gluware®

Using **Intelligent Model Discovery** to Create Network Automation Policy

Application Note

Contents

Overview

The Gluware® Config Modeling app is used to build and customize your configuration policy, then use the declarative engine to deploy policies reliability at scale. This Application Note is designed to help you understand the approach of using the Gluware® Config Modeling application to automate network features applying the Intelligent Model Discovery workflow to rapidly create network automation policy.

To onboard your network policy there are three options:

- **Intelligent Model Discovery** (IMD) Workflow This Gluware workflow provides the ability to connect to a live device, read each of the configured features, then enable the creation of the required constructs in Config Modeling so that they can be used on any other device with the same operating system.
- **Network Feature Design** Is a workflow option that steps a user through the process to define and create the configuration feature.
- **Example solution package** One of the most common ways in which users start with Config Modeling is to use example packages provided by Gluware. These packages have commonly configured features and users can customize them to their specific configurations.

This Application Note will walk you through the process of using the IMD workflow to onboard your network policy for use in Config Modeling.

Prerequisites

To use the IMD workflow, the following prerequisites must be met:

- Your Gluware software instance must be installed (on-premises, or running from the cloud with the Gluware Secure Gateway) and enabled with licenses for the Config Modeling app
- Your network device(s) must be added via the Device Manager application, or directly in the Config Modeling application
- You must be using a network device with a Gluware supported operating system
- You must have the Gluware Config Modeling Kit (CMK) for that operating system installed in your organization
- The required Feature Binders must exist in the Model Editor (or be created)

Gluware Config Modeling Kit (CMK)

To verify you have the current CMK installed for the vendor operating system you are working with, follow these steps:

1. Navigate to Solutions Management. *(Figure 1)*

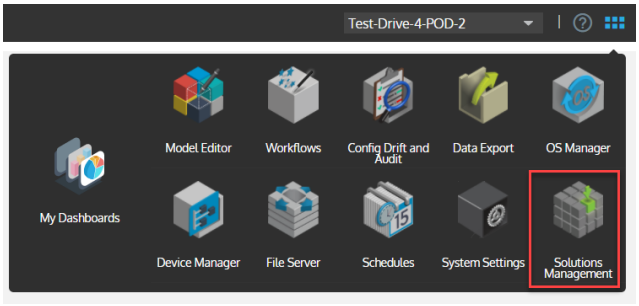

Figure 1 Select Solutions Management from the App Selector menu.

2. Using Package Explorer, click on the Installed view, and verify the Config Modeling Kit is up to date for the OS, if not, update the package. This example is using Cisco IOS Router CMK. *(Figure 2)*

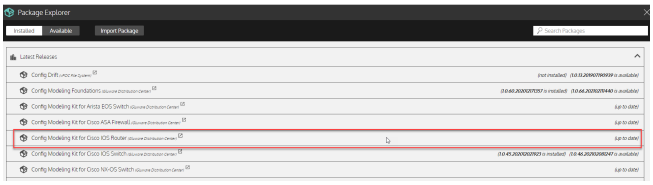

Figure 2 Navigate In Package Explorer, validate the CMK is up to date for the vendor OS.

Gluware Feature Binders

To view the Feature Binders defined in your system, follow these steps:

1. Navigate to the Config Modeling app in the Model Editor. *(Figure 3)*

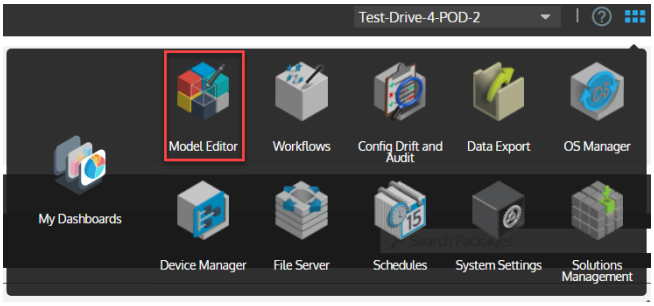

Figure 3 Navigate into the config Modeling app in Model Editor from the App Selector

2. In the Model Editor, navigate to the Globals (G) view, select Feature Binder from the drop-down filter, and optionally, add a filter for the OS you are using, in this case IOS. *(Figure 4)*

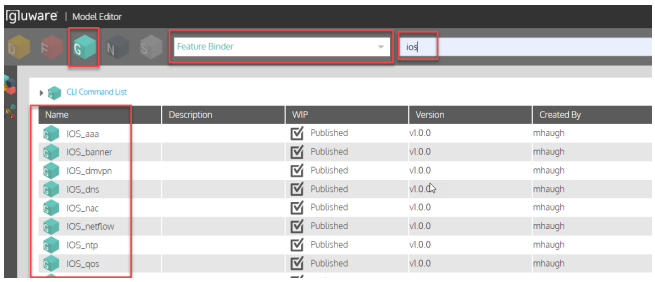

Figure 4 View the Feature Binders using the Globals view with the Feature Binder Filter and optional additional filter for the OS name.

The existing Feature Binders will be used by IMD to identify and import those features as policy into Config Modeling. If a Feature Binder does not exist for a feature you want to import, it will need to be created before running the IMD workflow. Steps to create a Feature Binder are described in this document.

Create model instances using Intelligent Model Discovery

You can create all the instances required for Config Modeling from a device with a known configuration. The Intelligent Model Discovery (IMD) workflow will create the required Gluware components including the CLI Command Lists, CLI Command Groups, Features, and Assemblies from the device's existing configuration if they do not already exist. You can then use these instances to model other devices in your network.

You can run the Intelligent Model Discovery workflow from **Model Editor** and from **Workflows.**

Run from Model Editor

1. Go to **Model Editor** and click **N** (Nodes) at the top of the screen. Also select the type of nodes to filter for, in this case IOS Routers. *(Figure 5)*

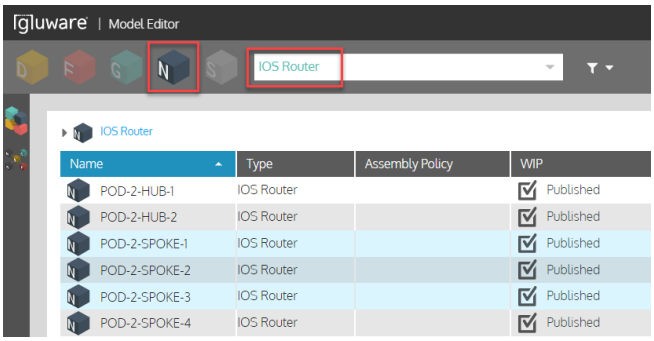

Figure 5 Select the Node view and use the filter for the device OS.

2. You can launch the Intelligent Model Discovery workflow by right-clicking on the node in the grid and selecting Design-> Intelligent Model Discovery, or if you bring up the **Node Instance Map,** you can right-click on the icon for the target node, in this case the node is called POD-2-SPOKE-1. *(Figures 6 and 7)*

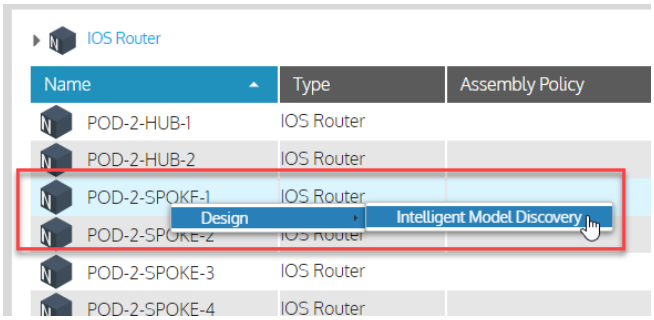

Figure 6 Run the IMD workflow by right-clicking on the target node.

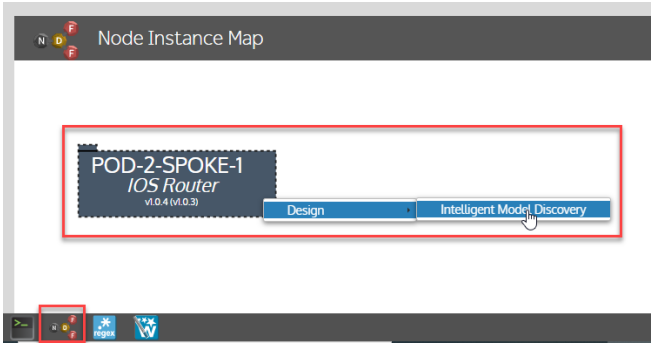

Figure 7 Another option is to run IMD by right-clicking on the node icon in the Node Instance Map view.

3. Next, use Intelligent Model Discovery to step through the process for Gluware to connect to the device and parse the configuration into the instances required for modeling. The discovered models are then displayed. Read the information about the workflow and click Next. *(Figure 8)*

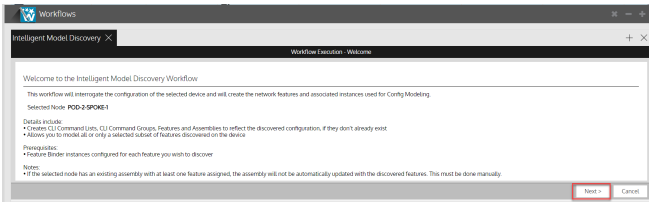

Figure 8 Read the information about the IMD workflow and click Next.

4. Once the IMD workflow has run, use the feature tabs to brows the features discovered and the corresponding CLI feature policy. *(Figure 9)*

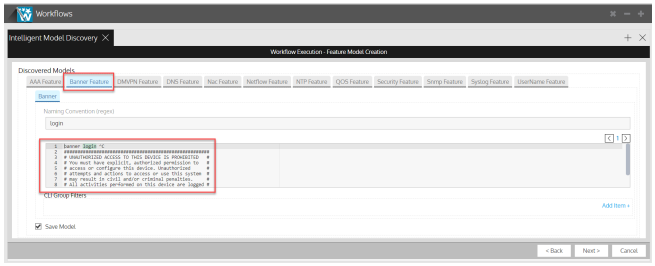

Figure 9 Brows the features discovered and CLI policy.

5. Modeling configurations for each model discovered: *(Figure 10)*

   - If you want to restrict the CLI commands allowed, click **Add Item** +, select **Allowed CLI Commands (regex),** and enter the CLI commands. If no commands are entered, Gluware will allow any command to be issued.
   - If you want to render the commands only if the listed elements are found during discovery, click **Add filter** +, select **Discovery Elements,** and list them.
   - Clear the **Save Model** box if you do not want to model the feature.

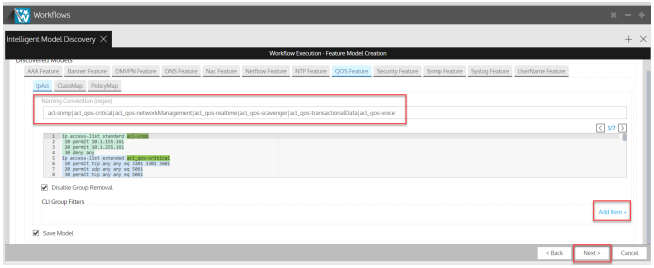

Figure 10 Customize the feature by changing the Naming Convention used for discovery or adding a CLI filter. Save changes and click Next.

6. Confirm the features you want to build by checking the box next to the feature name and click **OK.** *(Figure 11)*

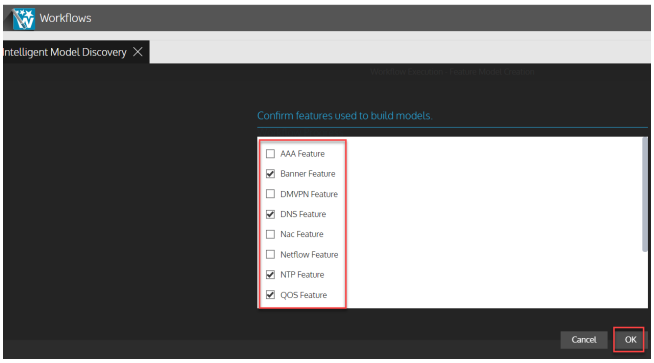

Figure 11 Confirm features you want Gluware to build and click OK.

7. Click **Finish** (or Cancel if you do not want Gluware to build the models). Once the Workflow Progress is complete you will see the message “Workflow has completed.”, close the workflow and return to the model editor. *(Figure12)*

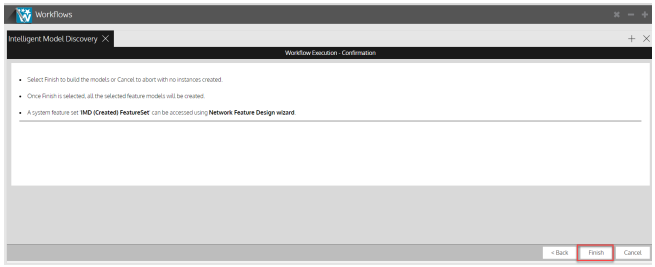

Figure 12 Finish the workflow, then after completed, exit the workflow to return to the Model Editor view.

View the Models Created

1. Once the IMD workflow is completed, in Model Editor on the Nodes(N) view click on the node that IMD was run on and bring up the **Node Instance Map.** From this view, you can see and navigate all the Gluware constructs created including the Assembly, Features, CLI Command Groups and CLI Command Lists. *(Figure 13)*

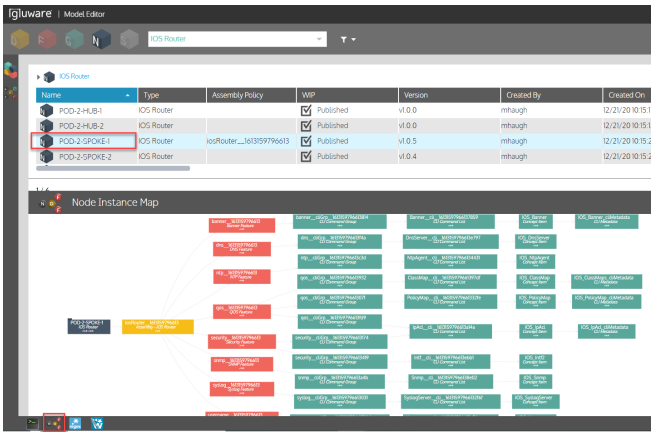

Figure 13 In Model Editor, click on the node IMD was run on and bring up the Node Instance Map view to see all the Gluware constructs created.

2. Now you are ready to use the Model Editor to view and edit any of the polices and apply the changes to this node or assign this same assemblies (or any of the feature created) to additional nodes to automate policy on them. Each item created is now available in the related Domain, Features and Globals view, like this Banner Global CLI Command List created. *(Figure14)*

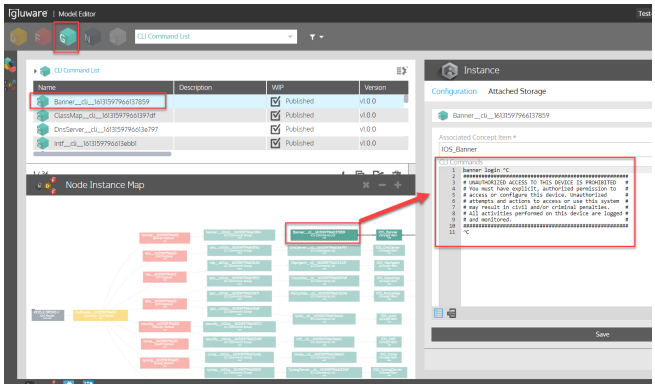

Figure 14 Browse individual constructs created using the Node Instance Map or the Grid view at the top.

Optional Step to Create a Feature Binder

A Feature Binder is a collection of Concept Items. A Feature Binder is required if you want to use IMD:

1. In Model Editor, click G (Globals) at the top of the screen.
2. Select Feature Binder from the drop-down list.
3. Click ➕.
4. In the Instance panel, click ✎ and name and describe the Feature Binder instance.
5. Select the device vendor from the drop-down list.
6. Select the operating system from the drop-down list.
7. Give the Feature Binder its internal name. The name cannot contain spaces or special characters.
8. Give the Feature Binder a display name.
9. Click Add Concept Item + and select a Concept Item from the list.
10. Add one or more additional Concept Items.
11. Save.

Conclusion

This *Application Note* was intended to provide a base knowledge for the execution of the IMD embedded workflow which is used to import feature and polices from existing devices in your network to create automaton policy.

Using IMD will accelerate the process to get started building your custom policies, but then additional work will be needed to customize them, add variables, conditionals and constraints. Use Gluware Config Modeling to model network features to standardize configurations across your network devices, eliminate manual errors and configuration bloat.

If you are ready to get started with Gluware system for automation or testing, here are some options:

1. **Get started with Gluware** from our free SaaS Network Inventory app offer to Gluware Enterprise for larger networks. Visit **Gluware Pricing Page** to learn more.
2. **Kick the tires** using a virtual environment we setup for you by requesting a Test Drive. Learn more **here**.
3. **Connect with a network automation expert** to explore your unique network needs, ask questions and request a tailored demo **here**.

Additional Gluware Resources

Watch a **demo** of Intelligent Model Discovery.

Tutorials | Collateral | Webinars | Blog posts

gluware®

2020 L Street, Suite 130
Sacramento, CA 95811

www.gluware.com