

HPE UCA Automation

Administrator and User Interface Guide for Linux (RHEL 6.4)

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Hewlett Packard Enterprise

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Preface

About this guide

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

Product Name: UCA Automation

Product Version: 2.1

Read this document before installing or using this software.

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 2.1	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 2.1, the supported browsers are Mozilla Firefox 32 and Microsoft Internet Explorer 9.0.

Typographical conventions

Fixed width text	It is used for filenames and their contents, computer inputs or outputs, program codes, and so on.
Italic text	It is used for labels, parameters, emphasized text, and replaceable text, citations and references
Bold text	It is used to indicate navigation options in the interfaces; for example, the text appearing in buttons and menu items. User interface controls, window titles, generic emphasis
<angle brackets=""></angle>	Indicates generic variable names that must be substituted by real values or strings.

Reference documents

- UCA Automation Installation Guide
- UCA Automation Integrator's Guide
- Deployment Manager Guide (HPE SA)
- NOM Installation and Configuration Guide
- NOM HPE SA 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

Please visit our HPE Software Support Online Web site at <u>softwaresupport.hpe.com</u> for contact information, and details about HPE 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 HPE Unified Correlation Analyzer for Event Based Correlation (UCA EBC) system, which provides business rules capability and HPE Service Activator (HPE SA 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 with NOM bus.

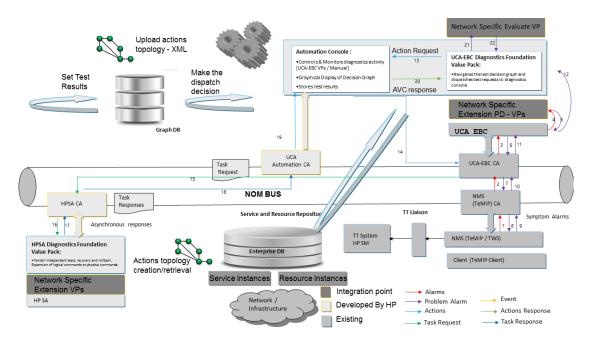


Figure 1: UCA Automation with NOM

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 HPE 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 interact with the action.
- 5. The task request is sent to an Activation System like HPE SA via UCA EBC CA.
- 6. The HPE SA Foundation VP validates the incoming request and then sends them to the workflows in the network specific value pack.
- 7. After processing the workflow the task response containing the diagnostic results is sent to Automation console.
- 8. The diagnostic results are sent back to the UCA-EBC Foundation value pack through the Automation console.
- 9. Depending on whether the administrator wants to make complex decisions based on the results, the diagnostic results are sent to the Evaluate value packs.
- 10. 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.

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

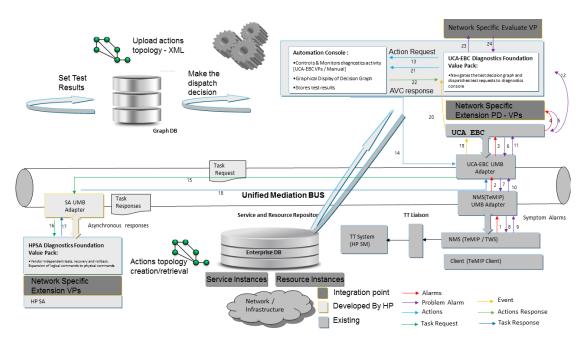


Figure 2: UCA Automation with UMB

Both the task request and task response from HPE SA passes through UCA EBC adapter.

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.

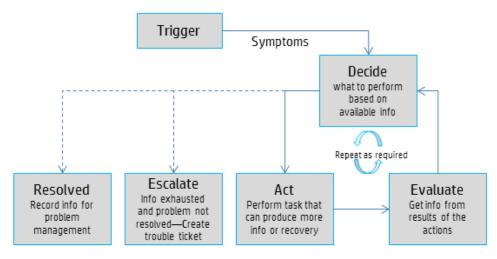


Figure 3: UCA Automation workflow

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.
- 3. <port #>—Port number of the UCA EBC user interface, which is by default 8888.
- 4. Click the UCA Automation Foundation VP on the left navigation pane
- 5. Select the UCAAutomation tab on the right-hand side.

The UCA Automation console opens.

	UCA_Automation_Foun	dation_L	ICA-V2	1-1A > Valu	e Pack > UC/	AAutomation								
 A UCA-EBC default 	Monitoring Configuration	Trouble	shooting	UGA/utomation	19									
UCA_Automation_DomainExam	UCA Automation	ALL	TALE	0[0] Walting F	or Operator [0]									2 Ref
UCA_Automation_DomainExam	Monitoring	, Sho	w Details		w Graph)	ee ee (1)	/(1) >>	22	
UCA_Automation_Foundation_L	Customer Care	0	-	Action Name	Action D	Problem	Mode	Action Originator	Originator	State	Start Time	Task Request	Service	Result
Value Pack UCA_Automation_Foundatio	A Topology View							No Berns to	show					
	View Reports													
	Settings													
	Auto Refresh ON													
	C Olobal Parameters													
	Customer Management													

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.



Figure 4: 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 log 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.

UCA-EBC Login × +	
< 🛞 15.154.113.179:8888/uca/login-page.html	▽ C] Q Search
	UCA Login
	User:
	Password:
	Login

Figure 5: Login panel

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

- a. Username: admin
- b. 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:

- 1. Action mode: This parameter has two attributes.
 - a. Open Loop— User can interact with an action. With this option, an administrator can decide whether to approve or disapprove an action.
 - b. Closed Loop—User cannot interact with an action and edit the parameter values for an action.

2. Action type:

- a. real Run the tests in real mode.
- b. 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	Action Mode	Action Type	Activate Global Params
Monitoring	Open Loop	real	true
Customer Care			
Topology View			
View Reports			
Settings			
Auto Refresh ON			
Global Parameters			
Customer Management			
	Update		
	Action Mode : Open Loop	Action Type : real	V Activate Global Params
		Update Reset	

Figure 6: 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 Monitoring View page opens.

UCA Automation	ALL	FAILED	0[5] Wating For	Operator [40]									2 Refre
Monitoring	, 9	ow Details	View 1	Graph					jex.	«« (1)	/(4) >>	>>	
Customer Care		D *	Action Name	Action ID	Problem	Mode	Action Originator	Originator	State	Start Time	Task Request	Service	Result
Avenue	🖻 operati	ion_contex	t uca_pbalarm al	arm_object 8	4484								0
Copology View	23	190	test_bsc_interface	100	bsc_interface_don	Open Loop	alarm	operation_context	Waiting_Operator	01-Oct-15 02:3	ŧ	MobileServices	
View Reports	🖃 operati	ion_contex	t uca_pbalarm al	arm_object 8	4483								
Settings	8	189	test_bsc_interface	100	bsc_interface_dev	Open Loop	alarm	operation_context	Waiting_Operator	01-Oct-15 02:3	r.	MobileServices	
	🖯 operati	ion_contex	t uca_pbalarm al	arm_object 8	4480								
Auto Refresh ON	10	182	test_bsc_interface	100	bsc_down	Closed Loop	alarm	operation_context	Failure	01-Oct-15 12.2	ŧ	MobileServices	Test Failed due to In
Global Parameters	🖃 operati	ion_contex	t uca_pbalarm al	arm_object 8	4479								
nas crovar r arametere	123	181	test_bsc_interface	100	bsc_interface_doi	Closed Loop	alarm	operation_context	Ok	01-Oct-15 12:1		MobileServices	PNG 16 154 145.5 (
Customer Management	🖻 operati	ion_contex	t uca_pbalarm al	arm_object 8	4478								
	E	180	check_II	101	bsc_interface_doi	Closed Loop	alarm	operation_context	Failure	01-Dcl-15 12:0	8.)	MobileServices	The Alarm is not as
	13	179	test_bsc_interface	100	bsc_interface_doi	Closed Loop	alarm	operation_context	Ok	01-Oct-15 12:0	¢	MobileServices	PING 16.154.145.5 (
	🖂 operati	ion_contex	t uca_pbalarm al	arm_object 8	4477								
	175	178	test_bsc_interface	100	bsc_interface_dov	Closed Loop	alarm	operation_context	Ok	01-Oct-15 12:0	6	MobileServices.	PNG 18.154 145.5 (

Figure 7: 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.

- a. All— Status of all tests that are currently running, failed, awaiting operator's response.
- b. Failed—Lists all tests that have failed.
- c. 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.

Table 1: Monitoring

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.
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.

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.

Print Preview	Print
ID:	303
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_object1095
State:	Ok .
Status:	PASSED
	-Contrastion-1:D: encodepc/UTL-0" standators/yetT-> mag units="http://peaks.automation.to.com?> -teaser->

Figure 8: Monitor show details

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

UCA Automation	ALL	FALLED	[5] Waiting For	Operator [40]	1								2 Ref
Monitoring	. 5	how Details	View (Sraph					lee.	<< (1)	/(4) >>	>>	
Customer Care		0.*	Action Name	Action ID	Problem	Mode	Action Originator	Originator	State	Start Time	Task Request	Service	Result
Topology View	🖃 operat	tion_context	t uca_pbalarm al	arm_object 8	34484								
	10	150	test_bsc_interfaci	100	bsc_interface_do-	Open Loop	alarm	operation_context	Wating_Operator	01-Oct-15 02:3	8	MobileServices	
View Reports	🖃 operal	tion_context	t uca_pbalarm al	arm_object 8	84483								
Settings		189	test_bsc_interface	100	bsc_interface_do	Open Loop	alarm	operation_context	Waiting_Operator	01-Oct-15 02:3	P.	MobileServices	
-	operation	tion_context	t uca_pbalarm al	arm_object 8	84480								
Auto Refresh ON	13	182	test_bsc_interfaci	100	bsc_down	Closed Loop	alarm	operation_context	Failure	01-Oct-15 12:2	×	MobileServices	Test Failed due to
Global Parameters	Operation	tion_context	t uca_pbalarm al	arm_object 8	84479								
			test_bsc_interfaci		bsc_interface_do	Closed Loop	alarm	operation_context	Ok	01-Oct-15 12:1	u .	MobileServices	PNG 16.154.145
Customer Management		tion_context	t uca_pbalarm al	arm_object &									PING
	13	180	check_tt	101	bsc_interface_do	Closed Loop	alarm	operation_context	Failure	01-Oct-15 12:0	u .	MobileServices	The 16.154.145. (16.154.145
	8	179	test_bsc_interfaci	100	bsc_interface_do	Closed Loop	alarm	operation_context	Ok	01-Oct-15 12:0	c	MobileServices	PINC 56(84) byte
	operation	tion_context	t uca_pbalarm al	arm_object &	14477								data, 64 byt from
	13	178	test_bsc_interfaci	100	bsc_interface_do	Closed Loop	alarm	operation_context	OK	01-Oct-15 12:0	¢.	MobileServices	PING 16.154.145.
	🖻 operat	tion_context	t uca_pbalarm al	arm_object 8	84476								tti=123 time-
	10	177	check_tt	101	bsc_interface_do	Closed Loop	alarm	operation_context	Falure	01-Oct-15 11.5	6	MobileServices	The ms 64 bytes 16,154,145
	10	176	test_bsc_interface	100	bsc_interface_do	Closed Loop	alarm	operation_context	OK	01-Oct-15 11.5	6	MobileServices	PINC icmp_seq+2
	operation	tion_context	t uca_pbalarm al	arm_object 8	84475								ttl=123 time= ms 64 bytes
	8	175	check_tt	101	bsc_interface_do	Closed Loop	alarm	operation_context	Failure	01-Oct-15 11:4	1	MobileServices	The 16.154.145.
	23	174	test_bsc_interface	100	bsc_interface_do-	Closed Loop	alarm	operation_context	Ok	01-Oct-15 11:4	1	MobileServices	PINC icmp_seq=3
	23	173	test_bsc_interface	100	bsc_interface_do-	Closed Loop	alarm	operation_context	Ok	01-Oct-15 11:4	(MobileServices	PINC ms 64 bytes
	operat	tion_context	t uca_pbalarm al	arm_object 8	34474								16.154.145. icmp_66g=4

Figure 9: Monitor view result

4. View Graph

View Graph button allows to locate the selected action and the traversal path with status. Select the task for which the decision tree location to be known and click on View Graph.

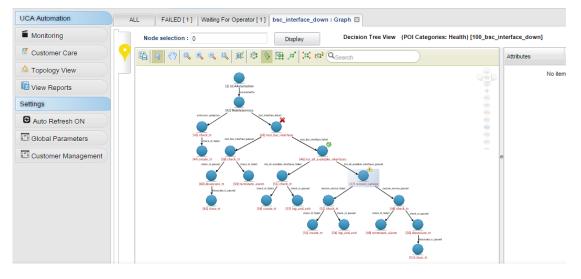


Figure 10: Task View Graph

Details of the icons in the Tom Sawyer Visualization

Table 2: Action Status Icons

Field	Description
Green color tick mark	Passed Action
Red color cross mark	Failed Action
Yellow color caution mark	Actions waiting for operator

User POI (Point of Interest) specifies the task which user might be interested in. In the above decision tree, these specified tasks are displayed on the POI view (left icon on the right of the decision tree).

This POI can either define the Waiting for Operator tasks or failed tasks which are configurable via UCAAutomation.properties.

- a. Configure the UCA_ATM_POI_STATE attribute in the \${UCA_EBC_DATA}/instances/<your instance>/deploy/UCA_Automation_Foundation_UCA-V2.1-1A/conf/UCAAutomation.properties with either Waiting_Operator or Failure.
- b. By default the value is Waiting_Operator.

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.
 - a. 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.
 - b. If the value is pre-configured and restricted from editing, the field is displayed as noneditable and you cannot edit it before approving.
- 4. Click **Approve** if the value is correct or click **Disapprove**.

hp	Specify parameters for Action: test_bsc_interface
ip address of the interface	ip address configured on the interace
	Abbione

Figure 11: 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-V2.1-1A/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 Customer Care

5.1 Customer Management

Customer Management deals with Customer registration and customer – service mapping

5.1.1 Customer Registration

The master screen facilitates the customer to register with the system.

1. Select Customer Management -> Customer

This page asks the user to enter the customer information including the Customer Name, Address and save the same

UCA Automation	Customer Service	\$						
Monitoring	ld	Name	Address	City		State	Country	
Customer Care	103	Merk	abc	def		ghi	ja l	
A Topology View								
View Reports								
Settings		Note			×			
C Auto Refresh ON								
C Global Parameters		Custon	ner successfully created with id	entification numbe	er as 103			
Customer Management			ОК					
	Customer Name :							
	CRy				State			
	Country :							
				Save	Reset			

Figure 12: Customer registration page

Details of various fields in UCA_CUSTOMER table are as follows:

Table 3: UCA Customer field descriptions

Field	Description
ID	Customer Id
Customer Name	Name of the Customer
Address	Address of the Customer
City	City of the Customer
State	State of the Customer
Country	Country of the Customer

2. Customer Management -> Services

Customer can avail the service via this page.

The page provides list of customers registered with the system and the list of services. User can map the service to the customer and also provide the validity of the service.

UCA Automation	Customer	Services						
Monitoring	Name		Service Type		Start Time		En	d Time
Customer Care	Mark.		MobileServices	ា	0/07/2015		11/	23/2016
A Topology View								
View Reports			Note			×		
Settings			Customer Ser	vice successfully created				
Auto Refresh ON			Customer Ser					
🖸 Global Parameters				OK				
Customer Management						_		
	Custor	mer : Mark	0		Services :	Mobile Service	ns v	8
	Start Ti	me: Oct w	7 🐱 2015 🛥 🛄		End Time :	Oct w 7	w 2015	- 1
				Save	Reset			

Figure 13: Customer Service mapping page

Details of various fields in UCA_CUSTOMER_SERVICE table are as follows:

Table 4: UCA Customer Service field descriptions

Field	Description
Customer Id	Customer Id defined in UCA_CUSTOMER table
Service type id	Service Id defined in UCA_SERVICETYPE table
Start Date	Service start date
End Date	Service end date

5.2 Customer Care Test

Customer Care Scenario will be initiated once an Operator receives a call from a Customer for any problem. Actions can be performed for a specific service type or a problem.

 Select UCA Automation -> Customer Care options from the menu. The Customer Relations page asks the operator to enter the Customer Identification number (unique number given to each customer once he registers with the system).

UCA Automation			
Monitoring	No items to show		
Customer Care	No lients to show.	- Ne	o items to show.
A Topology View			
View Reports			
Settings		UCA Automation - Customer Relations	
Auto Refresh ON		Enter Customer 103	
Global Parameters		Identification 103	
Customer Management	No items to show.	Enter Exit	Start Test Exit
L			

Figure 14: Customer Care Main Page

 Select the Service for which customer is facing problem. All the customer details will be displayed on the left pane and the list of services availed by the customer will be displayed on the right grid. The valid service will be indicated with a green color and the expired services in red color.

Monitoring Customer Care	No items	to show			No terra to	o show.
View Reports	1	_	UCA A	utomation - Customer	Services	_
ettings		Mark	Service	Start Time	End Time	
3 Auto Refresh ON		Mark	MobileServices	09/23/2015	10/14/2015	
Global Parameters	No Rema 1	123, XYZ ABC DEF XYZ				start Test Ext
					Enter Exit	
fa		_				

Figure 15: Customer Details Page

3. Chart of customer previous problems

The column chart here represents a count of the entire passed, failed and disapproved task for all problems faced by the customer.

	UCA Autor	ation - Customer Track Records Summary	
160 120 80 40 0	Customer Track Records Summary	Pa Fail. Ols	Enter Exit

Figure 16: Customer Track record Page

4. Select a problem from the list.

From the list of problems for the service selected, pick the customer problem.

UCA Automation		
Monitoring	No items to show.	No items to show.
Customer Care	THE BREAK OF BITCH.	. NO REM'S TO SHOW.
Contract Topology View		
Wew Reports		
Settings		UCA Automation - Customer Problem
G Auto Refresh ON		Customer v
B Global Parameters	5.55	bsc_interface_down
Customer Management	No liems to show	Enter Exit

Figure 17: Customer problem Page

For the selected service and problem combination, all the possible actions are listed in the **UCA Actions** table. And the action will be pre-selected. Details of the various fields in the UCA Actions are as follows:

Table 5: UCA Actions field descriptions

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

- UCA Automation Service Type Action Mode Output Parser Action Type Monitoring V Mo 101 100 test_bsc_interface test test_bsc_interface Open Loop reger TestService1 Customer Care Topology View Testi View Reports Settings Auto Refresh ON Diagnostic action triggered with Task Id as 1205. Do you need to proceed with the next Action? Global Parameters V bsc_interface_down Customer Management OK Cancel Start Test Exit
- 5. Click the Start Test button to trigger the diagnostic action.

Figure 18: Customer Care – Trigger the diagnostic action

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.

Based on the result of the test, next diagnostic action defined as per the decision tree will be triggered.

JCA Automation	Service Type			ID *	Action Name	Action Type	Desc	ription	Act	ion Mode	Output Par	ser Dispa	sich Type
Monitoring	MobileServices			00	test_bsc_interface	test	test_b	sc_inter	face Ope	en Loop	regex	HPSA	
Customer Care	TestService1												
	TestService2												
Topology View	LTE1												
View Reports	Test1												
Settings		Confirm				1	×						
C Auto Refresh ON									ion Origine		Start Time	Service	Resul
Global Parameters		•	The list	next diagnos all_available_	tic action to be executed is interfaces. Do you want to	proceed?		90 Q	perator	Failure	05-Oct-15 03:	2 MobileServic	e connect
	Problem			_									
Customer Management	bsc_interface_down				OK Cancel	1							

Figure 19: Customer Care – Trigger of next probable action

This process of triggering the next action based on the output of the current action will be continued till the test of the problem is complete.

Only the actions with Dispatch type as 'HPSA' will be considered.

Also, time for fetching the next action or the refresh time is defined in

UCAAutomation.properties.

- a. Configure the UI_MANUAL_USR_TESTS_REFRESH_INTERVAL attribute in the \$
 {UCA_EBC_DATA}/instances/<your
 instance>/deploy/UCA_Automation_Foundation_UCA-V2.1 lA/conf/UCAAutomation.properties.
- b. By default the auto refresh timer is set to 9 seconds (9000ms).

You can also toggle the Auto Refresh value by clicking the **Settings -> Auto Refresh** option Once it reaches the end of the test, tasks triggered will be moved to history on confirmation.

UCA Automation	Service Type		10 *	Action Name	Action Type	Descript	ion .	Action Mode	Output Par	ser Disp	atch Type
Monitoring	V MobileServices		V 100	test_bsc_interface	test	test_bsc.	interface (Open Loop	regex	HPS	A
Customer Care	TestService1										
Topology View	LTEI										
View Reports	E Testi										
Settings		Confirm	C. C. M. Law	1	10	X					
Auto Refresh ON							Action Orig		Start Time	Service	Resul
Global Parameters		•	Diagnostic action complete. Do you	initiated for the problem bs want to move to history?	c_interface_down	s op	operator	Ok Ok	05-Oct-15 03: 05-Oct-15 03:		
Customer Management	Problem			OK Cancel		qc	operator	Falure	05-Oct-15 03.	2' MobileServi	ce connect
	(v) osc_menace_oom										

Figure 20: Customer Care – Test completion page

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.

 To open the Topology view, edit the following attributes in the \${UCA_EBC_DATA}/instances/<your instance>/deploy/UCA_Automation_Foundation_UCA-V2.1-1A/conf/UCAAutomation.properties file.

ucaebc_tomsawyer_port=http://<Neo4J server hostname>:8888/graphdisplay/?username=root&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.

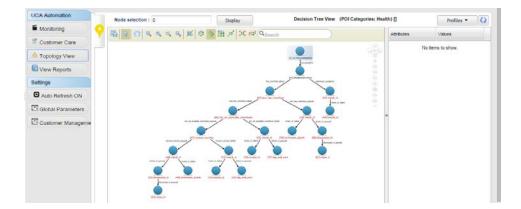


Figure 21: Topology View – launch Neo4j data browser

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	✓ Basic Search From Date :			o Date :			Archive				
Monitoring	 Advanced Sea 	rch									
Customer Care						Search	R	eset			
A Topology View											
View Reports									ec ec (1)	22 22	
	Export Report	Print Report	Arch								
Cottinge		Action Name Action D	Problem	Mode	Action Origin Originator	State	Status	Action Reque Service	Task Requesi Task Respon Result	Start Time	End Time
	D*										
	0.0					No 8	ems to show.				
Settings Auto Refresh ON Global Parameters						No t	ems to show.				

Figure 22: Report search criteria

2. Search the reports based on the following criteria.

Table 6: Report search 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
Туре	Open Loop/Closed Loop
Originator	Alarm/operator/test
Problem	List of all problems defined in the HPE SA inventory
Service Type	List of all service types (domain) defined in the HPE SA inventory
Archive	Searches for archived records, if selected

Table 7: Report actions

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

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

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

UCA Automation	v	Basic Searc				-			-										
-		From Date Advanced 5				То	Date :		-		Archive								
Monitoring		Advanced 5	search							Search	Re	cet .							
Customer Care									-										
A Topology View																			
View Reports																			
Settings		ixport Report		Print R		Archin							100			3)	39. 33		
	E	D	Act	ion Name	Action D	Problem	Mode	Action Origin	n Originator	State	Status	Action Reque Service	Task Reques	Task Ret	spon Result		Start Ti	me	End Time
Auto Refresh ON	-	operation	conte	xt uca_pł	alarm al	arm_object 84	486												
C Global Parameters	10	196	term	inate_ala	106	bsc_interface	Closed Loop	alarm	operation_co	Ok	PASSED	<7xml version MobileService		xml ve</td <td>rsior TERMIN</td> <td>ATED</td> <td>01-Oct-1</td> <td>5 02 43</td> <td>01-Oct-15 02:43</td>	rsior TERMIN	ATED	01-Oct-1	5 02 43	01-Oct-15 02:43
Nar Oloval Falalitetela	10	195	d	heck_tt	101	bsc_interface	Closed Loop	alarm	operation_co	Failure	FALLED	<7xml version MobileService		xml ve</td <td>rsior The Ala</td> <td>rm is no</td> <td>01-Oct-1</td> <td>5 02:40</td> <td>01-Oct-15 02:43</td>	rsior The Ala	rm is no	01-Oct-1	5 02:40	01-Oct-15 02:43
Customer Management	E	194	test	bsc_inte	100	bsc_interface	Closed Loop	alarm	operation_co	OR	PASSED	xml versior MobileService</td <td></td> <td><?xml ve</td><td>rsior PING 16</td><td>154.14</td><td>01-Oct-1</td><td>5 02:40</td><td>01-Oct-15 02:40</td></td>		xml ve</td <td>rsior PING 16</td> <td>154.14</td> <td>01-Oct-1</td> <td>5 02:40</td> <td>01-Oct-15 02:40</td>	rsior PING 16	154.14	01-Oct-1	5 02:40	01-Oct-15 02:40
		operation	conte	xt uca_pt	alarm al	arm_object 84	485												
	E	193	term	inate_ala	106	bac_interface	Closed Loop	alarm	operation_co	Ok	PASSED	«?xml versior MobileService		xml ve</td <td>rsior TERMIN</td> <td>ATED</td> <td>01-Oct-</td> <td>5 02:38</td> <td>01-Oct-15 02:3</td>	rsior TERMIN	ATED	01-Oct-	5 02:38	01-Oct-15 02:3
	10	192	d	heck_ff	101	bsc_interface	Closed Loop	alarm	operation_co	Failure	FALED	«?xmi versior MobileService		«?xml ve	rsior The Ale	rm is no	01-Oct-1	5 02:33	01-Oct-15 02:3
	E	191	test	bsc_inte	100	bsc_interface	Closed Loop	alarm	operation_co	Ok	PASSED	«?xml version MobileService		«?xml ve	raior PING 16	154.14	01-0cl-1	5 02 31	01-Oct-15 02:3
	•	operation	conte	et uca_pt	alarm al	arm_object 84	482												
	E	188	term	inate_ala	106	bsc_interface	Open Loop	alarm	operation_co	Ok	PASSED	xml versior MobileService</td <td></td> <td><?xml ve</td><td>rsior TERMIN</td><td>ATED</td><td>01-Oct-1</td><td>5 02:2:</td><td>01-Oct-15 02:2</td></td>		xml ve</td <td>rsior TERMIN</td> <td>ATED</td> <td>01-Oct-1</td> <td>5 02:2:</td> <td>01-Oct-15 02:2</td>	rsior TERMIN	ATED	01-Oct-1	5 02:2:	01-Oct-15 02:2
	1	187	c	heck_tt	101	bsc_interface	Open Loop	alarm	operation_co	Failure	FALLED	xml version MobileService</td <td></td> <td><?xml ve</td><td>rsior The Ala</td><td>rm is no</td><td>01-Oct-1</td><td>5 02:21</td><td>01-Oct-15 02:2</td></td>		xml ve</td <td>rsior The Ala</td> <td>rm is no</td> <td>01-Oct-1</td> <td>5 02:21</td> <td>01-Oct-15 02:2</td>	rsior The Ala	rm is no	01-Oct-1	5 02:21	01-Oct-15 02:2
	100	186	test	bsc inte	100	bac interface	Open Loop	alarm	operation co	Ök	PASSED	«?xml version MobileService	xml version</td <td><?xml ve</td><td>rsior PING 12</td><td>27.0.0.1</td><td>01-Oct-1</td><td>5 02:18</td><td>01-Oct-15 02-2</td></td>	xml ve</td <td>rsior PING 12</td> <td>27.0.0.1</td> <td>01-Oct-1</td> <td>5 02:18</td> <td>01-Oct-15 02-2</td>	rsior PING 12	27.0.0.1	01-Oct-1	5 02:18	01-Oct-15 02-2

Figure 23: Report default search

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

- 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.

UCA Automation	✓ Basi	c Search														
OCX Automation	Fri	om Date :			To To	Date :		-		Archive						
Monitoring	∧ Adv	anced Sea	rch													
Customer Care									Search	Re	set					
A Topology View																
View Reports												<<	«« (1)	7(1)	>> >>	
and view respons																
	Export	Report	Print Re	sport	Delet	e						her	a (1)			
	Export		Print Re Action Name		Delet Problem	Mode	Action Origi	n Originator	State	Status	Action Reque Service	Task Reques			Start Time	End Time
Settings		•		votion ID	Problem	Mode	Action Origi	n Originator	State	Status	Action Reque Service					End Time
Settings Auto Refresh ON		D* ration_co	Action Name A	votion ID	Problem	Mode		n Originator operation_co	State	Status PASSED	Action Reque Service		Task Resp		Start Time	End Time
Settings Auto Refresh ON Clobal Parameters		D* ration_co	Action Name A	alarm ala	Problem arm_object 84 bsc_interface	Node				Tene Stas			Task Resp <7xml versi	on Result	Start Time 01-Oct-15 02	

Figure 24: 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 HPE SA 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.

Click the sicon in the ribbon.
 The Create New Automation Orchestrator Project Wizard appears.

New Automation Orch	estrator Project		23
	on Orchestrator Project Wizard Orchestrator Project Wizard	6	
Project name: File Name Inventory DB Driver Inventory DB URL Inventory DB Username Inventory DB Password Neo4j DB Protocol Neo4j DB Host Neo4j DB Port Neo4j DB Data Inventory DB Data Inventory DB Data Choose file sy		0WSE-	
?	Finish	Cance	el 📄

Figure 25: Create New Decision Tree Project Wizard

- 2. Specify the following details:
 - a. Project name
 - b. File name
 - c. Inventory DB Driver
 - d. Inventory DB URL
 - e. Username
 - f. Password
 - g. Neo4j Host
 - h. 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.

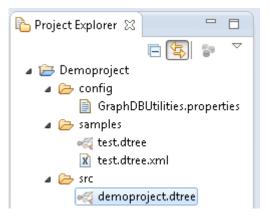


Figure 26: UCA Automation Orchestrator project folder structure

a. GraphDBUtilities.properties file—Contains the inventory properties and Neo4j properties.

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

0			
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.		

b. .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—Automation definition view where you can define the model objects.
- Orchestration—Editor view using which you can define the decision tree.
- Deployment—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	
Eile Edit View Navigate Segrch Project Run Window Help	
💼 ▾ 💼 ▾ 🔜 🔞 🔤 😻 🏷 🎋 ▾ 💽 ▾ 🎭 ▾ 🌐 🕸 🧭 ▾ 🎒 🗗 🖉 ▾ 🎒 ▾ 🏷 ▾ 🖓 ▾ 🏷 ▾ 🗸 🐨 🖉 🕬 🖉 ▾ 🎒	•
Quick Acces	s 📑 🖬 🛃 Java
😽 🛷 demoproject.dtree 😒	
UCA Automation	2 @ @
Definition	E
Orchestration Deployment	
Deployment	
UCA Automation Orchestrator	

Figure 27: 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.
 - a. Service Definition tab—To define Service types.
 - b. Action Definition tab—To define the Actions.
 - c. **Problem Definition** tab—To define the Problems.

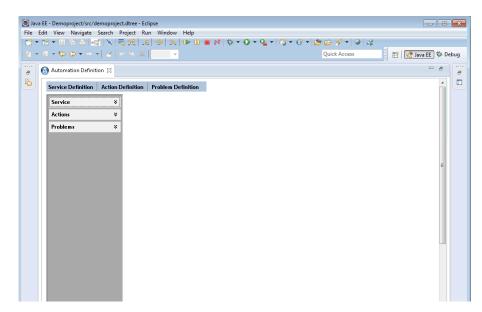


Figure 28: Automation Definition View

8.4.1 Create a new service type

Follow this procedure to create a new Service type.

- Click the **Definition** button. The **Automation Definition** View appears.
- 2. Click the **Service Definition** tab. The **CREATE A SERVICE** pane opens.

🔘 Ja	va EE - Demoproject/src/e	demoproject.dtr	ee - Eclipse				-	•	×
	Edit View Navigate								
				0 • 0 • 0 • 0	🎍 🕶 🐯 🕶 🚱 🖻				
±	• 8 • • • • • •	▼ 2 4 4 4	- × <		Qu	ick Access	🔛 😰 Java EE	券 Del	bug
8	📮 Console 🙆 Auto	mation Definitio	m 🛙				-	8	8
6	Service Definition	Action Defin	ition Problem Definit	ion					
	Service	×		CREATE A SERVIC	E				
	Actions	×	*						
	Problems	×	Service Type *						
				Create					
				create					
								E	
								Ψ.	

Figure 29: 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.

🔘 Ja	/a EE	- Demoproject/src/d	lemoprojec	t.dtree - Eclipse			×
				Project Run Window Help			
1 📫	•	t 🕶 🔛 🐚 📥 😽	🕻 🔌 🗏	v \$\$ \$ \$ \$ \$	IIII ₩ ₩ ▼ O ▼ Q ▼] 🖏 ▼ III ▼ III ♥ 🗁 🖉 ▼] ≫] 48		
1 2 1 -	ł	l • • + • • •	• et i <	¥ \\$ X	Quick Access 🔛 😰 🖓 Jav	a EE 🕸 C)ebug
8	E	Console 🙆 Autor	mation Def	inition 🛙		- 8	
ß		Service Definition	Action E	Definition Problem Definition	n	<u></u>	
		Service	¥		CREATE A PROBLEM		
		Actions	¥				
		Problems	¥	Problem Name *			
				Service Name *	ADSL 👻		
					Create	E	
					III		
	11.7						

Figure 30: Create a new Problem

- 3. Specify the name of the problem in the **Problem Name** text box.
- Select the service type for which the problem is being created, from the Service Name dropdown list and click the Create button.

8.4.3 Create a new action

The following procedure shows how to create a new Action.

- Click the **Definition** button. The **Automation Definition** View appears.
- 2. Click the Action Definition tab. The CREATE AN ACTION pane opens.

Service	¥		CREATE AN ACTION
Actions	*	Action Name *	
:heck_tt :lose_tt :reate_tt dissociate_tt		Description	
ist_all_available_inte recover_service		Туре	recover/resolve
erminate_alarm		Action Mode	Open Loop 🔹
est_bsc_interface Problems		Output Parser	None
		Cost	
		Execution Mode	Asynchronous
		Dispatch Type	HPSA 🔻

Figure 31: Create a new Action

- 3. Enter the required details in the **CREATE AN ACTION** pane.
 - a. Action Name—Name of the action.
 - b. Description—Enter a description for the action.
 - c. Type—Select an action type from the drop-down list, which contains recover/resolve, test, audit, read-only-test, internal, and escalate options.
 - d. Action Mode—Select an option from the drop-down list, which contains Open Loop, Closed Loop, or None options.
 - e. OutputParser—Select an option from the drop-down list, which contains None, regex, and xpath options.
 - f. Cost
 - g. Execution Mode —Select an option from the drop-down list, which contains Asynchronous and Synchronous options.
 - h. Dispatch Type—Select an option from the drop-down list, which contains HPSA, OO, Shell Script, Alarm, and Trouble Ticket options.
 - i. Trouble Ticket Action—Select the Trouble Ticket Action from the drop-down list.
 - ii. 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.

Table 8: Action Types

Action Type	Description		
Recover/Resolve	Action that can recover or resolve a problem symptom.		
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 9: Action Modes

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 10: Output Parsers

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 11: Execution Mode

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

Table 12: Dispatch Types

Dispatch Type	Description	
HPSA	Action is dispatched to HPE Service Activator for execution.	
00	HPE 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.	
	Possible operations are creating Trouble Ticket, associating a trouble ticket, dissociating a trouble ticket, and closing a trouble ticket.	

Table 13: Alarm Actions

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 14: Trouble ticket 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.		

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.

- 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.
- 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.

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😨 📮 Console 🙆 Automation Def	inition 🛛		- 8
Service Definition Action I	Definition Problem Definition		<u> </u>
Service * ADSL Cable Service UE Cable Service UE MobileServices MPLS VPN PVV RAN_REM Actions * CheckHeadEnd create_tt dissociate_tt/close_tt dissociate_tt/close_tt lits_all_avail_inteface LTE_RECOVER Perform_DetermineCutPoint RAN_RECOVER recover_service RemediateTTP_Pailure terminate_alarm tett_bsc_inteface update_stam_check_tt update_st Problems * Determine_CutPoint PortCheck PreCheck	Service Type * PTW	UPDATE A SERVICE	-
•		m	•

Figure 32: Update a Service

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

- Click the **Definition** button. The **Automation Definition** View appears.
- Click the Actions tab or icon on the left-hand side.
 The Actions tab expands and shows the configured Actions.
- Select the action you want to modify from the actions listed under the Action tab. The UPDATE AN ACTION pane appears.

Console 🙆 Automation Def	inition 🛛	
Service Definition Action [Definition Problem Definition	
Service ¥		UPDATE AN ACTION
Actions *		
check_tt close_tt	Action Name *	terminate_alarm
create_tt	Description	terminate_alarm
dissociate_tt list_all_available_interfaces recover_service	Туре	recover/resolve 🔻
terminate_alarm test_bsc_interface	Action Mode	Open Loop 🔹
Problems ¥	Output Parser	None
	Cost	
	Execution Mode	Synchronous 💌
	Dispatch Type	Alarm
	Alarm Action	terminate_alarm 🔻
	Updat	e Delete

Figure 33: Update an Action

- 4. Modify the required fields on this pane.
- 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.

- 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.

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b	Service Definition	Action Definition	Problem Definition		Â	
	ADSL	*		UPDATE A PROBLEM		
	Cable_Service LTE MobileServices	Р	roblem Name 🔺	bsc_interface_down		
	MPLS_VPN PTW RAN_REM	s	ervice Name 🔺	MobileServices +		
	Actions	*	Up	date Delete		
	Problems bsc_interface_dow unknown_symptor		<u> </u>		н	
				m	-	
	•				,	

Figure 34: 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.

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🖶 📮 Console 🔕 Automation Definition 🛛	
Service Definition Action Definition Problem Definition	tion 📄 🛄
Service *	CREATE A PARAMETER
ADSL Cable_Service	
	*
RAN_REM Type *	String
Actions Actions	=
checkHeadEnd create_tt dissociate_tt/close_tt Description list_all_avail_interface	
LTE_RECOVER Perform_DetermineCutPoint Default Value RAN_RECOVER	
recover_service RemediateHeadEnd remediate TTP Failure	
terminate_alarm test_bsc_interface update_alarm_check_tt	test_bsc_interface v
update_alarm_check_tt update_tt Parameter Type	* Input -
Problems 🌣	
Determine_Cut_Point PostCheck PreCheck	Create
	ш т

Figure 35: Create a Parameter

- 4. Enter the required information in the fields.
 - a. Parameter Name
 - b. Type—The available values are String, Integer, Float, and Boolean
 - c. 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.

- 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.
- 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.

Service *	L	IST OF PARAMETERS	
ADSL Cable_Service LTE MobileServices MPLS_VPN PTW RAN_REM	INPUT	OUTPUT	
Actions 🌣			
checkHeadEnd create_tt dissociate_tt/close_tt list_all_avail_interface		PDATE A PARAMETER	
LTE_RECOVER	Parameter Name *	interface_ip_address	
Perform_DetermineCutPoint RAN_RECOVER recover_service	Type *	String 🔹	
RemediateHeadEnd remediate_TTP_Failure terminate_alarm	Label		
test_bsc_interface update_alarm_check_tt update_tt	Description	IP Address	
Problems *	Default Value	0.0.0.0	
Determine_Cut_Point PostCheck PreCheck	Editable?	V	
	Action Name	test_bsc_interface v	
	Parameter Type *	Input v	

Figure 36: 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.

- Click the **Definition** button. The Automation Definition View appears.
- 2. Click the **Actions** tab or the vice icon on the left-hand side. The **Actions** tab expands and shows the configured Actions.
- 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.

Service *	L	IST OF PARAMETERS		
ADSL Cable_Service LTE MobileServices MPLS_VPN PTW RAN_REM	INPUT interface_ip_address	OUT	PUT	
Actions *				
checkHeadEnd create_tt dissociate_tt/close_tt list_all_avail_interface		PDATE A PARAMETER	_	
LTE_RECOVER	Parameter Name *	interface_ip_address		
Perform_DetermineCutPoint RAN_RECOVER	Type *	String	•	
recover_service RemediateHeadEnd remediate_TTP_Failure terminate_alarm	Label			
test_bsc_interface update_alarm_check_tt update_tt	Description	IP Address		
Problems *	Default Value	0.0.0.0		
Determine_Cut_Point PostCheck PreCheck	Editable?	V		
	Action Name	test_bsc_interface	*	
	Parameter Type *	Input	•	

Figure 37: 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.

- 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.
- 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.

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	Service Def	finition	Action D	efinition	Problem Definition	l i i i i i i i i i i i i i i i i i i i	ŕ	
	Service		¥		c	REATE AN ACTION OUTCOME		
	Actions		*					
	checkHead create_tt dissociate_1 list_all_avai	tt/close_tt		Ad	tion Outcome Name			
	LTE_RECO Perform_D RAN_RECO	/ER etermine()VER		Ad	tion Name	test_bsc_interface *		
	recover_ser Remediatel remediate_ terminate_	HeadEnd .TTP_Failu alarm				Create	E	E
	test_bsc_in update_ala update_tt							
	Problems		×					
	<					III	•	
	<u></u>							

Figure 38: 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.

- Click the **Definition** button.
 The **Automation Definition** View appears.
- 2. Click the **Actions** tab or the **i** icon on the left-hand side. The **Actions** tab expands and shows the configured Actions.
- 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.

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b	Γ	Service Definition	Action Defin	ition Problem Definition			Â	
		Service	*	LIS	T OF ACTION OUTCOMES			
		Actions	*					
		checkHeadEnd create_tt		ACTI	ON OUTCOMES			
		dissociate_tt/close_ list_all_avail_interfau LTE_RECOVER Perform_Determine RAN_RECOVER recover_service	ce :CutPoint		bsc_interface_failed bsc_interface_passed			
		RemediateHeadEnc remediate_TTP_Fail terminate_alarm test_bsc_interface			UPDATE AN ACTION OUTCOME		=	
		update_alarm_chec update_tt	k_tt	Action Outcome Nam	re * test_bsc_interface_failed			
		Problems	*	Action Name	test_bsc_interface v			
					Update Delete			
	4				m	۰.		

Figure 39: Update an Action Outcome

- 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.

- Click the Definition button. The Automation Definition View appears.
- Click the Actions tab or the [★] icon on the left-hand side. The Actions tab button expands and shows the configured Actions.
- 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.

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		Service Definition	Action Defin	ition Problem Definition		Â.	
		Service	×	LIS.	T OF ACTION OUTCOMES		
		Actions checkHeadEnd create_tt dissociate_tt/close_t list_all_avail_interfac		test_b	IN OUTCOMES sc_interface_failed c_interface_passed		
		LTE_RECOVER Perform_Determine RAN_RECOVER recover_service RemediateHeadEnd		-	UPDATE AN ACTION OUTCOME		
		remediate_TTP_Faile terminate_alarm test_bsc_interface update_alarm_check update_tt		Action Outcome Name		=	
		Problems	*	Action Name	test,bsc_interface * Jpdate Delete		
	•				π	•	

Figure: 40 Update an Action Outcome

- 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 DB 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:

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

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

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	Help	
UCA Automation Orchestrator		

Figure 41: 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.

- In the Automation Orchestrator home page, click the Orchestration button. The palette with options and the editor appears.
- 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:
 - a. Property
 - b. Value

The serviceName property appears in the Property column.

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	UCA Automation Orchestrator	8 8 ≱ 8 × - □
	Property serviceName	Value -
	۰ [

Figure 42: Add Service node to orchestrator editor

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

- a. Property
- b. Value

The actionName property appears in the Property column.

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		AD'SL
	MobileServices	aosi.
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Properties 🙁 📴 Console 👩 Automation Defi Property	ntion	्र वि के ख

Figure 43: Add an Action node to orchestrator editor

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

- 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:

- a. Property
- b. Value

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

Click the row in the Value column corresponding to the problemName.
 A drop-down list appears with all problems associated with the Service type.

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UCA Automation		<i>™ ∂</i>
Definition Orchestration Deployment Deployment Charlon Charlo	UCAAutomation UCAAutomation MobileServices	a.
UCA Automation Orchestrator	test_bic_interface	e (ii)> □, ··• □
Property	Value	
problemName	bs <u>t_interface_down</u> unknown_symptom	

Figure 44: Link a Service and Action node

- 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:
 - a. Undo— To undo a previous operation, select **Undo <operation name>**. Multiple undo operations are possible.
 - b. Redo— The **Redo <operation name>** is enabled after an operation is undone.
 - c. Zoom In—Click **View** -> **Zoom In** from the menu to magnify the decision tree in the editor.

- d. Zoom Out—Click **View** -> **Zoom Out** from the menu to diminish the decision tree. This option is available only for the decision tree editor.
- e. 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:

- a. Property
- b. Value
- The actionOutcomeName property appears in the Property column.
- 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.

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CA Automation		<i>□ ∂</i>
Definition Orchestration Deployment Creptoyment Deployment Action Problem ActionOutcome	MobileServices bic_ interface bic_ interface bic_ interface	
UCA Automation Orchestrator		
Properties II Console Automation Definition		
Property	Value	
actionOutcomeName	test_bsc_interface_failed test_bsc_interface_passed	•

Figure 45: 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:
 - a. Undo— To undo a previous operation, select **Undo <operation name>**. Multiple undo operations are possible.

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

8.8.7 Save decision tree

 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.

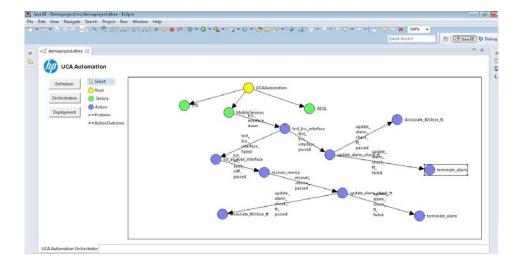


Figure 46: Final Decision Tree

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?

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.

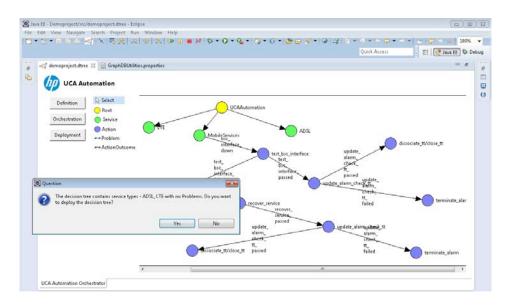


Figure 47: Confirmation message

- 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.

	UCA-EBC:default > Topology Management > Display
V A UCA-EBC default	Display Topology Mgr Data load
O Application	Node selection : 0 Display Decision Tree View (POI Categories: ALL)
Mark Users	
O Actions	
O Orchestra	litoot uureearte
Topology Management	
UCA_Automation_Domain	
UCA_Automation_Domain	onternotación de la construcción
CA_Automation_Founda	T T T T T T T T T T T T T T

Figure 48: 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
- 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.

 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.driver.OracleDriver #Oracle url : jdbc:oracle:thin:@<hostname>:<port>:<service> #Postgres jdbc driver : org.postgresql.Driver #Postgres url : jdbc:edb:@<hostname>:<port>:<service> inventory.db.driver=org.postgresql.Driver inventory.db.url=jdbc:postgresql://<hostname>:<port>/<service> inventory.db.user=<username> inventory.db.user=<username>

#Neo4j database connection details
neo4j.db.protocol=http
neo4j.db.host= <hostname></hostname>
neo4j.db.port= <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.</port></host>

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

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