeuronInstance)
The  instance has been created successfully.


PS C:\Program Files (x86)\Neudesic\Neuron ESB>
```

Process Designer

The Process Designer and Runtime experience continues to evolve in the Neuron ESB 2.6 platform to
enable customers to build robust business processing scenarios. One of the most noticeable changes in
Neuron ESB 2.6 is the rebranding of the Pipeline Designer. In Neuron ESB 2.6 this has been renamed
Process Designer to more accurately reflect its rich set of capabilities. Neuron ESB offers a flexible, easy
to use, Process Designer with a drag and drop interface that ships with over 30 configurable Process
Steps that do everything from calling a service, updating a database or queue to parsing an Excel file, as
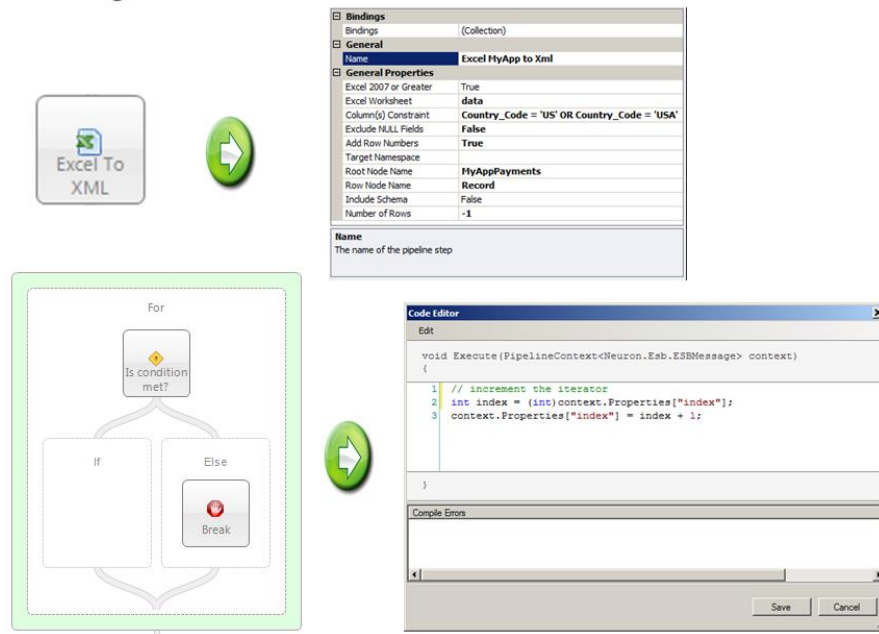depicted below within the Neuron ESB Explorer.
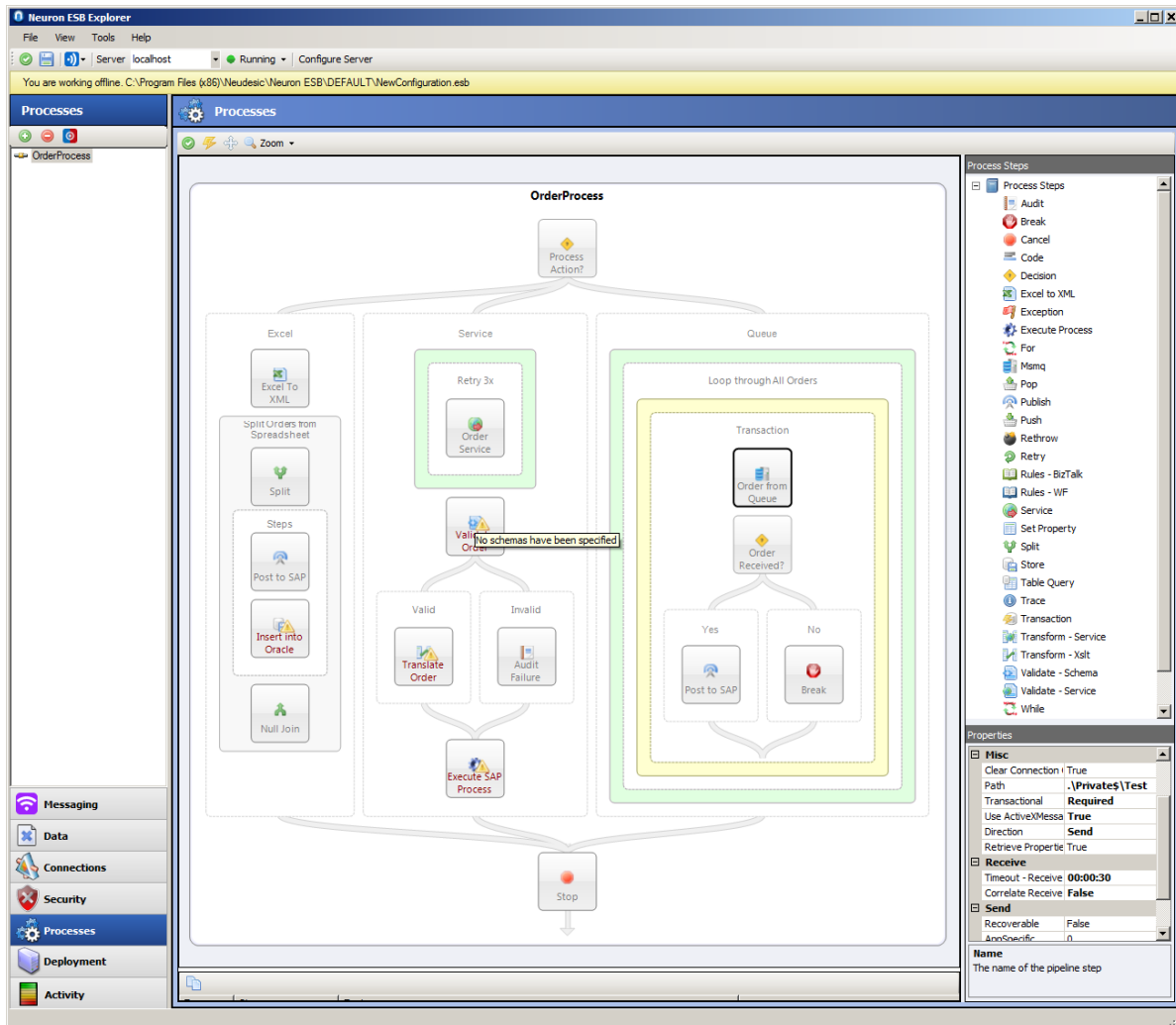
New Process Steps

With Neuron ESB 2.6, organizations can create more complex business processes using newly introduced Process Steps such as "While" and "For" looping constructs as well as an "Excel to Xml" parsing Process Step. Other enhancements have been made to the exception management of processes and to increase the richness and flexibility of existing Process Steps. Organizations can create custom Process Steps in Microsoft Visual Studio .NET that can be reused across solutions and easily test their processes within the Process Designer or Microsoft Visual Studio .NET environment. Some of the new Process Steps and enhancements included are listed below.

- Excel to Xml – A new Process Step that allows organizations to parse binary Excel documents into XML. This Process Step can also optionally generate an XSD schema based on the XML. Where clauses for determine what rows are returned and specifics about how the XML should be constructed can be specified. This uses the Excel ODBC driver which is installed by default with Microsoft Office. This driver can also be downloaded from here: http://www.microsoft.com/download/en/details.aspx?id=13255
- While Loop - A new Process Step that allows a While type looping construct to be configured within a Process. The new Break Process Step can be used within the While Loop.

* For Loop - A new Process Step that allows a For type looping construct to be configured within a Process. The new Break Process Step can be used within the For Loop.

* Service – The existing Process Step has been extended so that the SOAP Action can be dynamically set at runtime.
* Process Exceptions – How to capture the details of an exception that occurs during the execution of a Process has been changed to allow users to retrieve specific details, including the parent Process name, sub Process name, and the name of the Process Step that actually threw the exception. Neuron ESB now exposes the *Neuron.Pipelines.PipelineException* object that includes properties providing the necessary metadata to create rich exception handling routines within Processes.

Adapters and Connectivity

Neuron ESB provides many areas of developer productivity. Neuron exposes extremely simplified interfaces for adapter development as well as real time process development. Adapters function as bridges to external transports, protocols or existing applications that may be in use within an organization. Neuron ESB provides many "out of the box" adapters to simplify connectivity through messaging and configuration. Additionally, several "event based" publication adapters are also included with Neuron ESB.

Neuron ESB 2.6 introduces several new adapters as well as enhancements to assist organizations connect, compose and expose new capabilities within their environment. FTP/FTPS adapters are now included, as well as updated "event based" publication adapters for both Microsoft SharePoint 2010 and Microsoft Dynamics CRM 2011, complimenting their existing subscription adapters. The Neuron ESB

ODBC adapter has been enhanced with new capabilities such as supporting ReturnValue and OutPut type parameters.

Microsoft SharePoint 2010

Neuron ESB includes remarkable integration capabilities with both Microsoft SharePoint 2010 and Microsoft Dynamics CRM 2011. The Microsoft SharePoint 2010 event based publication adapter compliments the existing Microsoft SharePoint subscription adapter by allowing organizations to capture SharePoint generated events from lists and libraries and publish those events in real time to a Neuron ESB Topic. The Neuron ESB SharePoint 2010 Publication Adapter has the following features:

- Publish from Lists
- Publish from Tasks
- Publish from Libraries
- Publish on multiple types of events:
    - Item Added
    - Item Updated
    - Item Deleted
    - Item Checked Out
    - Item Checked In
- Include Attachments
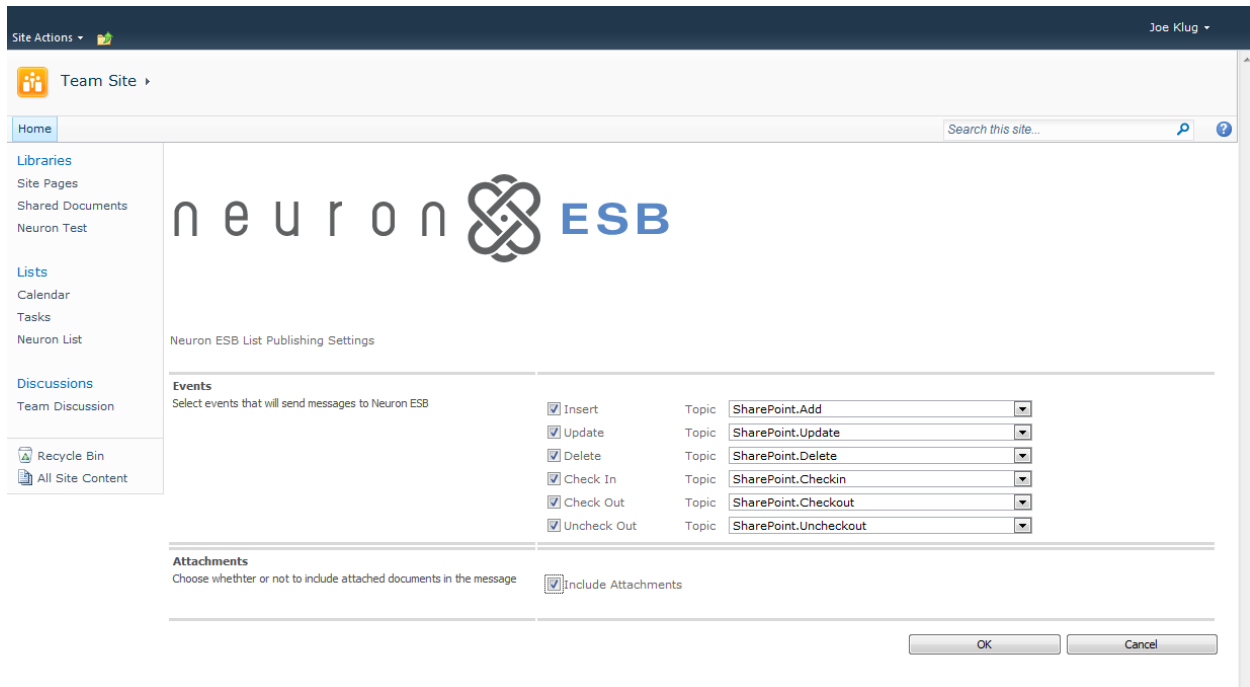
Microsoft Dynamics CRM 2011

The Microsoft Dynamics CRM 2011 event based publication adapter compliments the existing Microsoft Dynamics CRM subscription adapter and embraces functionality consistent with that of the Microsoft Dynamics CRM 4 event based publication adapter. However, improvements were made in both performance and resource management.

Using Neuron ESB, Microsoft Dynamics CRM 2011 administrators can easily capture events through the Dynamics CRM 2011 Process Designer and configure them to be forwarded to a Neuron ESB Topic. Processes in Microsoft Dynamics CRM 2011 are based on Windows Workflow Foundation. By leveraging the Microsoft Dynamics CRM 2011 process engine, Neuron can provide more options for business rule creation, while offering a greater breadth of event publication options, including full WCF service capabilities.

The Neuron ESB Microsoft Dynamics CRM 2011 publication adapter extends Microsoft Dynamics CRM 2011, enabling it to send event notifications to web services as well as Neuron topics using. Some of the features include:

- Send entities to topics and web services.
- Send dynamic entities to topics and web services.
- Send customized XML with data from related entities to topics and web services.
- Execute fetch XML queries and send the results to topics and web services.
- Run XSL transforms before sending data to web services.
- Capture detailed tracing information.
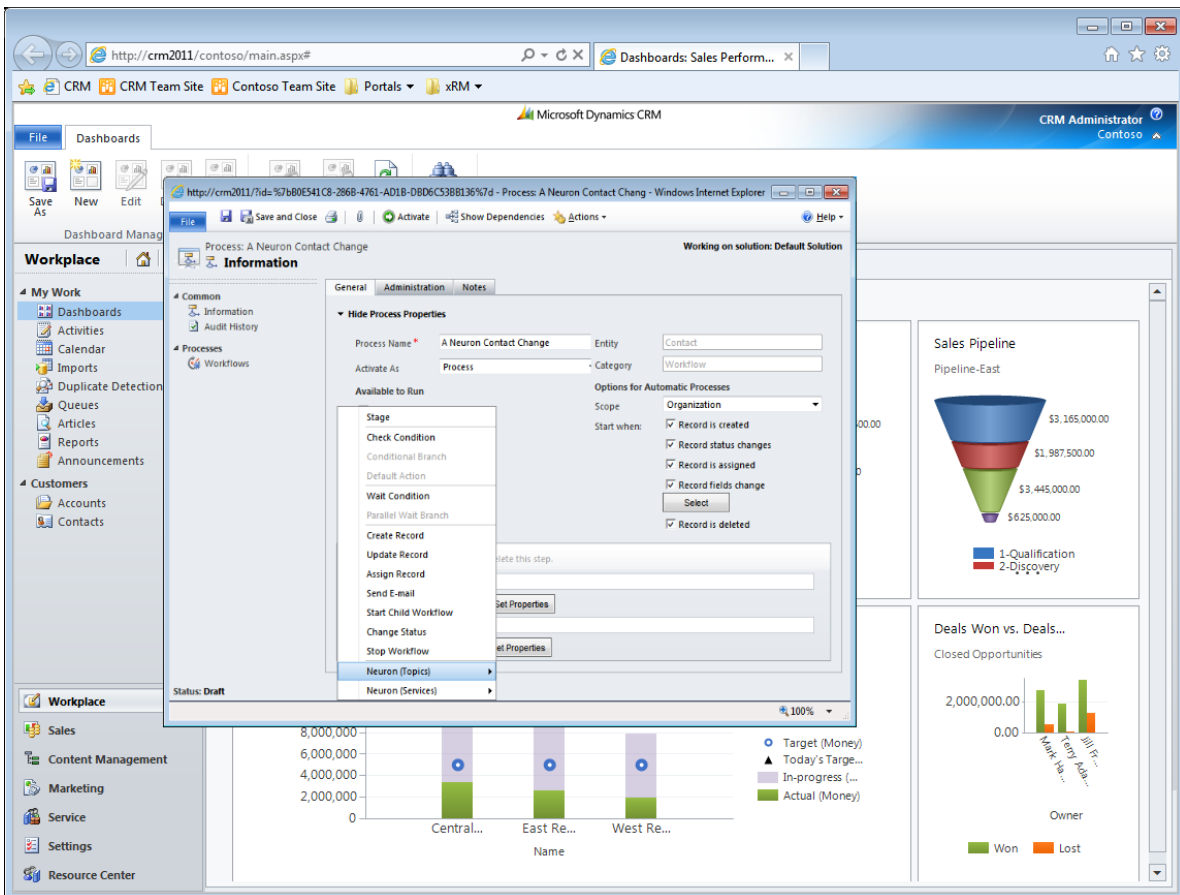
The latest Neuron ESB Microsoft Dynamics CRM 2011 publication adapter can be downloaded from here:
http://support.neuronesb.com/downloads/neuron26/Neuron.Crm2011.Workflow.Setup64.msi

FTP/FTPS Adapter

Neuron ESB 2.6 introduces a new adapter that provides access to the complete functionality of the FTP protocol. This adapter supports both Publish and Subscribe modes, allowing organizations to monitor FTP sites and publish documents directly to Neuron Topics as well as send messages from Neuron ESB Topics to FTP locations.

The FTP/FTPS adapter provides built-in support for UNIX, VMS, AS/400, and Windows/DOS FTP server types. The adapter can also work with other lesser-known type of FTP servers. SSL (Secure Sockets Layer) is supported, providing secure transfers for both Publish and Subscribe mode. Connections to FTP servers through HTTP proxy servers are easily handled. A number of features are supported in this adapter including:

- RFC 959, 1123, and 1579 compliant.
- Supports the FEAT command (also known as the "Knowledge of Extra Capabilities").
- Supports MODE Z data transfer.
- Supports secure FTP via SSL 3.0 and 3.1 (TLS).
- Supports the CCC command and provides a property designed to make connecting to servers behind firewalls more easy.
- Enables connections to FTP servers through HTTP proxy servers.
- Solid, built-in support for various server types, including UNIX, VMS, AS/400, and DOS.
- Supports all major FTP operations and allows sending of custom commands.
- Supports FTP passive mode for firewall and proxy server resilience.
- Multiple Connection/Thread support for Publish and Subscribe mode
- Timestamp Comparison for Publish mode
- Delete after Download options
- File Ready schemes to support Publish mode downloads
- Error reporting options

(General)	
Server Name	win2008-d01
FTP Connections	10
Port	990
Transfer Mode	Stream
Transfer Type	Binary
Passive FTP	True
FTP Operation Timeout	60
Secure Connection	ExplicitSSL
Secure Data Channel	True
Certificate	FtpCertForThomson
Anonymous Connection	False
User Name	Administrator
Password	••••••••••
HTTP Proxy	False
Publish Mode Properties	
Publish Topic	OASDI
Polling Interval	60
Error Reporting	Error
Error On Polling	ReportAllErrors
Delete After Download	False
Enable Timestamp Comparison	True
FTP Folder	\\Test\\New\\
File Mask	*
File Ready Scheme	True
Method	CompletedFileExtension
File Extension	completed
Publish Empty Message	True
Audit Mesage On Failure	True
Subscribe Mode Properties	
FTP Folder	
Generate Unique Filename	False
PreAllocateStorage	False
Audit Mesage On Failure	False

Method
There are two methods 1.) Exclude downloading files with a specific file extension 2.) look for a 'completed' file extension and download its matching file.

ODBC Adapter Enhancements

The ODBC Adapter was originally introduced in the 2.5.14 release of Neuron ESB, providing access to ODBC data sources and supporting a variety of operational modes including Query, Execute, Publish and Batch. Organizations use this adapter to connect to ODBC supported data sources, composing them into new solutions and exposing them for consumption by other applications or services. By using Neuron ESB's native service hosting and brokering capability, any ODBC data source can be exposed as a web service with nothing more than a few clicks of a button.

Neuron ESB 2.6 continues to extend the functionality of the adapter by introducing dynamic metadata properties that can be set at runtime. A number of capabilities have been added and extended to the adapter so that it continues to provide a robust solution for the data centric organization.

- ReturnValue and OutPut type parameters are now supported when used in Query mode
- Errors that occur in Query mode are now propagated back through the bus to the calling publisher
- Support for dynamically setting the RootNode, RowNode and Namespace properties at runtime.
- TableDirect mode support has been added when using an ODBC Text driver and renaming sources option is used.
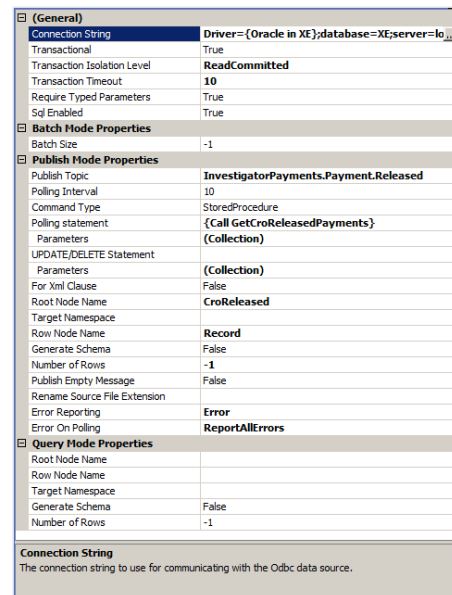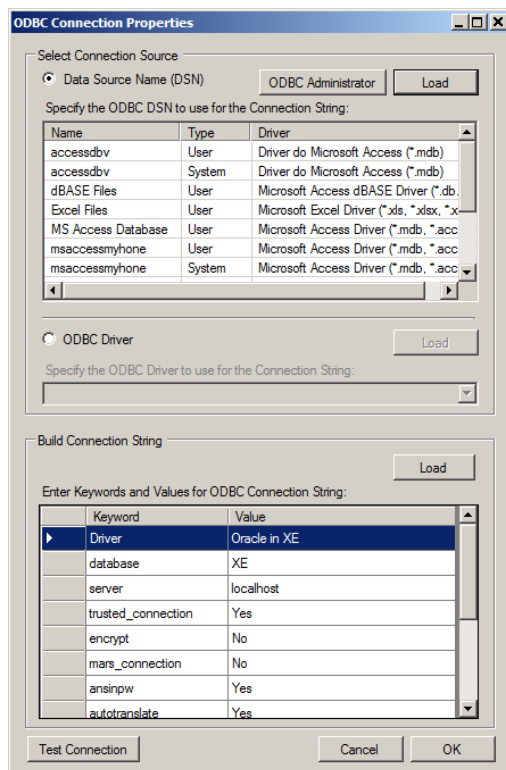
- ODBC adapter now returns the Neuron specific exception on publication failure.
- ODBC Connection string property may be set at runtime.
- Supports SQL Injection checking
- Generates XSD Schemas for retrieved data
- Supports typed parameters
- After Update/Delete statement execution
- Polling, Querying and Sending to data sources
- FOR XML clauses when using ODBC driver for SQL Server
- Transaction support

Topics using Named Pipes

Neuron ESB offers a Topic based publish and subscribe model to mediate the routing of messages between all Parties (Publishers and Subscribers), Adapter and Service Endpoints. Neuron's Topic model is composed of a sub topic hierarchy that can more intuitively reflect either an organization's structure or business requirements. However, Neuron ESB is unique in the industry in that it allows the business to determine the Quality of Service (QoS) attributes at the Topic level, and that many Topics of various QoS attributes can exist side by side. By providing this level of flexibility, organizations do not have to worry about changing their specific business requirements to meet the limitations imposed by other competing products. Some of the critical QoS attributes include:

- Throttling
- Encryption
- Auditing
- Transport
- Transactions
- Durability
- Compression

Transport is a critical QoS selection since it affects many aspects that businesses may require including transaction and durability support as well as ordered messaging, guaranteed delivery, once only delivery, scale out, latency and performance. In previous versions of Neuron ESB, several configurable Transports for Topics were supported including:

- TCP
- MSMQ
- PEER
- BIZTALK

Neuron ESB 2.6 introduces a fifth Transport; Named Pipes. Named Pipes can be used to as a Transport property for Topics within the Neuron ESB Explorer. Named Pipes can be used as an alternative to TCP based Topics to relieve the need for operations to manage a large number of ports, yet still provide in memory routing, low latency and performance aspects that organizations expect from Neuron ESB!

Monitoring and Reporting

Windows Management Instrumentation (WMI)

New administrative, monitoring and reporting capabilities are introduced with the release of Neuron
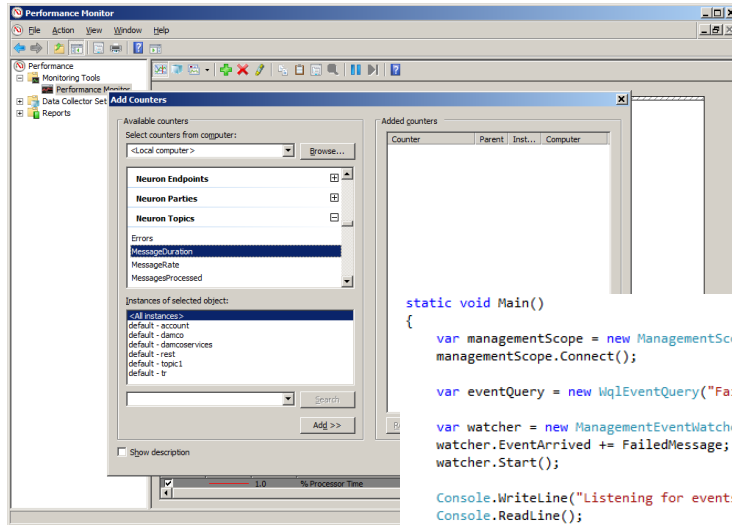
ESB 2.6. Microsoft WMI performance counters and events have been added to more readily aid operations in the measurement of the runtime environment using either third party or custom monitoring tools. Now organizations can use WMI to measure the performance of Topics, the total time for request/response type (MessageDuration counter) calls or monitor for failed

message events as they occur within Neuron ESB. Although Neuron ESB already includes graphical, web service driven monitoring tools like Endpoint Health Monitor, the addition of WMI support provides for well-rounded monitoring solution support.
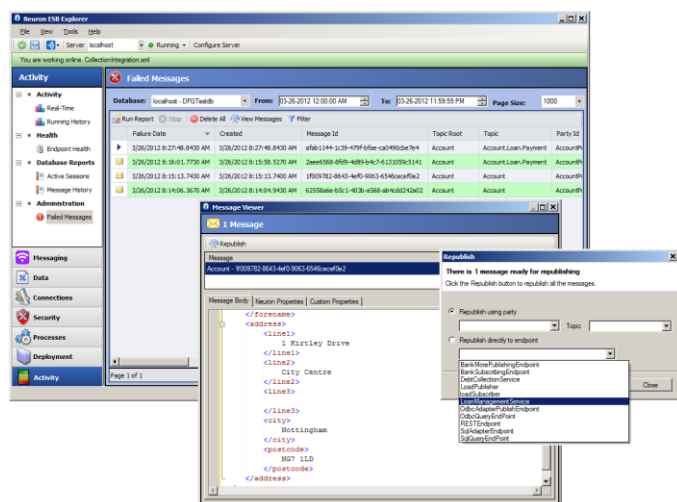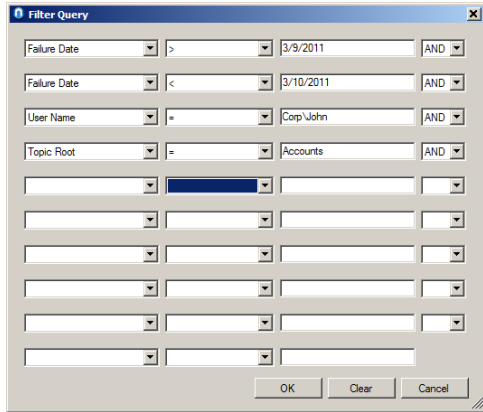
Reporting

The inclusion of more robust reporting capabilities, including the ability to query, sort and respond were started with the introduction of the Bulk Edit/Resubmit feature within Neuron ESB 2.5.14. Bulk Edit and Resubmit became a feature of both the Message History and Failed Message reports within the Neuron

ESB Explorer. It allows users to edit any message, either individually or in bulk and then resubmit that message either directly to any endpoint, or directly through an existing Neuron Publisher.

In Neuron ESB 2.6 we continue to refine and extend these reporting capabilities. Organizations can now sort any column in the reports. They can control the page size, specifying exactly how many rows should be visible on every page of the reports. More fields are displayed by default, freeing users

from the need to open a message in the Message Viewer to view every header and custom message property that may exist. However, Neuron ESB 2.6 introduces a new Filter Query feature accessible from every report through the Filter command. This allows users to define SQL like query criteria to

determine exactly what records to return from the database and display in the reports. The new user interface supports querying against every Neuron ESB Message Header property, using standard predicates and supporting AND/OR/NOT.
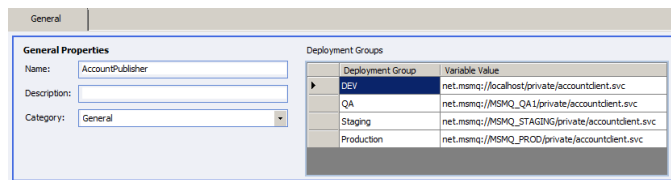
Neuron Audit Database

One of the most sweeping changes affecting custom reporting is the refactoring of the Neuron ESB database structure. In previous versions of Neuron the ESB Message, (which included the data payload, custom properties as well as the ESB Message header properties) were stored as a compressed binary blob. If users wanted to build custom reports from the Neuron ESB database it required the use of Microsoft SQL/CLR functions to decompress and retrieve either the custom properties or data payload from the original ESB Message. This was cumbersome to setup, as well as a resource intensive endeavor. With the release of Neuron ESB 2.6, the Neuron Audit tables have been refactored specifically enable custom reporting. All ESB Message header properties are represented by their respective columns in a table. The data payload of the ESB Message is now stored separately within its own column, uncompressed. Also, custom properties that users add to the ESB Message are stored in an XML data typed column supporting XQuery.

```
SELECT CustomProperties.query('data(/CustomProperties/Property[@Name="CI.Name"])') AS [Name]
FROM MessageAudit_AllTopics
```
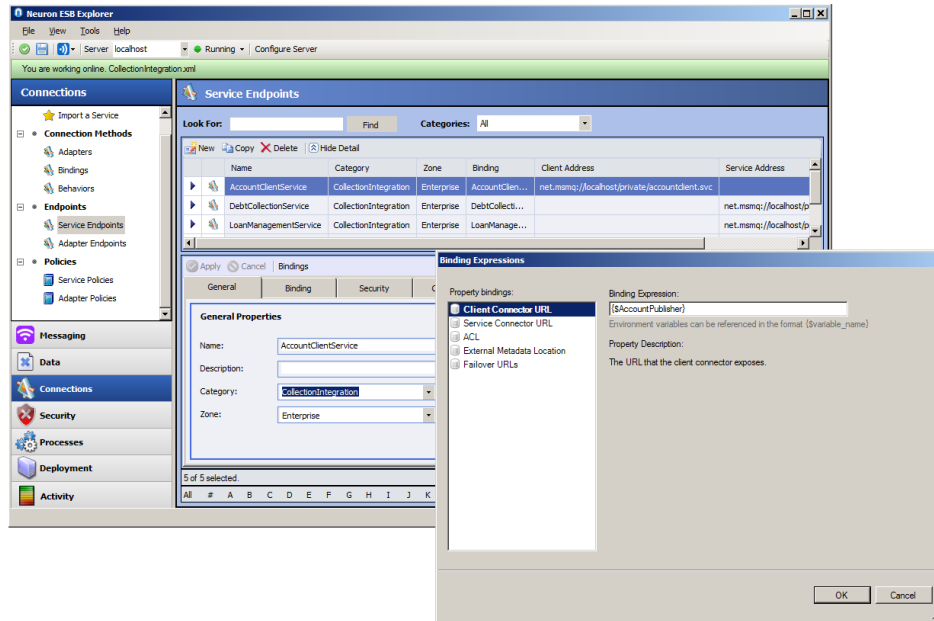
Deployment Management
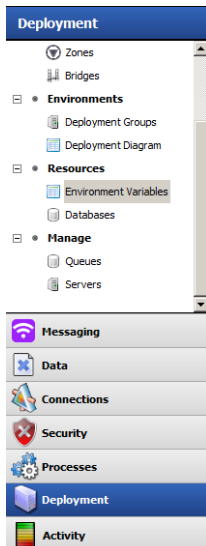
Environment Variables were introduced in Neuron ESB 2.1 and have been an important enablement of the Neuron ESB XCopy deployment approach. With each version of Neuron, we have continually extended and refined how Environment Variables can be used, and for what they can be used for. Environment Variables are associated with Neuron ESB Deployment Groups and are assigned unique values per Deployment Group. Once these values are defined, the variables can be used to configure most of the design time properties exposed by Neuron ESB Process Steps, Service Endpoints and Adapter Endpoints through the use of the Binding Expressions dialog. Environment Variables can also be used to configure any custom Process Steps or Adapters that organizations may create and deploy with their Neuron ESB solution.

Neuron ESB 2.6 continues the tradition and introduces support for configuring the Access Control List (ACL) property of Service Endpoints and the Connection String property of Neuron ESB Audit databases using Environmental Variables. The latter has significant impact on deployment scenarios as it enables users to configure just one Neuron ESB Audit database within the Neuron ESB Configuration Store yet assign that database to multiple Deployment groups, even though the Connection String parameters (i.e. server, database name, etc.) may be completely different between Deployment Groups.

Neuron ESB 2.6 introduces additional changes to facilitate deployment across environments as well as manage the interaction with the Neuron ESB Configuration Store (*.ESB). For example, in previous versions of Neuron, the Neuron Audit database, once defined, would have to be created before persisting the change. Now, users can add the configuration for the database and persist it, without having to first create it. When selecting the "Apply" or the "Test/Create Database" buttons users are now prompted to optionally create the database if it does not exist.

Lastly, both the Neuron ESB Explorer, as well as the Neuron ESB Service Runtime can load and run a Neuron ESB Configuration Store file in READ ONLY mode. This becomes useful in scenarios where the Neuron ESB Configuration Store file is managed using third party source code control systems.
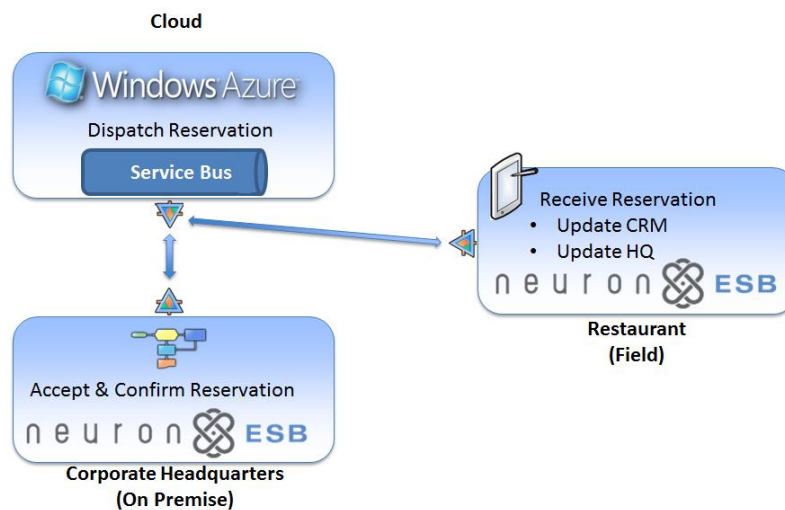
Service Endpoints

Azure Service Bus Integration
In conjunction with providing a powerful integration platform for the .NET developer, Neuron ESB 2.6 deploys as a web service platform facilitating critical functions for organizations interested in successfully adopting a SOA strategy:

⊗   Service Intermediary

- Service Router
- Service Versioning
- Service Provider
- Service Patterns

Neuron ESB 2.6 plays a critical role as organizations evolve to look toward Cloud offerings for service hosting or business to business communication. As a web service broker, Neuron ESB 2.6 now includes all of the Azure Service Bus Relay Bindings (http://msdn.microsoft.com/en-us/library/windowsazure/hh410102.aspx) to facilitate hybrid approaches to bridge On Premise integration with Cloud based solutions. Neuron ESB 2.6 ensures that communication between the Cloud and On Premise systems can be handled securely and reliably, while managing processing requirements of the organization.


WCF Service Behaviors

Neuron ESB 2.6 introduces creatable, pluggable, reusable WCF Behaviors that can be assigned to any Service Endpoint. Organizations can now create WCF Behaviors by navigating to the Connections tab within the Neuron ESB Explorer. The Behaviors node is located under the "Connection Methods" section.

Once the WCF Behavior is saved, it can be selected as an option on a Service Endpoint, located on the "General" tab. When Neuron ESB Service Runtime loads the Service Endpoint, it will apply both the service and endpoint behaviors to the Client Connector (Neuron ESB hosted service), and will apply the endpoint behaviors to the Service Connector.
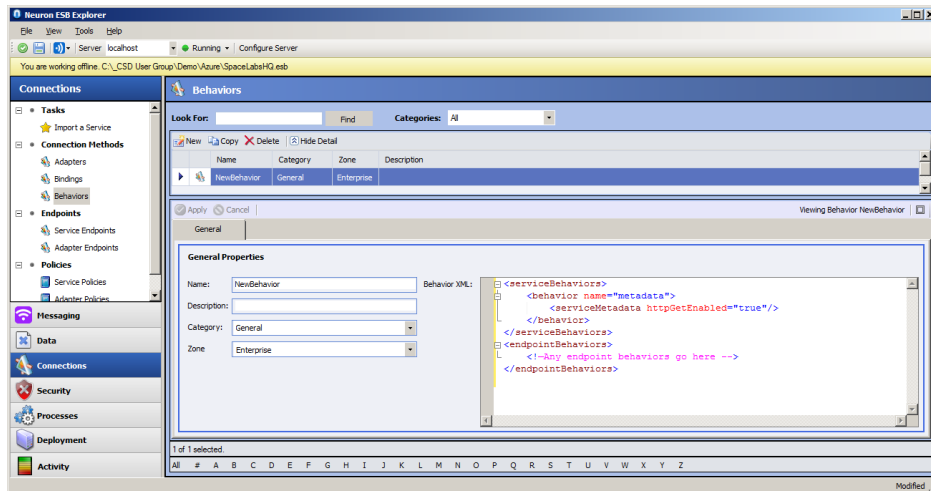
REST Delegation

Neuron ESB is used by many organizations to broker, route and mediate web service calls for their customer and partners. Neuron effectively controls the flow of requests to internal resources and exposes new capabilities to consumers through composite design patterns and tools. Although many organizations use SOAP based services, REST based services are an important ingredient for embracing Web 2.0 and mobility scenarios. Many customers today use Neuron ESB to expose existing SOAP based services as REST based services, saving a significant amount of time and development effort in the process.
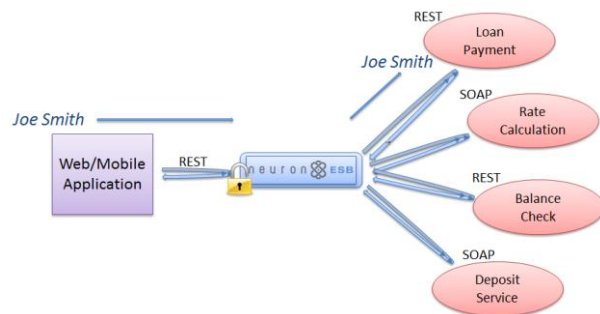
Neuron ESB 2.6 continues to add support for REST by providing end to end Delegation support for REST based calls that it brokers. Neuron ESB 2.6 is unique in this respect as it provides this support for the .NET platform, where it is missing today. This allows organizations on the Microsoft Platform to build secure; REST based brokered solutions using Neuron ESB.

Additional Enhancements

The Neuron 2.6 release includes all accumulated fixes since the release of Neuron 2.5 as well as many other enhancements. The complete list of changes can be found in the change log ("Neuron Change Log.pdf") located Here: (http://products.neudesic.com/media/pdf/changelog.pdf)