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Lab Overview - HOL-1901-01-CMP - vRealize Operations and Log Insight - Overview and What’s New!
Lab Guidance

Note: It may take more than 90 minutes to complete this lab. You should expect to only finish 2-3 of the modules during your time. 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.

In this lab we introduce vRealize Operations and vRealize Log Insight. We will show administrators how to navigate through the solution interfaces to find the information that they need, and touch on the most popular features of the tools.

In addition we have included modules for administrators that simply want to see what feature enhancements were included in the most recent releases of vRealize Operations and vRealize Log Insight.

Lab Modules:

• **Module 1 - vRealize Operations Overview (60 minutes)**
• **Module 2 - vRealize Log Insight Overview (45 minutes)**
• **Module 3 - What's New in vRealize Operations (30 minutes)**
• **Module 4 - What's New in Log Insight (30 minutes)**

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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:

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.

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.
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.

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 - Overview of vRealize Operations (60 minutes)
Introduction

Welcome to Module 1 - the vRealize Operations Overview. In this module, we explore the main concepts within vRealize Operations, learn how to navigate the user interface, and look at how to interpret the information provided by the solution. By the end of the module, you should feel comfortable with the major features within vRealize Operations - including optimizing your environment, capacity planning and troubleshooting. You will have a good understanding of how to navigate through the information provided, and where to go for further help.
vRealize Operations

VMware vRealize Operations is a highly scalable, extensible and intuitive operations platform to centralize management for the Software Defined Data Center (SDDC). It delivers continuous performance optimization based on business or operational intent, efficient capacity management, proactive planning and intelligent remediation.

It is available either stand-alone, or as part of the vRealize Suite and comes in three editions - Standard, Advanced and Enterprise.

Introducing the Self-Driving Datacenter

VMware vRealize Operations delivers self-driving operations from applications to infrastructure to optimize, plan and scale SDDC and multi-cloud deployments.

Key Features of vRealize Operations:

- Continuous performance optimization
- Efficient capacity management and planning
- Intelligent Remediation

Introducing Intent-Based Operations

VMware vRealize Operations introduces intent-based operations. It’s not enough to just move workloads around to balance them. In fact, that can be harmful if lower priority
workloads are moved into clusters or hosts that are serving critical VMs. This is why vRealize Operations 6.7 lets you define your business and operational intent in policy.

- Do you prefer to balance your workloads or consolidate them onto fewer hosts?
- How much risk is acceptable? What headroom would you like for unplanned or burst demand?
- How can you meet specific business requirements for SLA tiers, license policies, compliance and availability?

Tag-Based VM Placement allows you to set criteria for VM placement based on vSphere tags, while Workload Placement Policy specifies your intent for your environment.
Log in to the vRealize Operations HVM instance

This lab environment is running three different instances of vRealize Operations and one instance of vRealize Log Insight. We have the different vRealize Operations instances in order to be able to work through different use cases that have unique requirements. The lab instances are as follows:

- Live Instance: Connected to the small running vSphere environment in the lab. There isn't a large inventory of objects in this instance but it allows us to interact with vCenter.
- Historical Instance: Running a 30-minute time loop of data that was captured in the past. This instance has a much larger inventory of objects but since it is not currently connected to a vCenter, we can't perform any actions here.
- Blue Medora Management Packs: Also running in historical mode, this instance has a large number of management packs from Blue Medora that allow us to see information from adjacent infrastructure (storage and physical servers) as well as operating system and application information.

In this lesson we will be using the Historical Instance of vRealize Operations.

If you are already logged into the **historical** (not live) instance of vRealize Operations, click [here](#) to skip ahead.

Open the Chrome Browser from Windows Quick Launch Task Bar

If your browser isn't already open, launch Google Chrome

1. Click the **Chrome** icon on the Windows Quick Launch Task Bar
Open the vRealize Operations - Historical Instance Tab

The browser home page has links to the different instances of vRealize Operations that are running in the lab.

1. Click the **vRealize Operations - Historical Instance** link to open the UI in a new browser tab
Log in to vRealize Operations

1. If Local Users is not the default, click the drop down as shown and click **Local Users**

Enter user credentials. Username is **admin** and password is **VMware1!**

2. Click **LOG IN**
Navigating the vRealize Operations User Interface

The vRealize Operations Manager User Interface (UI) has seen major improvements in versions 6.6 and 6.7. The new UI was designed with simplification in mind, making relevant information easily accessible and contextually relevant. This lesson will highlight the major components to the vRealize Operations Manager UI, to demonstrate the ease of navigation through the solution.

Understanding the User Interface

There are several components to the UI, and several paths to the same content. The major areas of navigation are:

1. The Title Bar
2. The Content Pane, which will usually display a dashboard containing other links
3. The Navigation Pane, which is contextual to the title bar and can be hidden or displayed by clicking on the chevron << in the top right-hand corner of the pane.
4. Note the chevron for hiding or showing the navigation pane.
Quick Start Page

The Quick Start page in vRealize Operations 6.7 is a navigation dashboard that focuses on the four high-level functional objectives that vRealize Operations Manager addresses. It is the default dashboard when you log in, or click on Home in the title menu bar. It contains the following sections:

- Optimize Performance
- Optimize Capacity
- Troubleshoot
- Manage Configuration

These areas will be explored in more detail in the upcoming lesson, "Exploring vRealize Operations Manager".

The Title Bar

The title bar runs across the top of the vRealize Operations Manager user interface. On the left hand side of the menu is the main menu, which contains the top level menu items for vRealize Operations:

- Home
- Dashboards
- Alerts
- Environment
- Administration

You use the title bar menu to navigate through the major areas of the UI.
Title Bar - Top Right

The title bar includes icons on the right hand side for:

- Search
- Refresh
- Notifications
- User Preferences

There is also a link to video help (indicated by the arrow in the screenshot). This link is very useful when getting familiar with vRealize Operations Manager, as it will take you videos relevant to where you are in the tool. This lab may not have internet access, so remember to check out video help when you return to your own environment.

User Preferences

Now we will start to explore some of the menu options. Review the User Menu, in the top right of the title bar:

1. Click on the person icon.
2. Review the items available in the dropdown.

The dropdown displays the current user (admin), and the menu items listed here:

- **Preferences**: Set display preferences for the current user.
- **Help**: Link to online documentation, including instructional videos.
- **About**: Display software version information.
- **Log Out**: Log out the current user.
Collection Notifications

Review the **Collection Notifications** menu:

1. Click on the bell icon.
2. Review the items available in the drop down.

The Collection Notifications dropdown shows the collection status of configured data sources. The administrator can quickly see if there are adapter instances that are not sending data. Clicking on the adapter instance name will link to the solution configuration page where adapter issues can be diagnosed. Since we are using the historical view mode instance of the tool, no data is being collected. You can ignore any errors.

Refresh

Review the **Refresh** icon. To refresh the data presented in the content pane:

1. Click on the refresh icon.

This may be necessary when you have resolved an issue and are waiting for an alert to clear, for example.
Quick Search

Review the **Quick Search** function, to quickly locate objects in your environment:

1. Click on the magnifying glass icon in the title bar, to open the search bar.
2. Type "db" into the search bar, and see which matching objects are found.
3. Use the scroll bar to see the whole list of matching objects.

Notice the different matching object types, including:

- Virtual Machine
- Virtual Machine Folder
- vSphere Distributed Port Group

Close out the search for now:

4. Click on the x to close the search

Main Menu

The Main Menu is displayed along the title bar, and is made up of the main navigation areas:
• **Home** - Default is the Quick Start dashboard, which is configurable.
• **Dashboards** - Navigation options for data visualization dashboards (that the user has rights to).
• **Alerts** - Chronological list of alerts for objects (that the user has rights to).
• **Environment** - Browsable list of objects (that the user has rights to).
• **Administration** - Privileged menu for Operations Manager System Administrative functions (only visible to administrators).

**Navigation Pane**

The navigation pane is on the left hand side of the content pane, and can be hidden by the `<<` symbol. The links in the navigation pane are dependent on the area of the solution the user is currently in. For example, the navigation pane seen here is associated with the **Home** section.

1. Click on `<<` to hide, (then `>>`) to show the navigation pane.
2. Review the menu items in the navigation pane.
3. Click through the main menu items to see how the links in the navigation pane change depending on the menu context:
   - Home
   - Dashboards
   - Alerts, etc

Did the options in the navigation pane change?
Return to the Home screen if you are not already there:

1. Click on **Home** in the title bar menu.

Now that you are familiar with the basic layout of the interface, we can navigate to the areas that will provide immediate value and deep insight into your environment. We will first explore the major areas within vRealize Operations Manager by using the options in the title bar.

**Home View**

When in the Home menu context, the navigation pane lists quick links to our most popular dashboards. There are many more dashboards available, as we will discover when we explore the Dashboards menu item. Using the Home navigation pane may be the fastest way to access the "Quick Start" and "Operations Overview" dashboards.
Operations Overview

Let's look at the information displayed on the Operations Overview dashboard:

1. Select the Operations Overview link from the Home navigation pane menu.
2. Click on different datacenters to update the information shown on the dashboard.

The Operations Overview dashboard is a great way to get an overview of the health of your environment. It shows a summary of the objects under management, including object growth charts, and allows you to navigate between datacenters to see uptime, alerts and virtual machines with resource contention.

Dashboards

Switch to the Dashboards view:

1. Click on Dashboards in the title bar menu.
**Dashboard View**

Dashboards is the main navigation area for dashboards, views and reports. Dashboards are accessible from the All Dashboards dropdown, and organized into categories. The navigation pane displays links to dashboards that you have previously viewed or selected for display:

1. Click on the downward chevron next to "All Dashboards".
2. Select the checkbox next to Operations.
3. Verify that the Operations dashboards are now available from the navigation pane.

This is a simple way to make your favorite dashboards easily accessible. You can uncheck the category if the navigation pane is getting too cluttered.

**Alerts**

Switch to the Alerts view:

1. Click on Alerts in the title bar menu.
Alerts View

Alerts takes you to the All Alerts dashboard, which shows a chronologically sorted list of recent alerts in your environment. Alerts are categorized based on their criticality, status, and impact on health, risk, or efficiency.

1. Open the chevron by Today to review alerts generated today.

Alerts are covered in the upcoming lesson "vRealize Operations Manager Concepts".

Environment

Switch to the Environment view:

1. Click on Environment in the title bar menu.
Environment View

Environment will take you to the Environment Overview dashboard, which is a visual overview of the health of resource groups within your environment. Here you can quickly evaluate the health, risk and efficiency of various objects as they relate to your overall object hierarchy. The health of object groups are reflected by colored badges that enable quick, visual interpretation of the data.

Health, Risk and Efficiency are covered in the upcoming lesson "vRealize Operations Manager Concepts".

Administration

Switch to the Administration view:

1. Click on Administration in the title bar menu.
Administration View

Administration will take you to the Administration page which contains all administration options including Solutions (Adapters), User Management and Support tools. This is where you will configure Management Packs, Certificates, Policies, etc.

Administration is out of scope for this vRealize Operations Manager overview, but feel free to take a look around at the different configuration options here.

Conclusion

This concludes the lesson "Navigating the vRealize Operations Manager User Interface". You now have a good understanding of the main navigation options and the locations of key content.

Next, let's explore some of the key concepts for vRealize Operations Manager.
vRealize Operations Concepts

Before we dig deeper into vRealize Operations, it is important to understand the key concepts and associated terminology that allow us to interpret the information displayed by the solution.

This lesson covers the following concepts:

- Monitoring Objects - Metrics, Badges and Health
- Actionable Alerts
- Dashboards and Reports
- Management Packs/Extensibility

Monitoring Objects in Your Managed Environment

You can use vRealize Operations to resolve problems that your customers raise, respond to alerts that identify problems before your customers report them, and generally monitor your environment. Everything under management by vRealize Operations is an object. Objects can be virtual machines, datastores, applications, port groups, and other vSphere and non-vSphere constructs. Objects have properties and metrics.

Each object is a small piece of the overall picture, but there are times when you want to be able to access information associated with an object directly. For example, a user calls with a performance issue with a virtual machine. You may decide to start troubleshooting at the virtual machine object level and work outwards. From there, you can identify associated objects, relationships, metric thresholds and so forth.

Object Search

Let's say we receive a call that a virtual machine (VM) called "weblogic-01" is having performance issues:

1. Search for "weblogic-01" in Quick Search (magnifying glass icon to open search bar).
2. Click on the VM name in the results list.
You should be directed to the dashboard for that VM.

In the next step we will review the concept of metrics, badges and health to help quickly identify issues. Can you see where these concepts are represented on the VM dashboard?

**Metrics, Badges and Health**

<table>
<thead>
<tr>
<th>Health</th>
<th>Risk</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Health Icons" /></td>
<td><img src="image2" alt="Risk Icons" /></td>
<td><img src="image3" alt="Efficiency Icons" /></td>
</tr>
<tr>
<td>Current Operational State&lt;br&gt;Score: Higher is better (100)&lt;br&gt;Combination of: Workload, Anomalies, Faults</td>
<td>Potential Issues&lt;br&gt;Score: Lower is better (0)&lt;br&gt;Combination of: Time Remaining, Capacity Remaining, Stress</td>
<td>Optimization Opportunities&lt;br&gt;Score: Higher is better (100)&lt;br&gt;Combination of: Reclaimable Waste, Density</td>
</tr>
<tr>
<td>Address immediately</td>
<td>Requires attention</td>
<td>$$$</td>
</tr>
</tbody>
</table>

vRealize Operations rolls up information collected from objects to identify the health of your environment at-a-glance:

- **Metrics** - Raw data is collected from an object in the form of a metric observation or value (for example CPU Usage and Memory Contention %). Additional metrics may be calculated, such as capacity metrics, badge metrics, and health metrics.
- **Badges** - A visual overview of several related metrics. The color of the badge reflects the status of that badge. Green indicates the status of the badge is normal.
- **Health** - The health of an object is determined by the status of the related badges. Minor badges are rolled up into three major badges:
  - **Health Badge** - indicates a situation requiring immediate attention. It consists of **Workload, Anomalies** and **Faults**.
  - **Risk Badge** - indicates an issue that will require attention soon. It consists of **Stress, Time Remaining** and **Capacity Remaining**.
  - **Efficiency Badge** - identifies optimization opportunities in the environment. It consists of **Reclaimable Waste** and **Density**.
Virtual Machine Badges and Health

Let’s see how those concepts are at play on the dashboard that we found for the VM `weblogic-01`:

1. Make sure you are on the **Summary** tab for the dashboard.
2. Cycle through the **Badges** displayed in the **Recommended Actions** Pane. Hover over the badge for a text pop up of the badge, then click on it to switch the view:
   - Health
   - Risk
   - Efficiency
3. Did you notice the status changes to match the selected badge?
4. Are the associated issues different depending on which badge you are viewing?
Virtual Machine Metrics

Now let's see how we would drill down further into the information for this VM using Metrics.

1. Switch to the tab for **All Metrics**.
2. Browse to the **Contention** category.
3. Double-click on each of the **Virtual Disk** metrics.

Notice how the historical data for the selected metrics are displayed in the right-hand pane.
1. Return to the **Summary** tab.

Let's review what we found for our VM with a performance issue. The **weblogic-01** dashboard displayed the following information:

- The Health Status is red.
- There is a health alert that indicates "Virtual machine disk I/O write latency is high"
- The suggested fix is to "Enable Storage I/O control"

We then looked at the All Metrics tab. From there we could look at all metrics and historical data collected for this virtual machine.

This exercise was intended to introduce you to the concept of badges, health and metrics. We are not going to examine this issue any further at this time. Further troubleshooting examples are available later in this module.
Actionable Alerts

Alerts are generated when a metric or a group of metrics exceeds a threshold. Thresholds can be dynamically determined by vRealize Operations analytics, or manually set by an administrator.

Alert definitions are a combination of symptoms and recommendations that identify problem areas and generate alerts. Alert definitions are provided for various objects in your environment. You can also create your own alert definitions.

Alerts within vRealize Operations not only identify an issue, but also provide recommendations and actions to be taken when an alert is triggered. These actions can be triggered automatically (either immediately or during a scheduled window), or configured to require manual initiation. Actionable alerts are central to the Self-Driving Data Center as they provide several levels of automation that can be increased as users become more comfortable with letting the environment respond to issues in an automated fashion.

Components that make up an alert definition include:

- Symptoms
- Recommendations
- Actions
- Notifications

Alert Definitions
To review existing alert definitions:

1. Navigate to "Alerts" in the title menu
2. In the navigation pane, select "Alert Settings", then "Alert Definitions"
3. Browse the list of Alert Definitions to get a feel for how Alerts are configured within vRealize Operations.
4. Look at the details associated with the selected alert, such as **Base Object Type** and **Impact**.

Alerts will be explored further in the next lesson.

**Dashboards and Reports**

Dashboards and Reports in vRealize Operations are used to display information that is consumable and contextual to the needs of the user. Dashboards and reports are made up of smaller units of display called widgets and views.

- Dashboards present a visual overview of the performance and state of objects in your infrastructure. You use dashboards to determine the nature and timeframe of existing and potential issues within your environment.
- Reports are point-in-time (scheduled or on-demand) snapshots of views and dashboards that can be exported in PDF or CSV format.

There are dozens of dashboards and reports available with the core solution. vRealize Operations Advanced (or higher) also allow the creation and customization of dashboards and reports.

**Dashboard Navigation**

Dashboards are found under the Dashboard navigation view of vRealize Operations:
1. Go to the **Dashboards** title bar option.
2. Click on the down chevron next to **All Dashboards**.
3. Review the category groupings of available dashboards.
4. Select the **Getting Started** dashboard.

### Getting Started

The **Getting Started** dashboard is a navigation dashboard that groups available dashboards into "personas" or use cases. Click through the personas to view the associated dashboards:

1. Operations
2. Capacity Planning
3. Performance and Troubleshooting
4. Optimize
5. Configuration and Compliance (not shown in screenshot)

We will look at specific dashboards in the next lesson, "Exploring vRealize Operations".
Widgets

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

You use widgets to build custom dashboards. Custom dashboards are outside of the scope of this module, but the screenshot shows the widget list from a custom dashboard creation to help illustrate the concept of widgets.

The available configuration options vary depending on the widget type. Many widgets can provide data to or accept data from other widgets. You can use this feature to set the data from one widget as filter and display related information on a single dashboard.
Heat Maps

A **heat map** is a type of widget that contains rectangles of different sizes and colors, with each rectangle representing an object in your virtual environment. The color of the rectangle represents the value of one metric, while the size of the rectangle represents the value of another metric.

For example, one heat map might show both the total memory and the percentage of memory in use for each virtual machine. Larger rectangles would represent virtual machines with more total memory, while the different colors would represent memory usage (green for low and red for high).

Heat maps are used throughout vRealize Operations, as they are an effective way to visualize data across a large number of objects.
Views are used within vRealize Operations to help interpret metrics, properties, symptoms and so on, from a particular perspective:

1. Go to the **Dashboards** title bar option.
2. Select the **Views** menu item from the navigation pane.
3. Review some of the out-of-the-box views available.

Views are configured to show transformation, forecast, and trend calculations:

- The transformation type determines how the values are aggregated.
- The trend option shows how the values tend to change, based on the historical data. The trend calculations depend on the transformation type and roll up interval.
- The forecast option shows what the future values might be, based on the trend calculations of the historical data.
A report is a scheduled snapshot of views. Reports are accessed through the navigation pane of the Dashboards view:

1. Go to the **Dashboards** title bar option.
2. Select the **Reports** menu item from the navigation pane.
3. From the **Report Templates** tab, look at some of the out-of-the-box reports available.

vRealize Operations Reports allow the user to capture details related to current or predicted resource needs.

Reports can be customized to include your corporate logo (using customizable report templates), then scheduled to run regularly and send output to a group email or FTP server.
Management Packs/ Extensibility

Management packs for vRealize Operations extend the operational management capabilities of the platform to provide operational visibility into additional, non-vSphere solutions. Management packs can be created by VMware or by third parties. Management packs contain:

- Adapter configuration for third party solution
- Metrics
- Dashboards
- Alerts and recommendations

Management packs for vRealize Operations can be downloaded through vRealize Suite Lifecycle Manager, or directly from the VMware Solution Exchange [https://marketplace.vmware.com/](https://marketplace.vmware.com/)

Blue Medora is a company that VMware has partnered with for the development of management packs for third party integrations.

**Conclusion**

This concludes the lesson on vRealize Operations Concepts. In the next lesson, we put these concepts to use as we further explore vRealize Operations.
Exploring vRealize Operations

In this lesson we will really start to see the power of vRealize Operations, and the Self-Driving capabilities it can bring to your datacenter. We will walk through the major functions within the tool, and put some of the concepts that we learned in the previous lesson into practice.

This lesson is laid out following the top level menu items in the new 6.7 "Quick Start" page, which is the first page that you see when you click on the "Home" tab. It is broken down into the same segments:

• Optimize Performance
• Optimize Capacity
• Troubleshoot
• Manage Compliance

Feel free to explore links and other areas within the tool as we move through this lesson, coming back to the "Quick Start" dashboard to pick up the lesson as needed.

Optimize Performance

The workload optimization feature of vRealize Operations is the control center of your self-driving datacenter. You define business and operational intent, and then vRealize Operations will take necessary actions to keep your workload resources optimized.

Workload Optimization works closely with DRS to ensure applications have the resources they need. Workload optimization will evaluate resources required and in use across clusters, allowing you to migrate workloads between clusters as needed.

Continuous Performance Optimization - *Assure application performance based on business and operational intent*

• Assess Performance
• Define business or operational intent
• Automate workload optimization and balancing
• Report

Optimize Performance is covered in more detail in HOL 1901-02: Optimize Performance and Assess vSphere Configuration and Compliance with vRealize Operations.
Optimize Performance - Intent

Business or Operational Intent is how we instruct vRealize Operations to manage our resources. Here are some examples of intent:

- Assure the best application performance
- Save money through license enforcement
- Meet compliance goals
- Drive infrastructure costs as low as possible
- Implement SLA tiering

To start, you need to determine your target utilization objective for the datacenter. If application performance is your top concern, then you can spread workloads evenly over the available resources by choosing Balance. Alternatively, if you are looking to place workloads into as few clusters as possible, lower your cost per VM and possibly repurpose some hosts you can choose Consolidate.

Optimize Performance - Navigation
Navigate to the performance optimization dashboards via the following menus:

1. Click on the "Home" title bar icon (which will take you to the "Quick Start" page).
2. Find the "Optimize Performance" section in the content pane.

### Optimize Performance - Overview

![Optimize Performance dashboard](image)

#### Undersized Virtual Machines

<table>
<thead>
<tr>
<th>Name</th>
<th>Configured vCPU</th>
<th>Recommended vCPU(s) to</th>
<th>Configured Memory (GB)</th>
<th>Recommended Memory to Parent vCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>mgmt-w-ad2</td>
<td>1</td>
<td>0</td>
<td>2 GB</td>
<td>1 GB</td>
</tr>
<tr>
<td>ntap-u8-mgmt</td>
<td>1</td>
<td>0</td>
<td>2 GB</td>
<td>1 GB</td>
</tr>
<tr>
<td>MSFT-HM06</td>
<td>1</td>
<td>1</td>
<td>2 GB</td>
<td>1 GB</td>
</tr>
<tr>
<td>SAP-HM01</td>
<td>1</td>
<td>1</td>
<td>2 GB</td>
<td>1 GB</td>
</tr>
<tr>
<td>SAP-HM09</td>
<td>1</td>
<td>1</td>
<td>2 GB</td>
<td>1 GB</td>
</tr>
<tr>
<td>Total</td>
<td>289</td>
<td>16</td>
<td>719.5 GB</td>
<td>122 GB</td>
</tr>
</tbody>
</table>

#### Oversized Virtual Machines

<table>
<thead>
<tr>
<th>Name</th>
<th>Configured vCPU</th>
<th>Reclaimable vCPU(s)</th>
<th>Configured Memory (GB)</th>
<th>Reclaimable Memory</th>
<th>Parent vCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>vr6-master3</td>
<td>16</td>
<td>8</td>
<td>32 GB</td>
<td>14 GB</td>
<td>mbsu-vc-lab</td>
</tr>
<tr>
<td>vr6-master-ops</td>
<td>16</td>
<td>8</td>
<td>32 GB</td>
<td>16 GB</td>
<td>mbsu-vc-lab</td>
</tr>
<tr>
<td>ll-mgmt-1</td>
<td>12</td>
<td>6</td>
<td>16 GB</td>
<td>4 GB</td>
<td>mbsu-vc-mgmt</td>
</tr>
<tr>
<td>ll-mgmt-2</td>
<td>12</td>
<td>6</td>
<td>16 GB</td>
<td>3 GB</td>
<td>mbsu-vc-mgmt</td>
</tr>
</tbody>
</table>

Navigate to the **Optimize Performance** dashboard:

1. Click on **Overview** (under Optimize Performance in the navigation pane).

The first piece of the performance optimization puzzle is to make sure that virtual machines have the appropriate resources allocated to them. This means increasing resources assigned to undersized virtual machines to ensure performance, and rightsizing oversized virtual machines to reduce waste.
2. Review the machines in the **Undersized Virtual Machines** widget.

3. Review the machines in the **Oversized Virtual Machines** widget.

The widgets show the currently-configured vCPU and memory of the virtual machine, as well as the recommended configuration based on historical and predictive utilization trends.

**Optimize Performance - Change Resources**

You can right-size a workload immediately or schedule a resize for a later time through this dashboard. Let's take a look at how to do that.

**Display Widget Toolbar**

At first glance, it may not seem like a widget has associated options. However, this is just because vRealize Operations hides icons and toolbars that are not in use to reduce screen clutter. In order to show the toolbar, click on the eye icon in the Undersized Virtual Machine widget.

1. Hover over the top right hand side of the widget until an eye icon is displayed, then click on it.

\[Be\ \textit{aware\ that\ there\ are\ many\ small\ chevrons\ and\ icons\ within\ vRealize\ Operations\ that\ are\ easily\ missed,\ but\ that\ expose\ all\ kinds\ of\ additional\ functionality.\ If\ the\ screen\ doesn't\ look\ like\ you\ expect,\ look\ for\ a\ chevron\ that\ may\ indicate\ hidden\ panes,\ or\ eye\ icons\ to\ show\ additional\ toolbars.}\]
To see the actions that can be taken against this resource:

1. Select a virtual machine from the list.
2. Click on the gear icon to see the list of available actions

Note that these can be run immediately or scheduled at a later time (during a maintenance window, for example).

*If you cannot see the gear icon, go back to the previous step to review how to make the toolbar visible.*

We are not going to run an action at this time, as we are in historical view mode and not connected to a live vCenter Server.
Workload Optimization

Once virtual machines are rightsized, the second piece of the performance optimization puzzle is to make sure that hosts and clusters have the optimal combination of workloads running on them. Navigate to the Workload Optimization dashboard:

1. Click on the "Home" title bar icon (which will take you to the "Quick Start" page).
2. Find the "Optimize Performance" section and select "Workload Optimization".
The Workload Optimization dashboard is a quick view into the state of your environment in regard to workload placement. vRealize Operations will determine whether your environment is optimized based on the intent that has been configured.

1. Review the different ways you can view the information by selecting the different Sort by options:
   - Time Remaining
   - Cost Savings
   - Optimized

2. Click on **msbu-east**.
Optimization Details

Opening the dashboard for a datacenter will show the information for that datacenter. Note the information presented here:

1. Optimization Recommendation - optimize now or schedule
2. Placement Settings - to configure intent
3. Placement History - vMotions in last 24 hours
4. Information about the clusters within the datacenter or custom datacenters (may need to scroll down)

Custom datacenters are groupings of clusters that you can create for the purpose of balancing workloads between them.

In this example, the msbu-east datacenter is not optimized for performance.

- Placement Settings - Utilization Objective is set to Moderate
- The east-mgmt cluster has 100% CPU utilization (your lab instance might be somewhat different)
- The east-comp cluster has only 18% CPU utilization (your lab instance might be somewhat different)
Workload Optimization Policy Settings

To review the available options for workload optimization policy, edit the placement settings:

1. Click on "Edit Settings" within the "Placement Settings" widget.
Review Workload Automation Policy

1. Note the graphical representation of the policy.
2. Move the **Workload Optimization** slider from **Balance** to **Consolidate**, and review the updated graphical representation.
3. Note the ability to set **Cluster Headroom**.
4. Note the ability to configure **Tag Based VM Placement**.
5. **Cancel** out of this screen.

Optimize Capacity

The capacity optimization components of vRealize Operations ensure efficient capacity management of your environment, making sure that you are getting the most from your infrastructure resources and are planning appropriately for growth.
Efficient Capacity Management - Run your infrastructure like a service provider by using optimal densification, proactive planning and procurement

- Assess capacity and costs.
- Identify savings and automate reclamation.
- Predict demand and shortfalls, and get intelligent recommendations.
- Plan capacity based on demand across clouds.

Optimize Capacity is covered in more detail in HOL 1901-03: Optimize Capacity and Cost Savings with vRealize Operations.

Optimize Capacity - Navigation

Navigate to the capacity optimization dashboards via the following menus:

1. Click on the "Home" title bar icon (which will take you to the "Quick Start" page).
2. Click on "Assess Capacity" (in the "Optimize Capacity" section).
Optimize Capacity - Overview

The Optimize Capacity - Overview dashboard is a quick view into the state of your environment in regard to capacity. vRealize Operations will determine whether your environment is at risk of running out of capacity, and when:

1. Review the different ways you can view the information by selecting the different Sort by options:
   - Time Remaining
   - Cost Savings
   - Optimized

2. Click on **msbu-east**

*Note that the Capacity Optimization Overview dashboard looks very similar to the Workload Optimization dashboard. This is intentional, to make navigation as simple as possible. Although the information the dashboards display is slightly different, the navigation options are the same.*
Capacity Details

Opening the dashboard for a datacenter will show the information for the selected datacenter. Note the information presented here:

1. **Time Remaining** - How long before we run out of resources?
2. **Optimization Recommendations** - How can we ease the pressure? Reclaim waste or move workloads within the environment.
3. **Cluster Utilization** - Information about the clusters within the datacenter or custom datacenter.

In this example, the msbu-east datacenter is not optimized for capacity:

- Time remaining for one of the clusters is at Critical level.
- There is waste available for reclaim.
- The east-mgmt cluster has 0 days remaining for CPU.
- The east-comp cluster has 1 year remaining for CPU.
What-If Analysis

What-if Analysis is the capacity planning feature that allows you to plan ahead by simulating the addition of additional applications and virtual machines into your environment, using scenarios. Scenarios allow you to define a configuration for a workload or application, and use the vRealize Operations analytics to determine if and where capacity exists to support those additional workloads. It will also show you what it will cost to run those resources.

To navigate to the What-if Analysis dashboard:

1. Select Home to load the main navigation pane options.
2. Open the options for Optimize Capacity in the navigation pane.
3. Select What-If Analysis from the Optimize Capacity menu.

We are just viewing this section to show that this functionality is available, we are not going to run a scenario at this time.

Troubleshoot

The intelligent remediation components of vRealize Operations ensures the ongoing, hands-off health of your environment. It uses predictive analytics to predict potential
issues, intelligent analysis to determine smart thresholds and intelligent alerts for automated responses to triggered alerts.

**Intelligent Remediation - Predict, prevent and troubleshoot across SDDC and multiple clouds**

- Enterprise-wide troubleshooting with metrics and logs
- Integration with Wavefront
- Native vSAN operations manager that starts in vCenter
- Best for SDDC
- Highly scalable and extensible

Intelligent Remediation is covered in more detail in HOL 1901-04: Monitor and Troubleshoot Your Infrastructure and Applications with vRealize Operations and Log Insight

**Troubleshoot - Navigation**

Navigate to the performance troubleshooting dashboards via the following menus:

1. Click on the the "Home" title bar icon (which will take you to the "Quick Start" page).
2. Find the "Troubleshoot" section in the content pane.
The troubleshooting dashboards offer guided remediation to issues occurring in your environment. There are more dashboards available than displayed here, so we are going learn how to navigate directly to them.

**Getting Started**

The Getting Started dashboard is the best way to navigate through the out-of-the-box dashboards. If you remember from the lesson "Navigating the User Interface" earlier in this module, the Getting Started dashboard groups other dashboards into personas based on role or task.

Open the **Getting Started** dashboard:

1. Select the "Dashboards" title bar icon
2. Open the "All Dashboards" chevron
3. Select the "Getting Started" dashboard
Troubleshooting Dashboards

From the Getting Started dashboard:

1. Select the **Performance Troubleshooting** persona
2. Review the listed dashboards

These are guided troubleshooting dashboards designed to help you isolate issues within your environment. We will pick one to review.

3. Click on the "**Troubleshoot a VM**" dashboard from the list of Performance Troubleshooting dashboards.
Returning to our troublesome VM from earlier in this module, let's use the guided troubleshooting dashboard to identify the issue and possible solutions.

We need to search for the VM in the first widget. Remember the VM name? It was "weblogic-01". Move to the next step to see how to filter for this VM.
Search (Filter) the VM list

1. Hover over the top right hand side of the VM list widget - this will bring up several gray icons.
2. Click on the eye icon, to show the toolbar.

Once the tool bar is visible, there are several options including Filter:

1. Enter the VM name (**weblogic-01**) into the **Filter** field, and hit **Enter**.
2. Select (highlight) the appropriate VM from the filtered list.

Once the VM is selected, the remaining widgets on the dashboards will change context to reflect data for that particular VM. Let's review the information.

**The VM Dashboard**

Notice that the widgets are numbered. They are ordered in a flow that facilitates troubleshooting:

- **Widget 1**: The selected VM
- **Widget 2**: About the VM - overview of the VM properties
- **Widget 3**: Active Alerts
- **Widget 4**: Workload Pattern over the previous week
- **Widget 5**: Relatives - parent objects (host, vCenter, etc) and child objects (datastore)

Scroll down to see additional widgets:

- **Widget 6**: Historical resource demand
- **Widget 7**: Cluster contention
- **Widget 8**: VM contention
- **Widget 9**: Datastore latency
- **Widget 10**: Parent Host
- **Widget 11**: Parent Cluster
If you cannot see data for one of the widgets, check to see if that pesky chevron is open or closed.

Other Troubleshooting Dashboards

If you have time, feel free to explore some of the other troubleshooting dashboards. The data shown will be different for different object types, but the concepts are the same:

- Review the widgets in the order displayed on the dashboard for a logical troubleshooting flow.
- Show or hide widget content by using the chevron icon to open or close.
- Use the eye icon to show or hide the tool bar for each widget.
- Permanently add your favorite dashboards to the navigation pane by selecting the check box in the All Dashboards dropdown.
Conclusion

In this module we walked through the high level content available in vRealize Operations. There is far too much information and functionality to cover in one lab, but this module should have given you a good overview of vRealize Operations and its capabilities. Follow up with additional HOLs that go deeper into each area.

You've finished module 1

Congratulations on completing module 1.

If you are looking for additional information on vRealize Operations, you can start here: https://www.vmware.com/products/vrealize-suite.html

You may proceed to the next module by advancing to the next page. If you want to jump to a particular module, follow one of the links below.

- Module 2 - vRealize Log Insight Overview (45 minutes)
- Module 3 - What's New in vRealize Operations (30 minutes)
- Module 4 - What's New in Log Insight (30 minutes)

Or if you want to end your lab,

1. Click on the END button at the top of the page.
Module 2 - Overview of vRealize Log Insight (45 minutes)
Introduction

Welcome to Module 2 - the vRealize Log Insight Overview. In this module, we will explore the main concepts within vRealize Log Insight, learn how to navigate the user interface, and look at how to interpret the information provided by the solution. By the end of the module, you should feel comfortable with the major features within vRealize Log Insight - including dashboards and interactive analytics. You will have a good understanding of how to navigate through the information provided, and where to go for further help.
vRealize Log Insight

vRealize Log Insight is a highly-effective intelligent log management and analytics solution from VMware. vRealize Log Insight delivers heterogeneous and highly-scalable log management with intuitive, actionable dashboards, sophisticated analytics and broad third-party extensibility. It provides deep operational visibility and faster troubleshooting across physical, virtual and cloud environments.

vRealize Log Insight is available standalone, and is included in the VMware vRealize Suite of solutions, Log Insight for NSX and VMware Cloud Foundation.

Introducing 360 Degree Troubleshooting

VMware vRealize Log Insight adds structure to unstructured log data and promotes rapid troubleshooting with no need for prior data knowledge. Integration with vRealize Operations Manager allows deeper troubleshooting by utilizing and correlating structured and unstructured data.

Key Features of vRealize Log Insight:

- Universal Log Collection and Analytics
- Enterprise-Class Scalability
- Intuitive GUI & Easy Deployment
- Built-in vSphere Knowledge
- Integration With vRealize Operations
Log In to vRealize Log Insight

This module uses vRealize Log Insight

If you are already logged into vRealize Log Instance, click to skip ahead.

Open the Chrome Browser from Windows Quick Launch Task Bar

Now let's start the lab module.

1. If Chrome is not currently open, click the Chrome icon on the Windows Quick Launch Task Bar.

Open a vRealize Log Insight Tab

1. The default page will be the HOL-1901 Lab Links page. Click the vRealize Log Insight link.
vRealize Operations is integrated with VMware Identity Manager which we will use for user authentication in this lab.

VMware Identity Manager should be pre-selected as the identity source. However, if it is not you will choose it.

1. VMware Identity Manager should be pre-selected however if needed click the drop down as shown and click **VMware Identity Manager**
2. Click **LOGIN VIA SSO** to take you to the user login page.
VMware Identity Manager Login

The user and password information should already be pre-selected, however if needed the user and password are:

**USER:** hol

**PASSWORD:** VMware1!

1. Click **Sign in**
When you first log in to vRealize Log Insight you are presented with the General Overview dashboard.
Navigating the vRealize Log Insight User Interface

The vRealize Log Insight user interface (UI) was designed with simplification in mind, making relevant information easily accessible and contextually relevant. This section will highlight the major components of the vRealize Log Insight UI to demonstrate the ease of navigation through the solution.

Understanding the User Interface

There are two main user interface pages: the Dashboards page and the Interactive Analytics page. The major areas of navigation on the Dashboards page are:

1. The Title Bar.
2. The Content Pane.
3. The Navigation Pane, which is only visible from the Dashboards view.

The Title Bar

The title bar runs across the top of the vRealize Log Insight user interface. It includes a dropdown on the right hand side for User Preferences and Administration.

The main menu is on the left hand side of the title bar. It has the top level menu items for the two views within vRealize Log Insight - Dashboards and Interactive Analytics.
User Preferences

The **User** dropdown on the top right hand side of the UI has the following menu items:

- **My Settings**: Set the role and email address of the current user
- **Log Out**: Log out the current user

To open the user menu:

1. Click on **hol@corp.local**.
2. Click on **My Settings**.

What Roles are listed for the user hol@corp.local? You should have the **Super Admin** role.

Administration Menu

The Administration drop-down on the top right-hand side of the UI has following menu items:

- **Administration**: Management configuration options, including system monitor, licensing, and integration information.
- **Content Packs**: Content Pack Management.
- **Help**: Links to documentation, support and communities.
- **About**: Version information for the software.
To open the Administration menu:

1. Click on the 3-bar icon to open the menu.
2. Click on the Administration menu item.

Administration Settings

The Administration menu item will take you to the area within the tool that includes management options, integration options, and other configuration. It is outside of the scope of this module to review these settings, but feel free to take a look around at the configuration options available here.

Main Menu

The Main Menu is displayed within the title bar, and is where you can switch between the two main areas of the tool:
Dashboards - View custom and content pack created dashboards, view graphs of log events, and create custom sets of widgets.

Interactive Analytics - search and filter log events, create queries to extract events, and view charts of query results.

Dashboards provide the ability to quickly visualize log data and determine potential issues within an environment. You can create dashboards of useful metrics that you want to monitor closely.

Any query can be turned into a dashboard widget and summarized over a time period. You can check the performance of your system for the last five minutes, hour, day or custom time range. You can view a breakdown of errors and observe trends in log events.

1. Click on **Dashboards**.
2. Review the **navigation pane**.

Available dashboards are listed in the left navigation pane of the Dashboards view. Additional dashboards are added through content packs or manual creation.
The Interactive Analytics view allows administrators and engineers to perform searches using plain language or REGEX strings. Log details can be searched and viewed to determine problem areas and perform root cause analysis.

1. Click on **Interactive Analytics**.
2. Note the **Query** field.

Query results are presented in charts that can be saved and added to Dashboards. We will explore both much more in the next lesson.
vRealize Log Insight Concepts

Now that we are familiar with the layout of the interface, we will explore the main concepts that you will encounter within vRealize Log Insight. These are:

- Log Management and Analytics
- Lifecycle of an Event
- Event Type Grouping
- Dashboards
- Interactive Analytics
- Queries
- Content Packs/Extensibility

Log Management and Analytics

vRealize Log Insight provides centralized log management for your entire stack. It allows the sharing of log data across your organization without compromising production systems, and uses search and analysis features for real-time troubleshooting.

vRealize Log Insight collects all types of machine-generated log data, e.g. network traces, configuration files, messages, performance data, system state dumps and more. Most machine-generated data is unstructured, making it difficult to analyze and report on. vRealize Log Insight brings structure to unstructured data by building a high performance index for performing analytics on the data.

In contrast, vRealize Operations Manager consumes structured data - metrics and KPIs with a clearly defined structure. This makes them easy to search and query. With the native integration between vRealize Log Insight and vRealize Operations Manager, you get deeper visibility and insight into your environment through inventory mapping and object alerting. You are able to utilize structured and unstructured data to determine the health of your environment.

Data Collection

vRealize Log Insight collects data from the following sources:

1. Sources using the syslog protocol
2. Sources using the vRealize Log Insight agent
3. Sources that can post data through the REST API
4. Historical data that was archived using vRealize Log Insight
Lifecycle of an Event

The end-to-end lifecycle of a log message or event includes multiple stages as data flows in and out of vRealize Log Insight from agent read, parse, ingestion, indexing (buckets), alerting, query, archive (bucket seal and ship), and deletion.

An event transitions through the following stages:

1. The event is generated (on a device outside of vRealize Log Insight)
2. The event is sent to vRealize Log Insight by one of the supported methods
3. The event is received by vRealize Log Insight, and either accepted or dropped
4. The event is ingested by vRealize Log Insight by passing through the ingestion pipeline
   ◦ A keyword index is created or updated in the index stored on local disk
   ◦ Machine learning is applied
   ◦ The event is stored in a compressed format in a bucket on local disk
5. The event is queried by vRealize Log Insight
   ◦ The keyword and glob queries are matched against the keyword index
   ◦ Regex is matched against compressed events
6. The event is archived
7. The event is deleted in a FIFO (first in, first out) model
Log Events

Log events contain the following information:

- **Timestamp** - when the event occurred
- **Source** - Where the event came from (originator or aggregator).
- **Text** - Raw text of the event.
- **Fields** - Name-value pairs extracted from the event.

Let's review one of the event logs:

1. Go to the **Interactive Analytics** view.
2. Enter the vm name "web-01a" into the query bar and press enter.
3. Verify you are on the **Events** tab.
4. Review one of the **Events** in the list.

Can you identify the parts? Hover over one of the links in the event to see the field (name-value) data.

**Note:** There are several fields that were not part of the raw data. Where did they come from? This is one of the benefits of the native integration with vRealize Operations Manager - vSphere inventory mapping. Fields can also be defined at the source within the vRealize Log Insight agent and by content packs and users.
Inventory Mapping

One of the things that happens when you configure the vRealize Operations Manager - vRealize Log Insight integration is inventory mapping. It provides additional metadata for vSphere events (ESXi or VM originated), that Log Insight alone would not be able to determine:

- vmw_cluster (optional)
- vmw_datacenter
- vmw_host
- vmw_object_id
- vmw_vcenter
- vmw_vcenter_id
- vmw_vr_ops_id

Take a look at any one of the name-value pairs that start with vmw*:

1. Hover over **vmw_vr_ops_id**
2. The value should appear

This gives vRealize Log Insight access to information it wouldn't have otherwise, for example an influx of messages being sent from VMs on the same host. It also enables you to move back and forth between the vRealize Operations Manager and vRealize Log Insight data while keeping the same object in context - invaluable when troubleshooting.
vRealize Log Insight uses machine learning technology to group together similar events. Intelligent Grouping scans incoming data and quickly groups messages together by problem type, enabling high performance searches for faster troubleshooting and root cause analysis. Following on from the example in the last step, grouping the messages together that came from VMs on the same host would very quickly identify a potential problem with that host.

These groupings are displayed as Event Types, and each new type the machine learning discovers is represented by a smart field. Types can be timestamp, string, int, hex and others. Event Types are also added as part of content packs.

Let's review some of the identified event types:

1. Verify you are in the **Interactive Analytics** view.
2. Click on the **Event Types** tab.
3. Review one of the **Event Types** in the list. Notice the number of events for each type.
4. Hover over the links in a grouping. Each of the links represents a **smart field**.
Each event type that machine learning discovers represents a new type of field called a smart field. The default name of a smart field follows the format type_number[event_type]. You can rename smart fields, which will save the field to the configurable list that we will review in this step. Fields are also added through content packs or extracted from log messages manually.

Review configured fields found in the current results:

1. Verify you are in the **Interactive Analytics** view.
2. Click on the << to open the Fields window, if not already open.
3. Review the listed **Fields**.
Interactive Analytics allows you to search and filter log events and create queries to extract events. Results are presented in chart and list format.

Navigate to the Interactive view, and search for an object to see the results visualization update:

1. Verify you are in the Interactive Analytics view.
2. Enter a hostname into the filter in the query field (try esx-04a and notice how the indexed text shows possible matches as you type). Hit Enter.
3. Does it change the results visualization? What about the listed fields?
Queries extract events, search, and add filter criteria. You can search log data using the following:

- Complete keywords, globs or phrases
- Filter by time range
- Combine multiple filter fields using the AND and OR operators

Let's try a simple query, to search for errors over the last 24 hours:

1. Verify you are in the **Interactive Analytics** view.
2. Return to the **Events** tab.
3. Enter "*error*" into the filter in the **query field**.
4. Change the timeframe to the **Latest 24 hours of data**.
Dashboards in vRealize Log Insight give a visual representation of the log data analyzed. Dashboards are included in content packs or can be custom created to show graphs of log events in your environment.

Review the **General - Overview** dashboard, to see the options available right within the dashboard:

1. Go to the **Dashboards** view.
2. Open the **General** chevron from the navigation pane and select the **Overview** dashboard.
3. Enter a hostname into the filter in the main pane (try esx-04a):
   - Enter **esx-04a** on the hostname filter line.
   - Press **Enter** to set the filter.
   - Press **Enter** again to apply it to the current view.

4. Does it change the visualizations in the dashboard?
Before moving on, reset the dashboard by removing the filter that we added:

1. Click on the x by the hostname criteria that we added in the previous step (esx-04a).
2. Hit Enter to update the dashboard once the filter is deleted.
Dashboard widgets are the individual panes on a dashboard that help you visualize information. The main types of widgets that can be added to a dashboard are:

1. Chart widget - visual representation of events linked to a saved query
2. Query List widget - contains title links to saved queries
3. Field Table widget - contains events where each event represents a column
4. Event Types table widget - contains similar events in single groups
5. Event Trends table widget - contains list of event types found in the query

The General - Overview dashboard contains chart widgets. Can you tell which widgets are in use on the General - Problems dashboard?

1. Go to the Dashboards view.
2. Open the General chevron from the navigation pane and select the Problems dashboard.

Displaying Data

Review the widget types on display in this dashboard and think about how viewing the data in this way will decrease the time it takes to find the root cause of an issue:

1. Notice how you can interact with the data directly from the dashboard.
2. This widget shows a count of events.
3. This widget shows a summary of events by event type.
4. This widget shows unique events by trend.
Content Packs/ Extensibility

Content packs for vRealize Log Insight extend the operational management capabilities of the platform to provide operational visibility into additional, non-vSphere solutions. Content packs can be created by VMware or by third parties. Content packs contain:

- Queries
- Dashboards
- Alerts
- Agent Groups
- Extracted Fields

Content packs can be added directly through the vRealize Log Insight portal, as displayed in the graphic on this step. In this lab we do not have Internet access, so the Marketplace will indicate that it is unavailable. It is still possible to review installed content packs or import a locally-stored content pack.

Let's review the installed content packs:

1. Select the **Administration** drop down in the **Title Bar**.
2. Select **Content Packs**.
3. Select **Marketplace**.
Explore Content Packs

Let's explore the contents of a content pack that is already installed:

1. Select the **Microsoft - IIS** content pack from the list of installed content packs
2. Cycle through the various tabs to show the content that was installed with this content pack:
   - Dashboards
   - Queries
   - Alerts
   - Agent Groups
   - Extracted Fields

*Tip: While you are here, also take a look at the General content pack, and the Overview and Problem dashboards. Reviewing existing content packs is a great way to get ideas on how to create your own content.*
Explore The IIS Dashboard

Let's take a look at the Microsoft - IIS dashboard that was installed with the content pack:

1. Navigate to the Dashboards view
2. Open the Microsoft - IIS chevron from the navigation pane and select the General - Overview dashboard

If you were to uninstall the content pack, the dashboards and related content would also be removed.

Now that we have a good understanding of the concepts within vRealize Log Insight, let's dig into some of the functionality available with the solution.
Exploring vRealize Log Insight

We are now familiar with the layout of the user interface and the major concepts within vRealize Log Insight. In this lesson, we will really start to see the power of vRealize Log Insight as a log analysis solution. We will walk through the major functions within the tool and put some of the concepts that we learned in the previous lesson into practice.

We will go deeper into the functionality available within the two main areas of the solution:

- Dashboards
- Interactive Analytics

Dashboards

Dashboards provide visual data, giving insight into the environment. vRealize Log Insight has the following types of dashboard:

1. Individual Dashboards - dashboards created by the user.
2. Shared Dashboards - dashboards shared to or from other users.
3. Content Pack Dashboards - dashboards added as part of a content pack.

In the previous lesson, you saw how to access the VMware Solution Exchange. Be sure to check there before creating your own content.

Existing content packs are also a good source of ideas and best practices when you start to create your own content.
Content Pack Dashboards

First, let's explore some of the dashboards that are installed with Content Packs:

1. Select the **Dashboards** view
2. Review the dashboards in the navigation pane under **Content Pack Dashboards**.
3. Select the **General - Overview** dashboard.
4. Notice the interactive options available in the main pane of the dashboard. For example, in the **General - Overview** dashboard you can enter filter criteria for hostname, source and appname directly into fields on the dashboard.
Widgets

Just like in vRealize Operations Manager, dashboards are made up of widgets. And just like vRealize Operations Manager, they have hidden options that you need to hover over to reveal:

1. Hover your mouse over the top right-hand side of the widget for the options to appear. Here you see:
   - A graph icon, which opens this query in the Interactive Analytics view.
   - An (i) icon, which gives additional information about the data displayed in the widget.
   - A gear icon, which shows the available actions for the widget (content pack dashboards are read-only, so the only action here is to clone).
Create a Dashboard

Let's see how easy it is to create a new dashboard by cloning and modifying an existing dashboard.

1. Select the **General - Overview** dashboard from the navigation menu
2. Hover over the menu item to bring up the **gear icon**, and click on it to bring up the **Clone** action
3. Click on the **Clone** action to clone the dashboard.

Move to the next step to name the new dashboard.

Name the new dashboard

![Dashboard Name Dialogue]

- **Name**: My Own Dashboard

**Figure**: Dashboard Name Dialogue with selected name and save button.
1. Name: **My Own Dashboard**.  
2. Click **Save**.

**Find the new dashboard**

![Dashboard screenshot](image)

Find your new dashboard in the navigation pane.  

**Hint:** It will be under **Custom Dashboards, My Dashboards, My Own Dashboard**.

1. Click on **My Own Dashboard**

**Edit the dashboard**

![Dashboard editor screenshot](image)
Look at the actions available for one of the widgets on the cloned dashboard. This dashboard is not read only, and you will see more options available:

1. Select the gear icon on one of the widgets.
2. Select Edit Chart Type.

**Edit Chart Type**

Once you have selected the Edit Chart Type option, you can see the different chart types that can be used to display data.

**Dashboards** are visual representations of queries that you can create and run in Interactive Analytics. Let's review the Interactive Analytics view and the functionality available there. We will come back to this dashboard later in this lesson.

*Think of dashboards you would like to see in your own environment. What log data would you want to be able to display visually?*
Interactive Analytics

The Interactive Analytics page can be accessed from several areas within the UI:

1. From the Main Menu (title bar).
2. From any widget on a dashboard (small graph icon).
3. From the Settings menu (small gear icon) of a widget by selecting Edit in "Interactive Analytics".

The context in which you entered the Interactive Analytics view will determine what is displayed. For example, using the main menu will open Interactive Analytics with all logs showing, whereas opening the view from within a widget will open Interactive Analytics with that query and chart already loaded.

1. Switch to the Interactive Analytics view from the Title Bar.
The Interactive Analytics view has two main sections:

1. The visual representation of the data - the number of events of the current query over time.
2. The current query and the matching log entries.

The events shown in this view will depend on the context in which the view was opened - top level from the main menu as shown, or from a previous dashboard or widget (in which case the the appropriate query and results will be shown).

We came to this view through the Title Bar, so we are viewing all logs currently (default is for the last 5 minutes).
Other content in the Interactive Analytics view

To the right-hand side of the bottom pane are additional icons and fields. Let's walk through them:

1. The timeframe for the query - you can use the preset timeframes in the dropdown or create a custom timeframe.
2. Query Action bar - actions against the current query (left to right):
   - Star icon (Add query to favorites)
   - Dashboard icon (Add query to dashboard)
   - Bell icon (Create alert from query)
   - Arrow icon (Export query, results or chart data)
3. View and Sort for the results pane.
4. List of extracted fields from the results of the current query. (Click on «« if this window is hidden.)
It is easy to query the data in vRealize Log Insight. Simply start typing into the search bar (for example, a keyword), and vRealize Log Insight will auto-populate your search query and narrow down the results. This eliminates the need to learn a proprietary query language.

Let's type a sample query into the search bar, so we can identify the information that is displayed in the results.
1. Type "error_file_not_found", or a keyword of your choice.
2. Change the time range to the Latest 24 hours of data.
3. View the number of matching events found for the period.
4. View the list of matching events.
5. Note the extracted field list (all defined fields from matching events).

Filtering and Grouping

You can add filters to search results to narrow the result down further. For multiple filter rows, select the operator between filters. By default, all is selected. Let's add a simple filter to illustrate:

1. Click ADD FILTER to add a filter line.
2. Enter `vmw_vcenter contains vcsa-01a` (Enter/Return to apply).

Did you notice how the valid event types and options autofill?

Intelligent Grouping

Event Types will group similar messages together. Since we have searched on the error_file_not_found error, how many groupings would you expect this to equate to? Let's see:
1. Select the **Event Types** tab.
2. Review the list of matching types.

As expected, vRealize Log Insight has grouped all of these similar messages into one type, allowing you to easily see how many of these errors have been generated in the time period.

**Next Steps**

Now that we have a good foundation for the functionality available in vRealize Log Insight we will put it all into practice. In the next lesson, we will build a dashboard from scratch, as well as the associated queries and charts.
Data Visualization Lab

We will bring these concepts together to create a simple dashboard to show various http statistics from an application. The lab environment contains the following resources:

• A 3-tier app that stores employee details:
  ◦ web-01a
  ◦ app-01a
  ◦ db-01a

• The three systems are Linux systems already logging to vRealize Log Insight, using the agent.
• Web-01a is running an nginx proxy that forwards to app-01a.
• App-01a is running httpd.

We will build a dashboard to display information determined from analysis of the app-01a httpd logs.
Lab Overview

We will need to complete the following:

- Configure the servers to send the appropriate logs.
- Extract the fields that we want to query.
- Create queries for the responses we are tracking.
- Create the visualizations and add to a dashboard.

*Note: We could download and install the ApacheHTTP content pack that already contains all of the fields, queries, charts and dashboards that we need, but that would defeat the object of this exercise!*

Access the Application

Open a new tab in the browser, and navigate to the following URL:

http://web-01a.corp.local

1. Open a new tab in the browser.
2. Enter the url: **web-01a.corp.local**
3. Hit refresh 3 times.
Note: We refreshed the browser to generate http traffic to the application, to verify in the next step that this data is not currently logging to vRealize Log Insight.

Search for http logs

1. Click on the vRealize Log Insight browser tab.
2. Click on the Interactive Analytics tab to clear the previous query.
3. Return to the Events tab.
4. Click Add Filter.
5. Enter hostname contains app-01a.
6. Verify there are No Results.

Return to the vRealize Log Insight tab and search for app-01a, to verify we are not currently collecting the logs we need:
Add httpd logs

These servers are using the vRealize Log Insight agent to forward logs. That means we can manage the configuration from the central management system. Currently, they are only logging /var/log/messages. We need to add the /var/log/httpd logs.

1. Click on the 3 bars in the title menu
2. Click on Administration

Find the Linux agent group

1. Select Agents from the navigation pane.
2. Click on the down chevron by All Agents.
3. Select Linux from the dropdown.
Note: We could create a new agent group here for http servers, but for simplicity will edit the existing Linux agent group which contains the configuration for all Linux agents.

**Access the Linux Agent Group configuration**

Verify that you see the 3 Linux servers already configured as members of the Linux group:

1. View the existing agents
   - app-01.corp.local
   - web-01a.corp.local
   - db-01a.corp.local

2. Scroll down to **Agent Configuration** section
3. Click on the **Edit** tab
Review the existing agent configuration

Here you can review the existing configuration for the Linux agent group, including the files which are forwarding logs and the logging level. The same information is shown on the Build tab, but it is easier to edit it here on the Edit tab. Switch back and forth between the tabs to get a feel for the configuration options:

1. Switch between the **Build** and **Edit** tab to review the agent configuration options.

We need to add additional logs:

- `/var/log/httpd/access_log`
- `/var/log/httpd/error_log`

*Note: Because we will update the configuration for the Linux agent group, the logging will be added for all systems in that group. For more granular configuration, add additional agent groups.*
Update the agent configuration

1. Verify you are back on the **Edit** tab
2. Add the following text to the top of the configuration. You can also drag and drop into the configuration by selecting the text below:

```plaintext
[filelog|httpd]
directory=/var/log/httpd
include=access_log;error_log
parser=syslog_parser
```

3. Click **Save Agent Group**
Generate Application Activity

Return to the HOL Example App and generate some http traffic. The application browser tab should still be open, if not open a new tab and return to the application:

1. Return to the **HOL Example App** tab, or open a new tab in the browser (navigate to **web-01a.corp.local**).
2. Hit **refresh** several times.
3. Click on **Add New Employee**.
Create New Record

Enter the following information:

1. Name: John Smith
2. Address: 123 Acme Lane
3. Salary: 10000
4. Click Submit
View Record

Employee Details

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Address</th>
<th>Salary</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Roland Mendel</td>
<td>C/ Araquii, 67, Madrid</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Victoria Ashworth</td>
<td>35 King George, London</td>
<td>6500</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Martin Blank</td>
<td>25, Rue Lauriston, Paris</td>
<td>8000</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>John Smith</td>
<td>213 Acme Lane</td>
<td>10000</td>
<td></td>
</tr>
</tbody>
</table>

VMware Hands On Labs

Thanks to definit.co.uk for this sample 3-tier example

1. Click the eye icon beside an existing record
2. Click Back
Delete Record

1. Click the trashbin icon beside the new record (John Smith).
2. Click Yes.
Verify logs received

Return to the vRealize Log Insight tab and rerun the app-01a query:

1. Click on the vRealize Log Insight browser tab
2. Click on the Interactive Analytics tab
3. Click Add Filter
4. Enter hostname contains app-01a
5. Run the query
6. Verify results

There should be a log for each time you refreshed the page. If not, return to the step where you updated the agent configuration and verify it is correct. Then try the preceding steps again.
Extract Fields

If you recall from earlier in the module, fields in vRealize Log Insight help to give structure to unstructured data, which makes it easy to query and measure the data. Fields are created in several ways:

1. Smart fields - machine learning identifies and creates common field types from ingested logs.
2. Content packs - include field definitions.
3. Manually - users can manually extract fields from ingested logs.

We are going to extract the following fields from our httpd logs, so that we can build queries and a dashboard around the information:

- `hol_httpd_request_type` - Field containing POST, GET, PUT.
- `hol_httpd_request_page` - Field containing page requested (`/*php`).
- `hol_httpd_response_time` - Field containing the http response time in ms.
- `hol_httpd_response_code` - Field containing http response code.

Update query window

At some point during the exercise the query that we used to list log entries from app-01a will no longer show results, as it is using the default timeframe "Latest 5 minutes of data". We need to extend this window while we define the fields we need:

1. Verify that the filter is still set to `hostname` contains `app-01a`.

   ![Query Window](image-url)
2. Click on the dropdown next to timeframe.
3. Select **Latest hour of data**.

**Extract fields - http request type**

First we will define the http request type field from one of the resulting entries from our previous query:

1. Highlight **GET** on the first log entry in the list
2. Click on **Extract Field** in the pop-up.

*Note:* We do not have to be particularly precise when highlighting the field, as we edit the regex in the next step to make sure it captures the correct information.
Define field hol_http_request_type

vRealize Log Insight will suggest the regex to define the field. We are going to update the configuration to make sure it encompasses all of the request types that we are interested in.

**Tip:** as you build out your regex, the matching fields will be highlighted in the logs in the query window. This will help when tuning the regex to make sure you are capturing the results you need. “Pre and post context” show the regex before and after the targeted field. You need to test against several logs to make sure the field is consistently identified correctly.

Enter the following information into the field configuration box that has opened on the right-hand side of the window:

1. **Field Name:** hol_http_request_type
2. **Available for:** All Users
3. **Extracted value (regex):** GET|PUT|POST
4. **Pre and Post context:**
   - Pre: \s
   - Post: \s

5. Verify that the targeted fields are highlighted in dark green (light green highlighting is pre and post context)
6. Click **Save**
Extract fields - http requested page

Now we will define the http requested page field from one of the resulting entries from our previous query:

1. Highlight the **requested page** information on one of the GET log entries (it may be a / or index.php)
2. Click on **Extract Field** in the pop-up.

**Note:** We do not have to be particularly precise when highlighting the field, as we edit the regex in the next step to make sure it captures the correct information.

Define field **hol_http_requested_page**
vRealize Log Insight will suggest the regex to define the field. We are going to update the configuration to make sure it encompasses all of the request types that we are interested in.

Tip: as you build out your regex, the matching fields will be highlighted in the logs in the query window. This will help when tuning the regex to make sure you are capturing the results you need. "Pre and post context" show the regex before and after the targeted field. You need to test against several logs to make sure the field is consistently identified correctly.

Enter the following information into the field configuration box that has opened on the right-hand side of the window:

1. Field Name: **hol_http_requested_page**
2. Available for: **All Users**
3. Extracted value (regex): `/\w+(\.php)?`?
4. Pre and Post context:
   - Pre: `(GET|PUT|POST|DELETE)\s`
   - Post: **leave blank**
5. Verify that the targeted fields are highlighted in dark green (light green highlighting is pre and post context)
6. Click **Save**

**Extract fields - http response time**

Now we will define the http response time field from one of the resulting entries from our previous query:

1. Highlight the **response time** information on one of the GET log entries (it follows the 200 http response field, and can be any number)
2. Click on **Extract Field** in the pop-up.

*Note:* We do not have to be particularly precise when highlighting the field, as we edit the regex in the next step to make sure it captures the correct information.

**Define field http response time**

vRealize Log Insight will suggest the regex to define the field. We are going to update the configuration to make sure it encompasses all of the request types that we are interested in.

*Tip:* As you build out your regex, the matching fields will be highlighted in the logs in the query window. This will help when tuning the regex to make sure you are capturing the results you need.

Enter the following information into the field configuration box that has opened on the right-hand side of the window:

1. **Field Name:** `hol_http_response_time`
2. **Available for:** *All Users*
3. **Extracted value (regex):** `-\d+`
4. **Pre and Post context:**
   - **Pre:** `/1.0\s\d+\s`
   - **Post:** `\shttp`

5. Verify that the targeted fields are highlighted in dark green (light green highlighting is pre and post context)
6. Click **Save**
Extract Fields - http response code

Now we will define the http response code field from one of the resulting entries from our previous query:

1. Highlight the 200 (response code) entry on one of the GET log entries.
2. Click on Extract Field in the pop-up.

Note: We do not have to be particularly precise when highlighting the field, as we edit the regex in the next step to make sure it captures the correct information.

Define field http response code

vRealize Log Insight will suggest the regex to define the field. We are going to update the configuration to make sure it encompasses all of the request types that we are interested in.
Tip: As you build out your regex, the matching fields will be highlighted in the logs in the query window. This will help when tuning the regex to make sure you are capturing the results you need.

Enter the following information into the field configuration box that has opened on the right-hand side of the window:

1. Field Name: **hol_http_response_code**
2. Available for: **All Users**
3. Extracted value (regex): `-?\d+`
4. Pre and Post context:
   a. Pre: `1.0"\s`
   b. Post: `\s\d+`
5. Verify that the targeted fields are highlighted in dark green (light green highlighting is pre and post context)
6. Click **Save**

### Build Queries

Now that we have defined the fields that we want to measure on, we can build the queries that we will use to filter the data. We are going to create queries against app-01a only, although you could create the queries without specifying the hostname, and the hostname could be entered directly into the dashboard. This is useful if you have many similar servers where you want to display for the same information.

The query definition in vRealize Log Insight also defines how the data should be displayed, which fields to use for grouping data, and if it should be graphed using time series or non-time series:

- Time series graphs the data as it happens, using line and chart graphs, and is best for correlating issues and identifying trends.
- Non-time series will show matching totals over the configured time period.

We will use both types to illustrate the difference. The queries we will create are:

- Count of http request types, non-time series
- Count of pages requested, non-time series
- Http response time, time-series
- Http response codes, time-series
Interactive Analytics Chart

When you define a query not only do you define the logic that will be used to match log entries, but you also define the way that the information will be grouped and visualized. These options are set in the Interactive Analytics Chart:

1. **Aggregation Function** - total count (default), unique count, numeric functions against query results
2. **Grouping Function** - Time Series/Non-time Series, Group By field
3. **Chart Type** - column, line, table, area, bar, pie, bubble. Available types are dependent on Time/Non-time Series and Group By options.

Select each of the dropdown items listed above and review the available options.
Query 1 - Http Request Type

The first query we create will match logs from app-01a that contain data in the hol_http_request_type field.

The app-01a filter should still be configured in your query, so let's add an additional filter:

1. Click on **ADD FILTER**
2. Enter **hol_http_request_type exists**
Configure the view for this data to group the matching logs by request type, Non-time series (not broken out by time, displayed as a total for configured time period):

1. Select the **Grouping** dropdown
2. Select **Non-time series**
3. Select Group By: **hol_http_request_type**
4. Click **Apply**
Configure Chart Type

Change the chart type:

1. Select the drop down for Chart Type
2. Select Pie
3. Click back into the main window to close the pop-up

Favorite Requested Type Query

Add this query to your favorites, to easily recall later:

1. Click on the Favorite icon
Name **hol_http_request_type** Favorite

![Add Query to Favorites](image)

Name the favorite query:

1. Name: **app-01a http request type**
2. Click **Save**

**Query 2 - Http Requested Page**

![Query 2](image)

The next query will show logs from app-01a that contain data in the **hol_http_requested_page** field.

The previous filters should still be configured in your query, so let's modify the second filter:
1. Enter **hol_http_requested_page** exists

Configure Grouping

Configure the view for this data to group the matching logs by requested page, Non-time series (not broken out by time, displayed as a total for configured time period):

1. Select the **Grouping** dropdown
2. Select **Non-time series**
3. Select Group By: **hol_http_requested_page**
4. Click **Apply**
Favorite Requested Page Query

Add this query to your favorites:

1. Click on the Favorite icon

Name hol_http_requested_page Favorite

Name the favorite query:

1. Name: app-01a http requested page
2. Click Save
Query 3 - Response Time

The next query will show logs from app-01a that contain data in the hol_http_response_time field.

The previous filters should still be configured in your query, so let's modify the second filter:

1. Enter **hol_http_response_time** exists
Configure Aggregation

1. Select the Aggregation (Count of events) dropdown.
2. Select **Numeric function** for **hol_http_response_time**.
3. Select the **Average** checkbox.

Change the Aggregation Function option, in the first dropdown:

1. Select the Aggregation (Count of events) dropdown.
2. Select **Numeric function** for **hol_http_response_time**.
3. Select the **Average** checkbox.
Configure Grouping

Configure the view for this data to group the matching logs by requested page, Non-time series (not broken out by time, displayed as a total for configured time period):

1. Select the **Grouping** dropdown
2. Select **Time series**
3. Uncheck Group By: **hol_httpRequested_page** (make sure GROUP BY is not set)
4. Click into the main pane to clear the pop-up, then click **Apply**
Favorite Response Time Query

Add this query to your favorites:

1. Click on the Favorite icon

Name hol_http_response_time Favorite

Add Query to Favorites

Name: app-01a http avg response time

Name the favorite query:

1. Name: app-01a http avg response time
2. Click **Save**

**Query 4 - Response Code**

The final query will show logs from app-01a that contain data in the `hol_http_response_code` field.

The previous filters should still be configured in your query, so let's modify the second filter:

1. Enter **`hol_http_response_code` exists**
Configure Aggregation

Change the Aggregation Function option, in the first dropdown:

1. Select the Aggregation dropdown
2. Select Count of Events
3. Click Apply
Configure the view for this data to group the matching logs by requested page, Non-time series (not broken out by time, displayed as a total for configured time period):

1. Select the **Grouping** dropdown
2. Select **Time series**
3. Select Group By: **hol_http_response_code**
4. Click **Apply**
Configure Chart Type

Change the chart type:

1. Select the drop down for **Chart Type**
2. Select **Column**
3. Click anywhere to close the pop-up

Favorite code query

Add this query to your favorites:
1. Click on the Favorite icon

Name hol_http_response_code Favorite

Name the favorite query:

1. Name: **app-01a http response code**
2. Click **Save**
Create the app-01a Http Dashboard

Now we will create a dashboard to display the data. Move to the Dashboards tab, and check if there are any existing shared dashboards. There are not. We will create one:

1. Click on **Dashboards**
2. Click on **Shared Dashboards**
3. Click on **+ NEW DASHBOARD**
Name the Dashboard

Name the dashboard:

1. Name: **App-01a Http Statistics**
2. Check "**Share this dashboard among all users**"
3. **Save**

View the app-01a http dashboard

Make sure you are returned to the new dashboard. If not, navigate to it:

1. Click on **Dashboards**
2. Click on **App-01a Http Statistics**

The dashboard should be empty, as we have not configured any widgets yet.
Add Views to the Dashboard

We will add 4 widgets to the dashboard, based on the views that we created earlier. These are visualizations of the results from the queries that we created and saved. We will recall the queries from the favorites that we created and add them onto the new dashboard. The dashboard will show the following visualizations:

- Http Request Type
- Http Request Page
- Http Response Time
- Http Response Code

Add http type widget

Return to the Interactive Analytics view, where we will recall our favorite queries and add them to the dashboard:

1. Click on Interactive Analytics
2. Click on the star dropdown to show saved queries
Select http type query

1. Select the **app-01a http request type** query
Add to dashboard

Click on Add to Dashboard

Name http type chart

Configure the display name for the chart, and select the dashboard:
1. Name: **Http Request Type**
2. Dashboard: **App-01a Http Statistics**
3. Click **Add**

**Add http page widget**

From the Interactive Analytics view, select the next query to add:

1. Click on the **star** dropdown to show saved queries

**Select http page query**

1. Select the **app-01a http requested page** query
Add to dashboard

1. Click on Add to Dashboard

Name http page chart

Configure the display name for the chart, and select the dashboard:
1. Name: **Http Requested Page**.
2. Dashboard: **App-01a Http Statistics**.
3. Click **Add**.

**Add http time widget**

From the Interactive Analytics view, select the next query to add:

1. Click on the **star** dropdown to show saved queries

**Select http time query**

1. Select the **app-01a http response time** query
Add to dashboard

1. Click on **Add to Dashboard**

Name http time chart

Configure the display name for the chart, and select the dashboard:
1. Name: **Average Http Response Time**.
2. Dashboard: **App-01a Http Statistics**.
3. Click **Add**.

### Add http code widget

![Image of Add http code widget](image)

From the Interactive Analytics view, select the next query to add:

1. Click on the **star** dropdown to show saved queries

### Select http code query

![Image of Select http code query](image)

1. Select the **app-01a http response code** query
Add to dashboard

1. Click on Add to Dashboard

Name http code chart

Configure the display name for the chart, and select the dashboard:
1. Name: **Http Response Code**.
2. Dashboard: **App-01a Http Statistics**.
3. Click **Add**.

**Generate Application Activity**

![Image of Employee Details and Add New Employee button]

Return to the HOL Example App and generate some http traffic. The application browser tab should still be open, if not open a new tab and return to the application:

1. Return to the **HOL Example App** tab, or open a new tab in the browser (navigate to **web-01a.corp.local**).
2. Hit **refresh** several times.
3. Click on **Add New Employee**.
Create New Record

Enter the following information:

1. Name: **John Smith**
2. Address: **123 Acme Lane**
3. Salary: **10000**
4. Click **Submit**
View Record

Employee Details

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Address</th>
<th>Salary</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Roland Mendel</td>
<td>Calle Araquil, 67, Madrid</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Victoria Ashworth</td>
<td>35 King George, London</td>
<td>6500</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Martin Blank</td>
<td>25, Rue Lauriston, Paris</td>
<td>8000</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>John Smith</td>
<td>213 Acme Lane</td>
<td>10000</td>
<td></td>
</tr>
</tbody>
</table>

VMware Hands On Labs
Thanks to defint.co.uk for this sample 3-tier example

View Record

Name
John Smith
Address
123 Acme Lane
Salary
10000

1. Click the eye icon beside an existing record
2. Click Back
Delete Record

1. Click the trashbin icon beside an existing record
2. Click Yes
Enter bad url

1. Change index.php to `index-bad.php`
View Results on Dashboard

Return to the dashboard and review the data displayed:

1. Return to the **vRealize Log Insight** browser tab.
2. Click on **Dashboards**.
3. Click on **App-01a Http Statistics**, if you were not returned there directly.
4. View the information displayed in the widgets.
5. Change the timeframe to the **Latest hour of data**.

Hopefully this lab illustrated how easy it is to use vRealize Log Insight to collect logs from your environment, group the data, and display the data in a meaningful way. As discussed, there are many content packs available that contain pre-defined fields, queries, alerts and dashboards. For data specific to your environment - where there may not be a content pack available - it is simple to build out new content or modify existing content to provide meaningful analysis of your data.

This information can be shared with leadership (and other teams that require the information but not access to the systems), reported on, alerted on, and made available where and when needed.
Conclusion

In this module, we walked through the main features and functionality of vRealize Log Insight. We covered the core concepts and capabilities of the tool. We took a fairly simple use case, and showed how to quickly generate a query, visualization and a dashboard. We have really only scratched the surface of what we can do with the intelligent log management features within Log Insight. The native integration with vRealize Operations Manager makes it an essential addition to your cloud management portfolio.

You've finished module 2

Congratulations on completing module 2.

If you are looking for additional information on vRealize Log Insight, you can start here: https://www.vmware.com/products/vrealize-log-insight.html

You may proceed to the next module by advancing to the next page. If you want to jump to a particular module, follow one of the links below.

- Module 1 - vRealize Operations Overview (60 minutes)
- Module 3 - What's New in vRealize Operations (30 minutes)
- Module 4 - What's New in Log Insight (30 minutes)

Or if you want to end your lab,

1. Click on the END button at the top of the page.
Module 3 - What's New in vRealize Operations (30 minutes)
Introduction

Welcome to Module 3 - What's New in vRealize Operations! In this module, we will explore the new features that became available with our 6.6 and 6.7 version updates. We will walk through some of the most popular new features and show the benefit that they can bring to your environment.
Log in to the vRealize Operations HVM instance

This lab environment is running three different instances of vRealize Operations and one instance of vRealize Log Insight. We have the different vRealize Operations instances in order to be able to work through different use cases that have unique requirements. The lab instances are as follows:

- Live Instance: Connected to the small running vSphere environment in the lab. There isn't a large inventory of objects in this instance but it allows us to interact with vCenter.
- Historical Instance: Running a 30-minute time loop of data that was captured in the past. This instance has a much larger inventory of objects but since it is not currently connected to a vCenter, we can't perform any actions here.
- Blue Medora Management Packs: Also running in historical mode, this instance has a large number of management packs from Blue Medora that allow us to see information from adjacent infrastructure (storage and physical servers) as well as operating system and application information.

In this lesson we will be using the Historical Instance of vRealize Operations.

If you are already logged into the historical (not live) instance of vRealize Operations, click to skip ahead.

Open the Chrome Browser from Windows Quick Launch Task Bar

1. Click the Chrome icon on the Windows Quick Launch Task Bar
Open the vRealize Operations - Historical Instance Tab

The browser home page has links to the different instances of vRealize Operations that are running in the lab.

1. Click the **vRealize Operations - Historical Instance** link to open the UI in a new browser tab
Log in to vRealize Operations

1. If Local Users is not the default, click the drop down as shown and click **Local Users**

Enter user credentials. Username is **admin** and password is **VMware1!**

2. Click **LOG IN**
What's New! vRealize Operations 6.6

vRealize Operations Manager 6.6 was released on June 13th, 2017. Version 6.6.1 (a maintenance release) was released on August 8th, 2017 and contained many minor bug fixes. This lesson will update you on the feature enhancements to vRealize Operations Manager that came with the 6.6 upgrade. If you are already at version 6.6, feel free to skip this lesson and move to the 6.7 Updates lesson.

The next few steps review new functionality as listed in the release notes for vRealize Operations 6.6. If you want to dive directly into hands-on with some of these features, skip ahead to "New HTML5 UI".

Otherwise, take a couple of minutes to review the updates.

6.6 Updates

vRealize Operation Manager 6.6 focuses on enhancing product usability, accelerating time to value, and improving troubleshooting capabilities. The information on the next few steps is taken from the Release Notes for 6.6.

Simplified usability

Simplified usability and faster time to value capabilities:

• New HTML5 user interface provides an easier and consistent experience.
• The Getting Started dashboard allows for simpler dashboard navigation.
• Persona based dashboards group dashboards into categories for guidance - Operations, Capacity and Utilization, Performance Troubleshooting, Workload Balance, and Configuration and Compliance.
• Out of the box integration with vSAN and vRealize Automation provides quick time to value.

Native vSAN management

Added Native vSAN management capabilities:

• Allows for centralized management across stretched clusters.
• Ability for complete vSAN management, which includes administering performance, capacity, logs, and configuration and health.

Fully Automated Workload Balancing

Fully Automated Workload Balancing:
• Ensures performance across the datacenter’s with fully automated workload balancing, across clusters and across datastores.
• Ensures DRS Configurations and provides the option to set DRS automation level for individual objects.
• Predictive DRS takes action to preempt resource contention.
• Utilizes operations analytics to optimize initial placement of workloads through vRealize Automation.

**Compliance capabilities**

Additional out-of-the-box compliance capabilities:

• Ability to tackle compliance problems through the new vSphere hardening dashboard
• Extends compliance through PCI & HIPAA compliance for vSphere.
• Ensures business configurations through new cluster, host, and VM configuration dashboards

**General Improvements**

General improvements:

• Adds support for Windows Server 2016 for End Point Operations agents
• The End Point Operations Management agents collect metrics for NFS-mounted file systems.
New HTML5 UI

The new HTML5 UI provides an easier and consistent experience across the VMware product line. Like other VMware solutions, it is based on the Clarity Design System (a VMware created and maintained, open source environment containing UX guidelines, an HTML/CSS framework, and Angular components to create an exceptional user experience). The overall result is a cleaner, fresher, faster, easier to navigate user interface.

The Clarity Design System has also been used to update the user interfaces for many other VMware solutions, including vCenter, vRealize Orchestrator, vRealize Log Insight and vRealize Business for Cloud. This gives a consistent, modern look and feel to our solutions.
The **Getting Started** dashboard, introduced in version 6.6, took the work we had done creating dozens of out-of-the-box dashboards (based on customer use cases), and grouped them into persona based groups. These groupings guide you to the information that you need, when you need it. It is still available in version 6.7 and continues to be the preferred navigation dashboard for many version 6.7 customers.

To find the **Getting Started** dashboard:

1. Click **Dashboards**.
2. Open menu for **All Dashboards**.
3. Select the **Getting Started** dashboard.
vRealize Operations 6.6 introduced **Persona-Based Dashboards** that help you navigate the vast amount of information available about your environment. The personas are based on your role or the task you are trying to accomplish. Dashboards are grouped by persona for easy navigation.

Review the personas and associated dashboards on the Getting Started dashboard by clicking in the personas below:

1. Select the **Operations** persona.
2. Select the **Capacity and Utilization** persona.
3. Select the **Performance Troubleshooting** persona.
4. Select the **Optimize** persona.
5. Select the **Configuration and Compliance** persona.

Take some time now to review the dashboards associated with each category.
Workload Balancing across Clusters

vRealize Operations 6.6 introduced **Fully-Automated Workload Balancing**, which provides the following functionality:

- Ensures performance across datacenters by automating workload balancing across clusters and datastores.
- Ensures DRS configuration across the environment and provides the option to set the DRS automation level for individual objects.
- Introduces Predictive DRS (with vSphere 6.5), to use predictive analytics to take action to preempt resource contention.
- Utilizes operations analytics to optimize initial placement of workloads through vRealize Automation.

Although the workload balance functionality was introduced in 6.6, it was improved in 6.7 and the navigation options changed:

- The **Workload Balance** persona in 6.6 was renamed to **Optimize** in 6.7.
- The **Workload Management** dashboard in 6.6 was updated to **Workload Optimization**, and moved to the **Quick Start** navigation option in 6.7.

This lab is 6.7, and we will therefore navigate using the 6.7 navigation options.
View Workload Balance

1. Select the **Home** from the menu bar
2. Click on **Workload Optimization** in the **Optimize Performance** section of the main content pane.
1. Select the **msbu-east** datacenter
## DRS Settings

1. Review the widget "Are your clusters meeting your utilization objectives?"
2. View the information associated with each cluster in the datacenter.

There are links in the widget to access additional DRS-related information and settings:

- **View DRS Summary** will show you the current settings for DRS on the cluster, vMotion history, and VM "happiness".
- **Set DRS Automation** will allow you to modify the cluster DRS settings directly from the vRealize Operations Manager user interface.

## vSAN Management

vRealize Operations Manager 6.6 added native vSAN management capabilities. In previous versions, vSAN management support was added through a management pack that had to be downloaded from the VMware Solution Exchange. This management pack is now part of the core product. It added the following capabilities:

- Allows for centralized management across stretched clusters.
- Allows for complete vSAN management, including administering performance, capacity, logs and configuration and health.
vSAN Adapter Configuration

To review the configuration options for the vSAN integration:

1. Click on Administration in the main title menu.
2. Select the Solutions menu item.
3. Select the VMware vSAN solution.
4. Review the Configured Adapter Instances.

Although the solution may look similar to the management packs from previous versions, note that it no longer needs to be downloaded and added from the VMware Solutions Exchange and cannot be deleted. Making it part of the core product means that it will be updated with the core product, and all integration functionality will be fully tested.

vSAN Dashboards

vRealize Operations Manager 6.6 added all new vSAN dashboards. The vSAN dashboards are embedded in the appropriate dashboard grouping, for example:

- vSAN Capacity Overview (Dashboards, All Dashboards, Capacity and Utilization, vSAN Capacity Overview)
- vSAN Operations Overview (Dashboards, All Dashboards, Operations, vSAN Operations Overview)
- Troubleshoot vSAN (Dashboards, All Dashboards, Performance Troubleshooting, vSAN Operations Overview)
Navigate to the vSAN Operations Overview dashboard:

1. Click on **Dashboards** in the main menu.
2. Open the **All Dashboards** List.
3. Hover over the **Operations** category.
4. Select the **vSAN Operations Overview** dashboard.
The vSAN Operations Overview dashboard is an overview of the health of your vSAN environment, including summary information, alerts, latency, IOPs, and other operational information.

Take a moment to review the information displayed here, before moving onto the next step.
Navigate to vSAN Capacity Overview

Navigate to the vSAN Operations Capacity dashboard:

1. Click on **Dashboards** in the main menu.
2. Open the **All Dashboards** List.
3. Hover over the **Capacity & Utilization** category.
4. Select the **vSAN Capacity Overview** dashboard.
vSAN Capacity Overview

The vSAN Capacity Overview dashboard provides an overview of storage capacity and savings achieved by enabling de-duplication and compression across all vSAN clusters. You can view total provisioned capacity, current and historical utilization trends, and future procurement requirements from the dashboard.

Take a moment to review the information displayed here, before moving onto the next step.
Navigate to vSAN Troubleshooting Dashboard

Navigate to the vSAN Troubleshooting dashboard:

1. Click on Dashboards in the main menu.
2. Open the All Dashboards List.
3. Hover over the Performance Troubleshooting category.
4. Select the Troubleshoot vSAN dashboard.
The Troubleshoot vSAN dashboard is a guided dashboard to help you troubleshoot vSAN issues. You can view the properties of your vSAN clusters, as well as active alerts on the components, including hosts, disk groups and vSAN datastores.

Take a moment to review the information displayed here before moving onto the next step. Note that this dashboard was updated further in vRealize Operations 6.7 by adding additional metrics.

Conclusion

There were many great feature enhancements in vRealize Operations 6.6, as listed in the introduction to this lesson. We have walked through only a few of them. There are even more great features in version 6.7, so be sure to complete the next lesson!
What's New! vRealize Operations 6.7

vRealize Operations 6.7 was released on April 12th, 2018. It is a major release. This lesson will update you on the feature enhancements to vRealize Operations Manager that came with the 6.7 upgrade.

The next few steps are reviewing the new functionality listed in the release notes. If you want to dive directly into hands on with some of these features, skip ahead to "Quick Start Dashboard".

Otherwise, take a couple of minutes to review the updates.

6.7 Updates

The vRealize Operations 6.7 release focuses on continuous performance optimization, predictive capacity management and planning, and providing application monitoring capabilities. It also provides several usability improvements, analytics advancements, content enhancements, and better integration.

The enhancement categories listed below are taken from the Release Notes for version 6.7 which can be reviewed here: https://docs.vmware.com/en/vRealize-Operations-Manager/6.7/rn/vRealize-Operations-Manager-67.html

Here are the key features and capabilities:

• Pre-Upgrade Assessment Tool
• Analytics Advancements
• Platform Improvements
• Refreshed vSAN support
• Automated Agent Lifecycle Management to Enable Application Monitoring in Wavefront
• User Experience Improvements
• Content Enhancements

Quick Start Dashboard

In addition to the Getting Started dashboard introduced in version 6.6, version 6.7 adds an additional navigation dashboard - Quick Start. This dashboard aligns the vRealize Operations Manager capabilities under the associated use cases.

Quick Start was explored in detail in the previous module in this lab:

Module 1: vRealize Operations Overview - Lesson 2: Navigating the vRealize Operations Manager User Interface
Refer back to that module for more information on the Quick Start dashboard. In this lesson, we will simply review the dashboard and how it guides you through the core functionality of vRealize Operations Manager.

**Navigate to the Quick Start Dashboard**

To access the Quick Start dashboard:

1. Click **Home** in the main menu bar.
2. Select the **Quick Start** dashboard from the navigation pane.

*Note: If you have not changed the configuration of your "Home" dashboard (in Manage Dashboards), the Home main menu option should always bring you to the Quick Start dashboard.*
Review Quick Start Dashboard

1. The Quick Start dashboard guides you through the following use cases:
   ◦ Optimize Performance
   ◦ Optimize Capacity
   ◦ Troubleshoot
   ◦ Manage Configuration

2. Scroll down to the bottom of this dashboard, until the "View More" button comes into view.
3. Click on "View More" for additional, important navigation options.
These additional links guide you to important internal and external information, including:

- Management Packs in the VMware Solution Exchange
- Training videos and additional resources
- vRealize Operations Manager Assessment tools

We will be reviewing the **vSphere Optimization Report** (under **Run Assessments**) later in this lesson.

### New Capacity Analysis Engine

vRealize Operations Manager 6.7 includes a completely new, (near) real-time **Capacity Analysis** engine. There are also new capacity overview, reclamation and planning UI workflows powered by new real time capacity analytics, resulting in quick time to value:

- Capacity updates are available immediately after changes occur in the environment.
- Capacity forecasts now includes both an upper and a lower confidence band.
- Time Remaining, Capacity Remaining, and Right-Sizing have improved accuracy.
- Capacity "what-if" scenarios available for future projects and changes.
- Costing integrated directly with capacity.
There is a more detailed analysis of Capacity in vRealize Operations 6.7 in HOL: 1901-02 Optimize Performance and Assess vSphere Configuration and Compliance with vRealize Operations.

**Capacity - Demand vs Allocation**

Capacity Remaining and Time Remaining calculations are now based on the demand capacity model. This is how public cloud providers calculate metrics, so you will be able to do more accurate planning across your hybrid resources. Here is a refresher on the concepts:

- Allocation - total amount of resource configured to the VM
- Demand - amount of the resource the VM is asking for
- Usage - amount of the resource the VM currently receives

Demand-based models show actual resource usage and trending based on actual usage.

Allocation-based models show resources allocated (i.e. could be demanded) and trending based on that information. While more conservative, it is also less accurate and less optimal for capacity planning.

**Capacity Allocation Dashboard**

We know that customers may still want to use allocation metrics to report on things like over-commit. We have provided a new Capacity Allocation Overview dashboard with 6.7, so that customers can continue to report on overcommit ratios in their environments.

**Capacity Allocation Navigation**

To view the **Capacity Allocation Overview** dashboard:
1. Select the **Dashboards** tab from the title bar menu
2. Expand the **All Dashboards** menu
3. Hover over the the **Capacity & Utilization** category
4. Select the **Capacity Allocation Overview** dashboard

**Capacity Allocation Overview Dashboard**

Here you can find information on allocation ratios for virtual machines, vCPUs, and memory for a specific data center or cluster. It even has some recommendations based on performance requirements. Scroll down to see the current allocation percentages for individual clusters.

**Optimize Capacity Overview**

The Optimize Capacity Overview dashboard is also new in version 6.7. It can be found in the Optimize Capacity use case of the Quick Start page or under Optimize Capacity in the main navigation pane of the Home section.
To view the **Optimize Capacity Overview** dashboard:

1. Select the **Home** tab from the title bar menu

There are 2 links to the dashboard:

2. Select **Optimize Capacity - Overview** from the navigation pane.

or

2. Select **Assess Capacity** from the **Optimize Capacity** use case in the main content pane.
1. Select the *msbu-east* datacenter
2. Review the widgets contained in the dashboard.

The widgets in the dashboard display the following information:

- **Time Remaining**: Here you see which clusters in this datacenter are at risk for capacity
- **Optimization Recommendations**: Notice there are costs associated with the recommendations, new in 6.7!
- **Cluster Utilization**: Here is where you will be able to select the cluster, and determine how long your resources are expected to last before you add additional capacity based on historical data and predictive analytics.
Cost Engine

vRealize Operations Manager 6.7 added cost drivers directly into the solution. If you are familiar with vRealize Business for Cloud, you will know about Cost Drivers and the cost reference database. In previous versions of vRealize Operations Manager, integration with vRealize Business for Cloud was required in order to see cost information. Now the cost engine is included directly within vRealize Operations Manager!

vRealize Operations Manager 6.7 comes with a cost reference database out of the box. These are infrastructure costs that VMware has analyzed over time and added to a database that gets updated quarterly. This means that you get costing information immediately for your environment. Of course, if you know your actual costs, you can add them directly to get an even more accurate picture.

Navigate to cost data

1. Select **Dashboards** from the title bar menu.
2. Open the menu for **All Dashboards**.
3. Hover over the **Optimize** category.
4. Select the **Assess Cost** dashboard.

1. Select Dashboards from the title bar menu.
2. Open the menu for All Dashboards.
3. Hover over the Optimize category.
4. Select the Assess Cost dashboard.
Assess Cost Dashboard

The Assess Cost dashboard reports on the cost of your environment - the most and least expensive clusters, total cost of ownership, and potential cost savings associated with reducing waste.

Take a minute to review the dashboard. In the next step, we will look the administrative settings available for the cost engine.

Cost Settings
To navigate to **Cost Settings**:

1. Select **Administration** from the title bar menu.
2. Open the **Configuration** menu in the navigation pane.
3. Select the **Cost Settings** menu item.
4. Review the tab menu items.

From here, you can review and update Cost Drivers, look at the derived cost of a particular cluster, and initiate a Cost Calculation.

### Update Cost Drivers

![Cost Drivers tab](image)

From the **Cost Drivers** tab, you see configurable Cost Drivers within the engine. The overview also lists the monthly expense and the cost comparison with the industry benchmark (the reference database). Since we have not made any changes yet, there is no variation from the industry benchmark.

To update one of the drivers, select it. For this lab, let's update the Server Hardware cost driver:

1. Return to the **Cost Drivers** tab.
2. Note the **Comparison with industry benchmark** and **Monthly Expense** figures. The value in your lab may show one or more values that have been overridden here.
3. Select **Server Hardware**.
Update Server Hardware Cost

Under Server Hardware Cost, you see the total number of servers in the managed environment, as well as the total associated monthly cost. You see that the hardware is broken out into server groups of like hardware. Let's say our vendor just gave us a great end-of-year special on BL460c G7s, so we are going update that cost:

1. Open the chevron for the **HP, ProLiant BL460c G7** grouping.
2. Click on **+ Split Batch**.

Cost per Server

1. Update the **Cost Per Server** field to **1000**.
2. Click **Save**.
Back to Cost Drivers

1. Scroll up to the top of the page.
2. Click on the **Back to Cost Drivers** link.

Cost Drivers Review

1. Notice how the **Monthly Expense** for **Server Hardware** has decreased.
2. Notice the **Industry Benchmark Comparison**, reflecting the end of year deal.

The reference database is accurate enough for many use cases, but if you can update the tool with your actual infrastructure costs, the information provided will be even more accurate and useful!
Business-Intent-Driven Automated Workload Balancing

We reviewed intent-driven automation in Module 1 - vRealize Operations Overview - Lesson: Exploring vRealize Operations Manager. Here is a quick refresher!

Business or Operational Intent is how we instruct vRealize Operations to manage our resources. Once you configure intent for the datacenter, vRealize Operations Manager will manage workload placement to comply with that intent.

Here are some examples of intent:

- Assure the best application performance.
- Save money through license enforcement.
- Meet compliance goals.
- Drive infrastructure costs as low as possible.
- Implement SLA tiering.

Workload Optimization

Placement settings are configured from the Workload Optimization dashboard:

1. Select the Home tab from the title dashboard
2. Open the Optimize Capacity menu in the navigation menu
3. Select the Workload Optimization dashboard
Edit Placement Settings

Placement Settings are configured on a datacenter or custom datacenter:

1. Select the **msbu-east** datacenter.
2. Click **Edit Settings** in the Placement Settings window.
Workload Automation Policy Settings

Workload Optimization settings are driven by your target utilization objective for the datacenter:

- If application performance is your top concern, then you would spread workloads evenly over the available resources by choosing **Balance**.
- If you are looking to place workloads into as few clusters as possible, lower your cost per VM and possibly repurpose some hosts then you would chose **Consolidate**.

You also determine the headroom, or buffer space, that you would like to enforce across the clusters. Finally, you can force more granular placement controls using **Tag Based VM Placement**. Now you can create tags based on licenses or application type, and let vRealize Operations Manager make the best placement decision within the confines of the restrictions you have configured.
Review the configuration options for workload optimization for this datacenter:

1. Workload Optimization
2. Cluster Headroom
3. Tag Based VM Placement
4. Cancel out of this window when you have reviewed the options.

Intent is covered in more detail in the HOL1901-02: Optimize Performance and Assess vSphere Configuration and Compliance with vRealize Operations.

vSphere Optimization Assessment

The vSphere Optimization Assessment has been completely revamped in 6.7. As well as being easier to access (it is now linked on the Quick Start dashboard), we also added the following improvements:

- Easier to use with one-click report generation.
- Revamped and expanded reports with easy to understand content.
- Highlights vRealize Operations new capabilities and features.

To find the assessment, navigate from the Quick Start page:

1. Select **Home** from the title menu.
2. Scroll to the bottom of the page, and click **VIEW MORE** to make all options visible (The screenshot shows the options expanded, so the "View Less" button is visible).
3. In the **Run Assessments** section, click on the **vSphere Optimization Assessment** link.

### VOA Overview

![VOA Overview Image]

The vSphere Optimization Assessment is easier than ever to run and interpret. The main page breaks the reports down into categories. Let's explore the interface:

1. Click on the **About VOA** link for an overview of the assessment. Close the pop-up once you have reviewed the information.
2. Select **Summary Report**.
3. Review the information in the **Overview** section for the selected report, including questions that the report will help answer.
4. Note that the selected report can be run directly from this screen.
Selecting each report will change the context of the Overview and Generate & Download Report information. Cycle through the additional reports, and review the information for each as they update:

1. Select report (cycle through each one).
2. Review report Overview.
3. Review additional information in Generate & Download Report pane.
PDF Reports

Reports for this lab have already been created and can be found on the desktop in a folder called VOA Reports. Open the folder on the desktop to review the information contained in these reports:

1. Open the **Lab_Files** folder on the desktop by double-clicking on it.
2. Enter the **VOA Assessments** sub-folder.
3. Review the reports that are contained in the folder.

The reports are in PDF format and will open in the Chrome browser for review. Return to vRealize Operations Manager when you have finished reviewing the reports.
Dark Theme

This section wouldn’t be complete without a shout-out to the dark theme. Some users swear it is easier on their eyes. You can change to the dark theme and other display options in user preferences.

Note that you will need to log out of this historical instance of vROps and into the Live Instance in order to view the dark theme.
Log out HVM Instance

Log out of the HVM instance and close the browser:

1. Click on the **Person** icon on the top right of the screen.
2. Select **Log Out**.
3. **Close** the browser.
Log into the Live Instance

1. Open the **Chrome** browser
2. Click on the **vRealize Operations - Live Instance** link
1. Verify that **VMware Identity Manager** is the authentication source
2. Click **Redirect**
Login hol user

1. Verify or enter the hol user credentials:
   ◦ Username: hol
   ◦ Password: VMware1!

2. Click Sign in.

User Preferences

1. Open the User Menu on the top right-hand side of the title menu bar.
2. Select Preferences.
1. Use the dropdown to change the **Color Scheme** from Light to Dark.
2. Click **Save**.

Try viewing a couple of dashboards and see what you think!
Conclusion

In this module we walked through the functionality introduced in vRealize Operations versions 6.6 and 6.7.

We were not able to cover all of the updates, so be sure to refer to the release documentation for each update.

Take a look at some of the more advanced vRealize Operations labs if there is an area you would like to explore further.

You've finished module 3

Congratulations on completing module 3.

If you are looking for additional information on vRealize Operations, you can start here: https://www.vmware.com/products/vrealize-suite.html

If you are looking for additional information on vRealize Operations 6.6 and 6.7 features:


You may proceed to the next module by advancing to the next page. If you want to jump to a particular module, follow one of the links below.

- Module 1 - vRealize Operations Overview (60 minutes)
- Module 2 - vRealize Log Insight Overview (45 minutes)
- Module 4 - What's New in Log Insight (30 minutes)

Or if you want to end your lab,

1. Click on the END button at the top of the page.
Module 4 - What's New in vRealize Log Insight 4.6 (30 minutes)
Introduction

In this module we will explore the exciting new features of vRealize Log Insight 4.6!

This Module contains the following lessons:

- Lesson 1: What's New!
- Lesson 2: UI Enhancements
- Lesson 3: Event Forwarding Options
What's New!

Welcome to the overview of vRealize Log Insight 4.6! We have some very new exciting new features to share with you.

Overview of New Features in vRealize Log Insight 4.6

General Enhancements

- Ability to be notified of dormant hosts
- Event forwarding supports sending in raw syslog format (basically unmodified)
- Authentication with VMware Identity Manager (vIDM) local users is now supported
- More configuration APIs supported

User Interface

- Ability to configure multiple destination for an agent from the UI
- Ability to enable/disable time synchronization on dashboards page
- Ability to exclude in addition to include legend options
- Bulk operations added to User Alerts page
- Ability to filter and perform bulk delete operations on Access Control page
- Added ability to export a full list of agents from the Agents page

Agent

- Support for journald collection
- Ability to send syslog events over UDP
- max_disk_buffer increased from 2GB to 8GB
- Ability to disable compression for CFAPI
- Support for Photon OS version 2

Importer

- Support bzip and bzip2 archiving formats


Log In to vRealize Log Insight

This module uses vRealize Log Insight

If you are already logged into vRealize Log Instance, click to skip ahead.

Open the Chrome Browser from Windows Quick Launch Task Bar

Now let's start the lab module.

1. If Chrome is not currently open, click the Chrome icon on the Windows Quick Launch Task Bar.

Open a vRealize Log Insight Tab

1. The default page will be the HOL-1901 Lab Links page. Click the vRealize Log Insight link.
Login to vRealize Log Insight

vRealize Operations is integrated with VMware Identity Manager which we will use for user authentication in this lab.

VMware Identity Manager should be pre-selected as the identity source. However, if it is not you will choose it.

1. VMware Identity Manager should be pre-selected however if needed click the drop down as shown and click **VMware Identity Manager**
2. Click **LOGIN VIA SSO** to take you to the user login page.
The user and password information should already be pre-selected, however if needed the user and password are:

**USER:** hol

**PASSWORD:** VMware1!

1. Click **Sign in**
When you first log in to vRealize Log Insight you are presented with the General Overview dashboard.
UI Enhancements

In this section we will be exploring the new vRealize Log Insight user interface improvements.

Understanding the User Interface

There are two main components to the user interface (UI), the Dashboard view and the Analytics view. There are multiple navigation options within the tool, but only these two views make navigation simple. The major areas of navigation are:

1. The Title Bar
2. The Content Pane
3. The Navigation Pane, which is only visible from the dashboards view.
New Ability to Display Legend on widgets

Please note the new ability to quickly enable a legend on all widgets of a dashboard. This can be helpful if there is a particular time period or data point you are looking for.
Navigate to Administration

Next, let's navigate to the Administration area. In the upper right hand corner of the browser you can navigate to the Administration pane.

Select **Administration** from the drop down. We will now be directed to management pane.
New Ability to Export full lists of Hosts and Agents

On the Navigation pane we have options to configure management settings. Lets get a list of the hosts.

1. Select **Hosts**
2. Select **EXPORT**
3. Here you can see we now have new options to Export data.

New Ability for Bulk Actions on Access Control

From the management pane we now have the ability to do bulk edits to access controls. Note the ability to select more than one account to modify.
1. Select one or more users (or groups).
2. Please note the **DELETE** option is now available, but DO NOT delete the accounts as it may impact functionality in other modules of this lab.

We also have the new ability to do bulk deletes of roles.

1. Select **Roles**
2. Select the check box to select all
3. Please note the 'delete' option is now available, but DO NOT delete the roles.
Event Forwarding Options

In this lesson we will now explore new Event Forwarding options that enable administrators to create new event management capabilities. Log Insight Event Forwarding can now support more complex logging scenarios including 3rd party integrations and supporting legacy systems.

Event Forwarding of Raw Syslog Format

Why is ‘Raw’ format important? Per syslog RFC’s, a system that forwards events must add its personal prefix to all events forwarded for auditing and tracking purposes. The addition of headers to syslog events can sometimes cause complexity and delays in processing events by third-party systems when multiple systems relay syslog events and multiple headers get appended. To mitigate this challenge, administrators may want to leverage the ‘Raw’ format so that events are forwarded without any additional meta data appended (non-RFC compliant).

Now lets looks at some of the new Event forwarding options. From the Management pane:

1. Select 'Event Forwarding'.
2. Create a new event forwarding event, select 'NEW DESTINATION'
3. While configuring the new event forwarding rule, we now have the option to specify 'Raw' as a selection option.

You can also edit or clone an existing event forwarding destination. If you edit the destination to change an event forwarder name, all statistics are reset. For more detailed information on configuring vRLI event forwarding, please see the official VMware documentation at this link.

Event forwarding over UDP

In addition to forwarding events in 'Raw' format, we also now have the ability to specify 'UDP' as a transport option.

1. Select 'Event Forwarding'.
2. Create a new event forwarding event, select 'NEW DESTINATION'
3. While configuring the new event forwarding rule, we now have the option to specify 'UDP' as a selection option.

Why is UDP Transport important? The ability to use UDP can be helpful as certain legacy applications may only support sending Syslog events over TCP.
NOTE: UDP does not support SSL at this time. Any configured SSL settings will be ignored if UDP is configured.
Conclusion

In this module you were able to explore the new UI enhancements and agent event forward features. We believe these improvements will make using vRealize Log Insight more helpful and efficient. Thank you!

You’ve finished module 4

Congratulations on completing module 4.

If you are looking for additional information on vRealize Log Insight, try one of these:

- vRealize Log Insight 4.6 What's New Technical Presentation
- vRealize Log Insight 4.6 Release Notes
- vRealize Log Insight 4.6 Administration Guide
- vRealize Log Insight Documentation

You may proceed to the next module by advancing to the next page. If you want to jump to a particular module, follow one of the links below.

- Module 1 - vRealize Operations Overview (60 minutes)
- Module 2 - vRealize Log Insight Overview (45 minutes)
- Module 3 - What's New in vRealize Operations (30 minutes)

Or if you want to end your lab,

1. Click on the END button at the top of the page.
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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