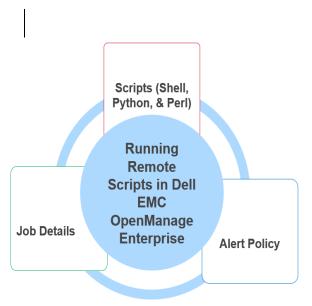


Technical white paper

Remote script execution with Dell EMC OpenManage Enterprise



Abstract

This technical white paper describes the Remote Script Execution feature of OpenManage Enterprise. It gives an overview of the feature along with a use case to enable and use the feature as a System Administrator.

July 2019

Revisions

Date	Description		
July 2019	Initial release		

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Executive summary

Addressing device alerts manually, especially in large setups, is a time-consuming and laborious exercise for the system administrators. OpenManage Enterprise with the Remote Script Execution feature is a solution to this concern.

The Remote Script Execution feature enables the system administrators to run up to 100 scripts, RACADM, or IPMI commands remotely in response to alerts received such as change in device health, power status, and connectivity status.

1 Some use cases for the Remote Script Execution feature

Listed below are some of the use cases where the Remote Script Execution feature can be used:

USE CASE 1:

Remote Script Execution can be used to prevent over heating of servers. When temperature reaches a critical state in a server, alert is generated. In such instances, the user can create an alert policy to trigger a remote IPMI command to shut down the device.

USE CASE 2:

Remote scripts can be used to get the system event logs using RACADM. For instance, when power redundancy is lost for iDRAC servers, the user is notified with the alerts. An alert policy could be created on such alerts to trigger remote RACADM command to get SEL logs for that device.

USE CASE 3:

Customer gets an SNMP trap on an appliance in a private network, based on which he/she wants to set up a policy to run a script on the remote server to send a mail to the group, with the device and alert details. For more information, refer the topic Configure Remote Script Execution with token substitution

2 Basic details of Remote Script Execution

Here are a few facts about the Remote Script Execution feature in OpenManage Enterprise that you need to be aware of before getting started:

• Only the OpenManage Enterprise users with Administrator privileges can use this feature

Features	User levels Enterprise	s for accessing Dell EMC	OpenManage
Manage traps with Alert Polices	Admin	Device Manager	Viewer
	Yes	No	No

- This feature supports up to 4 custom remote commands
- Script execution is supported only on Linux-based systems
- Token substitution is only supported for the "script" execution
- The nodes where the scripts are executed may or may not be managed by the console
- If any change is made to the "command name", user would need to link the alert action again to the alert policy
- Batched commands with up to 100 scripts with token substitution or to a maximum of 3072 characters can be created and passed
- Batched command with up to 100 RACADM or IPMI commands containing a maximum of 3072 characters can be created and passed

3 Configure, Edit, and Delete scripts for remote execution

Scripts for remote execution can be customized to the different types of devices in the data center. This section provides a step-by-step explanation of how to create, edit and delete the scripts or commands for remote execution.

3.1 Configure Remote Script Execution with token substitution

- Select Create button a wizard for "Add Remote Command "will open.
- Provide a Command name.
- Select "script" radio button.
- In Authentication method select "Password".
- Provide Admin username and password of remote box.
- Place the script file with name demo.sh in the remote system.
 - Example command in Script file to send a mail: \$ mail -s \$1+\$2+\$3+\$4 user1@domain.com
- Provide Command to initiate the script .Ex-./demo.sh \$SEVERITY \$IP \$SERVICETAG \$MSG
- Passing Tokens to a Script: If you are using a batch file or a script, use \$1, \$2, \$3, and so on to
 receive the values passed from OpenManage Enterprise. The values are passed in the order they are
 entered from left to right in the Arguments field.
 - For example, if you use \$IP \$SERVICTAG as arguments, a batch file with the following Echo
 \$1 \$2 displays the following result: 172.168.10.10 ABC1234

The following table lists the supported tokens for Remote Script Execution Commands

Description	Tokens	
Device IP Address	\$IP	
Message	\$MSG	
Date	\$DATE	
Time	\$TIME	
Severity	\$SEVERITY	
Servicetag	\$SERVICETAG	
Recommended Resolution	\$RESOLUTION	
Alert Category Name	\$CATEGORY	
Asset tag	\$ASSETTAG	
Model Name	\$MODEL	
Os hostname	\$HOSTNAME	

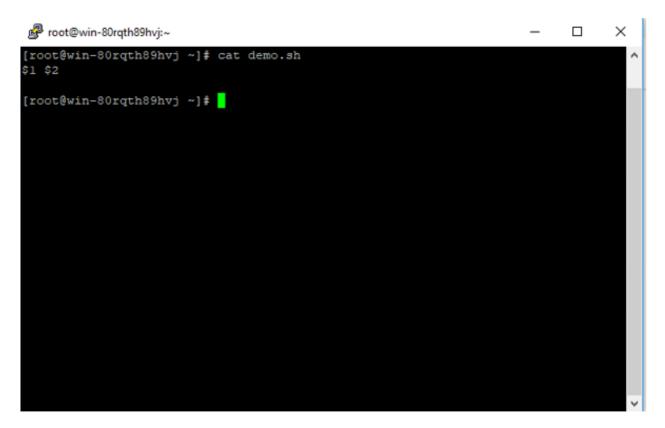


Figure: Screen shot from linux terminal.

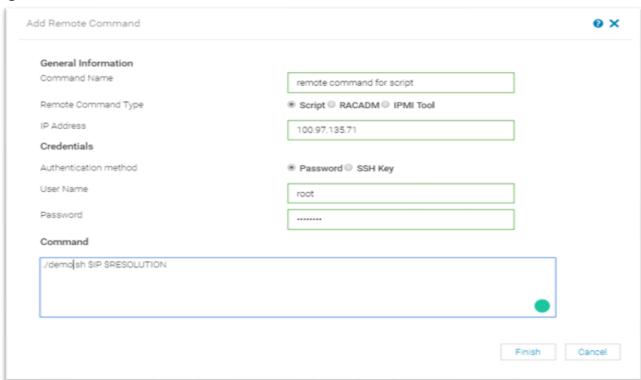


Figure: Screen shot from the Remote Script Execution page.

3.2 Configure Remote Script Execution with password for remote execution.

Here are the steps to configure the Remote Script Execution feature in OpenManage Enterprise using SSH with password.

- Activate the Add Remote Command wizard in OpenManage Enterprise (Application Setting > Script Execution > Create)
- Provide a Command Name
- For the Remote Command Type, select Script
- · For the Authentication method select Password
- Provide Admin Username and Password of the remote box
- · Place the script file in the remote system
- Provide Command to initiate the script. For example, ./demo.sh \$IP \$DATE

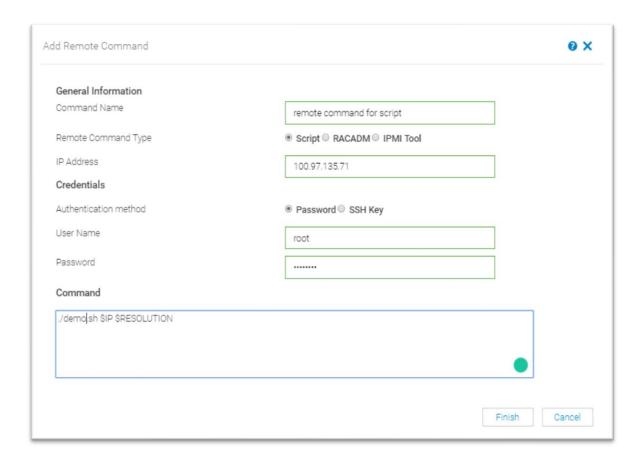


Figure 1: Configuring Remote Script Execution for script with password.

3.3 Configure Remote Script Execution for script with SSH key

3.3.1 Configure SSH key

- In the Linux host, run the following command to generate SSH key: ssh-keygen -b 4096.
- Enter path in which you want to save SSH key (/root/.ssh/id_rsa): /root/testKey/redhat_id_rsa
- Your public key and private key has been saved in location /root/testKey/
- We get keys private key and public key respectively: redhat_id_rsa redhat_id_rsa.pub
- Use SSH with -i option to add public, for example ssh -i redhat_id_rsa.pub root@100.97.135.71
- With ssh-copy-id command, make keys available to authorize logins on a remote machine. For example ssh-copy-id -i /root/testKey/redhat_id_rsa.pub root@100.97.135.71
- Now login to Linux SSH using the private key. ssh -i redhat_id_rsa root@100.97.135.71
- Copy contains of private key "redhat id rsa" in of SSH key box.

3.3.2 Procedure to configure Remote Script Execution for script with SSH key

- Activate the **Add Remote Command** wizard in OpenManage Enterprise (Application Setting > Script Execution > Create)
- Provide a Command Name
- For the Remote Command Type, select Script
- For the Authentication Method, select SSH Key
- Provide Username and "SSH KEY".
 Note: SSH Private key is entered in this box. (id_rsa)
- Provide Command to initiate the script. For example, ./demo.sh \$IP \$DATE

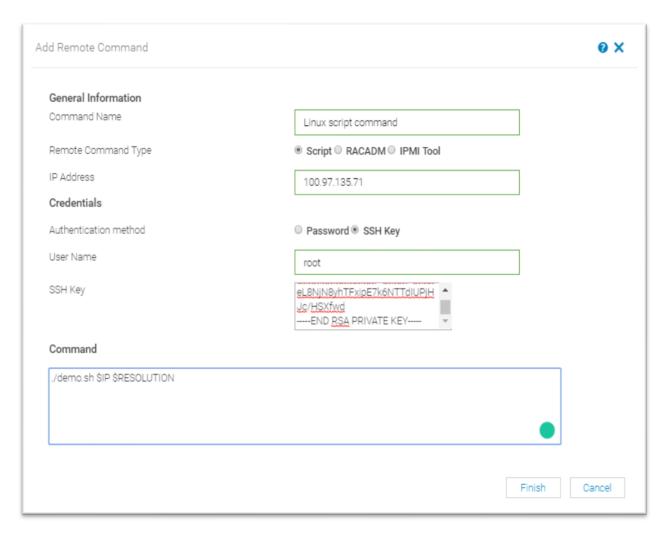


Figure 2: Configuring Remote Script Execution for script with SSH Key.

3.4 Configure Remote Script Execution for RACADM / IPMI command

- Activate the Add Remote Command wizard in OpenManage Enterprise (Application Setting > Script Execution > Create)
- Provide a Command Name
- For the Remote Command Type, select either RACADM or IPMI
- Depending on your selection provide either RACADM or IPMI command in the Command Box.

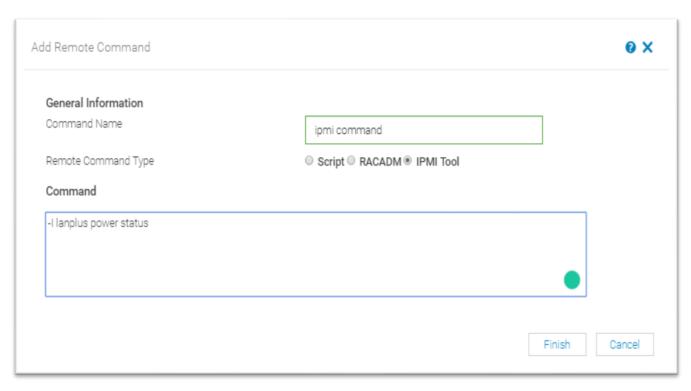


Figure 3: Configuring Remote Script Execution for IPMI commands

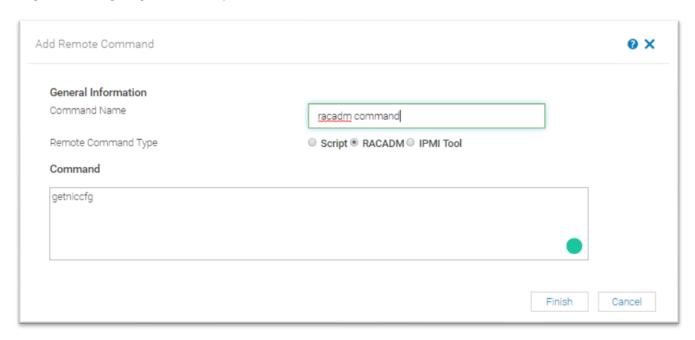


Figure 4: Configuring Remote Script Execution for RACADM commands.

3.5 Edit scripts or commands used in Remote Script Execution

Listed below are the steps to make changes to the existing scripts or commands meant for remote execution.

- Select the existing remote command from the Script Execution page (Application Setting > Script Execution)
- Click Edit to activate the Edit Remote Command wizard. You can edit the Command Name, Remote Command Type and the commands.

Note: If any change is made to the "command name", user would need to link the alert action again to the alert policy

3.6 Delete scripts or commands used in Remote Script Execution

Listed below are the steps to delete the existing scripts or commands meant for remote execution.

- Select the existing remote command from the Script Execution page (Application Setting > Script Execution)
- Click Delete.

4 Create an alert policy and link to the remote execution scripts and commands

To activate the scripts and commands created for remote execution, you need to create alert policies and link those policies to the remote execution scripts or commands. A step-by-step explanation using screenshots is provided on creating alert policies and linking them to the remote-execution scripts or commands.

- Click Create on the Alerts > Alert Policies page to activate the Create Alert Policy wizard.
- Provide a name and description of the alert policy in the Name and Description page of the Create Alert Policy wizard.

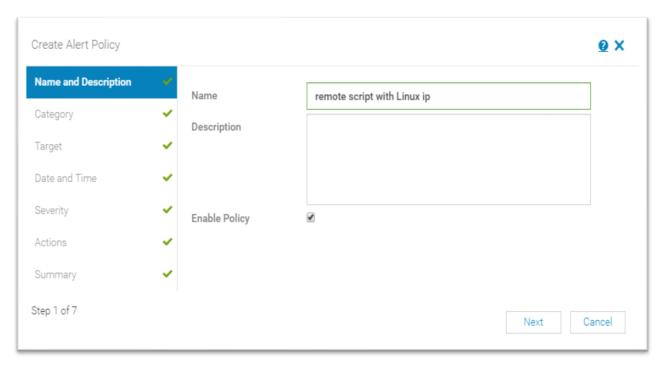
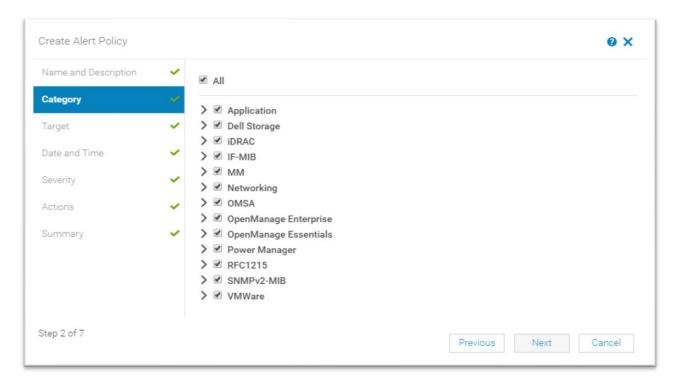
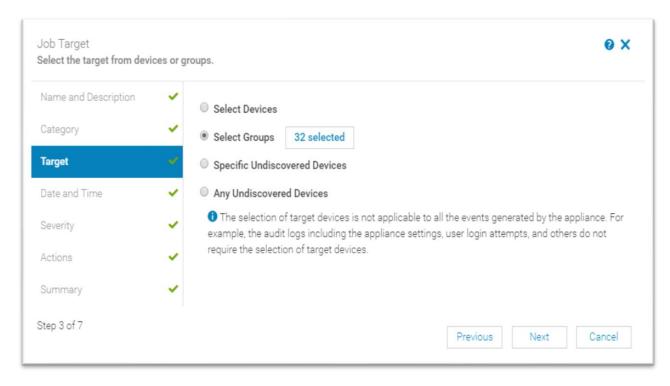


Figure: Create Alert Policy Wizard - Name and Description for Alert policy

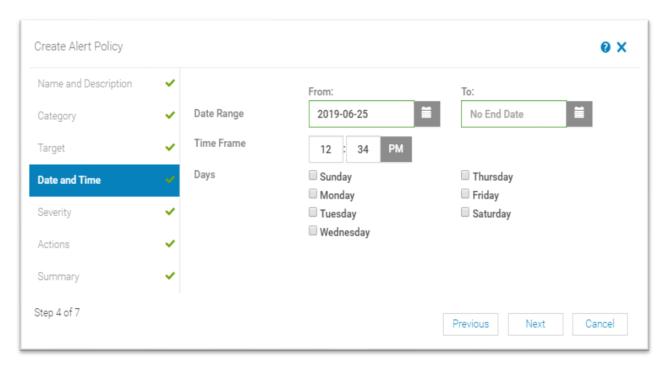
 From the Category page of the wizard, select category(ies) of the devices on which the alert policy would apply.



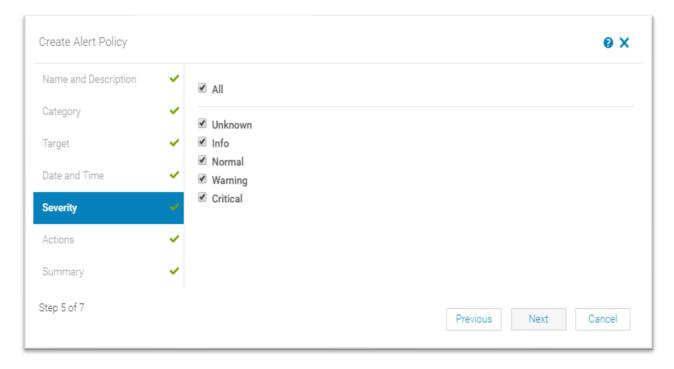
 Select the target devices on the Target page. Only the devices belonging to the earlier-selected category(ies) would be available for selection.



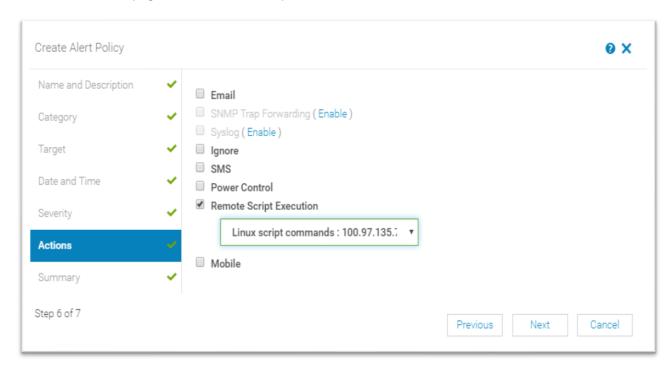
• In the **Date and Time** page of the Create Alert Policy wizard, specify the Date range, Time Frame or the Days.



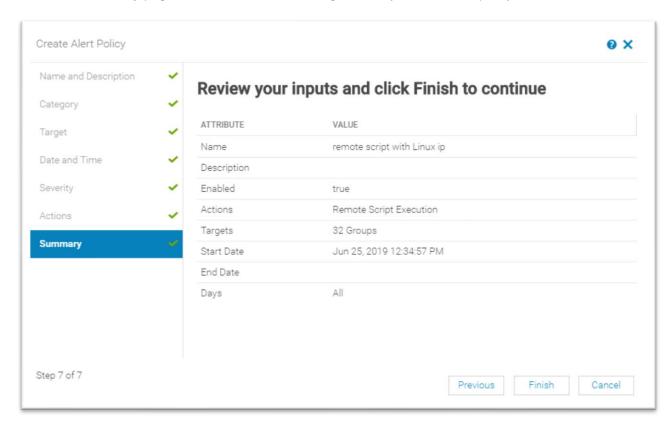
• On the **Severity** page, specify the severity of the alerts based on which the alert policy would apply.



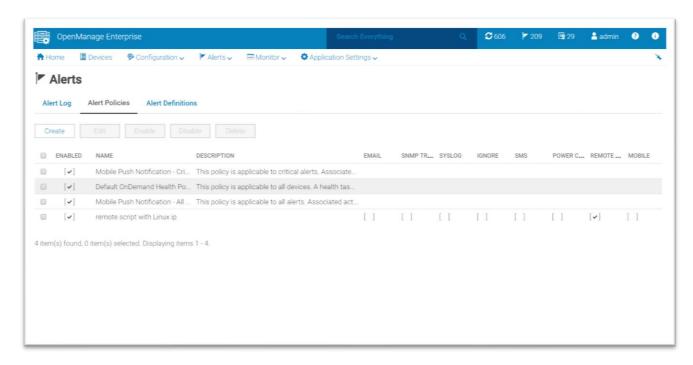
On the Actions page, select Remote Script Execution.



On the Summary page, click Finish after reviewing the newly-created alert policy



• Once an alerty policy is successfully created, you can view the policy on the Alerts > Alert Policies page.



5 Validate remote script execution

Remote scripts/commands are executed when alerts are received specific to the linked alert policy. A job is created whenever a remote script is executed.

The status of all jobs can be viewed on the Jobs page (**Monitor > Jobs**). Following screenshots are of the completed remote-execution jobs.

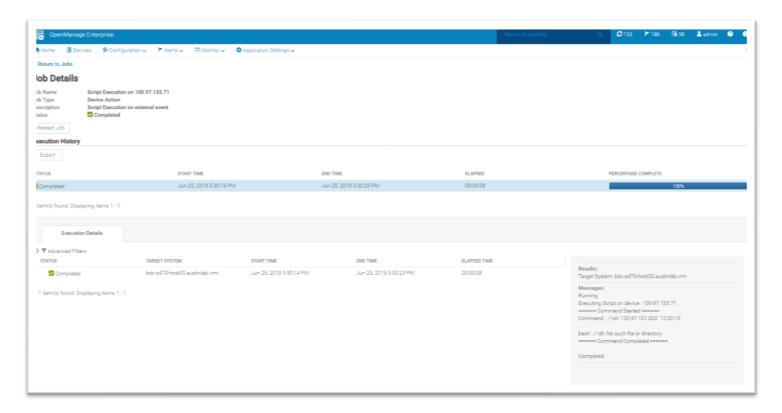


Figure: Completed remote-execution script.

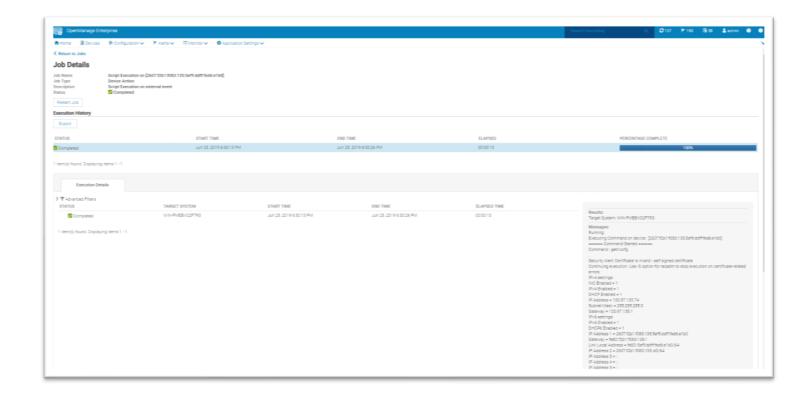


Figure: A completed RACADM job which was remotely executed.

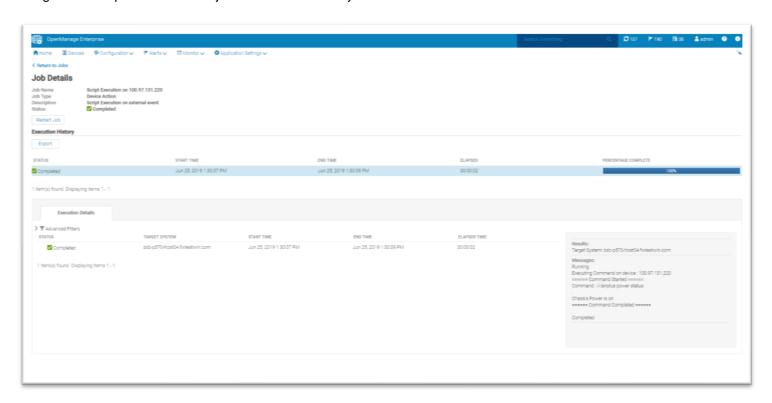


Figure: Successful IPMI command remote script execution.

6 Remote script execution using RESTful APIs

Remote script execution can also be implemented using RESTful APIs. Using REST APIs you can create remote RACADM commands, IPMI commands and SSH script and link them to alert policies. Click on the following links for more information:

Create IPMI Commands from Remote Script Execution page using REST APIs

Create RACADM Commands from Remote Script Execution page using REST APIs

Create scripts with SSH key authentication using REST APIs

Create Alert policy and link with action "Remote Script"

6.1 Create IPMI Commands from Remote Script Execution page using REST APIs

Below payload creates IPMI remote command with name test_ipmi and

Command used: -I lanplus sel time get

URI: https://100.97.140.61/api/ApplicationService/Settings

```
Method: POST
Payload:
    "ConsoleSetting": [
        {
            "Name": "REMOTE COMMAND NAME2",
            "DefaultValue": "",
            "Value": "test ipmi",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING2"
        },
        {
            "Name": "REMOTE COMMAND IP2",
            "DefaultValue": "",
            "Value": "",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING2"
        } ,
            "Name": "REMOTE COMMAND USER2",
            "DefaultValue": "",
            "Value": "",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING2"
        },
            "Name": "REMOTE COMMAND TYPE2",
            "DefaultValue": "",
```

```
"Value": "Ipmi",
    "DataType": "java.lang.String",
    "GroupName": "REMOTE_COMMAND_ACTION_SETTING2"
},
{
    "Name": "REMOTE_COMMAND_CMD2",
    "DefaultValue": "",
    "Value": "-Ilanplus sel time get",
    "DataType": "java.lang.String",
    "GroupName": "REMOTE_COMMAND_ACTION_SETTING2"
}
]
```

6.2 Create RACADM Commands from Remote Script Execution page using REST APIs

· Below payload creates remote racadm command with name test_racadm and

```
Command Used: getniccfg
URI: https://100.97.140.61/api/ApplicationService/Settings
METHOD: POST
Payload:
    "ConsoleSetting": [
            "Name": "REMOTE COMMAND NAME3",
            "DefaultValue": "",
            "Value": "test racadm",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
            "Name": "REMOTE COMMAND IP3",
            "DefaultValue": "",
            "Value": "",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
            "Name": "REMOTE COMMAND USER2",
            "DefaultValue": "",
            "Value": "",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
            "Name": "REMOTE COMMAND TYPE3",
            "DefaultValue": "",
            "Value": "Racadm",
```

6.3 Create scripts with SSH key authentication using REST APIs

Below payload creates remote racadm command with name test_racadm and

```
Command Used: getniccfg
URI: https://100.97.140.61/api/ApplicationService/Settings
METHOD: POST
Payload:
    "ConsoleSetting": [
            "Name": "REMOTE COMMAND NAME3",
            "DefaultValue": "",
            "Value": "test racadm",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        } ,
            "Name": "REMOTE COMMAND IP3",
            "DefaultValue": "",
            "Value": "",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
            "Name": "REMOTE COMMAND USER2",
            "DefaultValue": "",
            "Value": "",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
            "Name": "REMOTE COMMAND TYPE3",
            "DefaultValue": "",
            "Value": "Racadm",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
```

```
},
{
    "Name": "REMOTE_COMMAND_CMD3",
    "DefaultValue": "",
    "Value": "getniccfg",
    "DataType": "java.lang.String",
    "GroupName": "REMOTE_COMMAND_ACTION_SETTING3"
}
]
```

6.4 Create Alert policy and link with action "Remote Script"

•Below payload creates remote command with remote command type as Script and authentication method as SSH key and command used as: ./demo.sh \$IP \$HOSTNAME

\nMIIEoQIBAAKCAQEAi2iOQ/yOzjIQrzeBrLYFhWhOqWqNKZMBM0LktkfrRyEVEK3d\nUEmszrvfNfS/ /ICN47xKNHSUbFwsK/Fo5ZPcOrGGIM/SPpN1mwzYXoYtrhu3o7jJ\nW6hNwhEyuErl142VHJPNI8o1AB ECgPD9L1U+uj9wJYobnxys15QUsHZcDJSzBLRJ\nrtK+hDhMwvSaZm0ppIlmOa4nLXUNcKWfSYnMKPcF IwGO4li6188qUcN1N2B5VZG4\nbqNGvklIydcDLw+CDOnvDB6UYmnn5gsYS8Mjmhnss0T0vGtRrrqse+ 1W81cM13zO\nQWjc0bPAL5sW/09LVkVLJrxZftZoVy5Gn5qqRQIBJQKCAQA1rY4742TdyFeJTUWk\nTN 7lySoERk+qXxUUxfif98MMTiFedC36BhMHcQvlEbdZACZZOc7dvqSnqjVzqQeX\n/nLfbj/tMT+94qop 58vGhSEaTK4sP8e36Exd9s9wFD4elPfeNci9kJiz6Ovrf2cF\n37AWqVyUhjD6kiDPBW1qH/0z1L617+ EeTzZaLCn1cvpkew3sArjJHx9PIbuD6/AY\nlcCiM9V7mJXYWlAHUqABzhXAwnbaeodAyv00iHTTaeLz b3EhvRxZ9ZOJa0M+tdID\nlvblcc2neNu6NKiT3Eeuh+sVWc0ctDrXwdBvealEgRJYmzOWT4SF6zVNFZ STGxL7\n9x8tAoGBAP8THSP9bJ+AnpHUOKkQH19qqrFkpaiqGsbwQHuh5dXyqWz/KSXi/0LI\nXrrcuq CZJHA6JRoKKMINz+/2drWcaLqYhXC9MYC4f7nzH+eEm2ZR0QmtTWWkMjNP\nEaZRvOHJKCjIMlbQhaJC lmagVHcvBza42PE+dpXRob6Lyg0ZXV/VAoGBAIvqBf5a\n2qK191LikoYVubBQoW+Ge73ekKpLfCtMrR PeJ2inVwte2BzBJR9uW727bISMp000\nWGVhTUIri7kN8NqRKMibrT6T3U6+F0FTeSvEI9CAuGIadkq8 k5aKzyjzyQZ+r524\n/IQ12zQRz3WIcDwkeVX4xeTcyzdEs0AVKuaxAoGADcmujFLjRuRbmS4Q5os/91 Hf\nto/RmmoPSQYRUsp7IFJOWOsyqBobor65Ay6GmD+hGtK15btcJipCl1luM1SQChYV\nDQNOyLAG53 Ts98H6j+i/MPScZlvnCbE/OWwzuS13ytpjlf1vAdoV97Wjs2pTar3i\nNo3BOIffOrtytJmWWDUCqYB5 Ab/+k8QCWC77k4WkZdEHMPpSndLNuZHfY+EC2ofZ\n10PQIgYXq/ktoCAbLwM8TxG+vtXZj92/dr9b0q

Ja25/ddp/QF+/HayBEGgZGVgfu\ngB75hBUWk203jlYhVXTlJd5Kzm5e5S1rXwLFP9YEyQcfQiO/+b/o h5r/XgLPo5q5\nrQKBgQCyCt7kPOTfmTpTDmwS0wHYRoWrmdib6qXLeIR4W8k5hxnBMtfcuFwalIMb\n GLUOcW1RVg4X+axQCKc2MpzE6I1ZsuXK5fQTo18Y+8aldRLCTTN6Jb3cJ+jRPwPT\npRk75dAmSFNoUY BU1yJblf7lHMklr5KHgnNZIoUHkgtoLsFSVg==\n----END RSA PRIVATE KEY----",

```
"DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
        {
            "Name": "REMOTE COMMAND NAME3",
            "DefaultValue": "",
            "Value": "test script",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
            "Name": "REMOTE COMMAND IP3",
            "DefaultValue": "",
            "Value": "10.255.3.183",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
        {
            "Name": "REMOTE COMMAND USER3",
            "DefaultValue": "",
            "Value": "root",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        },
            "Name": "REMOTE COMMAND TYPE3",
            "DefaultValue": "",
            "Value": "script",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING1"
        },
        {
            "Name": "REMOTE COMMAND CMD3",
            "DefaultValue": "",
            "Value": "./demo.sh $IP $HOSTNAME ",
            "DataType": "java.lang.String",
            "GroupName": "REMOTE COMMAND ACTION SETTING3"
        }
    ]
}
d) Create Alert policy and link with action "Remote Script"
URI: https://100.97.140.61/api/AlertService/AlertPolicies
METHOD: POST
PAYLOAD:
```

```
{
  "Name": "Remote Script",
  "Enabled": true,
   "DefaultPolicy": false,
   "PolicyData": {
         "Severities": [],
         "Devices": [],
         "DeviceTypes": [],
         "Groups": [500, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008,
1009, 1010, 1011, 1023, 1024, 1025, 1012, 1013, 1014, 1015, 1016, 1017, 1018,
1019],
         "UndiscoveredTargets": [],
         "Schedule": {
               "StartTime": "2019-01-22 20:27:49.453",
               "EndTime": "",
               "CronString": "* * * ? * * *"
         "Actions": [{
               "Name": "RemoteCommand",
               "TemplateId": 111,
               "ParameterDetails": [{
                     "Name": "remotecommandaction",
                     "Id": 1,
                     "Value": "test_ipmi"
               } ]
         } ]
  },
   "State": true
}
```

A Technical support and resources

- <u>Dell.com/support</u> is focused on meeting customer needs with proven services and support.
- For OpenManage Enterprise documentation on the Dell support site, see <u>OpenManage Enterprise</u> documents