Integrations

Node-Red Guide — Last update: 29 January 2021

Basis Technologies

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1. Introduction

ActiveControl has long offered an Integration Framework – enabling integration with ITSM tools such as ServiceNow, JIRA, HPSM and many other products to be delivered for Customers over the years.

During this time, this Integration Framework – which is based on SAP ABAP – has been expanded as new and existing customers requested integrations with new products, or additional capabilities with existing integrations. This has sometimes required significant Development within Basis Technologies, taking focus from other areas of product evolution.

Due to this situation and indeed also customer feedback – Basis Technologies have introduced a new Node-RED Integration Framework as part of ActiveControl 8.40, which is intended to replace the existing SAP-based Integration Framework over time. Node-RED is a flow-based development tool for visual programming developed originally by IBM for wiring together hardware devices, APIs and online services. Basis Technologies believe that using Node-RED as an integration middleware between ActiveControl and 3rd Party products will enable new integrations to be setup much more easily and rapidly than we have been able to do in the past.

Ultimately, the aim of the new Node-RED middleware framework is to help our Delivery Team and Customers become much more self-sufficient in setting up new and existing integrations with ActiveControl.

Intended Audience

The intended audience for this document are the technical teams looking to implement integration between ActiveControl and third party tools using Node-Red middleware. The document assumes a reasonable prior knowledge of ActiveControl and indeed standard change and release processes with SAP, and also a willingness to learn Node-RED if it is something that is not already being used within the Customer organisation.

2. Node-RED

Node.JS

Node.js is an open-source, cross-platform, JavaScript runtime environment (Framework) that executes JavaScript code outside a web browser. Node.js lets developers use JavaScript to write command line tools and for server-side scripting—running scripts server-side to produce dynamic web page content before the page is sent to the user's web browser.

As an asynchronous event-driven JavaScript runtime, Node.js is designed to build scalable network applications. It is maintained by the Open JS Foundation.

More information on Node-JS can be found in the following external links.

Nodejs.Org
Openjsf.Org

Node.js can be installed on your PC or MAC via the download links here

Node-RED

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

Node-RED runs on Node-JS. It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click.
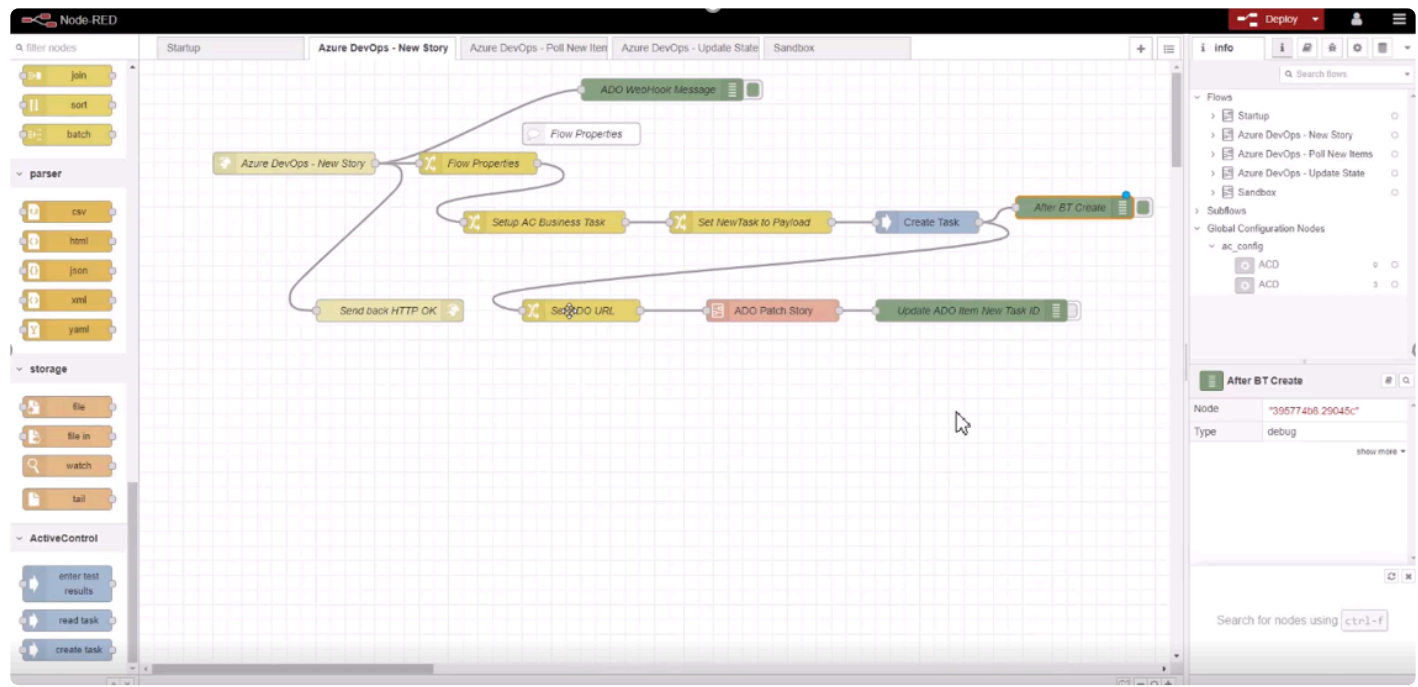
Figure: Example flow built in Node-RED

Further Information

Node-RED will be new to many Basis Technologies customers and ActiveControl users. The following 3rd party resources provide some useful background information and tutorials to the toolset.

Node-RED homepage	NodeRED.org
Getting started with Node-RED	Node-RED link
Node-RED tutorial playlist	YouTube video link
Node-RED Advanced Nodes	YouTube video link
Top 5 Node-RED Core Nodes	YouTube video link

3. ActiveControl & Node-RED

ActiveControl Domain Controller

Like the Transport Management System, ActiveControl has the concept of a Domain Controller.

The domain controller does not need to be configured in any special way, it is simply the SAP system that the ActiveControl client software connects to, and is where ActiveControl configuration and application data is stored.
The server software runs mostly within the ActiveControl domain controller. When necessary, the domain controller connects to the other SAP systems to gather change request information and to perform transports. These connections are made using SAP's remote function call (RFC) protocol.

In the contect of the ActiveControl Node-RED integration, Node-RED communicates with ActiveControl via the APIs that exist as part of the ActiveControl installation in the Domain Controller.

Integration Architecture

The following diagram summarises the high-level Architecture of an ActiveControl / Node-Red based integration.

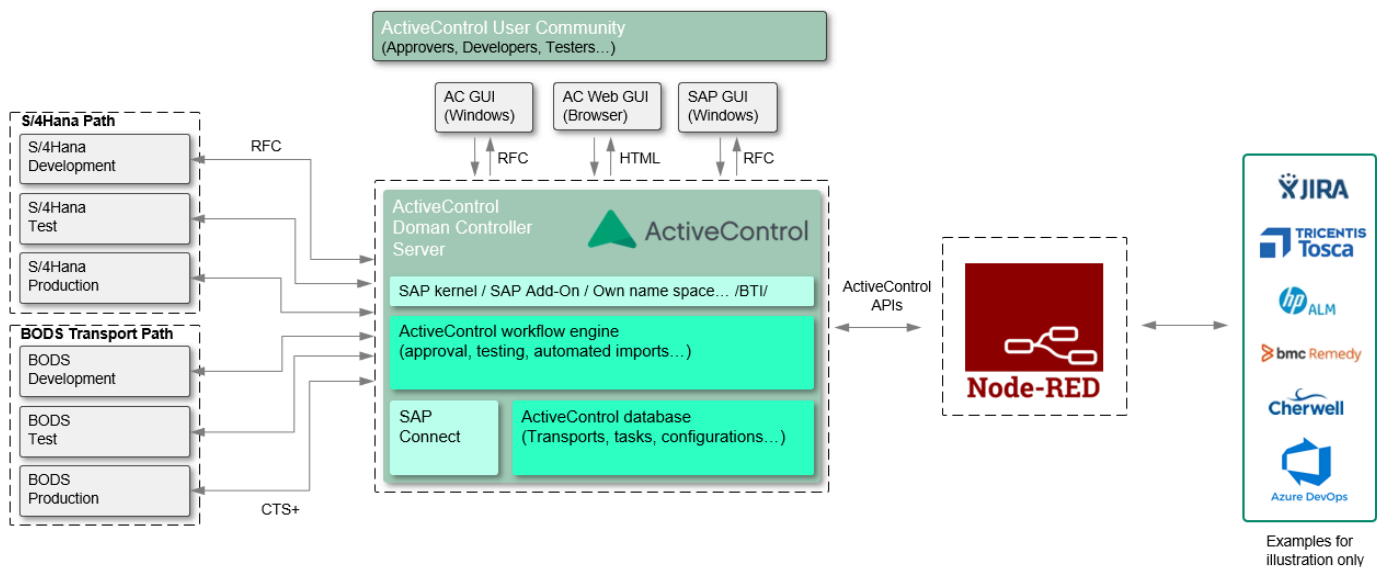Figure: ActiveControl Node-RED integration architecture

ActiveControl APIs

ActiveControl offers various out of the box APIs via which ActiveControl can communicate with Node-Red.

As of ActiveControl 8.40, SOAP APIs are available to perform all of the following key functions (however the intention is to supplement these with RESTful APIs in a future relesae of ActiveControl):

- Create a Business Task
- Change a Business Task
- Read a Business Task
- Read the Transports of a Business Task
- Start the analysis for a Business Task
- Read the results of an Analysis run
- Approve a Business task
- Enter the test results for a Business Task

SAP Integration user

An SAP user is required within the ActiveControl DOmain Controller to support inbound integrations.

This should be a SERVICE user with /BTI/TE:CTS_ADMIN and /BTI/TE:CTS_USER role assignments.

4. Installing Node-RED

Responsibity for setting up Node-Red

Node-RED as it is not a proprietary Basis Technologies product, and as such we do not sell, install or support Node-RED directly.

It is the Customer responsibility to install Node-Red if it is not already being used within the Customer technology estate.

Installing Node-RED

Node-RED may be installed on-premise or hosted in the cloud such as Amazon Web Services or Microsoft Azure. You can find more information at https://nodered.org/#get-started.

Run as a Linux daemon or Windows Service	https://nodered.org/docs/faq/starting-node-red-on-boot
Enabling HTTPS Access	https://nodered.org/docs/user-guide/runtime/securing-node-red#enabling-https-access
Editor & Admin API Security	https://nodered.org/docs/user-guide/runtime/securing-node-red#editor—admin-api-security
Set credentialSecret	Look for the credentialSecret instructions in the settings.js file in your Node-RED installation.

4.1. Node-RED Storage

By default, Node-RED uses a local file-system implementation to store its runtime data; more information on this can be found [here](#).

The ActiveControl Node-RED integration framework includes a custom storage module for storing runtime data in the SAP database of the ActiveControl Domain Controller system

This exists in a separate /???/ namespace to ActiveControl's /BTI/ namespace – as it will also be used by Basis Technologies' other flagship product Testimony in the future.

Storing the data in the SAP database enables ActiveControl customers to leverage their existing backup strategy; the following content will be stored:

- flow configuration
- flow credentials
- user settings
- user sessions
- node library content

4.2. ActiveControl SOAP nodes

A set of Node-RED nodes to interact with ActiveControl SOAP API are available from NPM here:
https://www.npmjs.com/package/@basistechnologies/node-red-contrib-activecontrol

5. Node-RED Templates

Node-RED flows can be exported as a json files from one Node-Red instance, and quickly imported into another Node-RED instance.

Basis Technologies intention over the coming years is to build up a library of re-usable Node-Red templates for 3rd Party tools with which we have already built an Integration via Node-RED for a customer. Using these templates, we anticipate the customer and Basis Technologies effort to setup new Integrations will reduce significantly, as only local customer connections and field mapping will need to be configured on top of the pre-existing Template.

Existing Node-RED Templates

None available as of ActiveControl 8.40.

As they become available, Integration Guides on the Node-RED Templates will become available via our existing https://docs.basistechnologies.com/ documentation portal.

Product	Link to Integration Guide
Azure DevOps	In process – will be added shortly
JIRA	Planned for H1 2021

6. Further Information

The ActiveControl Node-RED framework is available from ActiveControl 8.40 onwards.

As with all ActiveControl integrations, Basis Technologies would strongly recommend some formal consulting services support in the setup of a Node-Red integration between ActiveControl and another 3rd Party product.

If you are interested in finding out more about the ActiveControl / Node-RED capability, please reach out to your Basis Technologies Acount Manager and they can help to arrange a demo.