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Lab Overview

The Intelligent Operations Challenge Lab asks you to put on your thinking cap to save the day! This is a full story challenge lab, which means we recommend that you complete the modules sequentially in order to advance to the next step. If you would like to skip some modules, you should complete the previous modules tasks located in the Solution module.

Remember that this is a Challenge Lab. You will not be given the step-by-step instructions in this part of the lab. The idea is to challenge advanced vRealize Operations users to figure out the necessary steps on their own. If you get stuck or want to see the entire solution, skip to Module 5 of this lab (use the Table of Contents link at the top of the lab manual).

Lab Preface

As you walk into a tall glass building, you glance at your watch; it is 9:00 AM. It is the beginning of another workday at one of the most desirable companies in the year 2096, PanContinental Teleportation Corporation. PanContinental Teleportation moves people and things instantaneously across the globe. After a quick payment, anyone can step into a booth-like "Waypoint™" located in every major city across the globe. The customer then selects their destination and instantaneously emerge in their destination Waypoint™.

PanContinental technology is not magic. No, it powered by the primary datacenter using VMware vSphere 6.5 and vRealize Operations 6.6, which is the gleaming building you just entered. As the largest and most trusted global teleportation network, PanContinental's highest priorities are the safety of its customers and continuity of operations. That responsibility rests on your team's shoulders. In this lab, you will learn to understand and map a teleportation application in vRealize Operations.

This module will test your mettle and keep the teleportation application running smoothly. It is best suited for those with some vRealize Operations experience.

We provide optional hints along the way as well as providing the Challenges' final solutions.

A Readme.txt file is included on the desktop with authentication information.

Lab Module List:

• **Module 1 - Configuring a Custom Application** (15 minutes) (Advanced) In this module, we will be challenged to create a new application, selecting VMs across the vCenter and setting up application layers for those VMs.
• **Module 2 - Setup Metrics & Policy to the Application** (30 minutes) (Advanced) In this module, we will be challenged to understand the custom application behavior and apply correct metrics and policy.

• **Module 3 - Building the Application Monitoring Dashboard** (30 minutes) (Advanced) In this module, we will be challenged to build views and dashboards to publish the application metrics monitoring.

• **Module 4 - Publishing the Application Monitoring Dashboard** (15 minutes) (Advanced) In this module, we will be challenged to share the Application Dashboard for a specific user and grant him limited access to some of the vRealize Operations objects.

• **Module 5 - Challenge Solution** (45 minutes) (Advanced) In this module, we can find the full solution about the challenge.

**Lab Captains: Tony Okwechime, Snr. Systems Engineer, VMware**

This lab manual can be downloaded from the Hands-on Labs Document site found here:

http://docs.hol.vmware.com/

This lab may be available in other languages. To set your language preference and have a localized manual deployed with your lab, you may utilize this document to help guide you through the process:


**VMware Technology Network (VMTN)**

For additional hints and to discuss the challenges presented in the lab further, be sure to visit the VMware Technology Network (VMTN) Community Pages:

https://communities.vmware.com/community/vmtn/challenge-lab/vrealize-operations
Lab Guidance

Note: It will take more than 90 minutes to complete this lab. The modules are independent of each other so you can start at the beginning of any module and proceed from there. You can use the Table of Contents to access any module of your choosing.

The Table of Contents can be accessed in the upper right-hand corner of the Lab Manual.

Location of the Main Console

1. The area in the RED box contains the Main Console. The Lab Manual is on the tab to the Right of the Main Console.
2. A particular lab may have additional consoles found on separate tabs in the upper left. You will be directed to open another specific console if needed.
3. Your lab starts with 90 minutes on the timer. The lab can not be saved. All your work must be done during the lab session. But you can click the EXTEND to increase your time. If you are at a VMware event, you can extend your lab time twice, for up to 30 minutes. Each click gives you an additional 15 minutes. Outside of VMware events, you can extend your lab time up to 9 hours and 30 minutes. Each click gives you an additional hour.
Activation Prompt or Watermark

When you first start your lab, you may notice a watermark on the desktop indicating that Windows is not activated.

One of the major benefits of virtualization is that virtual machines can be moved and run on any platform. The Hands-on Labs utilizes this benefit and we are able to run the labs out of multiple datacenters. However, these datacenters may not have identical processors, which triggers a Microsoft activation check through the Internet.

Rest assured, VMware and the Hands-on Labs are in full compliance with Microsoft licensing requirements. The lab that you are using is a self-contained pod and does not have full access to the Internet, which is required for Windows to verify the activation. Without full access to the Internet, this automated process fails and you see this watermark.

This cosmetic issue has no effect on your lab.

Alternate Methods of Keyboard Data Entry

During this module, you will input text into the Main Console. Besides directly typing it in, there are two very helpful methods of entering data which make it easier to enter complex data.
Click and Drag Lab Manual Content Into Console Active Window

You can also click and drag text and Command Line Interface (CLI) commands directly from the Lab Manual into the active window in the Main Console.

Accessing the Online International Keyboard

You can also use the Online International Keyboard found in the Main Console.

1. Click on the Keyboard Icon found on the Windows Quick Launch Task Bar.
Click once in active console window

In this example, you will use the Online Keyboard to enter the "@" sign used in email addresses. The "@" sign is Shift-2 on US keyboard layouts.

1. Click once in the active console window.
2. Click on the **Shift** key.

Click on the @ key

1. Click on the "@" key.

Notice the @ sign entered in the active console window.
Look at the lower right portion of the screen

Please check to see that your lab is finished all the startup routines and is ready for you to start. If you see anything other than "Ready", please wait a few minutes. If after 5 minutes your lab has not changed to "Ready", please ask for assistance.
Module 1 - Configuring a custom application (15 minutes)
Introduction

Let's start!!!

The teleporter application is a three tier application. Your mission here is to identify the application components and create the application structure using vRealize Operations.

The virtual machines' application layers are identified with the acronyms: Web, App, and DB.

Remember that this is a Challenge Lab. You will not be given the step-by-step instructions in this part of the lab. The idea is to challenge advanced vRealize Operations users to figure out the necessary steps on their own. If you get stuck or want to see the entire solution, skip to Module 5 of this lab (use the Table of Contents link at the top of the lab manual).

Virtual Machines - vSphere Cluster Localization

Referring to the image above, you can identify the virtual machines' vSphere Cluster dependency.

With that, we are ready to move to the first challenge...
Open Firefox Browser from Windows Quick Launch Task Bar

1. Click on the Firefox icon on the Windows Quick Launch Task Bar.

HOL-1801 Lab Links Page

Once the firefox browser has been opened, the HOL-1801 Lab Links page should be loaded.

If not, please copy the link below to load the HOL-1801 Lab Links Page.

http://192.168.110.10 or click the Home button in the browser.
Login to vRealize Operations

1. Click on the vRealize Operations Manager - Live Instance link.

Select the VMware Identity Manager Authentication Option

1. Be sure to select the VMware Identity Manager authentication option from the drop down menu if it is not already selected.
2. Click the **REDIRECT** button

**Login to vRealize Operations**

1. Ensure that the displayed domain is **corp.local**. If a different domain is displayed, you can click on the **Change to different domain** link and then select the **corp.local** domain.

2. **Login** to vRealize Operations Manager with the following credentials. It is likely that the credentials have been auto populated.

   User name: hol
   Password: VMware1!

2. Click the **Sign in** button.
Creating the Application

Managing Application Groups

An application is a container construct that represents a collection of interdependent hardware and software components that deliver a specific capability to support your business. vRealize Operations Manager builds an application to determine how your environment is affected when one or more components in an application experiences problems and to monitor the overall health and performance of the application. Object membership in an application is not dynamic. To change the application, you manually modify the objects in the container.

Reasons to Use Applications

vRealize Operations Manager collects data from components in the application and displays the results in a summary dashboard for each application with a real-time analysis for any or all of the components. If a component experiences problems, you can see where in the application the problems arise, and determine how problems spread to other objects.
Mission 1 - Identify the Teleporter Virtual Machines Application

For your first mission, identify, using vRealize Operations, the Teleporter Application cluster and virtual machines.

Here is the vRealize Operations screenshot.

1. Navigate to the correct place to identify the cluster and Teleporter Application virtual machines. [hint: Environment\vSphere Hosts and Clusters]
Mission 2 - Create the Application using vRealize Operations

The first mission was too easy!!! Let's move to the second mission.

Create the application in the vRealize Operations.

1. Create an application with the name: Teleporter Application
2. Create the three tiers application: Web, App and DB.
3. Add the four VMs to the applicable tiers. The VM names are web-01a, web-02a, app-01a and db-01a.
4. Save the application

**Hint #1**: If you have identified the virtual machines in the Environment Area, you are on the right track.

**Hint #2**: You should not have any additional tiers, just the three mentioned above.

**Hint #3**: Due the screen resolution, you may not see the application "Save" button when you will build your application. For best results:

1. Select the Options menu in Firefox
2. Click the '-' button to zoom out to 90%

This will provide more viewing space while still allowing you to read the text.

You can also view hints on the VMware Technology Network Communities here:

https://communities.vmware.com/docs/DOC-36953
The Teleporter Application

Here is the final result for the Teleporter Application in vRealize Operations. What about your Teleporter Application? Was it built correctly?

Ready for the next missions... Ready? Let's go...
Module 2 - Configuring metrics and the policy for the application (30 minutes)
Introduction

Module 2 will challenge you to create new Super Metrics and a new policy to be assigned to the Teleporter Application.

Remember that this is a Challenge Lab. You will not be given the step-by-step instructions in this part of the lab. The idea is to challenge advanced vRealize Operations users to figure out the necessary steps on their own. If you get stuck or want to see the entire solution, skip to Module 5 of this lab (use the Table of Contents link at the top of the lab manual).

Open Firefox Browser from Windows Quick Launch Task Bar

1. If not already in vRealize Operations, click on the Firefox icon on the Windows Quick Launch Task Bar.
Once the firefox browser has been opened, the HOL-1801 Lab Links page should be loaded.

If not, please type the link below to load the HOL-1801 Lab Links Page.

http://192.168.110.10 or click the Home button in the browser

Open vRealize Operations

vRealize Operations Manager – Live Instance

vRealize Operations Manager – Historical Instance
1. Click on the **vRealize Operations Manager - Live Instance** link.

**Select the VMware Identity Manager Authentication Option**

1. Be sure to select the **VMware Identity Manager** authentication option from the drop down menu if it is not already selected.
2. Click the **REDIRECT** button
Login to vRealize Operations

1. Ensure that the displayed domain is corp.local. If a different domain is displayed, you can click on the **Change to different domain** link and then select the corp.local domain.
2. **Login** to vRealize Operations Manager with the following credentials. It is likely that the credentials have been auto populated.

   User name: hol
   Password: VMware1!

2. Click the **Sign in** button.

**Action Required for Module 2**

**If you did not complete Module 1**, please complete all steps in:

[Module 1 - Steps required to proceed for Module 2]
Creating Super Metrics

Super Metrics are mathematical formulas that contain one or more metrics. They are custom metrics we create when we need to track combinations of metrics, either from a single object or from multiple objects.

After we define the Super Metric, we can assign it to one or more object types. This action calculates the Super Metric for the objects in that object type and simplifies the metrics display. For example, if we define a Super Metric that calculates the average CPU usage on all virtual machines and we assign the Super Metric to a cluster, the average CPU usage on all virtual machines in that cluster is reported as a Super Metric for the cluster.

If the Super Metric attribute is enabled in a policy, we can then collect Super Metrics from a group of objects associated with a policy.

Review the Teleporter Application

If you completed all of the steps in Module 1, you should have the Teleporter Application as in the image above.
Mission 3 - Create the Super Metrics

At this point you are challenged to create two Super Metrics for the Teleporter Application. Those Super Metrics will be used for troubleshooting and application dashboard.

[hint: Content|Super Metrics] Due to the limited screen resolution in the lab environment, you may need to expand the left navigation pane if you don't see the icon for Content. Also you might have to zoom out the browser to 80% to see the Save button.

1. Super Metric: Max-Risk(%)  
   **Name:** Max-Risk(%)  
   **Super Metric Formula:** Max of Risk(%) for Teleporter Application
   
   **Hint #1:** This is the formula for the Super Metric:
   
   \[
   \text{max}(${\text{adaptertype}=\text{Container}, \text{objecttype}=\text{BusinessService}, \text{objectname}=\text{Teleporter Application}, \text{metric}=\text{badge|risk}}) \quad [\text{hint: BusinessService is the object type key for Application}]\]

2. Super Metric: Min-Health(%)  
   **Name:** Min-Health(%)  
   **Super Metric Formula:** Min of Health(%) for Teleporter Application
   
   **Hint #2:** This is the formula for the Super Metric:
   
   \[
   \text{min}(${\text{adaptertype}=\text{Container}, \text{objecttype}=\text{BusinessService}, \text{objectname}=\text{Teleporter Application}, \text{metric}=\text{badge|health}}) \]

   **Hint #3:** Do not forget to associate the super metric to **Container: Application Object Types** for both Super Metrics.

You can also view hints on the VMware Technology Network Communities here:

https://communities.vmware.com/docs/DOC-36954
Conclusion

At the end of the Super Metrics creation, you should have the screen above. If so, you are ready for the next mission...
Creating a New Application Policy

Here you will create a policy to use with your new application.

About Operational Policies

Operational Policies determine how to have vRealize Operations Manager monitor your objects, and how to notify you about problems that occur with those objects.

vRealize Operations Manager Administrators assign policies to object groups and applications to support Service Level Agreements (SLAs) and business priorities. When you use policies with object groups, you ensure that the rules defined in the policies are quickly put into effect for the objects in your environment.

With policies, you can:

■ Enable and disable alerts.
■ Control data collections by persisting or not persisting metrics on the objects in your environment.
■ Configure the product analytics and thresholds.
■ Monitor objects and applications at different service levels.
■ Prioritize policies so that the most important rules override the defaults.
■ Understand the rules that affect the analytics.
■ Understand which policies apply to object groups.

vRealize Operations Manager includes a library of built-in active policies that are already defined for your use. vRealize Operations Manager applies these policies in priority order.

Mission 4 - Creating a New Policy

The Teleporter Application, used by PanContinental Teleportation Corporation, has a special behavior. The Teleporter Application is used only four days per week (Monday, Tuesday, Wednesday and Thursday) from 9:00 AM to 5:00 PM.

You are responsible to have this application monitored correctly.
Your mission is to create a policy with these requirements [hint: Administration|Policies|Policy Library. Create as a child of the ...Default Policy (Hands on Labs) policy]:

<table>
<thead>
<tr>
<th>Policy Name:</th>
<th>Teleporter App Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Policy and Analysis Settings:</td>
<td>Application</td>
</tr>
<tr>
<td>Time Frame:</td>
<td>Monday, Tuesday, Wednesday and Thursday from 9:00 AM to 5:00 PM</td>
</tr>
</tbody>
</table>

**Hint #1:** Do not forget to setup the Super Metrics Visible by the Policy.

You can also view hints on the VMware Technology Network Communities here:

[https://communities.vmware.com/docs/DOC-36954](https://communities.vmware.com/docs/DOC-36954)
Conclusion

Here is the policy ready to be applied to the application.

What about your policy? If it is ready, we can now apply the policy to the application.
Assigning the New Policy to Teleport Application

So... we have the policy and it could be assigned to the Teleporter Application, however we would like to apply a Group Type before we assign the policy. In this step, you will create a Group Type.

Object Group Types

An object Group Type is an identifier that you apply to a specific group of objects in your environment to categorize them. You can add new Group Types and apply them to groups of objects so that vRealize Operations Manager can collect data from the object group and display the results in the dashboards and views.

How the Group Types Work

Use Group Types to categorize your objects so vRealize Operations Manager can apply policies to them to track and display specific status, such as alerts, workload, faults, risk, and so on.

When you create a new Group Type, vRealize Operations Manager adds it to the existing list of Group Types and creates a new folder with the name of your Group Type in the Environment Custom Groups list.

When you create a new group of objects, you assign a Group Type to that group of objects. You add objects from the inventory trees to your custom group, then create your dashboard, add widgets to the dashboard, and configure the widgets to display the data collected from the objects in the group. You can then monitor and manage the objects.

You can also apply a Group Type to a group of objects that you create manually or to object groups that you cannot modify, such as those added by adapters. Each adapter that you add to vRealize Operations Manager adds one or more static groups of objects to group the data received from the adapter sources.

The list of Group Types appears in the Content area under Group Types. The custom object groups appear in the Environment area under Custom Groups.

Create a new Group Type to have all PanContinental Application in the same place.
Creating a Group Type

1. Click on the **Administration** tab
2. Expand **Configuration** and
3. Click on **Group Types**.
4. Click on the **Plus** icon.
Type the Group Type Name

1. Type the Group Type name: **PanContinental Applications**.
2. Click on **OK** Button.
Mission 5 - Applying the Policy

Now we have the Group Type and we are ready to assign the policy.

Do you know how to assign the policy? I can give you a tip here: Think about Custom Groups. [Environment|Groups]

So, now, this is your turn, apply the created policy to the application.

Custom Group Name: Teleporter Application - Custom Group

Hint #1 - Assign the policy you just created to this new group.

Hint #2 - Use the PanContinental Applications Group Type for your Custom Group.
Hint #3 - Use the **Object Name and the expression "contains"** to set the Teleporter Application as the object for the policy.

You can also view hints on the VMware Technology Network Communities here:

https://communities.vmware.com/docs/DOC-36954

**Application and the Group Type**

Now, we will check the Group Type and the Custom Group Creation.

1. Navigate to **Environment**
2. Click on **Custom Groups**.
3. You will see the **PanContinental Applications** Group Type and your Custom Group created.
Navigate to the Application

If your policy was assigned correctly, you can follow the next steps to validate the Application Policy Assignment.

1. Double-Click on the Teleporter Application - Custom Group.
Select the Application

1. Expand **Related Objects** by clicking on the arrow
2. Click on **Application**.
3. Click on **Teleporter Application**.
Validating the Policy Assignment

1. Check the policy on the top-right in the screen.

If you can see the **Teleporter App Policy**, you successfully did your job.

Good Job!!

So, now it is time to create a View and a Dashboard for the application.
Module 3 - Building the application monitoring dashboard (30 minutes)
Introduction

Module 3 will challenge you to create a View and a Dashboard for the Teleporter Application.

Remember that this is a Challenge Lab. You will not be given the step-by-step instructions in this part of the lab. The idea is to challenge advanced vRealize Operations users to figure out the necessary steps on their own. If you get stuck or want to see the entire solution, skip to Module 5 of this lab (use the Table of Contents link at the top of the lab manual).

Open Firefox Browser from Windows Quick Launch Task Bar

1. Click on the Firefox icon on the Windows Quick Launch Task Bar.
Once the firefox has been opened, the HOL-1801 Lab Links page should be loaded. If not, please type the link below to load the HOL-1801 Lab Links Page.

http://localhost

Open vRealize Operations

1. Click on the vRealize Operations Manager - Live Instance link.
Select the VMware Identity Manager Authentication Option

1. Be sure to select the **VMware Identity Manager** authentication option from the drop down menu if it is not already selected.
2. Click the **REDIRECT** button
Login to vRealize Operations

1. Ensure that the displayed domain is corp.local. If a different domain is displayed, you can click on the Change to different domain link and then select the corp.local domain.

2. Login to vRealize Operations Manager with the following credentials. It is likely that the credentials have been auto populated.

   User name: hol
   Password: VMware1!

2. Click the Sign in button.

Action Required for Module 3

if you did not complete Module 1 or 2, please complete the steps for Module 1 and 2 in the Solution module:

Module 1 - Steps required to proceed for Module 3
Module 2 - Steps required to proceed for Module 3
Building the Object View for the Application

vRealize Operations Manager Views Overview

A View presents collected information for an object in a certain way depending on the view type.

vRealize Operations Manager provides several types of views. Each type of view helps you to interpret metrics, properties, policies of various monitored objects including alerts, symptoms, and so on, from a different perspective. vRealize Operations Manager Views also show information that the adapters in your environment provide.

Checking the Super Metrics

Now, let’s check if the Super Metrics are available to be used in our View.

1. Navigate to Environment and click on Applications then click the Teleporter Application
2. Click on the All Metrics tab.
3. Expand the **All Metrics** treeview and You will see the Super Metrics you created.

**Mission 6 - Building the Object View**

In this mission you will create an Object View using the Super Metrics you created in previous steps.

This View will help you analyze the Risk and Health for the Teleporter Application.

Attributes of the View creation [hint: Content|Views]

<table>
<thead>
<tr>
<th>Name: Teleporter Application View</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description : Risk and Health Teleporter Application Monitoring</td>
</tr>
<tr>
<td>Presentation: Trend</td>
</tr>
<tr>
<td>Subjects: Application</td>
</tr>
<tr>
<td>Data: the Max-Risk(%) and Min-Health(%)Super Metrics</td>
</tr>
</tbody>
</table>

**Optional #1:** Use this View as a Further Analysis tool for the Anomalies Analysis.

**Hint #1:** You can preview the data before to move forward. Try to do this test to check the View results.

You can also view hints on the VMware Technology Network Communities here:

[https://communities.vmware.com/docs/DOC-36955](https://communities.vmware.com/docs/DOC-36955)
Have you finished already? Your View should now be available in the View List.

Great!!! Let's publish it in your Teleporter Application Dashboard.
Building the Application Monitoring Dashboard

vRealize Operations Manager Dashboards

The Dashboard provides a quick overview of the performance and condition of your virtual infrastructure.

vRealize Operations Manager collects performance data from monitored software and hardware resources in your enterprise and provides predictive analysis and real-time information about problems. The data and analysis are presented through alerts, in configurable dashboards, on predefined pages, and in several predefined dashboards.

Mission 7 - Building the Application Monitoring Dashboard

You are close to the end of the challenge. Here, you will consolidate all of your completed missions.

Your challenge is to create a dashboard for Teleporter Application monitoring as showed in the screenshot. You will add 6 widgets in your dashboard as described below.
Note: If you are using Chrome as your Browser and you see any issue with the Widget position arrangement, please move to the Firefox Browser.

[hint: Content|Dashboards]

### Dashboard Properties
- **Dashboard Name:** Teleporter Application Dashboard
- **Dashboard default:** Yes

### Widgets Properties

**Widget #1 - Teleporter Application Components:** Use the Object List widget where you can select the Teleporter Application Components. Set the widget filter to Applications|Teleporter Application. Set the "Teleporter Application" as "Auto Select First Row=on"

**Widget #2 - Metric Picker:** Select this as your second Widget

**Widget #3 - Metric Chart:** This Widget will show the results of Application Component and Metric selected in the Widget #1 and #2 respectively

**Widget #4 - Teleporter Application View:** Here you will apply the Object View you built previously. This widget could not change when you select some Application component (Self Provider = on)

**Widget #5 - Teleporter Application Alert List:** This Widget needs to list all Alerts related to the component selected in the Widget #1

**Widget #6 - Teleporter Application Health:** Monitor the Application Health in this Widget. This widget could not change when you select some Application component

**Hint #1:** You need to configure widgets #2, #3 and #5 interaction and don't forget to apply the interactions before navigating away

**Hint #2:** Build your widgets in two columns as shown in the screenshot.

You can also view hints on the VMware Technology Network Communities here:

[https://communities.vmware.com/docs/DOC-36955](https://communities.vmware.com/docs/DOC-36955)
Conclusion

What about your dashboard? Are your widgets interacting correctly?  [hint: Select the Teleporter Application in the Teleporter Application Components widget]

Great Job!!!

You are ready to publish your Teleporter Application Dashboard to the PanContinental Operations team. Let's move to your last Intelligent Operations Challenge Lab Mission.
Module 4 - Publishing the application monitoring dashboard (15 minutes)
Introduction

Module 4 will challenge you to publish the Teleporter Application dashboard to the PanCorporation Operations team.

Remember that this is a Challenge Lab. You will not be given the step-by-step instructions in this part of the lab. The idea is to challenge advanced vRealize Operations users to figure out the necessary steps on their own. If you get stuck or want to see the entire solution, skip to Module 5 of this lab (use the Table of Contents link at the top of the lab manual).

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Select the VMware Identity Manager Authentication Option

1. Be sure to select the VMware Identity Manager authentication option from the drop down menu if it is not already selected.
2. Click the REDIRECT button
Login to vRealize Operations

1. Ensure that the displayed domain is corp.local. If a different domain is displayed, you can click on the Change to different domain link and then select the corp.local domain.

2. Login to vRealize Operations Manager with the following credentials. It is likely that the credentials have been auto populated.

   User name: hol
   Password: VMware1!

2. Click the Sign in button.

Action Required for Module 4

if you did not complete Module 1, 2 or 3, please complete all steps for Modules 1 - 3 in the Solution:

Module 1 - Steps required to proceed for Module 4
Module 2 - Steps required to proceed for Module 4

Module 3 - Steps required to proceed for Module 4
Publishing the Application Monitoring Dashboard

Share Dashboards

You can share a dashboard or dashboard template with one or more user groups. When you share a dashboard, it becomes available to all of the users in the user group that you select. The dashboard appears the same to all of the users who share it. If you edit a shared dashboard, the dashboard changes for all users. Other users can only view a shared dashboard; they cannot change it.

Mission 8 - Publish the Teleporter Application Dashboard to the Operations User

This is your last mission...

Grant limited access to the Teleporter Application Dashboard for Operations User.

[hint: Dashboards|Action drop-down|Manage Dashboards|Select the Teleporter Application Dashboard|Configuration|Share Dashboards]

1. Remove all Shared Dashboards from Everyone. This is a required step to prevent the Operations User to have all Dashboards Access.
2. Share the Teleporter Application Dashboard to the Operations User.

Hint #1: Log Off from Admin and Log In with Operations credentials to test the Operations user view. NOTE that the operations user is a local account so you will be logging in locally.

User name: operations
Password: VMware1!

You can also view hints on the VMware Technology Network Communities here:

https://communities.vmware.com/docs/DOC-36956
Once you have finished the dashboard sharing, the Operations user should see the Teleporter Application dashboard as above.
Module 5 - Challenge solution (45 minutes)
Module 1 - Creating the Teleporter Application

In this module you will find the full solution for the HOL-1701 Challenge Lab: Intelligent Operations - Module 1.

Mission 1: Identify the Teleporter Virtual Machines Application

1. Click on **Environment** tab
Mission 1: Identify the Teleporter Virtual Machines Application

1. Click on **vSphere Hosts and Clusters** inventory Tree.
Mission 1: Identify the Teleporter Virtual Machines Application

1. Click on the arrows next to vSphere World, then the vCenter, Datacenter and Cluster arrows to expand the view.
2. Expand all 3 hosts in the environment to view the virtual machines. You will find the Teleporter Virtual Machine Application. The virtual machines that make up the application are **app-01a**, **db-01a**, **web-01a** and **web-02a**.
Mission 2: Creating the Teleporter Application

Let's start to create the Teleporter Application...

1. Click on Environment tab.
2. Click on Applications tab.

Mission 2: Add a new Application

1. Click on New Application icon.
Mission 2: Select the Application template

1. Select the **Custom** option.
2. Click the **OK** button.
### Mission 2: Create the Tiers

**Application Management**

<table>
<thead>
<tr>
<th>Tiers</th>
<th>Tier Objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>App</td>
<td></td>
</tr>
<tr>
<td>Web</td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td></td>
</tr>
</tbody>
</table>

1. Type the Application Name: **Teleporter Application**.
2. Click on **Add Tier** icon to add a new tier for the application.
3. Type the **Tier Name (App, Web, or DB)**.
4. Click on **Update** button.

You should repeat the steps 2, 3 and 4 for all Tiers: App, Web and DB.
Mission 2: Drag and Drop the Virtual Machines

1. Filter the virtual machines using the search field. In this case type **app-01a** and press **Enter**.
2. Click on the **Tier** you will **Drag and Drop** the virtual machine into. In this case the tier is **App**.
3. **Drag and Drop the app-01a virtual machine** into the **App** Tier. Be sure to select the object with an object type of **Virtual Machine**.

Repeat the steps 1, 2 and 3 for all Tiers: App, Web and DB so that you each tier contains the appropriate virtual machines.

**Don't forget** to drag and drop the **2 Web Virtual Machines to the Web tier**.
Mission 2: Verify and Save the Application

1. Verify that each tier contains the correct virtual machines. Remember, there should be 2 virtual machines in the Web tier and one virtual machine each in the App and DB tiers.
2. Click on Save to save the application.
Mission 2: The Application has been Created

You should see the Teleporter Application created.

Mission 2: Checking the Application Components

1. Click on Teleporter Application
Mission 2: Checking the Application Components

1. Click on the **Applications** link
Mission 2: Checking the Application Components

1. Expand the Teleporter Application.
2. Validate all tiers and components.

Summary

Your Application has been created. You are ready to move forward to the next step.
Module 2 - Setup Metrics & Policy to the Application

In this module you will find the full solution for the HOL-1801 Challenge Lab: Intelligent Operations - Module 2.

Mission 3: Creating Super Metrics

1. Click on the Administration tab.
2. Expand the Configuration menu
3. Click on Super Metrics.
4. Click on Add New Super Metric icon.
Mission 3: Create the new Super Metric: Max-Risk(%) 

1. Type the Super Metric Name: Max-Risk(%).
2. Open the Functions drop down list.
3. Select the max function.

Mission 3: Configure the Super Metric Formula 

1. Select the Application object type.
2. Filter by the Teleporter Application.
3. Select the Badge attribute.
4. Select the Risk (%) child attribute.
5. Assign the formula:
   max($\{adapter_type=Container, object_type=BusinessService, object_name=Teleporter Application, metric=badge риск\})
1. Type "]" after `max` in the formula field.
2. Filter the Teleporter Application using the word `Application`.
3. Select the `Teleporter Application`.
4. Expand the `Badge` metrics.
5. Double click on `Risk(%)` metric.
6. Type `")"` at the end of the formula field.
7. Click on `Save` button.

**Mission 3: First Metric was Created**

The Max-Risk(%) Super Metric was successful created.

1. Click on `Add New Super Metric` to add the second Metric - Min Health(%).

**Mission 3: Create the new Super Metric: Min-Health(%)**

1. Type the Super Metric Name: `Min-Health(%)`.
2. Open the `Functions` drop down list.
3. Select the **min** function.

**Mission 3: Configure the Super Metric Min-Health(%)**

1. Type "(" after **min** in the formula field.
2. Filter the Teleporter Application using the word **Application**.
3. Select the **Teleporter Application**.
4. Expand the **Badge** metrics.
5. Double click on **Health(%)** Metric.
6. Type ")" at the end of the formula field.
7. Click on **Save** button.

**Note:** If the Save Button is not visible at the end of Manage Super Metrics Panel, please zoom out the Browser to 75%.
Mission 3: Configure the Object Types for the Super Metrics

1. Select the **Metric**.
2. Click **Add Object Type** icon.
3. Select **Container** and then **Application**.

Mission 3: Save the selected Object type

Select Object Type

1. Click on **Select** button.
**Mission 3: Object type for the two Super Metrics**

<table>
<thead>
<tr>
<th>Name</th>
<th>Formula Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children Badge Health</td>
<td><code>(sum(Health: Badge Health) + sum(V0Ops Health: Badge Health) + sum(VCenter Health: Badge Health))</code></td>
</tr>
<tr>
<td>Max-Rds(%)</td>
<td><code>max(Teleporter Application: Badge Health)</code></td>
</tr>
<tr>
<td>Number of Children</td>
<td><code>count(SDDC Health: Badge Health) + count(V0Ops Health: Badge Health) + count(VCenter Health: Badge Health)</code></td>
</tr>
<tr>
<td>Min-Health(%)</td>
<td><code>min(Teleporter Application: Badge Health)</code></td>
</tr>
</tbody>
</table>

Perform the same steps for the two Super Metrics.
Mission 4: Creating the new Application Policy

1. Click on **Policies**.
2. Click on **Policy Library** tab.
3. Click on **Add New Policy** icon.
Mission 4: Configure the Policy Name

1. Type the Policy Name: **Teleporter App Policy**.
2. Click on **Select Base Policy**.
Mission 4: Select Base Policy

1. Click on "Add settings for new set of objects".
2. Expand the drop down list.
3. Expand Container and select Application.
4. Click OK.
1. Click on **Analysis Settings**.
Mission 4: Select Analysis Settings

1. Click on "Add settings for new set of objects".
2. Expand the drop down list.
3. Expand Container and select Application.
4. Click OK.
Mission 4: Configure the Time Range for the Policy

1. Click on the lock icon to unlock the Time Range session.
2. Configure the days of week (Mon, Tue, Wed, and Thu) and the time range (08:00 to 17:00) for the Time Range session.
Mission 4: Configure the Metrics and Properties

Once you have configured the Time Range in the previous step, you can select the attribute type to include in your policy, with those attributes vRealize Operations Manager can collect data from the objects in your environment. Attribute types include metrics, properties, and super metrics. You enable or disable each metric and determine whether to inherit the metrics from base policies that you selected in the workspace.

For this lab, you will change the attributes values as mentioned in the screenshot. (Note: Changing these values may take a little while and the GUI may appear to be unresponsive for a short time while you try to make the changes.)

- **State.** Indicates whether the metric, property, or super metric is inherited from the base policy.

- **KPI.** Indicates whether the key performance indicator is inherited from the base policy. If a violation against a KPI occurs, vRealize Operations Manager generates an alert.

- **DT.** Indicates whether the dynamic threshold (DT) is inherited from the base policy.

1. Click **Collect Metrics and Properties**
2. Filter the list to only show Supermetrics attribute types by de-selecting **Metric** and **Property**
3. Change the values for the Super Metrics as specified in the screenshot. You only want the Super Metrics to be applied to the Application object type.
4. Click on the **Save** Button (Note: The Save button might not be visible due to screen resolution. Please, scroll down the screen and you can find the Save button)

**Mission 4: The New Application Policy is Created**

The **Teleporter App Policy** policy has been created.
Mission 5: Assigning the New Policy to the Teleporter Application

For the Policy assignment you need to create a new Custom Group.

1. Click on **Environment** tab.
2. Click on **New Custom Group** icon.
Mission 5: Configure the New Custom Group

1. Type the **Custom Group Name**: Teleporter Application - Custom Group.
2. Select **PanContinental Applications** as Group Type. *(Note: You can find the instructions how to create this group on Module 2 - "Assigning the New Policy to Teleport Application" section of this lab).*
3. Select **Teleporter App Policy** as Policy.
4. Select **Object Name**.
5. Select **Contains**.
6. Type **Teleporter** in the filter field.
7. Select **Teleporter Application**.
8. Click on **OK** button.
Mission 5: The Custom Group has been Created

With this Custom Group we have assigned the Teleporter App Policy to the Teleporter Application.

Summary

You are ready to move to the next module.
Module 3 - Building the Application Monitoring Dashboard

In this module you will find the full solution for the HOL-1701 Challenge Lab: Intelligent Operations - Module 3

Gain screen space in vRealize Operations by Zooming Out - (Chrome)

1. Select the **Options** menu in the web browser.
2. Click the '-' button to zoom out to **90%**.

This will provide more viewing space while still allowing you to read the text.
Mission 6: Creating the Teleporter Application View

1. Click on the **Dashboards** tab.
2. Click on the **Views** menu item.
3. Click on the **Create View** icon.
Mission 6: Configure the Teleporter View Name

Teleporter Application View - New View

1. Type the View Name: **Teleporter Application View**.
2. Type the Description: **Risk and Health Teleporter Application Monitoring**.
Mission 6: Select the View Presentation

Teleporter Application View - New View

1. Click **Presentation** menu item.
2. Click **Trend** as View Presentation.
Mission 6: Select the View Subject

1. Click **Subjects** menu item.
2. Expand the **Subjects** drop down list.
3. Select **Application** from **Container**.
Mission 6: Drag and drop the Super Metrics

Teleporter Application View - New View

1. Click **Data** menu item.
2. Expand the **Super Metrics** tree.
3. Drag the **Max-Risk(%)** and **Min-Health(&)**.
4. Drop the **Super Metrics** to the data View area.

Next, click on **Visibility**.
Mission 6: Select the View Visibility

Teleporter Application View - New View

1. Select **Anomalies** check-box
2. Click on **Save** Button
Mission 6: The View has been created

You have the View ready to use.
Mission 7: Creating the Teleporter Application Dashboard

1. Click on the **Dashboard** tab.
2. Click on the **Getting Started** menu item.
3. Click on **Actions**.
4. Click the **Create Dashboard** menu option.
Mission 7: Configure the Teleporter Application Dashboard Properties

New Dashboard

1. Type the Dashboard name: **Teleporter Application Dashboard**.
2. Check **Yes** for the **"Is default"** field option.
3. Click on **Widget List**.

1. Type the Dashboard name: **Teleporter Application Dashboard**.
2. Check **Yes** for the **"Is default"** field option.
3. Click on **Widget List**.
Mission 7: Add the Widgets to the Teleporter Application Dashboard

Widgets are the panes on your dashboards. They show information about attributes, resources, applications, or the overall processes in your environment.

Drag and drop the Widgets: **Object List, Metric Picker, Metric Chart, View, Alert List, Health Chart**.

**Note:** If you are using Chrome as your Browser and you see any issue with the Widget position arrangement, please move to the Firefox Browser.

Now, you will configure the Widgets.

1. Click on **Edit** Button for each Widget to configure.
Mission 7: Configure the Object List Widget

1. For **Title**, type **Teleporter Application Components**.
2. For **Refresh Content**, select **On**.
3. Expand the **Application** tree and click on **Teleporter Application**.
4. Click the **Save** button.
Mission 7: Configure the Metric Picker Widget

1. For Title, type **Teleporter Metric Picker**.
2. For **Refresh Content**, select **On**.
3. Click the **Save** button.
Mission 7: Configure the Metric Chart Widget

1. Type the title: **Teleporter Metric Chart**.
2. For **Refresh Content**, select **On**.
3. Click the **Save** button.
Mission 7: Configure the View Chart

1. Type the title: Teleporter Application View.
2. For Self Provider, select On.
4. Type Teleporter on Filter field and press Enter to search the Teleporter Application View.
5. Select the Teleporter Application View.
6. Click the Save button.
Mission 7: Configure the Alert List Widget

1. Type the title: **Teleporter Alert List**.
2. For **Refresh Content**, select **On**.
3. Click on **Save** button.
Mission 7: Configure Health Chart Widget

1. Type the title: **Teleporter Application Health Chart**.
2. For **Refresh Content**, select **On**.
3. For **Self Provider** select **On**
4. For **Mode**, select **Self**.
5. Click on **Save** button.
Mission 7: Configure the Widget Interactions

Widget interactions are the configured relationships between widgets in a dashboard where one widget provides information to a receiving widget. When you are using a widget in the dashboard, you select data on one widget to limit the data that appears in another widget, allowing you to focus on a smaller subset data.

Now we will configure the Widget interactions.

1. Do not configure any Interaction to the Teleporter Application Components.
2. Select **Teleporter Application Components** as the Selected Object(s).
3. Select **Teleporter Application Components** as the Selected Object(s).
4. Select **Teleporter Metric Picker** as the Selected Metric(s).
5. Select **Teleporter Application Components** as the Selected Object(s).
6. Click on **Apply Interactions**.

**Mission 7: Save your Dashboard**

1. Click the **Save** button.

**Mission 7: Access Your Dashboard**

1. Click on the **Actions** menu
2. Select **Manage Dashboards**
Mission 7: Your Dashboard Is Ready To Use

1. Type **Teleporter** on the Dashboard Filter field and press **Enter** to search the **Teleporter Application View** and check that your dashboard has been created.

The Teleporter Application Dashboard is ready.

**Summary**

You are ready to move to the final step.
Module 4 - Publishing the Application Monitoring Dashboard

In this module you will find the full solution for the HOI-1701 Challenge Lab: Intelligent Operations - Module 4.

Mission 8: Sharing the Teleporter Application Dashboard

You can share a dashboard or dashboard template with one or more user groups. When you share a dashboard, it becomes available to all of the users in the user group that you select. The dashboard appears the same to all of the users who share it. If you edit a shared dashboard, the dashboard changes for all users. Other users can only view a shared dashboard; they cannot change it.

1. Select the **Teleporter Application Dashboard**.
2. Click on **Actions** icon.
3. Click on **Share Dashboards** menu item.
Mission 8: Sharing the Teleporter Application Dashboard

1. **Select all Dashboards.**
2. Drag and drop all Dashboards to **Not Grouped** Accounts Group.
Mission 8: Sharing the Teleporter Application Dashboard

1. Click on **Not Grouped** Accounts Group.
2. Click on **Teleporter Application Dashboard**.
3. Drag and drop the **Teleporter Application Dashboard** to **Teleporter App Operations**.
4. Click the **Save** button.

Mission 8: Log out the HOL User

1. Click the drop down for **hol@corp.local** then **Log Out**.
Mission 8: Log In with the Operations User

1. Ensure that authentication is set to Local Users
2. Enter Operations for the user name.
3. Enter VMware1! for the password.
4. Click the Log In button.
Mission 8: Navigate to the Dashboards Tab

1. Click **Ok** in the Missing Privileges Info pop-up. This information is displayed because the Operations user has not been assigned the permissions required to view the Home Page.
Mission 8: Teleporter Application Dashboard Shared

1. Click on the **Dashboards** tab. This is the only tab available to the Operations user.
2. Expand the **Dashboards** menu list and select the **Teleportor Application Dashboard**

The Teleporter Application is correctly shared and it is available for the Operations User.
Module Conclusion

You have completed Module 5 - Challenge Solution of the The Intelligent Operations Challenge Lab.

CONGRATULATIONS! You should now have completed all tasks related to this module and you have finished the Challenge Lab.

You can, from now, proceed to any other module for review:

- Module 1 - Configuring a Custom Application (15 minutes)
- Module 2 - Setup Metrics & Policy to the Application (30 minutes)
- Module 3 - Building the Application Monitoring Dashboard (30 minutes)
- Module 4 - Publishing the Application Monitoring Dashboard (15 minutes)

We hope you have enjoyed this Challenge.

Don't let learning end! You can discuss the challenges more or provide other create ways you have solved simular issues in the VMware Technology Network (VMTN) Communities for this lab here:

https://communities.vmware.com/docs/DOC-36957

How to End Lab

To end your lab click on the END button.
Conclusion

Thank you for participating in the VMware Hands-on Labs. Be sure to visit http://hol.vmware.com/ to continue your lab experience online.

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