HP UCA Automation

Version 1.2

Administrator and User Interface Guide

Edition: 1.0

April 2015

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Preface

This guide provides an overview of the UCA Automation product and describes how to use the web-based user interface of the UCA Automation.

Product Name: UCA Automation

Product Version: 1.2

Read this document before installing or using this software.

Intended audience

This guide is intended for solution developers, software development engineers, solution administrator, and solution operators. The administrators, operators, and observers have different privileges provided through the user interfaces.

Software versions

The term UNIX is used as a generic reference to the operating system, unless otherwise specified.

The software versions referred to in this document are as follows:

Product Version	Supported Operating systems
UCA Automation 1.2	Linux Red Hat Enterprise Linux Server release RHEL 6.4

As the mentioned, the user interface is web based; the rendering of some components might be slightly different depending on the browser used.

However, the described features should be identical on any supported browser. For UCA Automation 1.2, the supported browsers are Mozilla Firefox 32 and Microsoft Internet Explorer 9.0.

Typographical conventions

Courier Font:

- Source code and examples of file contents.
- Commands that you enter on the screen.
- Pathnames
- Keyboard key names

Italic Text:

- Filenames, programs and parameters.
- The names of other documents referenced in this manual.

Bold Text:

- To introduce new terms and to emphasize important words.

Reference documents

- UCA Automation Installation Guide
- UCA Automation Integrator's Guide
- Deployment Manager Guide (HPSA)
- NOM Installation and Configuration Guide
- NOM HPSA Channel Adapter Installation Guide
- NOM UCA Automation Console Channel Adapter Installation Guide
- NOM UCA EBC Channel Adapter Installation Guide
- NOM TEMIP Channel Adapter Installation Guide

Support

You can visit the HP software support online web site at www.hp.com/go/hpsoftwaresupport for contact information, and details about HP software products, services, and support.

The software support area of the software web site includes the following:

- Downloadable documentation
- Troubleshooting information
- Patches and updates
- Problem reporting
- Training information
- Support program information

Chapter 1

Overview

In any typical service provider environment, a need for isolating network related issues and automating resolutions for the same is always in demand. UCA Automation software is positioned primarily to address this need. It is implemented as a combination of business rules engine and workflows engine.

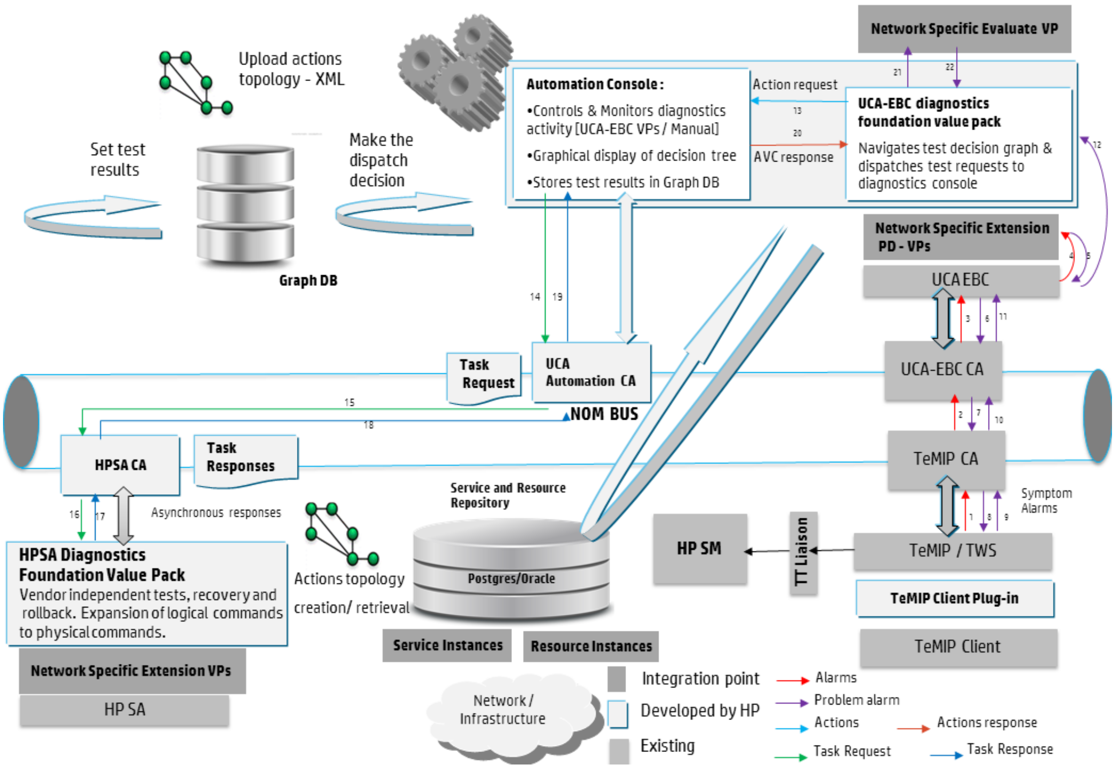
The system involves the integration of HP Unified Correlation Analyzer for Event Based Correlation (UCA EBC) system, which provides business rules capability and HP Service Activator (HPSA), which provides activation capability] glued via the enterprise service bus called NOM (NGOSS Open Mediation).

Generally, in the resolution solutions available today, there's no separate layering between what resolution steps need to be carried out on the incidence of a specific issue and how these resolution steps are carried out. This mixed up implementation of processes which represent both what and how part of the logic on the top of workflow engines OR in some cases on top of business rules engines, makes the workflows or business rules very complex to develop, comprehend, debug and maintain, read as 'modify' when a business decision changes - say support a new device type, support a new resolution command on the same device or support a new format of the output for an existing resolution command with an upgrade in device firmware. The problem scales to unimaginable magnitudes considering the different technologies such as DWDM, SDH, DSL, MPLS, LTE and legacies such as ATM, FR and X.25] and different layers / types of networks such as the transport, the access, the core, the radio access and so on.

UCA Automation software which is a combination of both business rule engine and the workflow engine will enable a clear separation of what to automate and how to automate. All the complexities of actual automation such as how to access a network resource [could be a network element, an element component or an EMS or NMS], what it's credentials could be, which specific transport mechanism to use to connect to the resource, what specific OS version of the device are to be supported, what specific commands need to be sent, would be abstracted from the business rules. This would enable the administrators to create-update-read the business rules with utmost clarity and maintain them efficiently. This would empower the administrators to store the knowledge gained regarding the automation in the form of business rules focusing on what part without bothering about the how part. One another advantage of UCA Automation software is, for most of the resolution automations - it would require the operator only to know business rules and he need not have knowledge of the business rules technologies to implement day to day operational changes to the decisions.

Thus UCA Automation System is a platform for building value added resolution automations based on a judicious combination of business rules and workflows.

The following diagram shows the architecture of the UCA Automation system.


Upload actions topology - XML
Set test results
Make the dispatch decision
Graph DB
Automation Console:
•Controls & Monitors diagnostics activity [UCA-EBC VPs / Manual]
•Graphical display of decision tree
•Stores test results in Graph DB
Action request
AVC response
Network Specific Evaluate VP
UCA-EBC diagnostics foundation value pack
Navigates test decision graph & dispatches test requests to diagnostics console
Network Specific Extension PD - VPs
UCA EBC
UCA-EBC CA
TeMIP CA
TeMIP / TWS
TeMIP Client Plug-in
TeMIP Client
Symptom Alarms
Task Request
UCA Automation CA
NOM BUS
HPSA CA
Task Responses
Asynchronous responses
HPSA Diagnostics Foundation Value Pack
Vendor independent tests, recovery and rollback. Expansion of logical commands to physical commands.
Network Specific Extension VPs
HP SA
Actions topology creation/ retrieval
Service and Resource Repository
Postgres/Oracle
Service Instances
Resource Instances
HP SM
TT Liaison
Network / Infrastructure
Integration point
Developed by HP
Existing
Alarms
Problem alarm
Actions
Task Request
Actions response
Task Response
1
2
3
4
5
6
7
8
9
10
11
12
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17
18
19
20
21
22

Figure 1 UCA Automation

The UCA Automation system process is as follows:

1. The network-specific PD value packs process a storm of alarms from an NMS such as TeMIP and create one Problem Alarm.
2. The UCA-EBC Diagnostics Foundation value pack acts on the Problem Alarm, which it receives either from the NOM bus or from the PD value pack.
3. The Decide-and-Act subsystem in the Foundation VP refers to a decision tree and determines the remedial actions for the problem.
4. The value pack sends these actions to the Automation console, enabling the user to view them, and later to an Activation System like HPSA.
5. The HPSA Foundation VP validates the incoming request and then sends them to the workflows in the network specific value pack.
6. The diagnostic results are sent back to the UCA-EBC Foundation value pack through the Automation console.
7. Depending on whether the administrator wants to make complex decisions based on the results, the diagnostic results are sent to the Evaluate value packs.
8. The Foundation value pack repeats the whole process of retrieving the next action from the decision tree, until it reaches the last action in the branch.

1.1 Design theory

Two key functions are performed by UCA Automation; the problem isolation and problem resolution.

Problem isolation is the responsibility of UCA EBC Problem Diagnosis value pack, which can eliminate event storms, false positives, false negatives, and deduce a single meaningful problem alarm.

This information is then passed to the decide-and-act engine, which identifies the action to be taken for a specific problem. After the action, the evolved knowledge is sent back to the decide-and-act engine for further resolution based on the decision tree or evaluates value-pack optionally, to perform predictive and proactive automation. In addition, diagnostic information is gathered automatically to reduce the MTTR (mean time to resolve).

The UCA Automation system works in the way depicted by the following diagram. It starts with the original problem, performs tests after tests as per the decision tree design, and then either resolves the problem or enriches the problem alarm with complete diagnosis, or can even create a trouble ticket automatically.

In case of manual resolution, the operator is presented with a set of problems, the associated services, and a list of the types of devices which can support such services. Once the above triplet is chosen, the corresponding resolutions are displayed, which can be invoked manually.

In UCA Automation System, the process of problem resolution happens in the way depicted by the following diagram. The administrator or integrator of the system has the option to easily configure the decision tree without the need for any kind of programming. The decide-and-act subsystems work based on this configuration. In case the administrator needs to make advanced decisions based on the results of the previous tests, the platform allows him to write his own rules in the evaluate block.

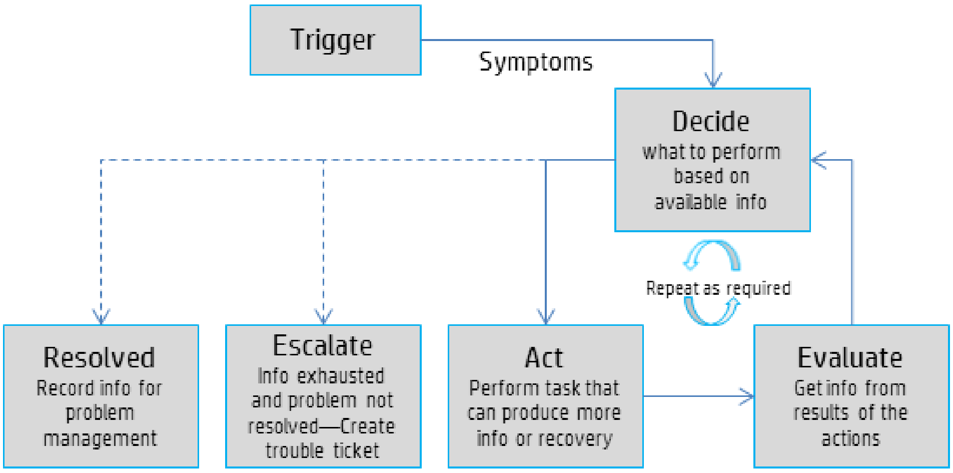

Trigger
Symptoms
Decide
what to perform based on available info
Repeat as required
Resolved
Record info for problem management
Escalate
Info exhausted and problem not resolved—Create trouble ticket
Act
Perform task that can produce more info or recovery
Evaluate
Get info from results of the actions

Figure 2 UCA Automation workflow

Chapter 2

Accessing UCA Automation

2.1 Launch UCA Automation UI

This section explains the procedure to open the UCA Automation UI.

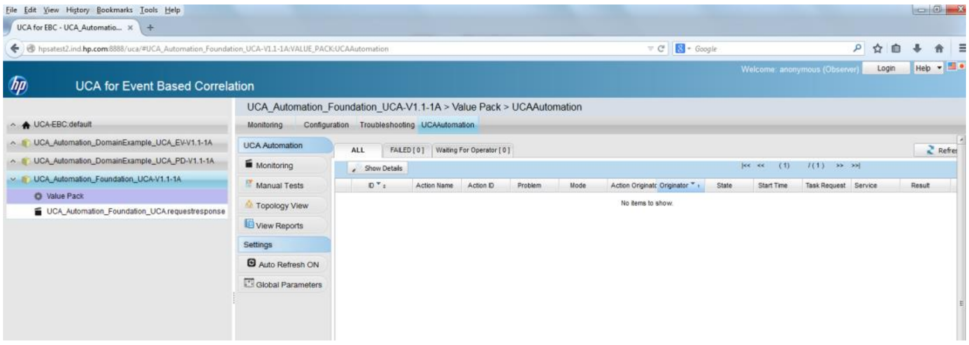
1. After starting the UCA Automation application, you can open the user interface from the UCA-EBC console by accessing the following URL:

   ```
   http://<hostname or IP address>:<port #>/uca
   ```

   - `<hostname or IP address>`—Hostname (full DNS name) or IP address of the UCA Automation server system. If UCA Automation server is running on your local host, you can use the `localhost` as the name of the host to connect to using your web browser.
   - `<port #>`—Port number of the UCA EBC user interface, which is by default 8888.

2. Click the **UCA Automation Foundation VP** on the left navigation pane
3. Select the **UCAAutomation** tab on the right-hand side.

   The UCA Automation console opens.



hpsatest2.ind.hp.com:8888/uca/#UCA_Automation_Foundation_UCA-V1.1-1A:VALUE_PACK:UCAAutomation

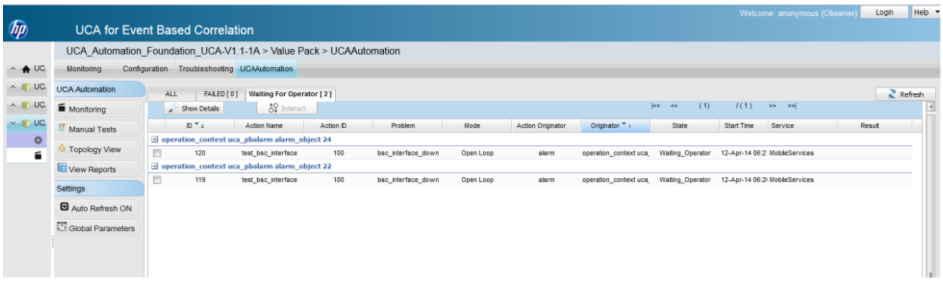
No items to show.

File Edit View History Bookmarks Tools Help
UCA for EBC - UCA_Automatio...
Google
Welcome: anonymous (Observer)
Login
Help
UCA for Event Based Correlation
UCA_Automation_Foundation_UCA-V1.1-1A > Value Pack > UCAAutomation
Monitoring
Configuration
Troubleshooting
UCAAutomation
UCA-EBC:default
UCA_Automation_DomainExample_UCA_EV-V1.1-1A
UCA_Automation_DomainExample_UCA_PD-V1.1-1A
UCA_Automation_Foundation_UCA-V1.1-1A
Value Pack
UCA_Automation_Foundation_UCA.requestresponse
UCA Automation
Monitoring
Manual Tests
Topology View
View Reports
Settings
Auto Refresh ON
Global Parameters
ALL
FAILED [0]
Waiting For Operator [0]
Refres
Show Details
(1)
/ (1)
ID
Action Name
Action ID
Problem
Mode
Action Originatc
Originator
State
Start Time
Task Request
Service
Result

2.2 User interface layout

The Monitoring window, which is the main page of the UCA Automation UI, shows various Actions and their statuses. The Actions are grouped by Originator and sorted by the Originator and the ID columns.

By default, the page is displayed for an Observer role.



	ID	Action Name	Action ID	Problem	Mode	Action Originator	Originator	State	Start Time	Service	Result
operation_context uca_pbalarm alarm_object 24											
□	120	test_bsc_interface	100	bsc_interface_down	Open Loop	alarm	operation_context uca_	Waiting_Operator	12-Apr-14 06:2	MobileServices	
operation_context uca_pbalarm alarm_object 22											
□	119	test_bsc_interface	100	bsc_interface_down	Open Loop	alarm	operation_context uca_	Waiting_Operator	12-Apr-14 06:2	MobileServices	

Figure 3 UCA Automation User Interface main view

The various roles available in the UCA Automation User Interface are Observer, Operator, and Administrator.

To access the UCA Automation UI, contact the UCA EBC administrator who can create a user and associate a role.

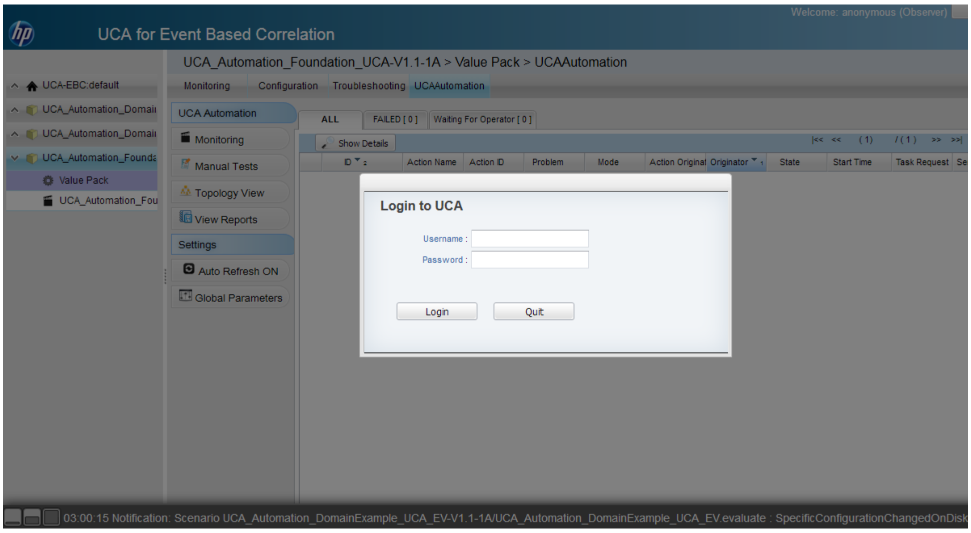
On the left panel, the various operations available are Monitoring, Manual Tests, Topology View, and View Reports. You can also set the Global Parameters for the UCA Automation console.

2.3 Logging into UI

Use the following procedure to lo into the UCA Automation UI.

1. Click the **Login** link on upper right corner of the page.

   The **UCA Automation Console: Login** pop-up window appears.



03:00:15 Notification: Scenario UCA_Automation_DomainExample_UCA_EV-V1.1-1A/UCA_Automation_DomainExample_UCA_EV.evaluate : SpecificConfigurationChangedOnDisk

Figure 4 Login panel

When installing the UCA Automation software, the admin user is created with Administrator privileges. The default login credentials are the following:

   - Username: `admin`
   - Password: `admin`

2. Enter the username and password and click the **Login** button.

   After logging in as the administrator, you can create additional users.

Chapter 3

Configuring UCA Automation

3.1 Global parameters

In UCA Automation, before the user applies an action and runs a test on an external system, the administrator can decide whether the user can change any settings of an action during the test. The administrator can restrict the user interactions by activating the Global Parameters feature available in the UI.

The available parameters are the following:

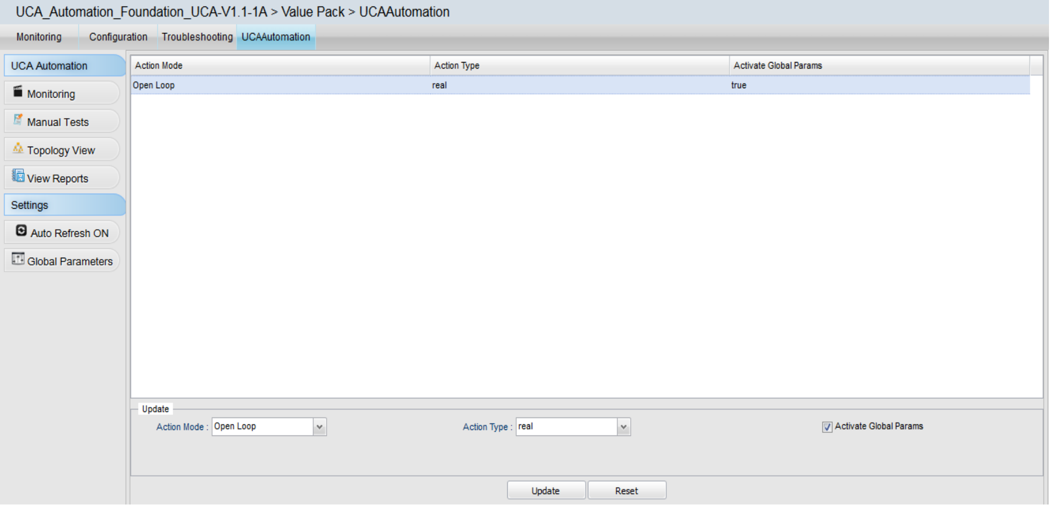
- **Action mode**: This parameter has two attributes.
  - Open Loop— User can interact with an action. With this option, an administrator can decide whether to approve or disapprove an action.
  - Closed Loop—User cannot interact with an action and edit the parameter values for an action.
- **Action type**:
  - Real — Run the tests in real mode.
  - Demo — Run the tests in demonstration mode

3.2 Activating Global Parameters

Use the following procedure to activate the Global Parameters feature.

1. Select **Settings** -> **Global Parameters** from the menu.

   The **Global Parameters** page opens.



UCA_Automation_Foundation_UCA-V1.1-1A > Value Pack > UCAAutomation

Action Mode	Action Type	Activate Global Params
Open Loop	real	true

Update

Action Mode : Open Loop

Action Type : real

☑ Activate Global Params

Figure 5 Global Parameters page

2. Select the **Activate Global Params** checkbox.

   The Global Parameters feature is activated.

Chapter 4

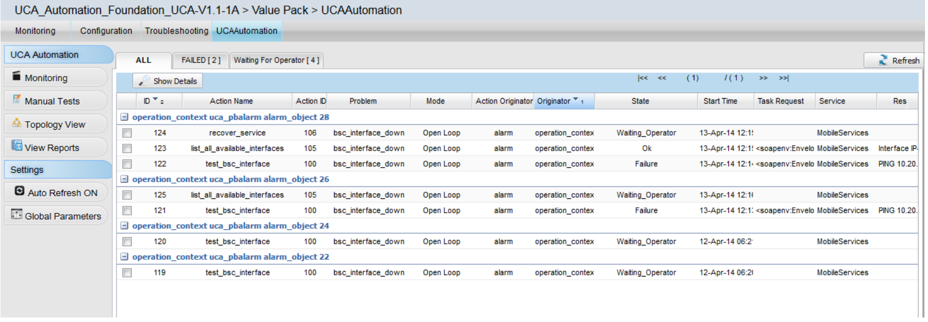
Monitoring

4.1 View status of tests

Use the following procedure to view the status of each test performed.

1. Select **UCA Automation** -> **Monitoring** from the menu.

   The **User Management** page opens.



	ID	Action Name	Action ID	Problem	Mode	Action Originator	Originator	State	Start Time	Task Request	Service	Res
⊟ operation_context uca_pbalarm alarm_object 28												
□	124	recover_service	106	bsc_interface_down	Open Loop	alarm	operation_contex	Waiting_Operator	13-Apr-14 12:1		MobileServices	
□	123	list_all_available_interfaces	105	bsc_interface_down	Open Loop	alarm	operation_contex	Ok	13-Apr-14 12:1	<soapenv:Envelo	MobileServices	Interface IP-
□	122	test_bsc_interface	100	bsc_interface_down	Open Loop	alarm	operation_contex	Failure	13-Apr-14 12:1	<soapenv:Envelo	MobileServices	PING 10.20.
⊟ operation_context uca_pbalarm alarm_object 26												
□	125	list_all_available_interfaces	105	bsc_interface_down	Open Loop	alarm	operation_contex	Waiting_Operator	13-Apr-14 12:1		MobileServices	
□	121	test_bsc_interface	100	bsc_interface_down	Open Loop	alarm	operation_contex	Failure	13-Apr-14 12:1	<soapenv:Envelo	MobileServices	PING 10.20.
⊟ operation_context uca_pbalarm alarm_object 24												
□	120	test_bsc_interface	100	bsc_interface_down	Open Loop	alarm	operation_contex	Waiting_Operator	12-Apr-14 06:2		MobileServices	
⊟ operation_context uca_pbalarm alarm_object 22												
□	119	test_bsc_interface	100	bsc_interface_down	Open Loop	alarm	operation_contex	Waiting_Operator	12-Apr-14 06:2		MobileServices	

Figure 6 Monitor view

The page contains the following three tabs which show the status of all tests that are currently running as well as the failed ones in.

- **All**— Status of all tests that are currently running, failed, awaiting operator's response.
- **Failed**—Lists all tests that have failed.
- **Waiting For Operator**—Lists all tests that are awaiting an action from the operator.

The value displayed next to these tab names represents the number of actions in these tabs. The default view shows the status of the action taken on a specific problem.

Field	Description
ID	Task ID
Action Name	Diagnostic Action taken for a problem.
Action ID	Diagnostic action ID.
Problem	Problem symptom.
Mode	Diagnostic action mode: Whether Open or Closed loop.
Action Originator	The possible values are Alarm and operator.

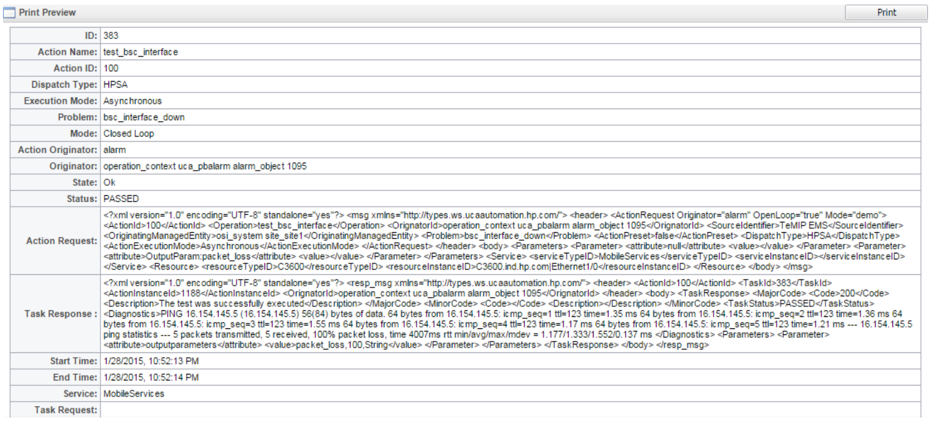
Field	Description
Originator	The possible values are Alarm ID and Operator ID.
State	The possible values are the following: - Waiting_Operator - Request_Sent - In_Progress - Failure - Ok
Start Time	The time at which the task started.
Task Request	The request message sent to the activation system.
Service	Service name.
Result	Diagnostic action results.

Table 1 Monitoring

Note

If the status a test is `Successful`, it is not listed in these lists. The successful reports appear in the **Reports** menu.

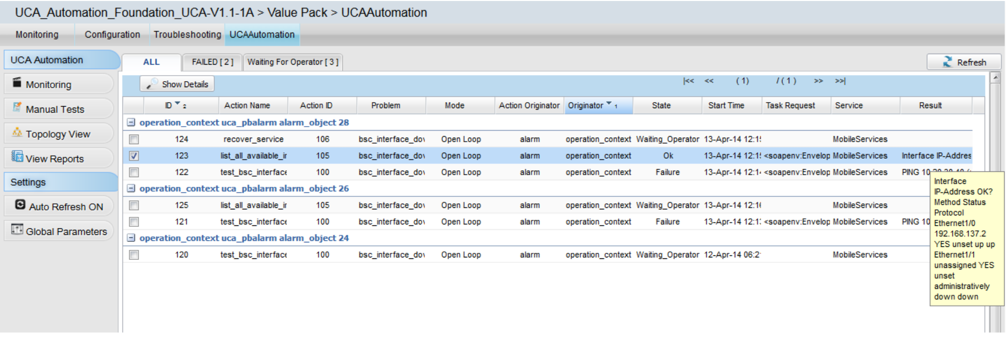
2. Select the checkbox for a record and click the **Show Details** button to view the details of that record.



ID:	383
Action Name:	test_bsc_interface
Action ID:	100
Dispatch Type:	HPSA
Execution Mode:	Asynchronous
Problem:	bsc_interface_down
Mode:	Closed Loop
Action Originator:	alarm
Originator:	operation_context uca_pbalarm alarm_object 1095
State:	Ok
Status:	PASSED
Action Request:	<?xml version="1.0" encoding="UTF-8" standalone="yes"?> <msg xmlns="http://types.ws.ucaautomation.hp.com/"> <header> <ActionRequest Originator="alarm" OpenLoop="true" Mode="demo"> <ActionId>100</ActionId> <Operation>test_bsc_interface</Operation> <OrignatorId>operation_context uca_pbalarm alarm_object 1095</OrignatorId> <SourceIdentifier>TeMIP EMS</SourceIdentifier> <OriginatingManagedEntity>osi_system site_site1</OriginatingManagedEntity> <Problem>bsc_interface_down</Problem> <ActionPreset>false</ActionPreset> <DispatchType>HPSA</DispatchType> <ActionExecutionMode>Asynchronous</ActionExecutionMode> </ActionRequest> </header> <body> <Parameters> <Parameter> <attribute>null</attribute> <value></value> </Parameter> <Parameter> <attribute>OutputParam:packet_loss</attribute> <value></value> </Parameter> </Parameters> <Service> <serviceTypeID>MobileServices</serviceTypeID> <serviceInstanceID></serviceInstanceID> </Service> <Resource> <resourceTypeID>C3600</resourceTypeID> <resourceInstanceID>C3600.ind.hp.com|Ethernet1/0</resourceInstanceID> </Resource> </body> </msg>
Task Response :	<?xml version="1.0" encoding="UTF-8" standalone="yes"?> <resp_msg xmlns="http://types.ws.ucaautomation.hp.com/"> <header> <ActionId>100</ActionId> <TaskId>383</TaskId> <ActionInstanceId>1188</ActionInstanceId> <OrignatorId>operation_context uca_pbalarm alarm_object 1095</OrignatorId> </header> <body> <TaskResponse> <MajorCode> <Code>200</Code> <Description>The test was successfully executed</Description> </MajorCode> <MinorCode> <Code></Code> <Description></Description> </MinorCode> <TaskStatus>PASSED</TaskStatus> <Diagnostics>PING 16.154.145.5 (16.154.145.5) 56(84) bytes of data. 64 bytes from 16.154.145.5: icmp_seq=1 ttl=123 time=1.35 ms 64 bytes from 16.154.145.5: icmp_seq=2 ttl=123 time=1.36 ms 64 bytes from 16.154.145.5: icmp_seq=3 ttl=123 time=1.55 ms 64 bytes from 16.154.145.5: icmp_seq=4 ttl=123 time=1.17 ms 64 bytes from 16.154.145.5: icmp_seq=5 ttl=123 time=1.21 ms --- 16.154.145.5 ping statistics --- 5 packets transmitted, 5 received, 100% packet loss, time 4007ms rtt min/avg/max/mdev = 1.177/1.333/1.552/0.137 ms </Diagnostics> <Parameters> <Parameter> <attribute>outputparameters</attribute> <value>packet_loss,100,String</value> </Parameter> </Parameters> </TaskResponse> </body> </resp_msg>
Start Time:	1/28/2015, 10:52:13 PM
End Time:	1/28/2015, 10:52:14 PM
Service:	MobileServices
Task Request:	

Figure 7 Monitor show details

3. (Optional) Hover mouse over the record's **Result** cell to view the results.



	ID	Action Name	Action ID	Problem	Mode	Action Originator	Originator	State	Start Time	Task Request	Service	Result
operation_context uca_pbalarm alarm_object 28												
□	124	recover_service	106	bsc_interface_do	Open Loop	alarm	operation_context	Waiting_Operator	13-Apr-14 12:1		MobileServices	
☑	123	list_all_available_i	105	bsc_interface_do	Open Loop	alarm	operation_context	Ok	13-Apr-14 12:1	<soapenv:Envelop	MobileServices	Interface IP-Addres
□	122	test_bsc_interface	100	bsc_interface_do	Open Loop	alarm	operation_context	Failure	13-Apr-14 12:1	<soapenv:Envelop	MobileServices	PING 10
operation_context uca_pbalarm alarm_object 26												
□	125	list_all_available_i	105	bsc_interface_do	Open Loop	alarm	operation_context	Waiting_Operator	13-Apr-14 12:1		MobileServices	
□	121	test_bsc_interface	100	bsc_interface_do	Open Loop	alarm	operation_context	Failure	13-Apr-14 12:1	<soapenv:Envelop	MobileServices	PING 10
operation_context uca_pbalarm alarm_object 24												
□	120	test_bsc_interface	100	bsc_interface_do	Open Loop	alarm	operation_context	Waiting_Operator	12-Apr-14 06:2		MobileServices	

Interface
IP-Address OK?
Method Status
Protocol
Ethernet1/0
192.168.137.2
YES unset up up
Ethernet1/1
unassigned YES
unset
administratively
down down

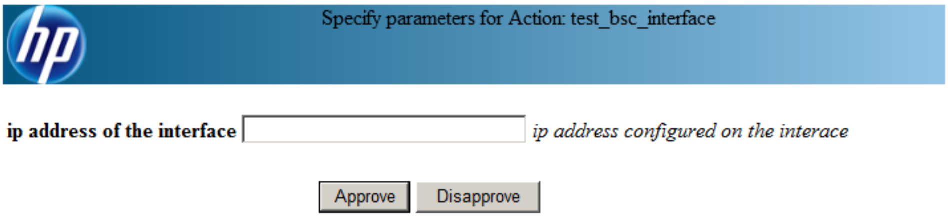
Figure 8 Monitor view result

4.2 Updating the Waiting for Operator records

If a test shows the status as `Waiting for Operator`, the operator should provide inputs to complete that test successfully.

1. Select the **Waiting For Operator** tab.
2. Select the checkbox for the required record and click the **Interact** button.

   The **Specify parameters for Action: <Name of the test>** window opens.
3. Enter the required inputs if the field is open for editing.
   - If the values are pre-configured or the parameter has a default value, the field displays those values. You can edit the value before approving it.
   - If the value is pre-configured and restricted from editing, the field is displayed as non-editable and you cannot edit it before approving.
4. Click **Approve** if the value is correct or click **Disapprove**.



Specify parameters for Action: test_bsc_interface

ip address of the interface *ip address configured on the interace*

Figure 9 Monitor interact page

4.3 Managing Auto refresh

When a new event occurs, the records are displayed immediately at runtime on the **Monitoring** page.

The page is automatically refreshed to fetch the new records. You can manage refreshing the page in the following two ways:

- Configure the `UI_AUTO_REFRESH_INTERVAL` attribute in the `$ {UCA_EBC_DATA}/instances/<your instance>/deploy/UCA_Automation_Foundation_UCA-V1.2-1A/conf/UCAAutomation.properties`.
- By default the auto refresh timer is set to 10 seconds (10000ms).
- Click the **Refresh** button on the right-hand side of the **Monitoring** page.
- You can also toggle the Auto Refresh value by clicking the **Settings** -> **Auto Refresh** option.

Chapter 5

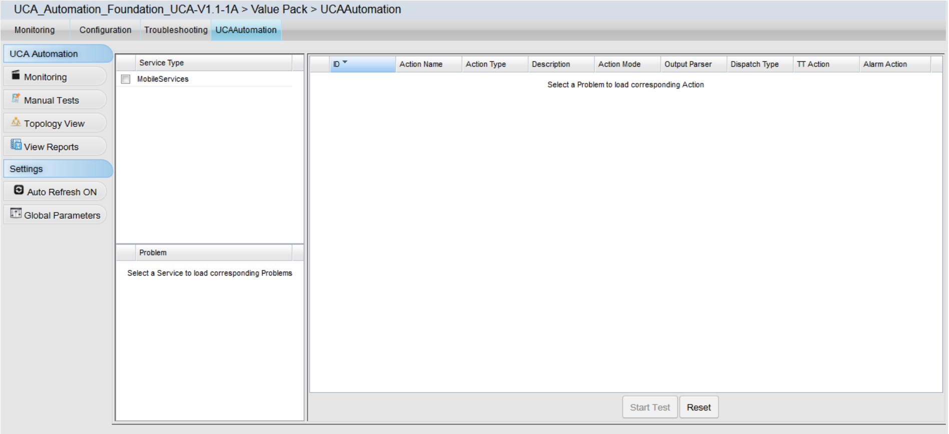
Starting tests manually

Manually, you can start an Action or a test using this interface. An action can be performed on a selected resource for a specific service type or a problem.

1. Select **UCA Automation** -> **Manual Tests** options from the menu.

   The page displays a list of Service Type problems and corresponding actions.

   You can populate the values on this page using the UCA Automation inventory system.



Select a Problem to load corresponding Action

Select a Service to load corresponding Problems

Figure 10 Manual Tests main page

2. Click the service you want from the list in the **Service Type** pane.

   All the associated Problems for the selected service are listed in the **Problem** table.

3. Select a problem from the list.

   For the selected service and problem combination, all the possible actions are listed in the **UCA Actions** table.

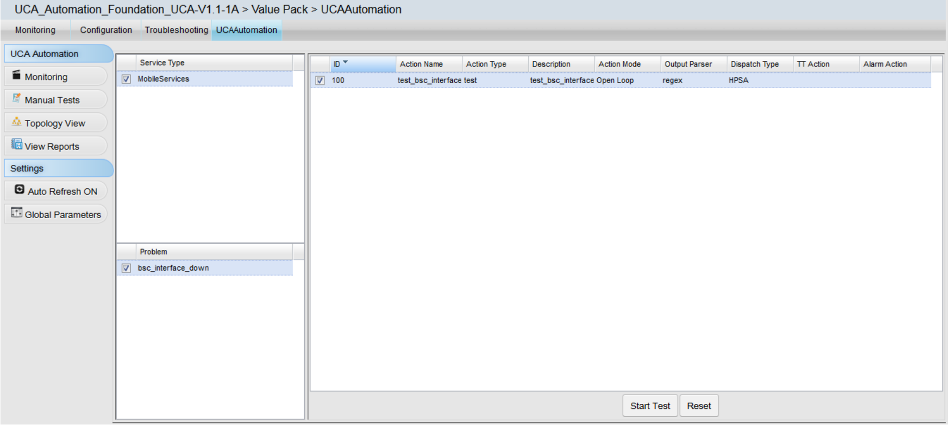
   Details of the various fields in the UCA Actions are as follows:

Field	Description
ID	Action ID
Action Name	Name of the diagnostic action to be performed
Action Type	Recover/resolve, test, audit, read-only-test, internal, escalate
Description	Brief description of the action
Action Mode	Open/Closed loop
Output Parser	None/Regular Expression/XPath. The output from the

Field	Description
	Diagnostic actions can be parsed using either regular expressions or XPath.
Dispatch Type	HPSA. Only actions with Dispatch Type HPSA are listed.

Table 2 UCA Actions field descriptions

4. Select the checkbox for the appropriate action that you want to run and click the **Start Test** button.



	Service Type
☑	MobileServices

	Problem
☑	bsc_interface_down

	ID	Action Name	Action Type	Description	Action Mode	Output Parser	Dispatch Type	TT Action	Alarm Action
☑	100	test_bsc_interface	test	test_bsc_interface	Open Loop	regex	HPSA		

Figure 11 Manual Tests – Selected action for a problem

After the test starts, the task waits for the user interaction which is the `Request_Sent` state and then moves to `In_Progress` state, and later to other states.

You can monitor the progress of the tests in the **Monitor** page.

Chapter 6

Launching Topology view

The Topology View in UCA Automation provides a graphical presentation of the actions performed during a particular test.

1. To open the Topology view, edit the following attributes in the `${UCA_EBC_DATA}/instances/<your instance>/deploy/UCA_Automation_Foundation_UCA-V1.2-1A/conf/UCAAutomation.properties` file.

```
ucaebc_tomsawyer_port=http://<Neo4J server
hostname>:8888/graphdisplay/?username=root&nodeId=0&profile
=ucaatm
```

2. Click the UCA Automation -> Topology View.

   The Topology viewer of UCA-EBC opens with the ucaatm profile that is defined in the `${UCA_EBC_DATA}/instances/<your instance>/deploy/conf/GraphDisplayProfiles.xml` file.

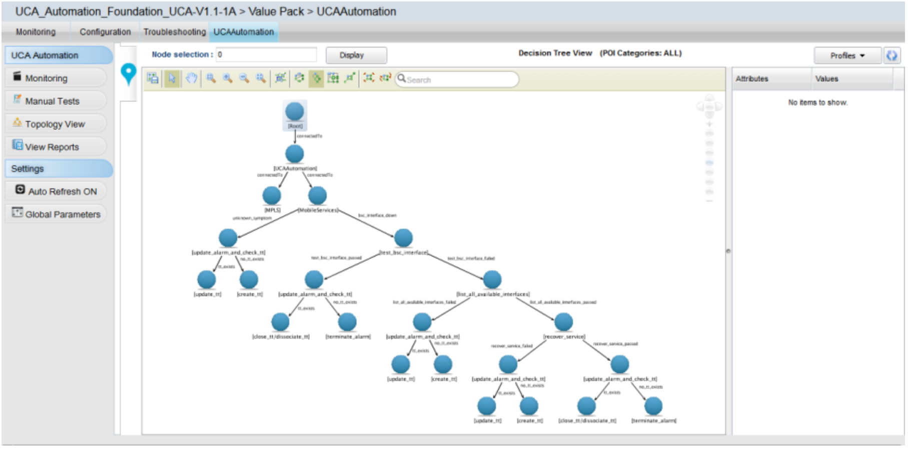


Figure 12 Topology View – launch Neo4j data browser

Chapter 7

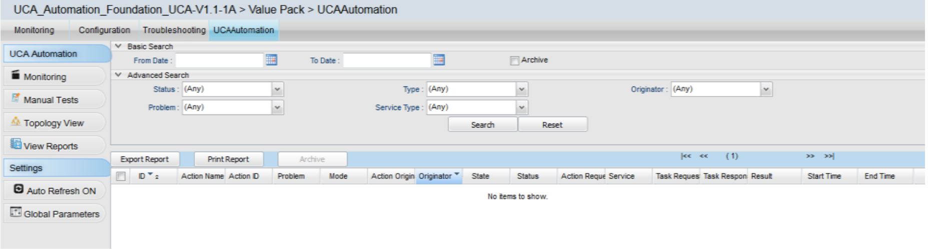
Generating reports

You can generate the required reports in the **Reports** window.

After a test is run and it displays the status as `successful` or `Failed`, this test is moved from the **Monitoring** window to the **Reports** window.

1. Select **UCA Automation -> View Reports** from the menu.

   The **Reports** page appears with the options to search and generate reports.



UCA_Automation_Foundation_UCA-V1.1-1A > Value Pack > UCAAutomation

From Date :

To Date :

□ Archive

Status : (Any)

Type : (Any)

Originator : (Any)

Problem : (Any)

Service Type : (Any)

No items to show.

Figure 13 Report search criteria

2. Search the reports based on the following criteria.

Search field	Description
From Date	If set, records are searched from this date onwards
To Date	If set, records are searched up to this date
Status	PASSED, FAILED, DISAPPROVED, INTERNALERROR
Type	Open Loop/Closed Loop
Originator	Alarm/operator/test
Problem	List of all problems defined in the HPSA inventory
Service Type	List of all service types (domain) defined in the HPSA inventory
Archive	Searches for archived records, if selected

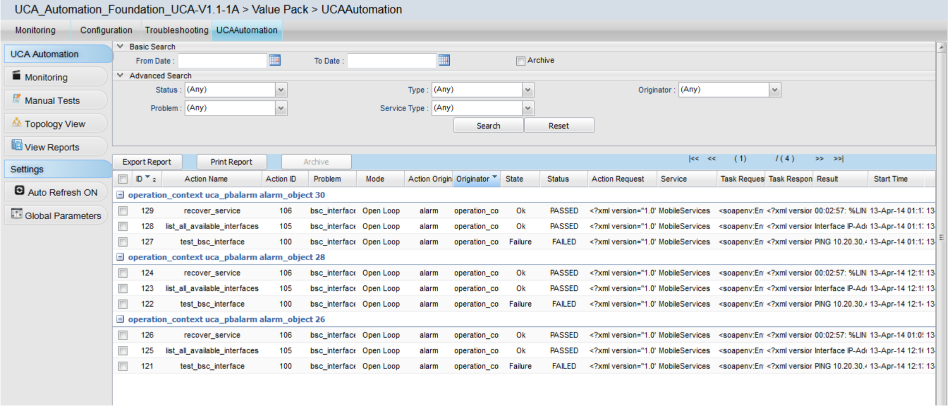
Table 3 Report search criteria

Report actions	Description
Search	Search for records with the filter criteria applied. By default, search for all records that are not archived
Export Report	Allows to save the records in CSV format

Report actions	Description
Print Report	Displays a print preview of the records from which the user can print the records
Archive	Archives the selected records. Only enabled when Archive search option is unchecked and logged in with sufficient privileges.
Delete	Selected archived records can be permanently deleted. Enabled when Archive search option is checked.
Reset	Resets the search criteria to default

Table 4 Report actions

Following figure shows the search results when performed with default options.



From Date : To Date : □ Archive

Status : (Any) Type : (Any) Originator : (Any)

Problem : (Any) Service Type : (Any)

□	ID	Action Name	Action ID	Problem	Mode	Action Origin	Originator	State	Status	Action Request	Service	Task Reques	Task Respon	Result	Start Time	
operation_context uca_pbalarm alarm_object 30																
□	129	recover_service	106	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	00:02:57: %LIN	13-Apr-14 01:1	13-
□	128	list_all_available_interfaces	105	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	Interface IP-Ad	13-Apr-14 01:1	13-
□	127	test_bsc_interface	100	bsc_interface	Open Loop	alarm	operation_co	Failure	FAILED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	PING 10.20.30.	13-Apr-14 01:1	13-
operation_context uca_pbalarm alarm_object 28																
□	124	recover_service	106	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	00:02:57: %LIN	13-Apr-14 12:1	13-
□	123	list_all_available_interfaces	105	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	Interface IP-Ad	13-Apr-14 12:1	13-
□	122	test_bsc_interface	100	bsc_interface	Open Loop	alarm	operation_co	Failure	FAILED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	PING 10.20.30.	13-Apr-14 12:1	13-
operation_context uca_pbalarm alarm_object 26																
□	126	recover_service	106	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	00:02:57: %LIN	13-Apr-14 01:0	13-
□	125	list_all_available_interfaces	105	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	Interface IP-Ad	13-Apr-14 12:1	13-
□	121	test_bsc_interface	100	bsc_interface	Open Loop	alarm	operation_co	Failure	FAILED	<?xml version="1.0'	MobileServices	<soapenv:En	<?xml versior	PING 10.20.30.	13-Apr-14 12:1	13-

Figure 14 Report default search

3. (Optional) Perform the following based on your requirement.
   - **Archive**—Select a record from the search result and click the **Archive** button to archive it.
   - **Print Report**—Click the **Print Report** button to print a report.
   - **Export Report**—Click the **Export Report** button to export the results into CSV format.

7.1 Deleting a report

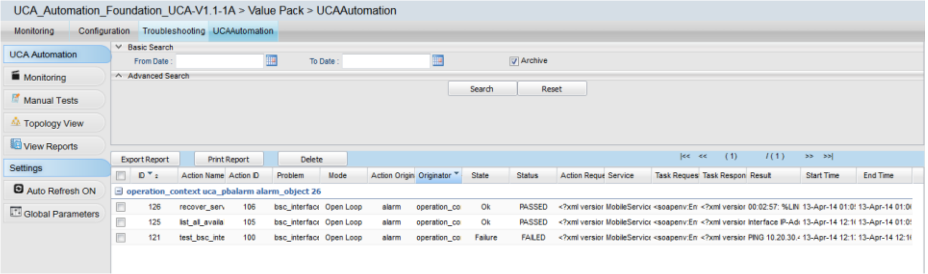
Use the following procedure to delete a report.

1. Select **UCA Automation** -> **View Reports** from the menu.

   The Reports page appears with the options to search and generate reports. You can delete only the archived reports.

2. Search the reports with the required criteria and select the checkbox for **Archive**.

   The archived records appear in the bottom panel.



From Date :
To Date :
☑ Archive

	ID	Action Name	Action ID	Problem	Mode	Action Origin	Originator	State	Status	Action Reque	Service	Task Reques	Task Respon	Result	Start Time	End Time
⊟ operation_context uca_pbalarm alarm_object 26																
□	126	recover_serv	106	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml versior	MobileService	<soapenv:En	<?xml versior	00:02:57: %LIN	13-Apr-14 01:0	13-Apr-14 01:0
□	125	list_all_availa	105	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	<?xml versior	MobileService	<soapenv:En	<?xml versior	Interface IP-Ad	13-Apr-14 12:1	13-Apr-14 01:0
□	121	test_bsc_inte	100	bsc_interface	Open Loop	alarm	operation_co	Failure	FAILED	<?xml versior	MobileService	<soapenv:En	<?xml versior	PING 10.20.30.	13-Apr-14 12:1	13-Apr-14 12:1

Figure 15 Report search for archived records

3. Select the checkbox for the report you want to delete and click the **Delete** button.

The report is deleted.

Chapter 8

UCA Automation Orchestrator

The UCA Automation Orchestrator is a tool which you can use for defining and modeling the three entities: Service, Problem, Action, and Action Outcome in the form of a decision tree. You can upload this decision tree to a neo4j graph database and use it to identify the Actions to be executed based on the Problem or Action Outcome. The graph can be designed as an n-ary tree. This tool is made available in the form of a plug-in in Eclipse.

The plug-in provides an interface to define these model entities and retain them in the automation inventory of the DB.

8.1 Prerequisites

The following prerequisites apply to installing and using the Automation Orchestrator:

- The HPSA Foundation value pack is deployed.
- The tables in the inventory are created.

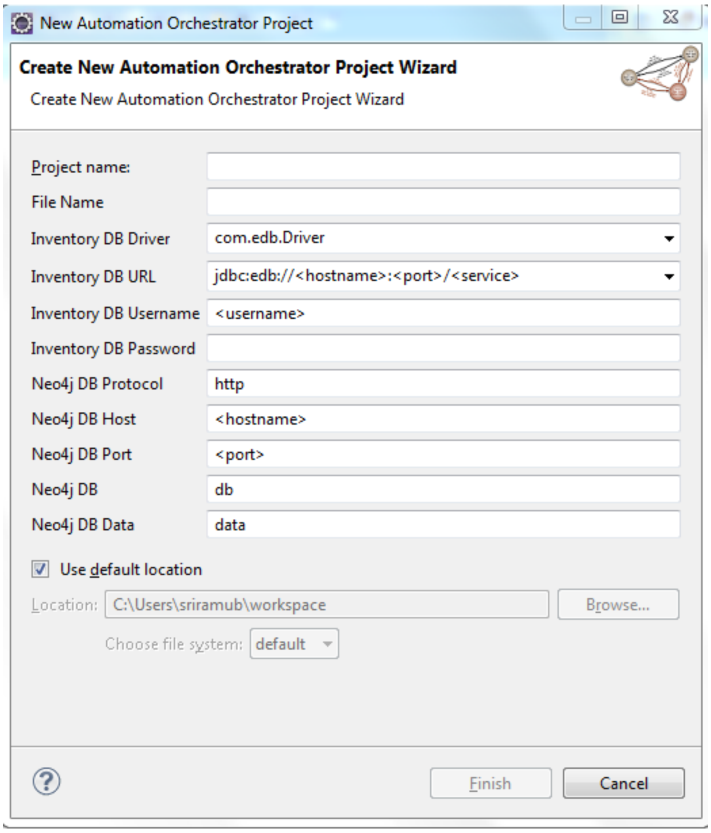
For more details, refer to the *UCA Automation Installation Guide*.

8.2 Create new decision tree project

After installing the UCA Automation Orchestrator plug-in and restarting eclipse, the plug-in is added to the Eclipse tool bar.

1. Click the icon in the ribbon.

   The **Create New Automation Orchestrator Project Wizard** appears.



New Automation Orchestrator Project

Create New Automation Orchestrator Project Wizard

Create New Automation Orchestrator Project Wizard

Project name:

File Name

Inventory DB Driver: com.edb.Driver

Inventory DB URL: jdbc:edb://<hostname>:<port>/<service>

Inventory DB Username: <username>

Inventory DB Password

Neo4j DB Protocol: http

Neo4j DB Host: <hostname>

Neo4j DB Port: <port>

Neo4j DB: db

Neo4j DB Data: data

☑ Use default location

Location: C:\Users\sriramub\workspace

Choose file system: default

Figure 16 Create New Decision Tree Project Wizard

2. Specify the following details:
   - Project name
   - File name
   - Inventory DB Driver
   - Inventory DB URL
   - Username
   - Password
   - Neo4j Host
   - Neo4j Host Port
3. Click the **Finish** button.

   The UCA Automation Orchestrator supports two databases: Enterprise DB and Oracle.

   The project is created with the following folder structure.

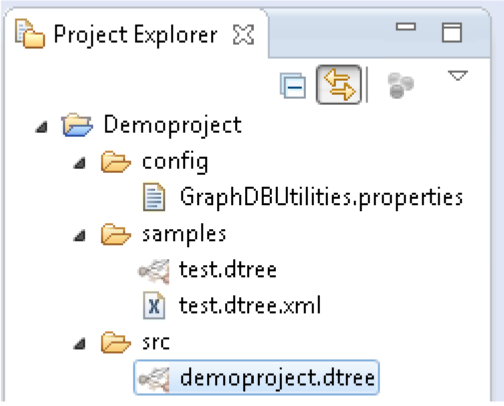


Figure: UCA Automation Orchestrator project folder structure

- `GraphDBUtilities.properties` file—Contains the inventory properties and Neo4j properties.

```
inventory.db.driver=com.edb.Driver
inventory.db.url=jdbc:edb://<hostname>:<port>/<service>
inventory.db.user=<username>
inventory.db.password=<password>
neo4j.db.protocol=http
neo4j.db.host=<hostname>
neo4j.db.port=<port>
neo4j.db.db=db
neo4j.db.data=data
org.neo4j.rest.batch_transaction=true
```

Parameter	**Description**
inventory.db.driver	Inventory database driver name.
inventory.db.url	Inventory database URL.
inventory.db.user	Inventory database username.
inventory.db.password	Inventory database password.
neo4j.db.protocol	The neo4j graph database protocol. By default, the value is `http`.
neo4j.db.host	The neo4j graph database hostname.
neo4j.db.port	The neo4j graph database port.
neo4j.db.db	Default value is `db`.
neo4j.db.data	Default value is `data`.
org.neo4j.rest.batch_transaction	Default value is `true`.

- `.dtree` file—Created under the `src` directory. This file contains the Automation Orchestrator.

When defining the model objects in the inventory, the system uses the Inventory database configuration. When you want to upload the decision tree to neo4j graph database, the system uses the neo4j graph database configuration.

8.3 UCA Automation Orchestrator UI layout

The following picture shows the UCA Automation Orchestrator main screen.

The following functions are available on the UI:

- Definition button—Automation definition view where you can define the model objects.
- Orchestration button—Editor view using which you can define the decision tree.
- Deployment button—Uploads the decision tree to Neo4j graph database. This button is enabled only after the decision tree is orchestrated and saved. By default the button is disabled.

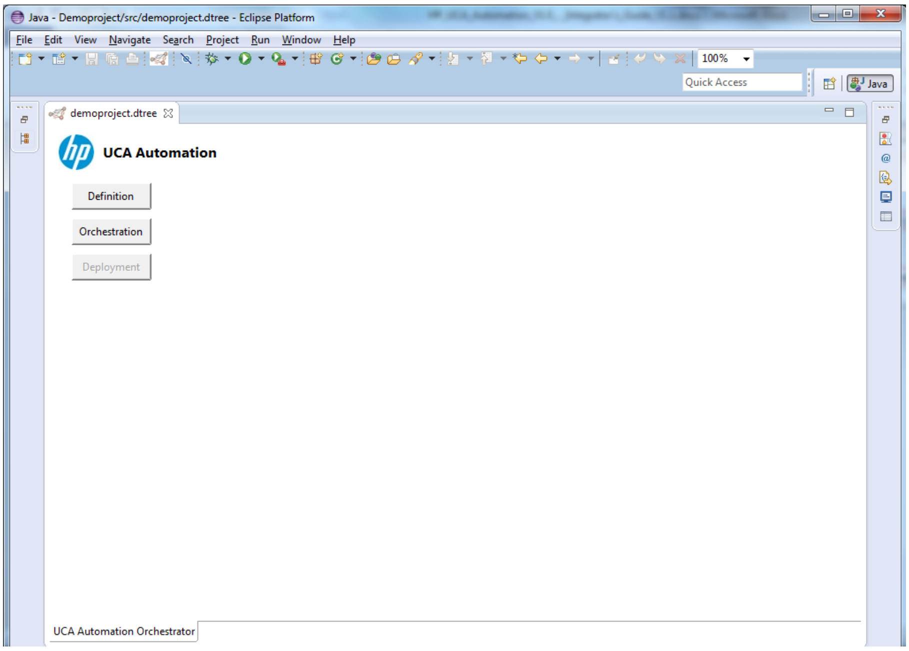

Java - Demoproject/src/demoproject.dtree - Eclipse Platform
File Edit View Navigate Search Project Run Window Help
100%
Quick Access
Java
demoproject.dtree
UCA Automation
Definition
Orchestration
Deployment
UCA Automation Orchestrator

Figure 17 UCA Automation Orchestrator main page in Eclipse

Note

Use the Eclipse Console View to see the errors and log messages.

8.4 Define Model Objects

1. Click the **Definition** button.
2. The **Automation Definition** View with the following three tabs appears.
   - **Service Definition** tab—To define Service types.
   - **Action Definition** tab—To define the Actions.
   - **Problem Definition** tab—To define the Problems.

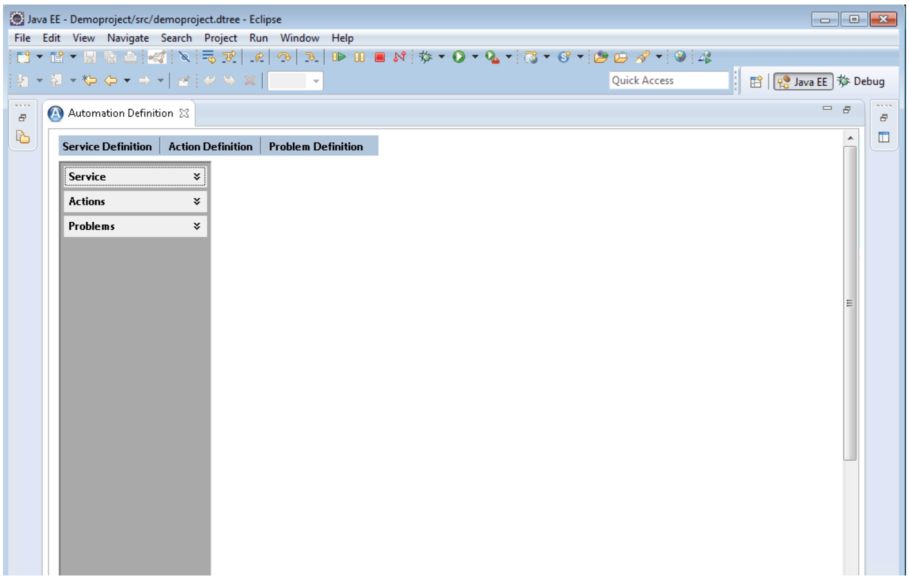


Figure 18 Automation Definition View

8.4.1 Create a new service type

Follow this procedure to create a new Service type.

1. Click the **Definition** button.

   The **Automation Definition** View appears.

2. Click the **Service Definition** tab.

   The **CREATE A SERVICE** pane opens.

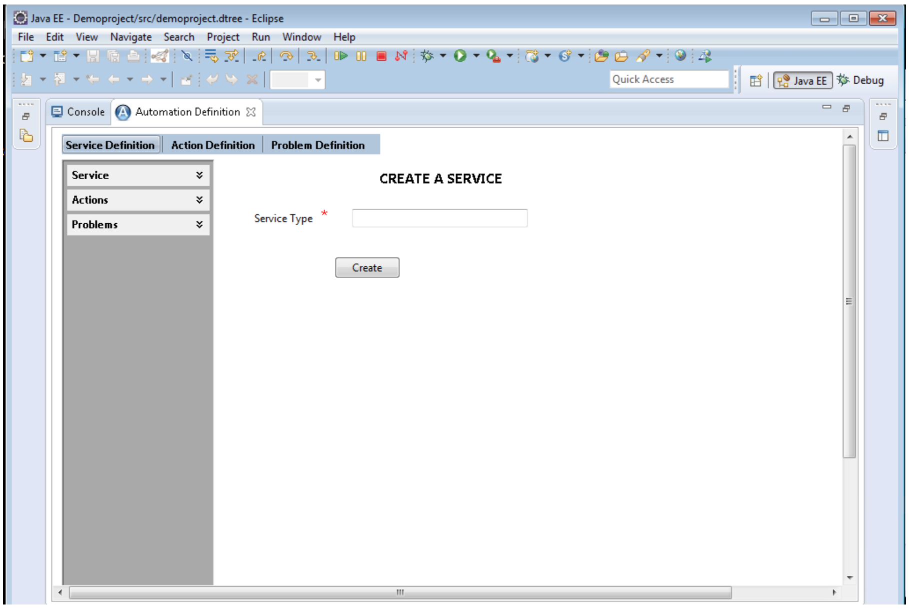


Figure 19 Create a new service

3. Enter a name for the Service type in the text box.

4. Click the **Create** button.

8.4.2 Create a new problem

The following procedure shows how to create a new Problem.

1. Click the **Definition** button.

   The **Automation Definition** View appears.

2. Click the **Problem Definition** tab.

   The **CREATE A PROBLEM** pane opens.

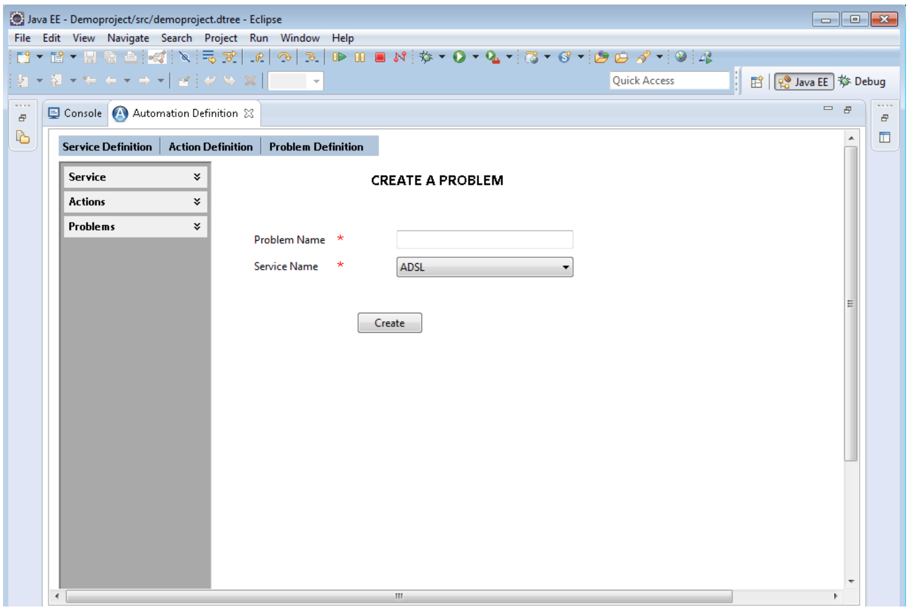


Figure 20 Create a new Problem

3. Specify the name of the problem in the **Problem Name** text box.

4. Select the service type for which the problem is being created, from the **Service Name** drop-down list and click the **Create** button.

8.4.3 Create a new action

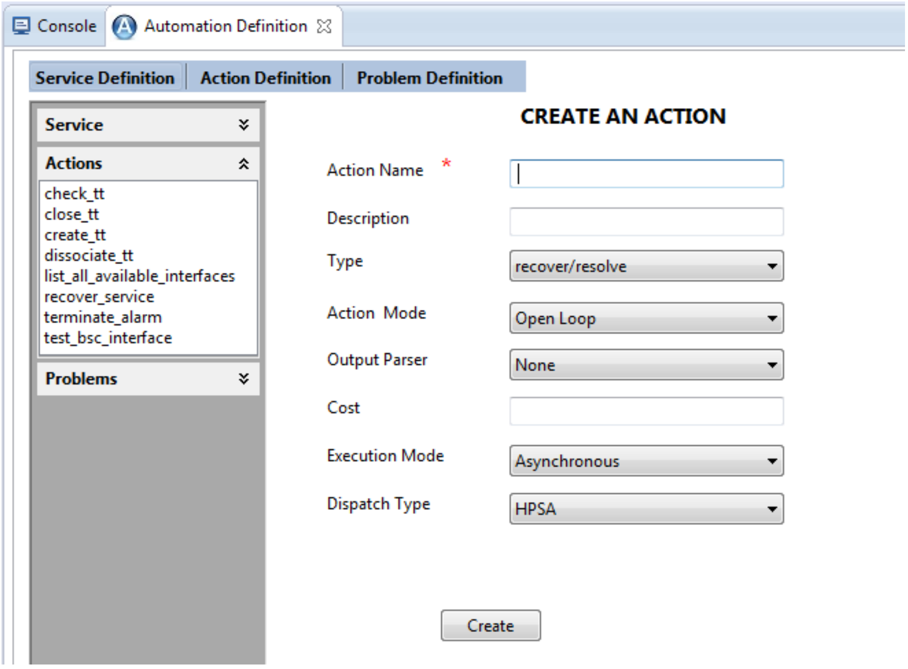
The following procedure shows how to create a new Action.

1. Click the **Definition** button.

   The **Automation Definition** View appears.

2. Click the **Action Definition** tab.

   The **CREATE AN ACTION** pane opens.



CREATE AN ACTION

Action Name *

Description

Type: recover/resolve

Action Mode: Open Loop

Output Parser: None

Cost

Execution Mode: Asynchronous

Dispatch Type: HPSA

Figure 21 Create a new Action

3. Enter the required details in the **CREATE AN ACTION** pane.
    - Action Name—Name of the action.
    - Description—Enter a description for the action.
    - Type—Select an action type from the drop-down list, which contains recover/resolve, test, audit, read-only-test, internal, and escalate options.
    - Action Mode—Select an option from the drop-down list, which contains Open Loop, Closed Loop, or None options.
    - OutputParser—Select an option from the drop-down list, which contains None, regex, and xpath options.
    - Cost
    - Execution Mode —Select an option from the drop-down list, which contains Asynchronous and Synchronous options.
    - Dispatch Type—Select an option from the drop-down list, which contains HPSA, OO, Shell Script, Alarm, and Trouble Ticket options.
        - Trouble Ticket Action—Select the Trouble Ticket Action from the drop-down list.
        - Alarm—Select the alarm action from the drop-down list.
4. Click the **Create** button to create a new action.

    When you create an Action, the system creates two Action Outcomes by default. The default Action outcomes contain the Action name with the following suffixes `_passed` and `_failed`.

    An example of the formats is `<ActionName>_passed` and `<ActionName>_failed`.

Action Type	**Description**
Recover/Resolve	Action that can recover or resolve a problem symptom.

Action Type	Description
Test	Actions performed to test the network.
Audit	Action to audit a pre-defined configuration.
Read-only-test	Read-only actions performed on the network.
Internal	Trouble ticket and alarm handling actions.
Escalate	Actions to escalate when a problem resolution is not performed.

Table 5 Action Types

Action Mode	Description
Open Loop	Actions that require operator intervention. The operator can optionally disapprove a test.
Closed Loop	Actions that do not require operator intervention.
None	If the value is set to `None`, the value set in the **Parameters** -> **Global Parameter** -> **ActionMode** is used.

Table 6 Action Modes

Output Parser	Description
Regex	The action output is parsed using regular expressions.
XPath	The action output is parsed using XPaths.
None	Action outputs are not parsed.

Table 7 Output Parsers

Execution Mode	Description
Asynchronous	The execution mode of the Action is Asynchronous.
Synchronous	The execution mode of the Action is Synchronous.

Table 8 Execution Mode

Dispatch Type	Description
HPSA	Action is dispatched to HP Service Activator for execution.
OO	HP Object Orchestration. For future possible integration.
Shell Script	Action that can be executed using a shell script. For future possible integration.
Alarm	An internal Alarm handling action. Possible operations are creating alarms and updating alarms.
Trouble Ticket	An internal trouble ticket action.

Dispatch Type	Description
	Possible operations are creating Trouble Ticket, associating a trouble ticket, dissociating a trouble ticket, and closing a trouble ticket.

Table 9 Dispatch Types

Execution Mode	Description
clear_alarm	Alarm action to clear alarm.
update_alarm	Alarm action to update an existing alarm.
terminate_alarm	Alarm action to terminate an existing alarm.
log_and_exit	Alarm action to just log a message and exit the tree.

Table 10 Alarm Actions

Execution Mode	Description
create_tt	Trouble ticket action to create a new trouble ticket.
check_tt	Trouble ticket action to check a trouble ticket.
associate_tt	Trouble ticket action to associate trouble ticket.
dissociate_tt	Trouble ticket action to dissociate trouble ticket.
close_tt	Trouble ticket action to close trouble ticket.

Table 11 Trouble ticket Actions

8.5 Update or delete model objects

8.5.1 Modify or delete a Service type

The following procedure shows how to update the name of a service type or delete the Service type.

1. Click the **Definition** button.

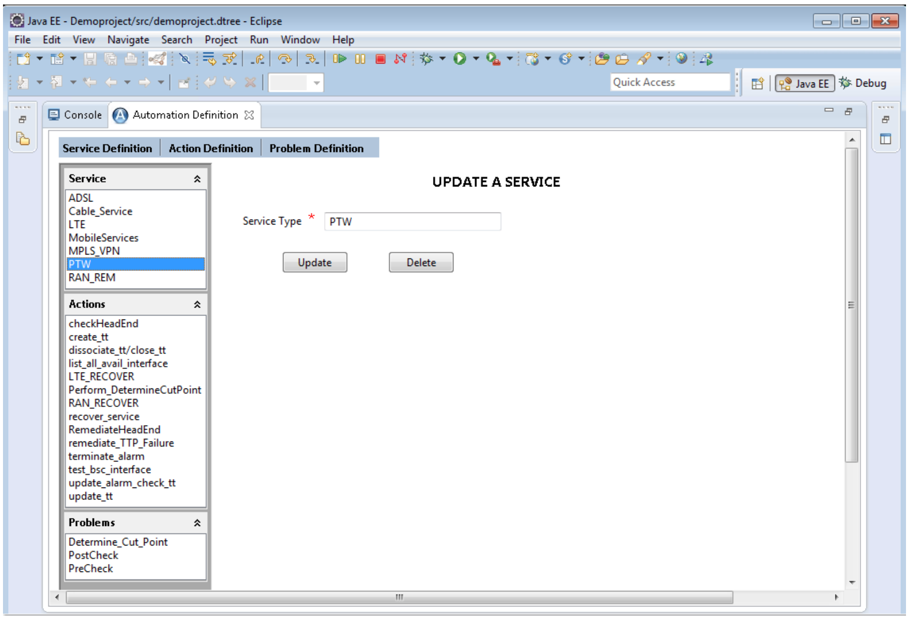
   The **Automation Definition** View appears.

2. Click the **Service** tab or the ︾ icon on the left-hand side.

   The **Service** tab expands and shows the configured service types.

3. Select a service type.

   The **UPDATE A SERVICE** pane appears. All the configured problems associated with the service type are displayed under the **Problems** tab. You can see them by clicking the **Problem** tab.



UPDATE A SERVICE

Service Type * PTW

Service
ADSL
Cable_Service
LTE
MobileServices
MPLS_VPN
PTW
RAN_REM

Actions
checkHeadEnd
create_tt
dissociate_tt/close_tt
list_all_avail_interface
LTE_RECOVER
Perform_DetermineCutPoint
RAN_RECOVER
recover_service
RemediateHeadEnd
remediate_TTP_Failure
terminate_alarm
test_bsc_interface
update_alarm_check_tt
update_tt

Problems
Determine_Cut_Point
PostCheck
PreCheck

Figure 22 Update a Service

4. Modify the name in the **Service Type** text box.

5. Click the **Update** button to update the service type or click the **Delete** button to delete the service type.

8.5.2 Modify or delete an Action

The following procedure shows how to update or delete an Action.

1. Click the **Definition** button.

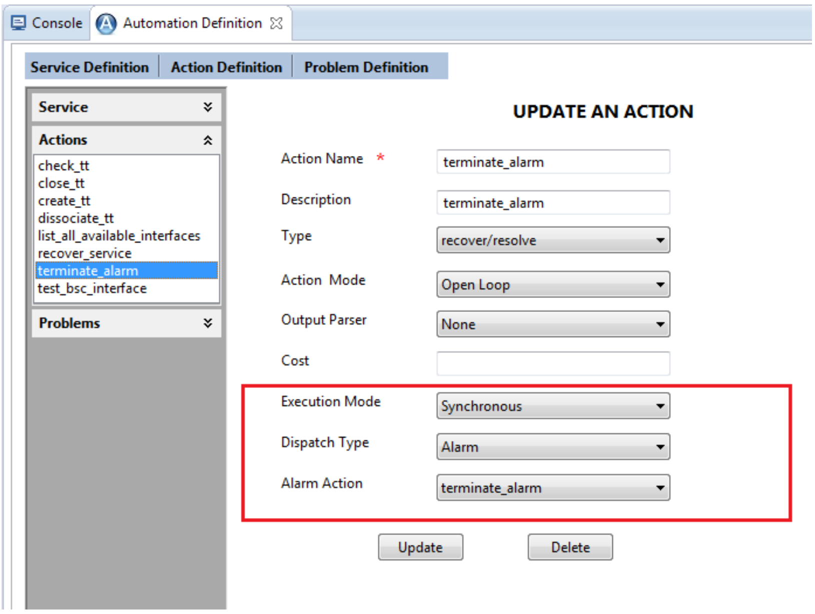
   The **Automation Definition** View appears.

2. Click the **Actions** tab or ︾ icon on the left-hand side.

   The **Actions** tab expands and shows the configured Actions.

3. Select the action you want to modify from the actions listed under the **Action** tab.

The **UPDATE AN ACTION** pane appears.



UPDATE AN ACTION

Action Name * terminate_alarm

Description terminate_alarm

Type recover/resolve

Action Mode Open Loop

Output Parser None

Cost

Execution Mode Synchronous

Dispatch Type Alarm

Alarm Action terminate_alarm

Figure 23 Update an Action

4. Modify the required fields on this pane.

5. Click the **Update** button to update the action or click the **Delete** button to delete the action.

   When you delete an action, all action outcomes and all parameters associated with the action are deleted.

8.5.3 Modify or delete a configured Problem

The following procedure shows how to update or delete a Problem.

1. Click the **Definition** button.

   The **Automation Definition** View appears.

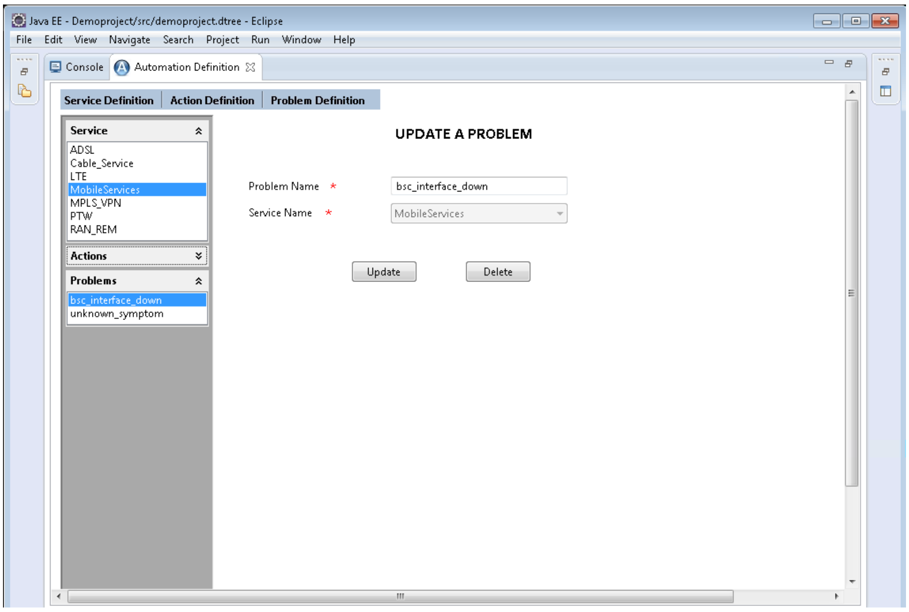
2. Click the **Problems** tab or the ⌄ icon on the left-hand side.

   The **Problems** tab expands and shows the configured Problems.

3. Select the problem you want to modify from the problems listed under the **Problems** tab.

   The **UPDATE A PROBLEM** pane appears.

   If you did not select a service type before trying to expand the **Problems** tab, the `Please select a Service first!` message appears.



Java EE - Demoproject/src/demoproject.dtree - Eclipse
File Edit View Navigate Search Project Run Window Help
Console
Automation Definition
Service Definition
Action Definition
Problem Definition
Update
Delete

Service

ADSL
Cable_Service
LTE
MobileServices
MPLS_VPN
PTW
RAN_REM

Actions

Problems

bsc_interface_down
unknown_symptom

UPDATE A PROBLEM

Problem Name * bsc_interface_down

Service Name * MobileServices

Figure 24 Update a Problem

4. Modify the name of the problem and click the **Update** button to update the problem.

5. (Optional) Click the **Delete** button to delete the problem.

8.6 Define parameters

8.6.1 Create a parameter

The following procedure shows how to create a parameter.

1. Click the **Definition** button.

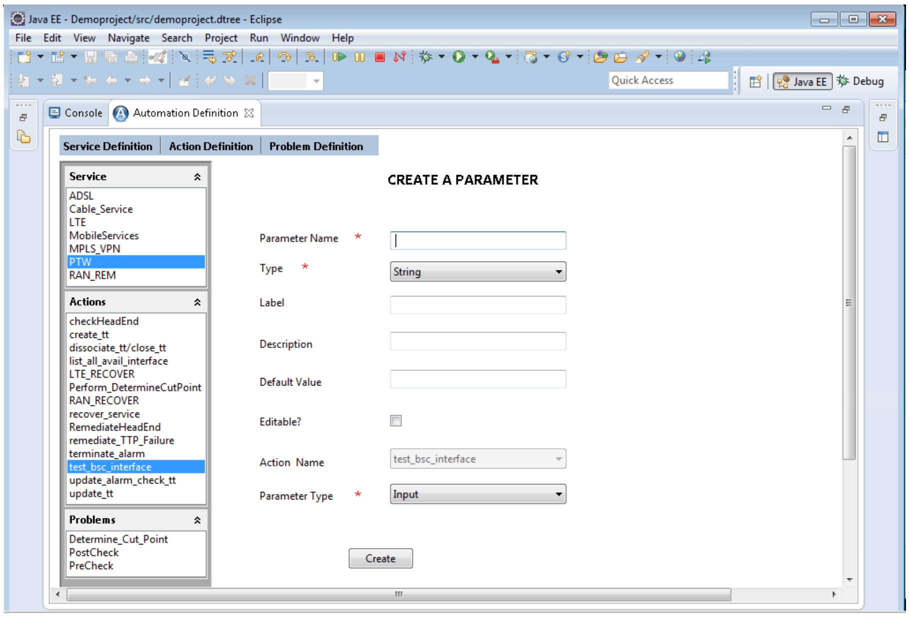
   The **Automation Definition** View appears.

2. Click the **Actions** tab or ︾ icon on the left-hand side.

   The **Actions** tab expands and shows the configured Actions.

3. Select an Action for which you want to create a parameter, right-click and select the **Create a Parameter** option from the pop-up list.

   The **CREATE A PARAMETER** pane opens.



Service
ADSL
Cable_Service
LTE
MobileServices
MPLS_VPN
PTW
RAN_REM

Actions
checkHeadEnd
create_tt
dissociate_tt/close_tt
list_all_avail_interface
LTE_RECOVER
Perform_DetermineCutPoint
RAN_RECOVER
recover_service
RemediateHeadEnd
remediate_TTP_Failure
terminate_alarm
test_bsc_interface
update_alarm_check_tt
update_tt

Problems
Determine_Cut_Point
PostCheck
PreCheck

CREATE A PARAMETER

Parameter Name *
Type * String
Label
Description
Default Value
Editable? □
Action Name test_bsc_interface
Parameter Type * Input

Figure 25 Create a Parameter

4. Enter the required information in the fields.
   - Parameter Name
   - Type—The available values are String, Integer, Float, and Boolean
   - Parameter Type—Select a value from the drop-down list. The available values are Input and Output.
5. Click the **Create** button to create the parameter.

8.6.2 View and update existing parameters

The following procedure shows how to view and update an existing parameter for an action.

1. Click the **Definition** button.

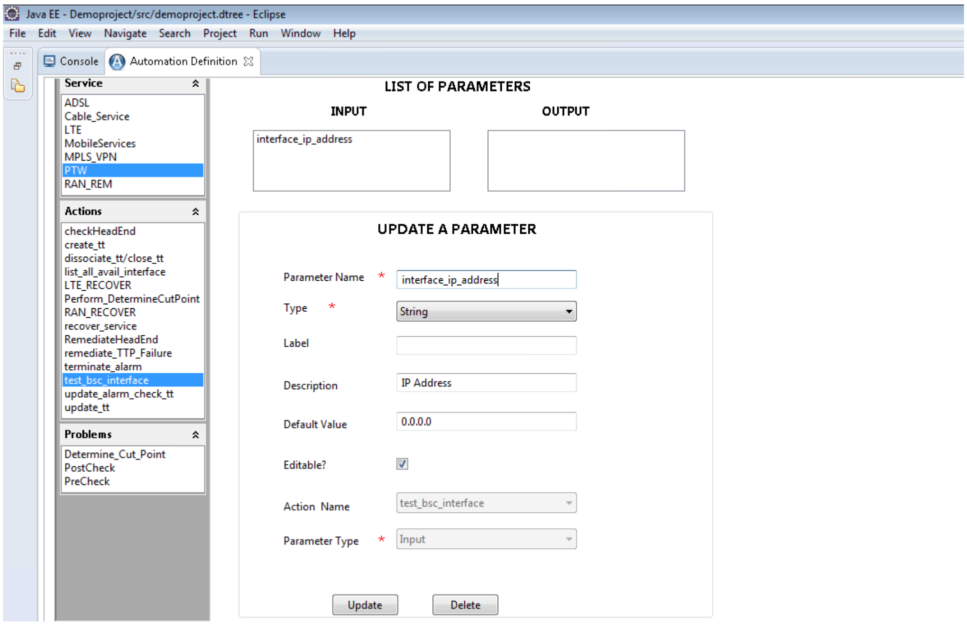
   The **Automation Definition** View appears.

2. Click the **Actions** tab or the ︾ icon on the left-hand side.

   The **Actions** tab expands and shows the configured Actions.

3. Select an Action for which you want to modify the parameter, right-click and select the **View Parameters** option from the pop-up list.

   The **LIST OF PARAMETERS** pane opens with the existing input and output parameters listed separately.


Java EE - Demoproject/src/demoproject.dtree - Eclipse
File Edit View Navigate Search Project Run Window Help
Console
Automation Definition

Service
ADSL
Cable_Service
LTE
MobileServices
MPLS_VPN
PTW
RAN_REM

Actions
checkHeadEnd
create_tt
dissociate_tt/close_tt
list_all_avail_interface
LTE_RECOVER
Perform_DetermineCutPoint
RAN_RECOVER
recover_service
RemediateHeadEnd
remediate_TTP_Failure
terminate_alarm
test_bsc_interface
update_alarm_check_tt
update_tt

Problems
Determine_Cut_Point
PostCheck
PreCheck

LIST OF PARAMETERS

INPUT	OUTPUT
interface_ip_address	

UPDATE A PARAMETER

Parameter Name * interface_ip_address
Type * String
Label
Description IP Address
Default Value 0.0.0.0
Editable? ☑
Action Name test_bsc_interface
Parameter Type * Input

Figure 26 List of parameters

4. Select the parameter you want to modify.

   The **UPDATE A PARAMETER** pane appears.

5. Update the required fields for the parameter and click the **Update** button.

6. The parameter is updated.

8.6.3 Delete a parameter

The following procedure shows how to delete an already created parameter for an action.

1. Click the **Definition** button.

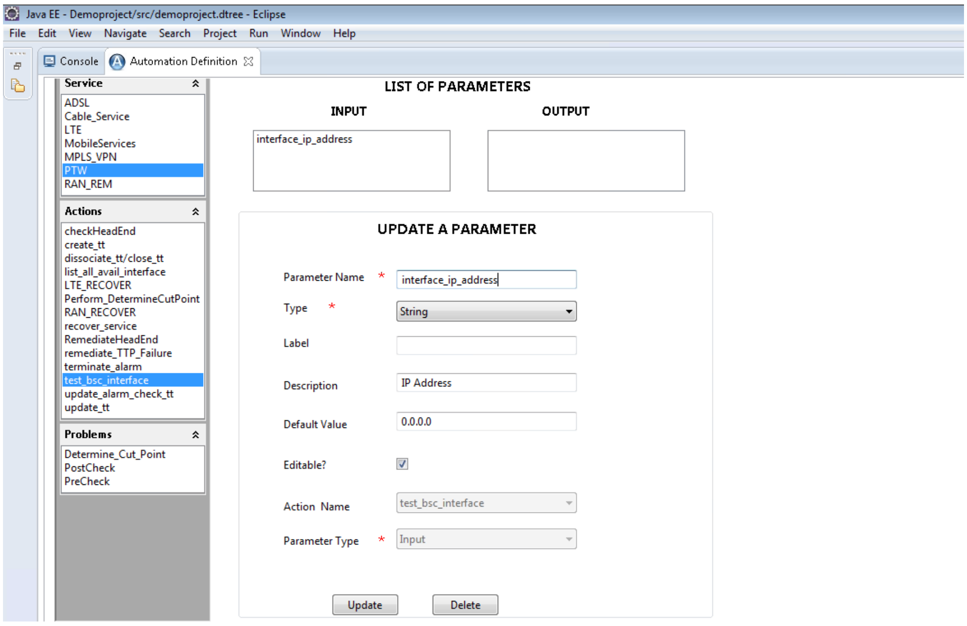
   The **Automation Definition** View appears.

2. Click the **Actions** tab or the ︾ icon on the left-hand side.

   The **Actions** tab expands and shows the configured Actions.

3. Select an Action for which you want to delete the parameter, right-click and select the **View Parameters** option from the pop-up list.

   The **LIST OF PARAMETERS** pane opens with the existing input and output parameters listed separately.


Java EE - Demoproject/src/demoproject.dtree - Eclipse
File Edit View Navigate Search Project Run Window Help
Console
Automation Definition

Service

ADSL
Cable_Service
LTE
MobileServices
MPLS_VPN
PTW
RAN_REM

Actions

checkHeadEnd
create_tt
dissociate_tt/close_tt
list_all_avail_interface
LTE_RECOVER
Perform_DetermineCutPoint
RAN_RECOVER
recover_service
RemediateHeadEnd
remediate_TTP_Failure
terminate_alarm
test_bsc_interface
update_alarm_check_tt
update_tt

Problems

Determine_Cut_Point
PostCheck
PreCheck

LIST OF PARAMETERS

INPUT	OUTPUT
interface_ip_address	

UPDATE A PARAMETER

Parameter Name * interface_ip_address
Type * String
Label
Description IP Address
Default Value 0.0.0.0
Editable? ☑
Action Name test_bsc_interface
Parameter Type * Input

Figure 27 List of parameters

4. Select the parameter you want to delete.

   The **UPDATE A PARAMETER** pane appears.

5. Click the **Delete** button.

   The parameter is deleted.

8.7 Create an Action Outcome

The following procedure shows how to view the already created Action outcomes for an Action.

1. Click the **Definition** button.

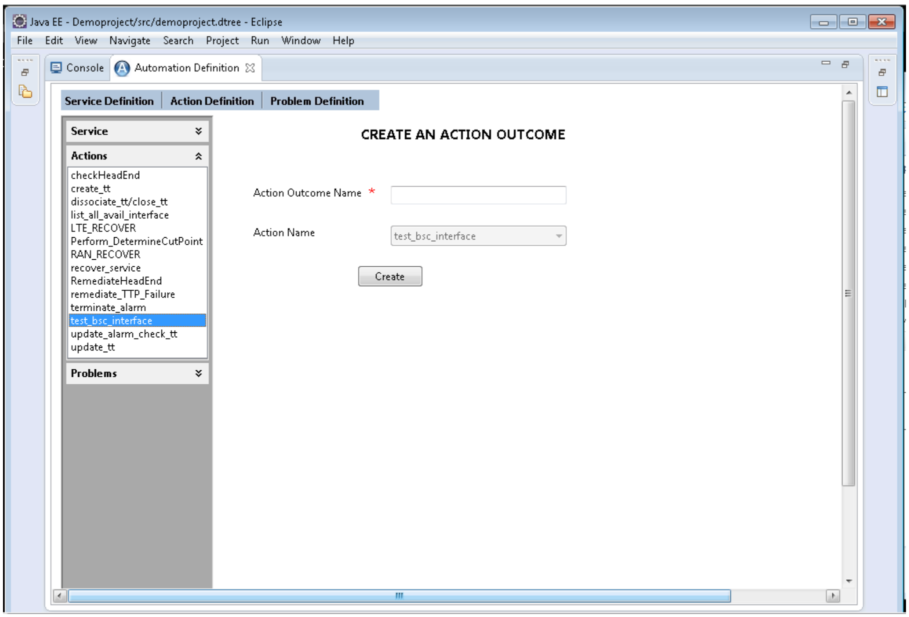
   The **Automation Definition** View appears.

2. Click the **Actions** tab or the ︾ icon on the left-hand side.

   The **Actions** tab expands and shows the configured Actions.

3. Select an Action for which you want to create an action outcome, right-click and select the **Create an Action Outcome** option from the pop-up list.

   The **CREATE AN ACTION OUTCOME** pane opens.



CREATE AN ACTION OUTCOME

Action Outcome Name *

Action Name: test_bsc_interface

Figure 28 Create an Action Outcome

4. Enter a name for the action outcome in the **Action Outcome Name** and click the **Create** button.

   A new Action outcome is created with the given name.

8.7.1 View and update Action Outcomes

The following procedure shows how to view the already created Action outcomes for an Action.

1. Click the **Definition** button.

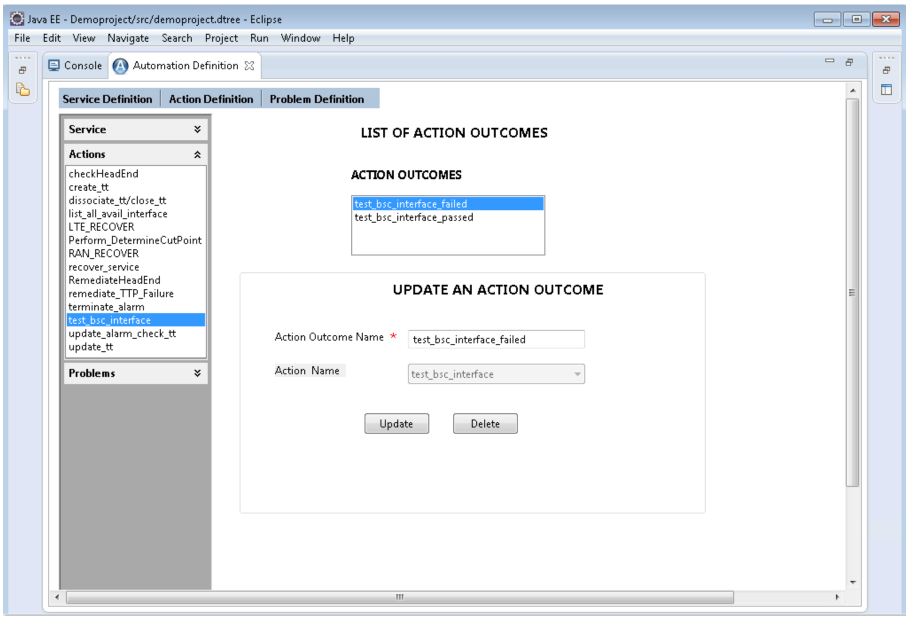
   The **Automation Definition** View appears.

2. Click the **Actions** tab or the ︾ icon on the left-hand side.

   The **Actions** tab expands and shows the configured Actions.

3. Select the Action for which you want to modify an action outcome, right-click and select the **View Action Outcomes** option from the pop-up list.

   The **LIST OF ACTION OUTCOMES** pane opens with a list of outcomes for the selected Action in the **ACTION OUTCOMES** box.



checkHeadEnd, create_tt, dissociate_tt/close_tt, list_all_avail_interface, LTE_RECOVER, Perform_DetermineCutPoint, RAN_RECOVER, recover_service, RemediateHeadEnd, remediate_TTP_Failure, terminate_alarm, test_bsc_interface, update_alarm_check_tt, update_tt

LIST OF ACTION OUTCOMES

ACTION OUTCOMES

test_bsc_interface_failed
test_bsc_interface_passed

UPDATE AN ACTION OUTCOME

Action Outcome Name * test_bsc_interface_failed

Action Name test_bsc_interface

Figure 29 Update an Action Outcome

4. Select an Action outcome you want to update from the list.

   The **Update an Action Outcome** pane appears. You can modify only the name.

5. Modify the Action outcome name and click the **Update** button.

   The Action outcome is modified.

8.7.2 Delete an action outcome

The following procedure shows how to view the already created Action outcomes for an Action.

1. Click the **Definition** button.

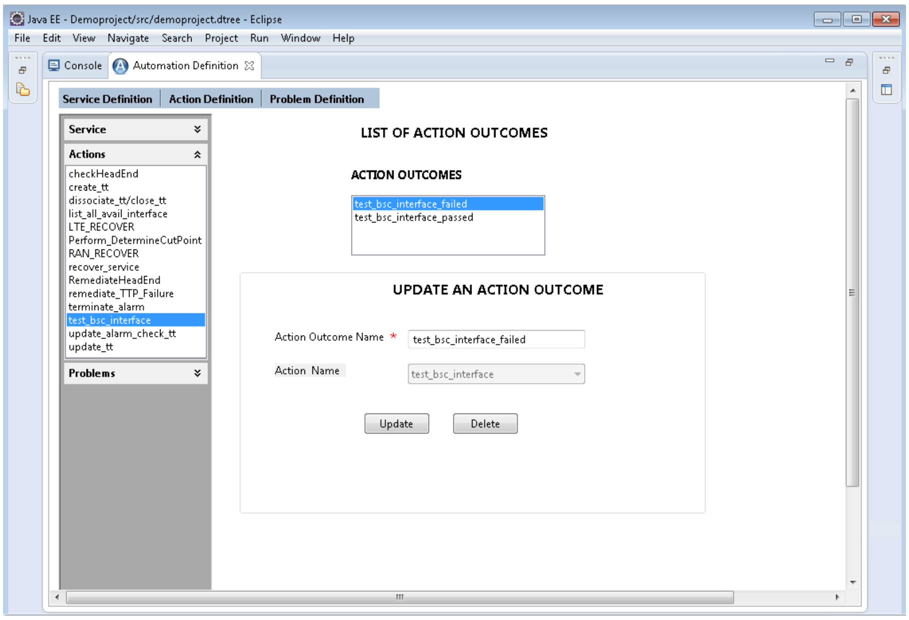
   The **Automation Definition** View appears.

2. Click the **Actions** tab or the ︾ icon on the left-hand side.

   The **Actions** tab button expands and shows the configured Actions.

3. Select the Action for which you want to delete the action outcome, right-click the action and select the **View Action Outcomes** option from the pop-up list.

   The **LIST OF ACTION OUTCOMES** pane opens with a list of outcomes for the selected Action in the **ACTION OUTCOMES** box.



checkHeadEnd
create_tt
dissociate_tt/close_tt
list_all_avail_interface
LTE_RECOVER
Perform_DetermineCutPoint
RAN_RECOVER
recover_service
RemediateHeadEnd
remediate_TTP_Failure
terminate_alarm
test_bsc_interface
update_alarm_check_tt
update_tt

LIST OF ACTION OUTCOMES

ACTION OUTCOMES

test_bsc_interface_failed
test_bsc_interface_passed

UPDATE AN ACTION OUTCOME

Action Outcome Name * test_bsc_interface_failed

Action Name test_bsc_interface

Figure 30 Update an Action Outcome

4. Select the action outcome you want to delete from the list.

   The **Update an Action Outcome** pane appears.

5. Click the **Delete** button.

6. Click **Yes** to confirm deleting the action outcome.

   The action outcome is deleted.

8.8 Orchestrating Model Objects

In the UCA Automation Orchestrator UI main window, the **Orchestration** button opens an editor, where you design a decision tree by using the entities from the database (enterprise or Oracle).

8.8.1 Launch Orchestration

1. In the UCA Automation Orchestrator project folder structure, click the `.dtree` file under the `src` directory.

   The **Automation Orchestrator** home page opens.

2. In the Automation Orchestrator home page, click the **Orchestration** button.

   A palette with the following options appears:

   - Select—To select a Problem link or Action Outcome link.
   - Root—To draw a root node. In a decision tree, you can have only one root node.
   - Service—To draw a Service node. All the Service nodes are linked to the root node at top.
   - Action—To draw an Action node.
   - Problem—To define links or relationships. The Service nodes are always linked to the Action nodes using Problem link.

- Action Outcome— To define links or relationships. The Action nodes are linked to another Action node by action outcome link.

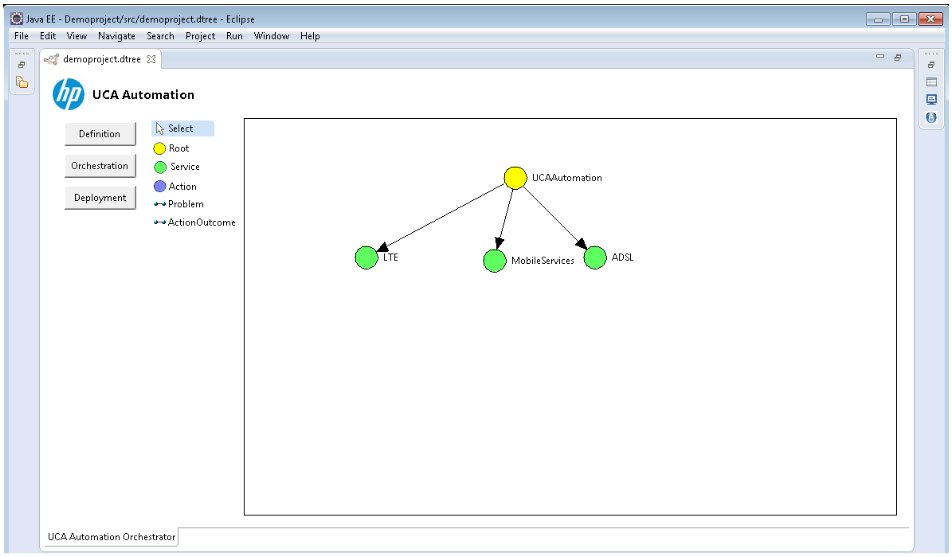


Figure 31 UCA Automation Orchestration

Each option is associated with an icon. To the right of the palette is the editor.

The editor contains a decision tree with root node as **UCAAutomation** and all Service nodes appear as linked to the root node.

A new file with extension `.dree.xml` is generated under the `src` folder. This file contains all Problems, Actions, and the XML format of the skeleton decision tree.

8.8.2 Add a Service to decision tree

The following procedure describes how to add a Service node to a decision tree.

1. In the **Automation Orchestrator** home page, click the **Orchestration** button.

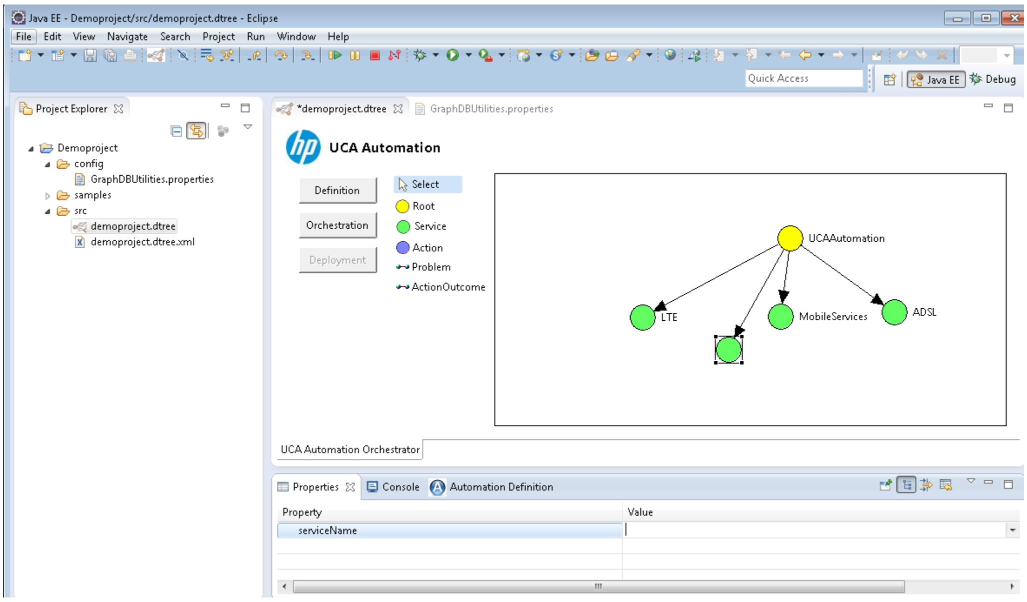
   The palette with options and the editor appears.

2. Select the **Service** option from the palette and click in the editor.

   The service icon is placed in the editor. The link with the root node is established automatically and the **Properties** pane opens with the following two columns:

   - Property
   - Value

   The **serviceName** property appears in the **Property** column.



Property	Value
serviceName	

Figure 32 Add Service node to orchestrator editor

3. Click the row in the **Value** column corresponding to the **serviceName**.

   A drop-down list appears with all the service names.

4. Select a service name and click inside the orchestrator editor.

   The service name is added to the editor against the Service node. If you do not give a name to the node, the `Please specify the Service name!` message appears when you save the decision tree.

5. (Optional) Select **Edit** from the menu or right-click the node to perform the following operations:

   - Undo— To undo a previous operation, select **Undo <operation name>**. Multiple undo operations are possible.
   - Redo— The **Redo <operation name>** is enabled after an operation is undone.
   - Zoom In—Click **View** -> **Zoom In** from the menu to magnify the decision tree in the editor.
   - Zoom Out—Click **View** -> **Zoom Out** from the menu to diminish the decision tree. This option is available only for the decision tree editor.
   - Delete—To delete a node. When you delete a Service node, the Service node and the incoming link and outgoing link are deleted.

Note

You cannot delete the Root node and the link between the Root node and the Service node.

When you delete a Service node, UCA Orchestrator automatically deletes the link to the Root node.

8.8.3 Delete a Service from the decision tree using CLI

You can use the command line utility to delete a specific branch in the decision tree for a Service.

1. Run the following command:

```
./decisionTree.sh -d MobileServices
```

2. To Delete all the Services run the following run

```
./decisionTree.sh -d ALL
```

8.8.4 Add an Action to decision tree

The following procedure describes how to add an action to a decision tree.

1. In the **Automation Orchestrator** home page, click the **Orchestration** button.

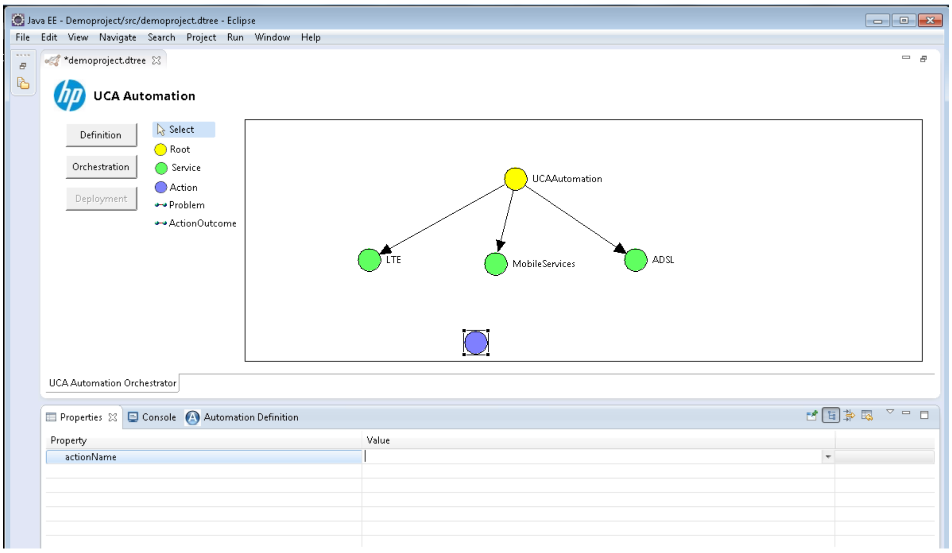
   The palette with options and the decision tree editor appear.

2. Select the **Action** option from the palette and click in the editor.

   The icon for the Action option is placed in the editor. The **Properties** pane opens with the following two columns:

   - Property
   - Value

   The **actionName** property appears in the **Property** column.



Property	Value
actionName	

Figure 33 Add an Action node to orchestrator editor

3. Click the row in the **Value** column corresponding to the **actionName**.

   A drop-down list appears with all the action names.

4. Select an action name and click inside the orchestrator editor.

   The action name is added to the editor against the Action node. If you do not give a name to the node, the `Please specify the Action name!` message appears when you save the decision tree.

5. (Optional) Select **Edit** from the menu or right-click the node to perform the following operations:

   - Undo— To undo a previous operation, select **Undo <operation name>**. Multiple undo operations are possible.
   - Redo— The **Redo <operation name>** is enabled after an operation is undone.
   - Zoom In—Click **View** -> **Zoom In** from the menu to magnify the decision tree in the editor.
   - Zoom Out—Click **View** -> **Zoom Out** from the menu to diminish the decision tree. This option is available only for the decision tree editor.

- ○ Delete—To delete a node. When you delete an Action node, the Action node and the incoming link and outgoing link of the Action node are deleted.

8.8.5 Link Service node to Action node

After you add an Action node, the Service node and Action node are linked using the Problem link. Problems are associated with Services. A service can have more than one Problem associated to it. If you want to associate a problem to two different service types, you should create the problem for each service type.

Follow the procedure to link the Action and Service nodes.

1. In the **Automation Orchestrator** home page, click the **Orchestration** button.

   The palette with options and the decision tree editor appear.

2. Select the **Problem** option from the palette and in the editor, click the Service node and then the Action node.

3. Select the **Select** option in the palette and click the problem link to associate the problem name to the link.

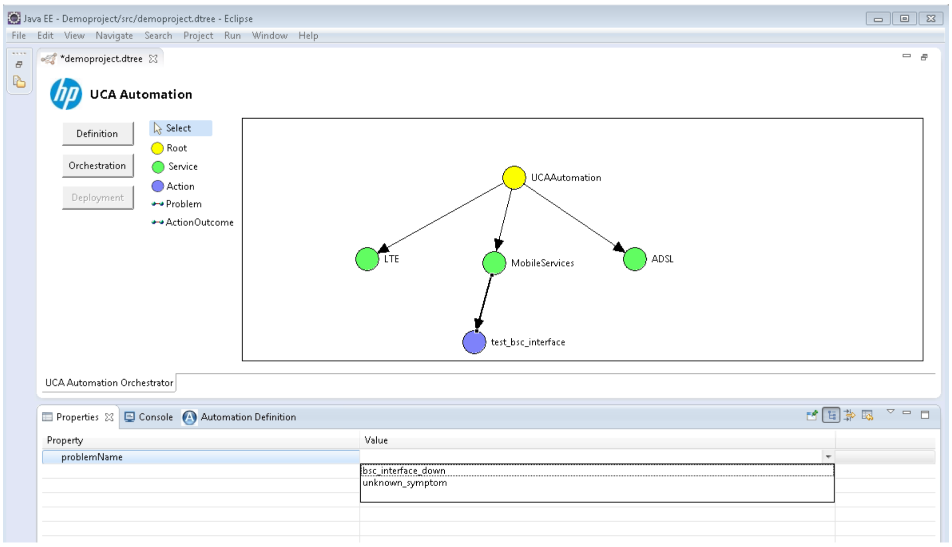
   The **Properties** pane opens with the following two columns:

   - ○ Property
   - ○ Value

   The **problemName** property appears in the **Property** column.

4. Click the row in the **Value** column corresponding to the **problemName**.

   A drop-down list appears with all problems associated with the Service type.



Property	Value
problemName	bsc_interface_down unknown_symptom

5. Select a value and click inside the orchestrator editor for the value to get updated in the editor.

   The Service node is linked to the Action node via the Problem link. If you do not give a name to the node, the `Please specify the Problem name!` message appears when saving the decision tree.

6. (Optional) Select **Edit** from the menu or right-click the node or link, you can perform the following operations:

   - ○ Undo— To undo a previous operation, select **Undo <operation name>**. Multiple undo operations are possible.

- ○ Redo— The **Redo <operation name>** is enabled after an operation is undone.
- ○ Zoom In—Click **View** -> **Zoom In** from the menu to magnify the decision tree in the editor.
- ○ Zoom Out—Click **View** -> **Zoom Out** from the menu to diminish the decision tree. This option is available only for the decision tree editor.
- ○ Delete—To delete a node or a link. When you delete a link, the system deletes only the link.

8.8.6 Link Action nodes

You can link two Action nodes using the Action outcome link. Follow the procedure to link the Action nodes.

1. In the **Automation Orchestrator** home page, click the **Orchestration** button.

   The palette with options and the decision tree editor appear.

2. Add and Action node in the editor.
3. Select the **Action Outcome** option from the palette and in the editor, click the Action node from which the link should be defined and then the other Action node.
4. Select the **Select** option in the palette and click the Action outcome link to associate the action outcome name to the link.

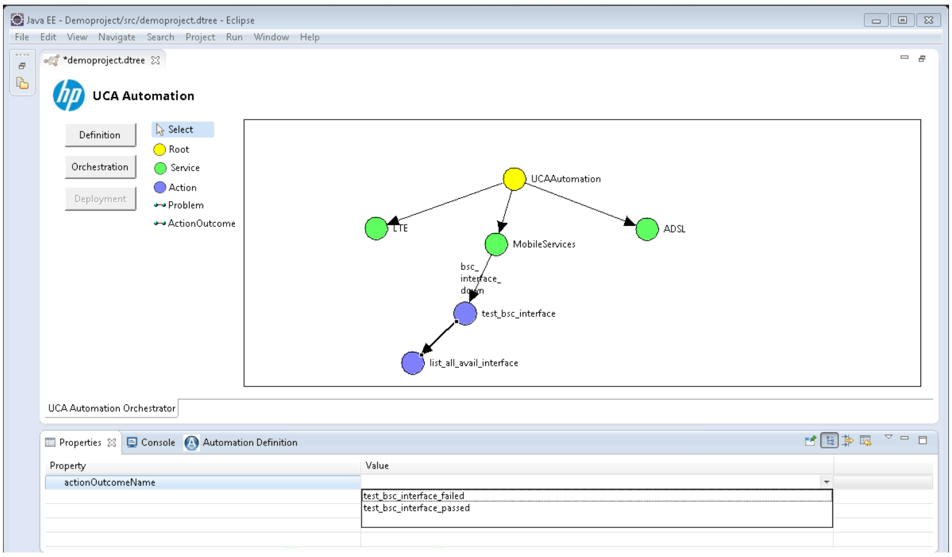
   The **Properties** pane opens with the following two columns:

   - ○ Property
   - ○ Value

   The **actionOutcomeName** property appears in the **Property** column.

5. Click the row in the **Value** column corresponding to the **actionOutcomeName**.

   A drop-down list appears with all action outcomes of the Action from which the link is drawn.



Property	Value
actionOutcomeName	test_bsc_interface_failed test_bsc_interface_passed

Figure 34 Action Outcome link

6. Select the action outcome and click inside the orchestrator editor for the value to get updated in the editor.

The Action nodes are linked via the action outcome link. If you do not give a name to the node, the `Please specify the Action outcome name!` message appears when you save the decision tree.

7. (Optional) Select **Edit** from the menu or right-click the node or link, you can perform the following operations:

   - Undo— To undo a previous operation, select **Undo <operation name>**. Multiple undo operations are possible.
   - Redo— The **Redo <operation name>** is enabled after an operation is undone.
   - Zoom In—Click **View** -> **Zoom In** from the menu to magnify the decision tree in the editor.
   - Zoom Out—Click **View** -> **Zoom Out** from the menu to diminish the decision tree. This option is available only for the decision tree editor.
   - Delete—To delete a node or link. When you delete a link, only the link is deleted.

8.8.7 Save decision tree

1. After drawing the decision tree, click the **Save** button in the UI to save the decision tree.

   The **.dree.xml** file is updated. After you successfully save the decision tree, the option for deployment is enabled.

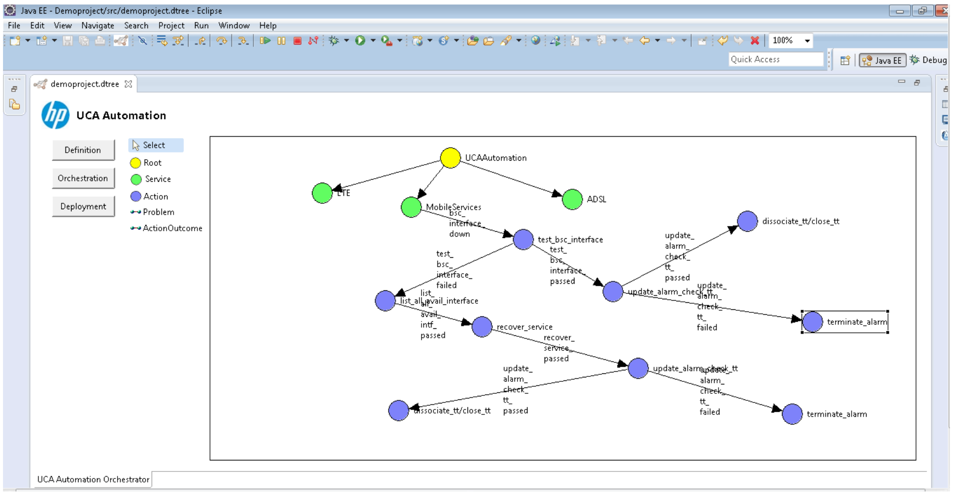


Figure 35 Final Decision Tree

After orchestrating the decision tree, if you click the **Orchestration** button again, a confirmation message appears: `Do you want to re-draw the decision tree?`

2. Click **Cancel** to save the current graph.

   If you click **Ok**, the decision tree skeleton with the Root node and Service nodes is re-generated and the all updates to the decision tree are lost.

8.9 Deploy decision tree

After you deploy the final decision tree, you can view it in the UCA EBC console's **Topology View**.

Follow the procedure to deploy the decision tree into neo4j graph database.

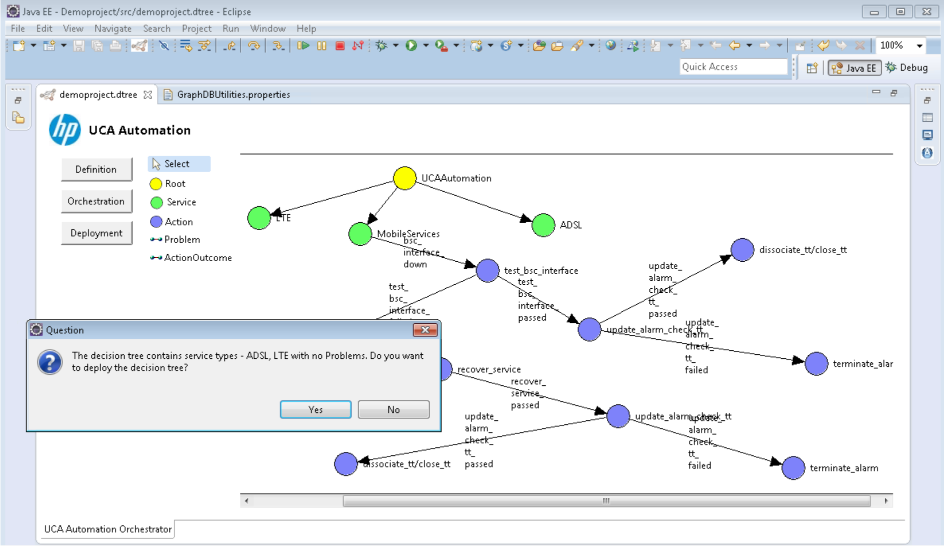
1. Specify the Neo4j graph database credentials in the `GraphDBUtilities.properties` file.

2. Click the **Deployment** button to deploy the decision tree.

   A confirmation message appears.

   If the decision tree contains services without any further links to problems or actions, the orchestrator uploads those services as well.

   Hence, if the decision tree contains services without any links to Actions, the confirmation message displays the list of services which do not have any problem linked and the message checks whether you still want to upload the decision tree.



Question

The decision tree contains service types - ADSL, LTE with no Problems. Do you want to deploy the decision tree?

Figure 36 Confirmation message

3. Select **Yes** to upload the decision tree into the neo4j database.

4. Log into UCA EBC, after the new graph is uploaded into the neo4j graph database.

5. Select **UCA-EBC:default** -> **Topology Management** -> **Display** to view the uploaded graph.

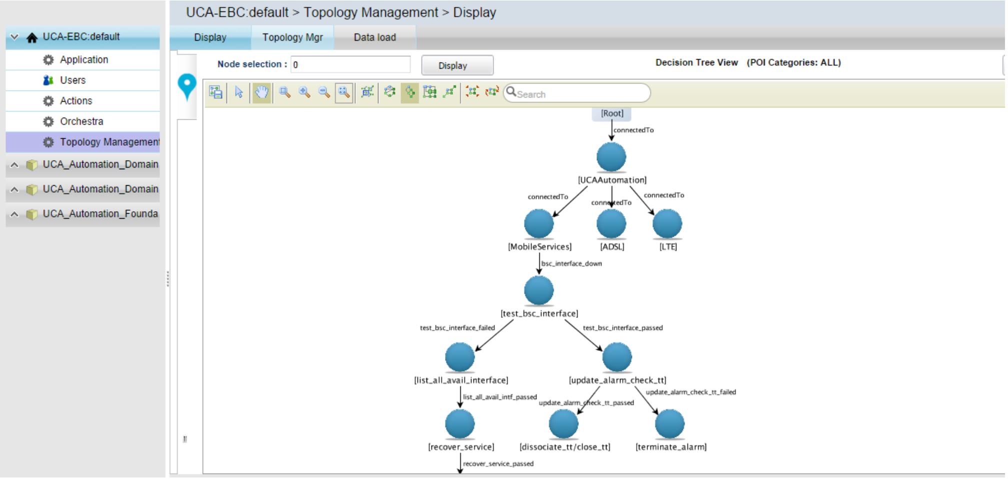


Figure 37 Decision tree after uploading into Neo4j graph database

Note

Only the nodes that have links in the decision tree are saved in the `.dtree.xml`. Hence, you cannot deploy the nodes which do not have links in the decision tree. However, when you save, the orchestrator editor saves all nodes and you can continue editing the graph.

8.10 Generate skeleton decision tree using CLI

You can Use the command line utility to generate a skeleton decision tree from the database.

1. Modify the `GraphDBUtilities.properties` file to specify the database URL, username, and password.

2. Run the following command to generate the skeleton decision tree XML.

```
./decisionTree.sh -e text.xml
```

3. Modify and upload the XML to the Neo4j database.

   Modify the XML only if you are familiar with the syntax of the decision tree.

8.10.1 Deploy using command Line utility

You can use the command line utility to deploy the decision tree developed using the automation orchestrator to Neo4j database.

1. Modify the `GraphDBUtilities.properties` file available under the `/opt/UCA_Automation/Utilities/DecisionTree/conf` to specify the location of the Neo4j host and port database.

```
   #UCA Automation Inventory database connection details
   #Oracle jdbc driver :
oracle.jdbc.pool.OracleConnectionPoolDataSource
   #Oracle url :
jdbc:oracle:thin:@<hostname>:<port>:<service>
   #Postgres jdbc driver : com.edb.Driver
   #Postgres url : jdbc:edb:@<hostname>:<port>:<service>
   inventory.db.driver=com.edb.Driver
   inventory.db.url=jdbc:edb://<hostname>:<port>/<service>
   inventory.db.user=<username>
   inventory.db.password=<password>

   #Neo4j database connection details
```

```
neo4j.db.protocol=http
neo4j.db.host=<hostname>
neo4j.db.port=<port>
neo4j.db.db=db
neo4j.db.data=data
#enables batch transaction of inserts into neo4j db
org.neo4j.rest.batch_transaction=true
#enables http streaming
org.neo4j.rest.stream=true
```

The default value for the `<host>` is `localhost` and `<port>` is `7474`.

2. Copy the Decision Tree XML developed using the orchestrator from projects `src` folder to any location in the server.

   For example, copy the XML file to `/opt/UCA_Automation/Utilities/DecisionTree/etc`.

3. Run the following command available at `/opt/UCA_Automation/Utilities/DecisionTree/bin`.

   ```
   ./decisionTree.sh -u etc/<Name of the decision tree xml>
   ```