



Cisco HyperFlex Sizer Getting Started Guide

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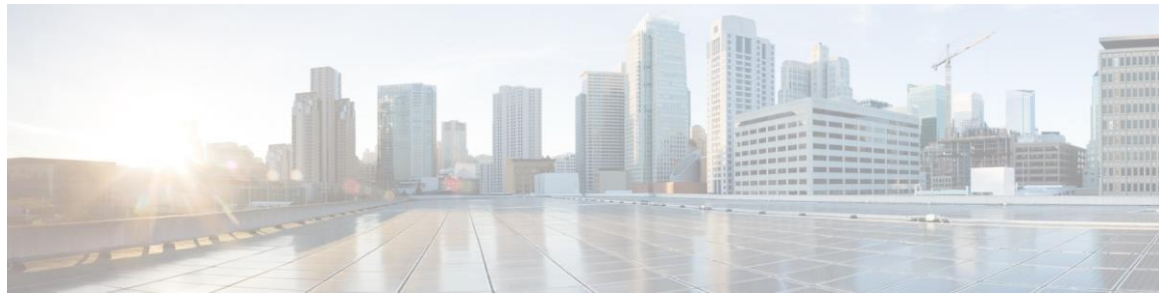
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- Kubernetes Container
- Artificial Intelligence/Machine Learning

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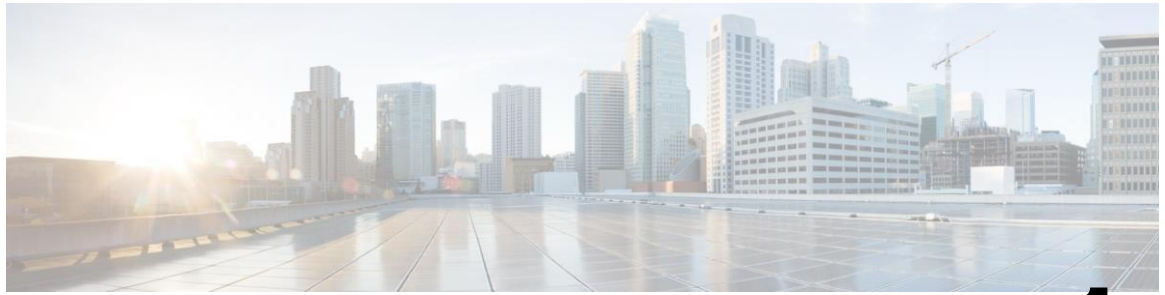
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CHAPTER 1

Overview

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- [Installation Prerequisites](#)
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Introduction

Cisco HyperFlex Sizer is a web-based application that helps in sizing different workloads and matching them with appropriate Cisco Hyperflex Systems.

The HyperFlex Sizer supports the following workloads categorized as:

- **VDI**
 - Virtual Desktop Infrastructure (VDI)
 - RDSH Workload
 - Epic Hyperspace
 - VDI Infrastructure VMs
- **Database**
 - Microsoft SQL database
 - Oracle
 - Splunk Workload
 - Bulk Database Input
- **Others**
 - General Server Virtualized Environment (VSI)
 - Microsoft Exchange Server

- HX Edge (ROBO)
- Compute and Capacity Sizer (RAW)
- File Upload on HX
- Artificial Intelligence/Machine Learning
- Kubernetes Container
- Veeam Availability Solution on HX

Installation Prerequisites

Supported Browsers

Browser	Version
Chrome	65 or higher
Firefox	59 or higher

Access HyperFlex Sizer

HyperFlex Sizer is hosted on the Cisco Cloud Application Environment (CAE) infrastructure. You can access the HyperFlex Sizer using the following link:

<https://hyperflexsizer.cloudapps.cisco.com>

Enter your Cisco user credentials.

Username	Cisco user ID
Password	Cisco password

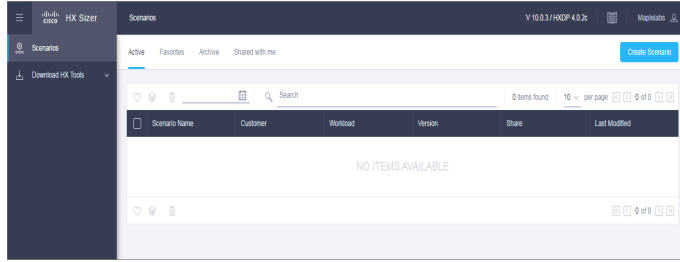
Click **Log In**.



Note: All the features are available only for Cisco employees and certified partners. The access level of your login credentials restricts access to certain features. For guest accounts, features such as Download Sizing Report and Download BOM are restricted.

Quick Start Guide

STEP 1:

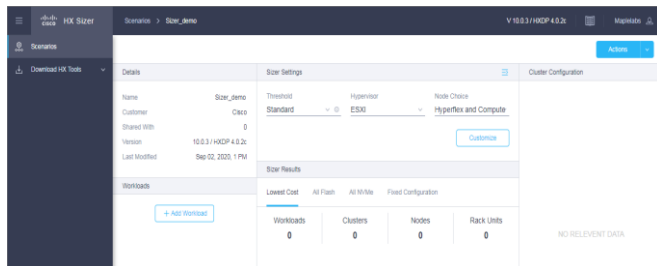


This is the first page you see when you log in to HyperFlex Sizer. The home page displays a list of all the scenarios previously created by you, if any.

STEP 2:

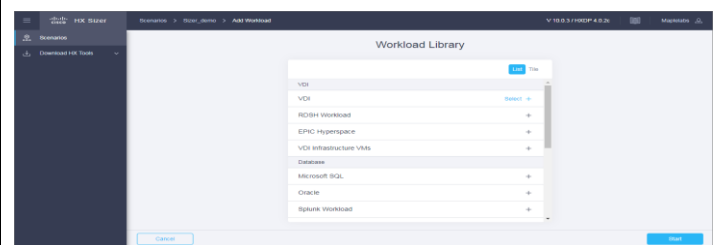
On the HyperFlex Sizer home page, click the Create Scenario button. Enter valid Scenario name and click Ok.

STEP 3:



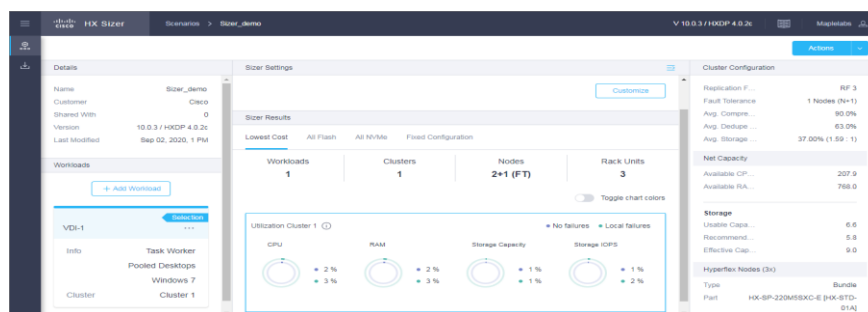
In the Scenario page, add a Workload using the + Add Workload button on the workloads pane.

STEP 4:



In the Workload Panel, select the desired workload type, proceed by clicking Next to configure workload parameters, and then Save to complete the Sizing workflow.

STEP 5:



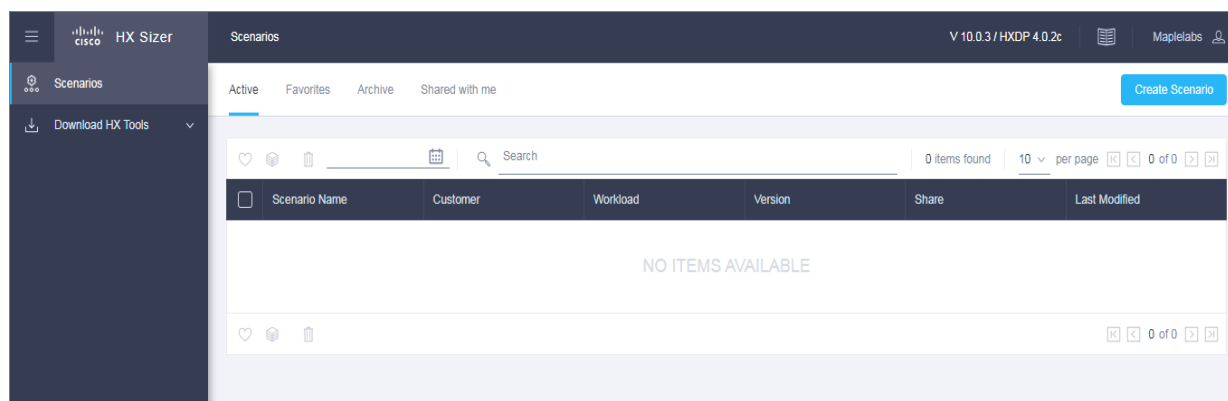
The Scenario page loads the Sizing Result in Lowest Cost / All Flash /All NVMe tabular format. You can view all details of the workload input, aggregate summary, Node results on right panel and utilization of resources for the chosen option. You can download the sizing report or BOM via the Action button on the top right. Click on Customize button to customize Cluster settings or Node settings.

Note: In Case of any Issues, click on the Send Feedback to ask for help.

HyperFlex Sizer Home Page

The HyperFlex Sizer home page displays a list of all the scenarios previously created by you, if any.

This is the first page you see when you log in to HyperFlex Sizer.



UI Element	Description
Create Scenario button	If there are no scenarios, you can click the Create Scenario button to create a new scenario.
Active tab	Displays a list of all scenarios previously created by you, if any.
Favorites tab	Displays a list of all the favorite scenarios, if any.
Archive tab	Displays a list of all the archive scenarios, if any.
Shared with me tab	Displays a list of all the shared scenarios by other users, if any.
Download HX Tools Dropdown	Provides links to download the OVA files for HX Bench and HX Profiler.
Getting Started button	Provides training materials for HxSizer, HxBench, and HxProfiler.
What's New button	Provides information on what's new in the various HyperFlex Sizer releases.
User Preferences option	Click the User Preferences option under User menu to change theme preference.
Send Feedback option	Click the Send Feedback option under User menu to send feedback and/or queries, if any.



CHAPTER 2

Scenarios

- [Add a Scenario](#)
- [Scenario Page](#)
- [Scenarios Page with Workloads](#)
- [Scenario Tasks](#)
- [Fixed Configuration Tab \(Reverse Sizing\)](#)

Add a Scenario

The following steps describe how to add a Scenario:

Step1 In the HyperFlex Sizer home page, click the **Create Scenario** button.

The Create Scenario window appears, shown as follows:

Create Scenario

Scenario Name *

Required

Customer

Close Ok

To Create Scenario, enter a valid Scenario name and click Ok.

Step2 In the **Add Scenario** window, complete the following fields:

Field Name	Description
Scenario Name	Enter a name for the sizing Scenario. Use the following guidelines to create the name: <ul style="list-style-type: none">• The Scenario name must begin with an alphabetic character.• Use alphanumeric characters only. An underscore, hyphen, or plus symbol can be used as a separator.• Special characters are not allowed.• The Scenario name must be unique.
Customer	(Optional)

Step3 Click **Save**.

You are now redirected to the Scenario details page.

Scenario Page

The HyperFlex Sizer Scenario details page displays a list of all the Workloads created by you, if any.

You can size different workloads on the Scenario details page by using the various options provided on the HyperFlex Sizer web application. You can choose between Lowest Cost, All-Flash and All NVMe sizing options to view the recommended sizing configurations that you can use in your HyperFlex cluster.

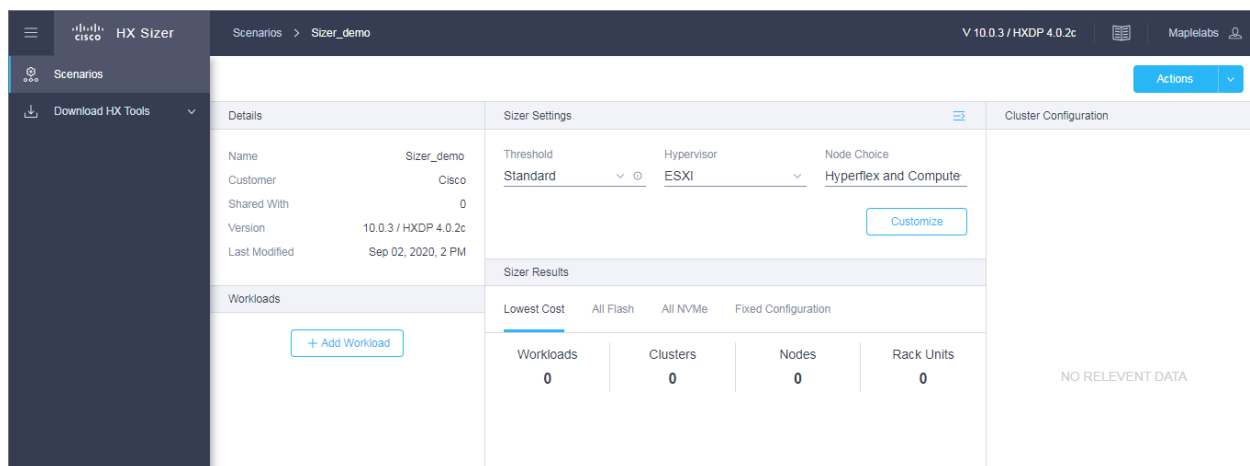
The Lowest cost option considers both Hybrid and All-Flash HX nodes for sizing and provides the optimal solution that can satisfy the given set of workloads.

The All-Flash option includes only All-Flash HX nodes to provide the optimal All-Flash solution that can satisfy the given set of workloads.

The All NVMe option includes only All NVMe HX nodes to provide the optimal All NVMe solution that can satisfy the given set of workloads.



Note Cisco recommends using the **All-Flash** option for all performance sensitive workloads as All-Flash configurations provide better performance consistency.



Scenarios Page with Workloads

The HyperFlex Sizer Scenario details page displays a list of all the Workloads created by you, if any.

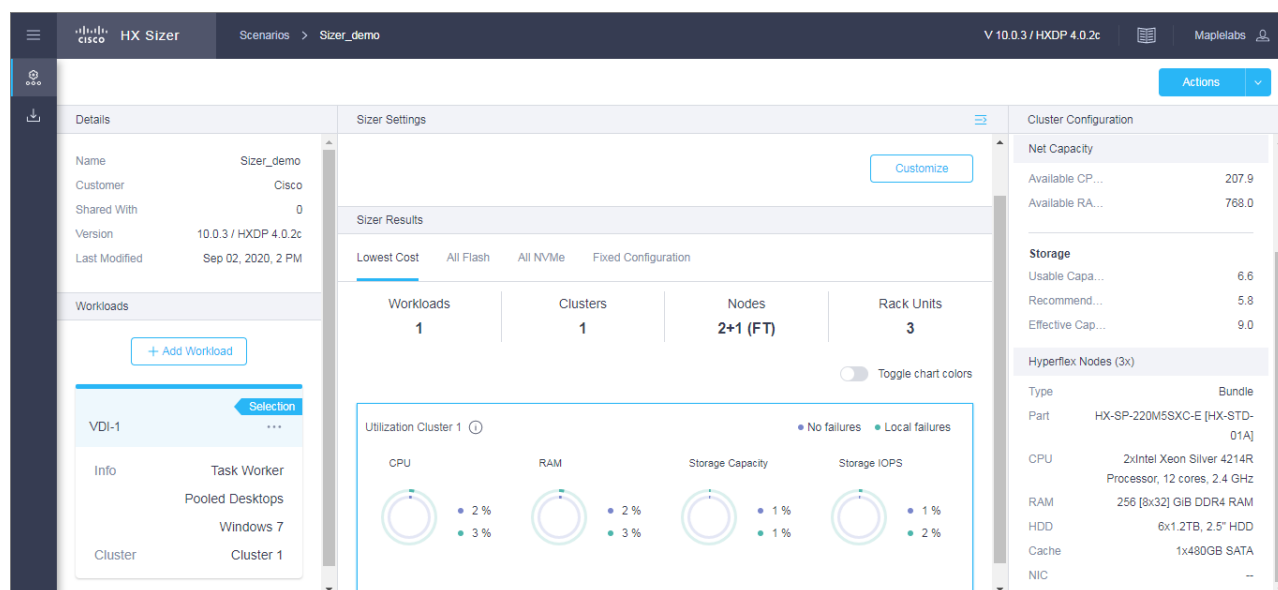
Let's look at the sizing results page.

Click the Add Workload button under Workloads.

On the Workload Type page, select any workload (in ex: VDI workload being selected). Proceed by Next, then Save.

The fields described in this section are displayed under the **Lowest_Cost** tab, **All-Flash** tab and **All NVMe** tab, shown as follows:

The Lowest cost option considers both Hybrid and All-Flash HX nodes for sizing and provides the optimal solution that can satisfy the given set of workloads. Whereas the All-Flash option includes only All-Flash HX nodes to provide the optimal All-Flash solution that can satisfy the given set of workloads. The All NVMe option includes only All NVMe HX nodes to provide the optimal All NVMe solution that can satisfy the given set of workloads.



Scenario Details Page

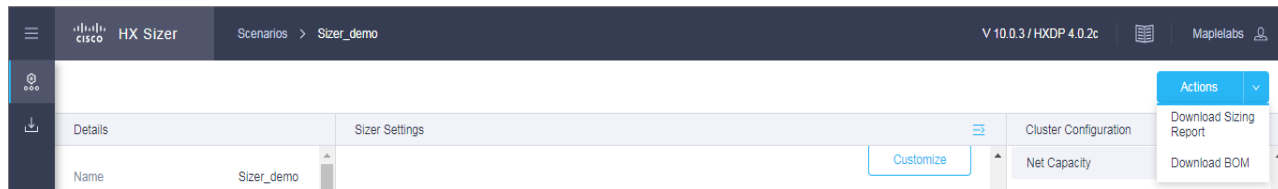
UI Element	Description
Threshold dropdown	<p>Set the sizing threshold to one of the following:</p> <ul style="list-style-type: none"> • Standard—Default • Conservative • Aggressive • No Hypervisor Reservation <p>The threshold setting controls the target utilization of clusters being sized.</p>
Hypervisor dropdown	<p>Choose the type of Hypervisor for which you want to do sizing:</p> <ul style="list-style-type: none"> • ESXi—Default • Hyper-V
Node Choice dropdown	<p>Choose the type of node for which you want to calculate sizing:</p> <ul style="list-style-type: none"> • HyperFlex & Compute—Default • HyperFlex Only
Summary details	Displays the Aggregate recommended number of Clusters, Nodes, and Rack Units for a given number of workloads.
Toggle Chart Colors button	User can toggle colors for Utilization charts.
Utilization Chart	<p>Displays the expected hardware resource utilization, namely CPU, RAM, Storage Capacity, and Storage IOPS for a workload.</p> <p>There are three different components in utilization:</p> <ul style="list-style-type: none"> • With no failures—For workloads that have replication enabled, the resource utilization includes the replication overhead. • With local failures—The number of failures matches the sizing parameter used for specifying the <i>Performance Headroom</i> parameter. For workloads that have replication enabled, resource utilization includes the replication overhead. • Unused / Free—Applicable only if the workload has replication enabled. Shows the resource utilization when the DR partner cluster has failed and workloads running on the cluster have moved over.
Cluster Configuration Panel	<p>You can view the Node Results for the individual cluster based on the selection. The following results are displayed:</p> <ul style="list-style-type: none"> • Cluster Configuration Settings—Specific settings for the HX cluster, for instance, the Replication Factor that is set • Hyperflex Nodes (Count—Number of nodes) <ul style="list-style-type: none"> Type—Type of node Part —Node used in the HX cluster Descriptions —Properties of the node

Download Button

You can download the sizing reports from the HX Sizer in two formats:

Download Sizing Report

You can view all details of the sizing input, proposed sizing configurations, workload summary, aggregate workload requirements, and utilization of resources for the chosen option. Click the Download button in the top-right corner of the Scenario page (shown as follows), then click Download Sizing Report.



Download BOM for Lowest_Cost, All-Flash, All NVMe and Fixed Configuration

A detailed Bill of Materials (BOM) is available separately for the Lowest Cost, All-Flash, All NVMe and Fixed configuration options as an Excel spreadsheet. This Excel sheet can be directly loaded to your Cisco Commerce Workspace (CCW).

Fixed Configuration

In the Fixed Configuration tab (also referred to as "Reverse Sizing"), the workflow starts with a fixed HX configuration and helps validate whether a given set of workloads will run on it or not.

See “Fixed Configuration tab (Reverse Sizing)” for more information.

Scenario Tasks

To view the existing Scenarios, navigate to the **Active** tab in Hyperflex Sizer homepage. You can perform the following tasks with existing Scenarios.

Clone a Scenario

Click the *Clone* icon of an existing Scenario to create a copy of the Scenario and complete the following fields.

Field Name	Description
Scenario Name	<p>Enter a name for the sizing Scenario. Use the following guidelines to create the name:</p> <ul style="list-style-type: none">• The Scenario name must begin with an alphabetic character.• Use alphanumeric characters only. An underscore, hyphen, or plus symbol can be used as a separator.• Special characters are not allowed.• The Scenario name must be unique.
Customer	(Optional)

Edit a Scenario

Click the *Edit* icon of an existing Scenario to edit the **Scenario name**, **Customer**.

Share a Scenario

To share a Scenario with an existing user or a new user, follow these steps:

1. Click the *Share* icon of an existing Scenario to share the Scenario.
2. Add the valid Cisco email ID with whom you are intended to share scenario.
3. You can set the following access privileges to users:
 - A Scenario always shared with read and write access.
 - Write access—Users have privileges to modify the Scenario, add new workloads, and modify existing workloads.

If username is not available in the database or unable to retrieve from LDAP server, check for the provided email ID and try again.

4. Click **Save**.

You can find the list of Scenarios shared with you under the **Shared with me** tab. You can find details about the owner of the Scenario and the users with whom the Scenario is shared on the **Shared Scenarios** page.

Delete a Scenario

Click the *Delete* icon of an existing Scenario to delete the Scenario.

Archive a Scenario

Click the *Archive* icon of an existing Scenario to archive the Scenario. The archived scenarios are shown in Archive tab.

Favorite a Scenario

Click the *Favorite* icon of an existing Scenario to favorite the Scenario. The favorite scenarios are shown in Favorite tab.

Fixed Configuration Tab (Reverse Sizing)

Fixed Sizing (also referred to as "Reverse Sizing") is a workflow that starts with a fixed configuration and helps validate whether a given set of Workloads will run on it or not.

In the Scenario page, click the **Fixed Configuration** tab. The tab appears, shown as follows:

The screenshot displays the Cisco HX Sizer web application. The top navigation bar includes the Cisco logo, 'HX Sizer', and a breadcrumb trail 'Scenarios > Sizer_demo'. The version 'V 10.0.3 / HXDP 4.0.2c' and the user 'Maplelabs' are also visible. The main interface is divided into three panels: 'Details', 'Sizer Settings', and 'Cluster Configuration'. The 'Details' panel on the left shows information for 'Sizer_demo', including the customer 'Cisco', version '10.0.3 / HXDP 4.0.2c', and a 'Last Modified' timestamp of 'Sep 02, 2020, 7 PM'. The 'Sizer Settings' panel in the center has tabs for 'Details', 'Sizer Settings', and 'Cluster Configuration'. Under 'Sizer Settings', there are dropdowns for 'Threshold' (set to 'Standard'), 'Hypervisor' (set to 'ESXI'), and 'Node Choice' (set to 'Hyperflex and Compute'). A 'Customize' button is present. Below these is the 'Sizer Results' section, which has tabs for 'Lowest Cost', 'All Flash', 'All NVMe', and 'Fixed Configuration' (which is selected). The 'Fixed Configuration' tab shows a table with columns 'Workloads', 'Clusters', 'Nodes', and 'Rack Units', all of which currently have a value of '0'. An '+ Add Cluster' button is located to the right of the table. A blue informational banner at the bottom of the 'Fixed Configuration' tab states: 'Regular sizing workflow helps identify the cost optimal HX configuration for a set of workloads. This workflow starts with a fixed HX configuration and helps validate whether a given set of workloads will run on it or not.' The 'Cluster Configuration' panel on the right is currently empty, displaying 'NO RELEVANT DATA'.

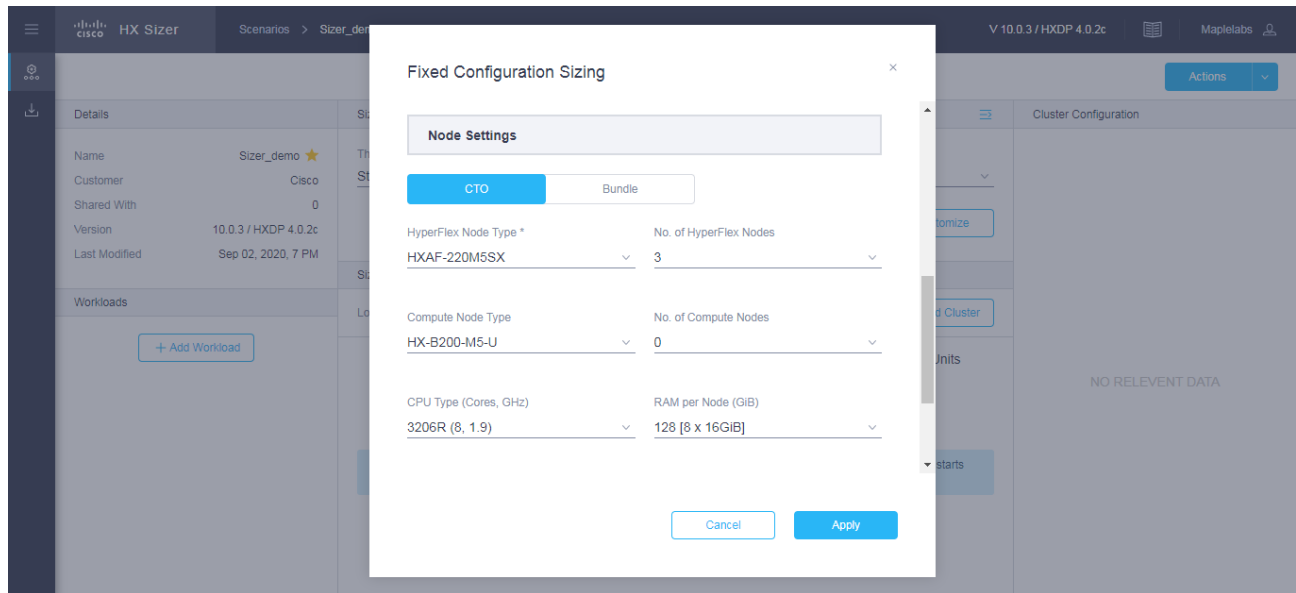
In the Fixed Scenario/Sizing the workflow starts with a fixed HX configuration and helps validate whether a given set of workloads will run on it or this can also be used to find out the specific details of a given configuration.

Configure Cluster in Fixed Configuration

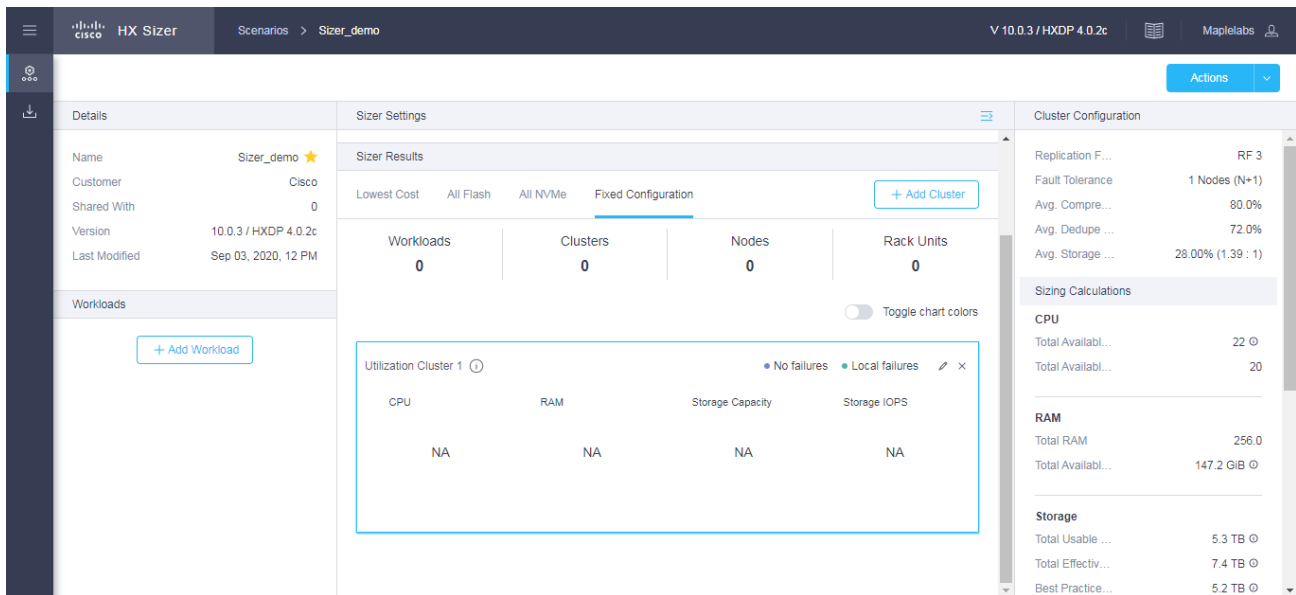
The steps to add Fixed Configuration cluster details as shown below.

Step1 In the Fixed Configuration tab, click on Add Cluster to configure the HyperFlex node and the Compute node (shown as follows).

Make your selections, then click Apply. The Scenario page reloads.



Step2 The **Fixed Configuration** tab Shows the following result.



Step3 Click the Add Workload button under **Workloads**, which prompts a dialogue box with the various Workload types (shown as follows). Select Assign Fixed Cluster from the dropdown to size for that cluster. If any Workloads are not supported for the chosen fixed configuration a warning message will be shown. The cluster setting can be changed by selecting the edit button in the respective Utilization cluster box.

Progress

- VDI Profile
- Infrastructure Configurations

Step 1
VDI Profile

Name *
VDI-1

User Type
Task Worker

OS Type *
Windows 7

Concurrency (%) *
100

Assign Fixed Cluster
Cluster 1

Auto

Cluster 1

Number of Desktop *
1

Assign GPU

Prev Cancel Next >

Alternative Step 3 If the Workload already present under **Workloads**, which you prefer to place into the configured Fixed Cluster, click on the edit button in Cluster box, select desired workload from the Assign Workload dropdown as shown below.

Fixed Configuration Sizing

Assign Workload
1 Selected

☐ All

☒ VSI-1

☐ VDI-1

Standard

ESXi

☐ Hardware Acceleration

☐ HyperFlex Boost

Cluster Settings

Data Replication Factor *
RF 3

Performance Headroom *
1

Cancel Apply

The other Workloads can be added to the Fixed Configuration Sizing based on the clustering of those Workloads that can be placed into one cluster. The standard clustering formats include:

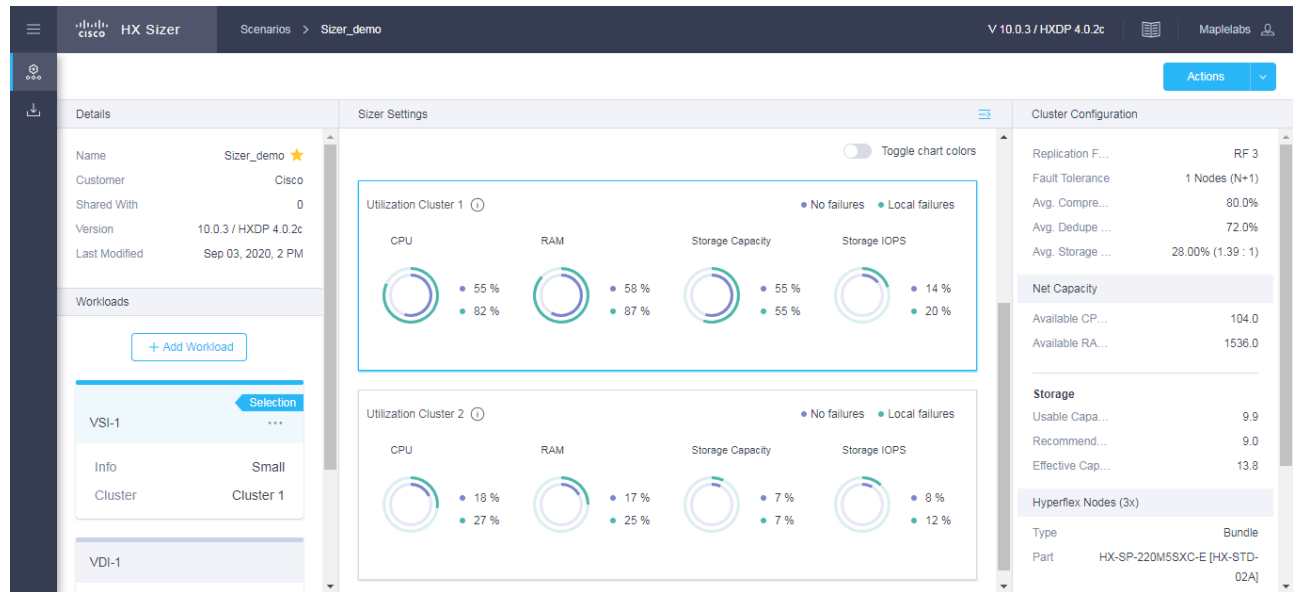
[VDI, RDSH, VDI_INFRA], [VSI, DB, ORACLE], [RAW, RAW_FILE], [EXCHANGE], [ROBO], [EPIC], [VEEAM], [SPLUNK], [CONTAINER], [AIML]

Note: For Fixed Configuration Sizing, the Stretch Cluster and Remote replication features are not supported.

Step4 Now users can configure multiple clusters in Fixed configuration and select the desired workloads for placement.

The **Fixed Configuration** tab, on the right panel Sizing Calculations section displays the calculated value for the effective resources available after reserve and overhead reductions for a given node configuration.

Click on the respective Utilization Clusters box to see the result.





CHAPTER 3

Workloads

- **Workloads Pane**
- **VDI Workloads**
 - Virtual Desktop Infrastructure (VDI) Workload
 - Epic Hyperspace Workload
 - VDI Infrastructure VMs Workload
 - RDSH Workload
- **Database Workloads**
 - Microsoft SQL database Workload
 - Oracle Workload
 - Splunk Workload
 - Bulk Database Input
- **Other Workloads**
 - General Server Virtualized Environment (VSI) Workload
 - Microsoft Exchange Server Workload
 - HX Edge (ROBO) Workload
 - Compute and Capacity Sizer (RAW) Workload
 - File Upload on HX
 - Veeam Availability Solution on HX Workload
 - Kubernetes Container Workload
 - Artificial Intelligence/Machine Learning Workload

Workloads Pane

You can complete the following actions from the Workloads Pane:

Edit Workload

Click the *Edit* icon of an existing Workload to edit the Workload profile.

Delete Workload

Click the *Delete* icon of an existing Workload to delete the Workload.

VDI Workloads

Add VDI Workload



To change the default values, click **Customize**.

Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

The node and parts for sizing are chosen based on CPU normalization.

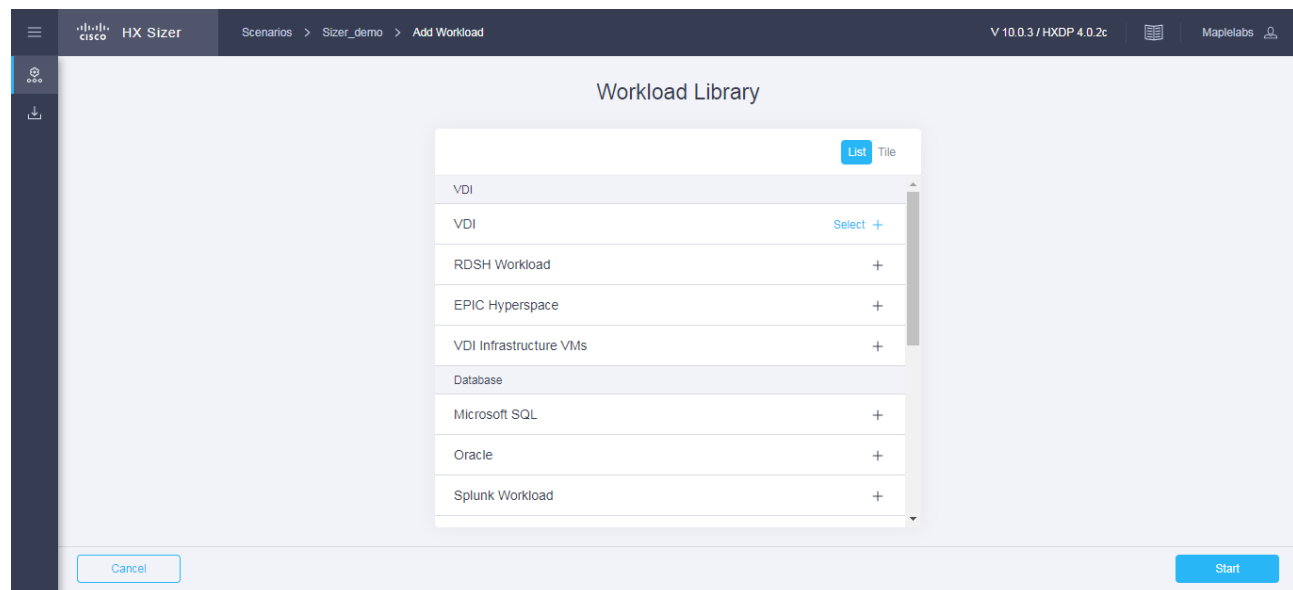
Normalized cores: The performance of a core in one processor is different from that of another processor. The performance of a CPU varies across generations of processors of the same type.

The HyperFlex Sizer computes the effective core for a node by using the SpecInt and CFP values, and normalizes this to the SpecInt/CFP values of Intel Platinum 8164.

To add a VDI Workload:

Step1 Click the Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **VDI**, (shown as follows). Click **Start**.



Step3 On the **VDI Profile** page (shown as follows), complete the following fields:

The screenshot shows the 'VDI Profile' configuration page in the Cisco HyperFlex Sizer. The page has a dark blue header with the Cisco logo and 'HX Sizer'. The breadcrumb trail is 'Scenarios > Sizer_demo > Add Workload > VDI-1'. The version is 'V 10.0.3 / HXDP 4.0.2c'. The left sidebar shows a progress bar with two steps: '1 VDI Profile' (active) and '2 Infrastructure Configurations'. The main content area is titled 'Step 1 VDI Profile' and contains the following fields:

- Name ***: VDI-1
- Assign Fixed Cluster**: Auto
- User Type**: Task Worker
- Provisioning Type**: Pooled Desktops
- OS Type ***: Windows 7
- Number of Desktop ***: 1
- Concurrency (%) ***: 100
- Assign GPU**: Toggle switch (off)

At the bottom, there are three buttons: 'Prev', 'Cancel', and 'Next >'.

UI Element	Description
Name field	Name of the Workload
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload
User Type drop-down list	Choose from a list of predefined resource consumption values: <ul style="list-style-type: none"> • Task Worker • Knowledge Worker • Power User • Custom User—If the predefined resource consumption values in the templates listed do not meet your requirements, select the Custom User option to manually enter the Desktop Compute Profile and Desktop Storage Profile values.
Provisioning Type drop-down list	You have the following options for data retention: <ul style="list-style-type: none"> • Persistent Desktops—Retains data on the desktop. • Pooled Desktops—Does not retain on the desktop.
OS Type drop-down list	<ul style="list-style-type: none"> • Windows 7 • Windows 10

UI Element	Description
Number of Desktops field	Enter the total number of desktops. The limit is 1 - 30,000 desktops.
Concurrency (%) field	Enter percentage relevant to the total number of desktops that should remain powered on concurrently.
Assign GPU toggle button	Enable if the desktops need to use GPUs.
User Home Directories toggle button	Enable if hosting User Home Directories on HX Cluster.
Workload Profile Depending on the User Type you choose, the recommended values will change.	
vCPUs field	<ul style="list-style-type: none"> • Task Worker—1 vCPU • Knowledge Worker—2 VCPUs • Power User—2 VCPUs
Clock (MHz) field	<ul style="list-style-type: none"> • Task Worker—325 MHz • Knowledge Worker—400 MHz • Power User—400 MHz
RAM (GB) field	<ul style="list-style-type: none"> • Task Worker—1 GB • Knowledge Worker—2 GB • Power User—2 GB
Desktop Storage Profile	
OS IOPS field	Depending on the User Type you choose, the recommended values will change. <ul style="list-style-type: none"> • Task Worker—6 IOPS • Knowledge Worker—8 IOPS • Power User—10 IOPS
OS Image Size (GB) field	Recommended is 20 GB
Snapshot Count field	Recommended is 0 GB
Working Set Size (%) field	Recommended is 10%

Click **Next**.

Step4 On the **Infrastructure Configuration** page (shown as follows), complete the following fields.

The screenshot shows the 'Infrastructure Configurations' page in the Cisco HX Sizer. The page is titled 'Step 2: Infrastructure Configurations'. On the left, there is a progress bar with two steps: '1 VDI Profile' and '2 Infrastructure Configurations'. The main content area contains the following fields and values:

- Replication Factor ***: RF 3
- Fault Tolerant Node ***: 1
- Data Compression Amount (%) ***: 10
- Dedupe Compression Amount (%) ***: 30
- Net Savings**: 37.00% (1.59 : 1)

Below these fields, there is a section for further documentation with the following links:

- [Veeam Availability on HX](#)
- [Cohesity](#)
- [Veeam](#)
- [Commvault](#)

At the bottom of the page, there are three buttons: '< Prev', 'Cancel', and 'Save'.

UI Element	Description
Replication Factor drop-down list	RF3 is recommended for data redundancy.
Fault Tolerant Node drop-down list	Enter the number of nodes used for Fault Tolerance. Recommended is 1 node. Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.
Data Compression Amount (%) field	Recommended is 10%
Dedupe Compression Amount (%) field	Recommended is 30%

Step5 Click **Save**.

Add Epic Hyperspace Workload

To change the default values, click **Customize**.

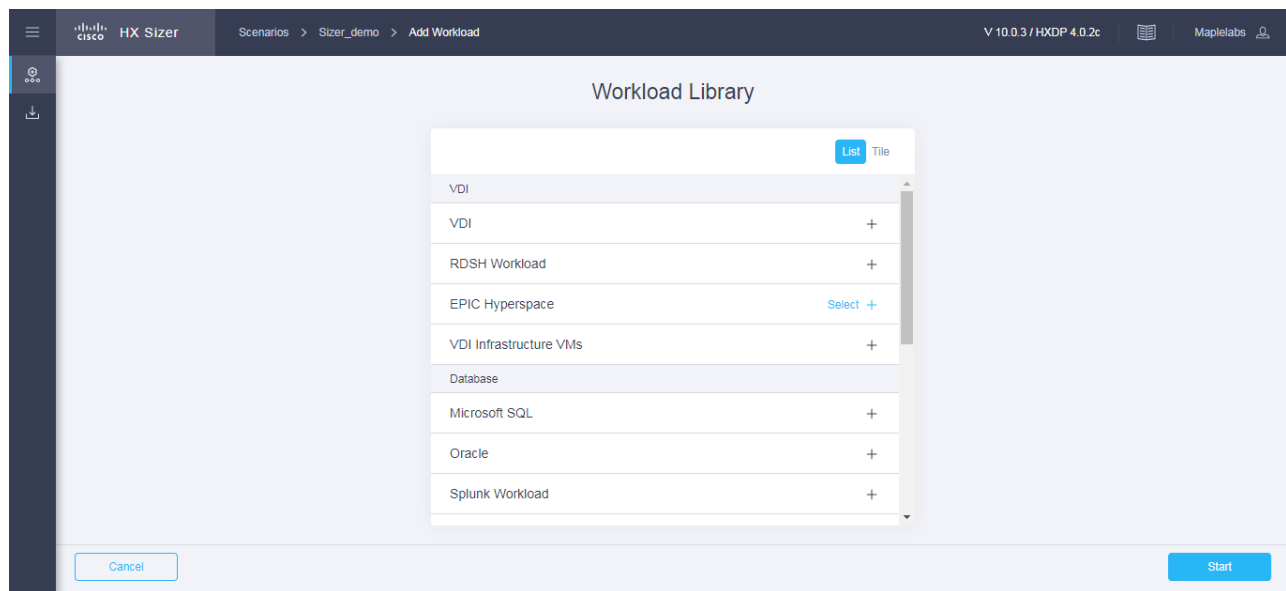


Attention The recommended values are based on performance tests and should be changed with care.

To add an Epic Hyperspace Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **Epic Hyperspace** (shown as follows). Click **Start**.



Step3 On the **Hyperspace Profile** page, complete the following fields:

UI Element	Description
Total Users Supported (%) field	Enter the total users supported for Datacenter 1 and Datacenter 2.
Number of Clusters field	Enter the Number of Clusters per Datacenter. Max value is 6.
Total Users field	Enter the Total Users value.
CPU SKU field	Choose the CPU SKU <ul style="list-style-type: none"> • Intel Gold 6150 • Intel Platinum 8168
Users Per Host field	Enter value for Users per Host
Expected Number of Hosts field	Enter value for Expected number of hosts.

Step4 On the **Infrastructure Configuration** page, complete the following fields.

The screenshot shows the 'Infrastructure Configurations' step in the Cisco HX Sizer. The left sidebar indicates 'Progress' with 'Epic Hyperspace' as step 1 and 'Infrastructure Configurations' as step 2. The main area contains the following configuration fields:

- Replication Factor ***: RF 3 (dropdown menu)
- Fault Tolerant Node ***: 0 (dropdown menu)
- Data Compression Amount (%) ***: 20 (slider)
- Dedupe Compression Amount (%) ***: 20 (slider)
- Net Savings**: 36.00% (1.56 : 1)

A blue callout box states: "We recommend having a backup strategy for your production environment. In addition to protection from other failures - having an active backup strategy and regular backups does mitigate risk of outage due to component and node failures. For further documentation, the links to the specific backup solutions for HX are provided below." Below this are links for "Veeam Availability on HX" and "Cohesity". At the bottom are buttons for "< Prev", "Cancel", and "Save".

UI Element	Description
Replication Factor drop-down list	RF3 is recommended for data redundancy.
Fault Tolerant Node drop-down list	The Fault Tolerance will be 0. Modify “Total Users Supported” for failover capacity.
Data Compression Amount (%) field	Recommended is 20%
Dedupe Compression Amount (%) field	Recommended is 20%

Step5 Click **Save**.

Add VDI Infrastructure VMs Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

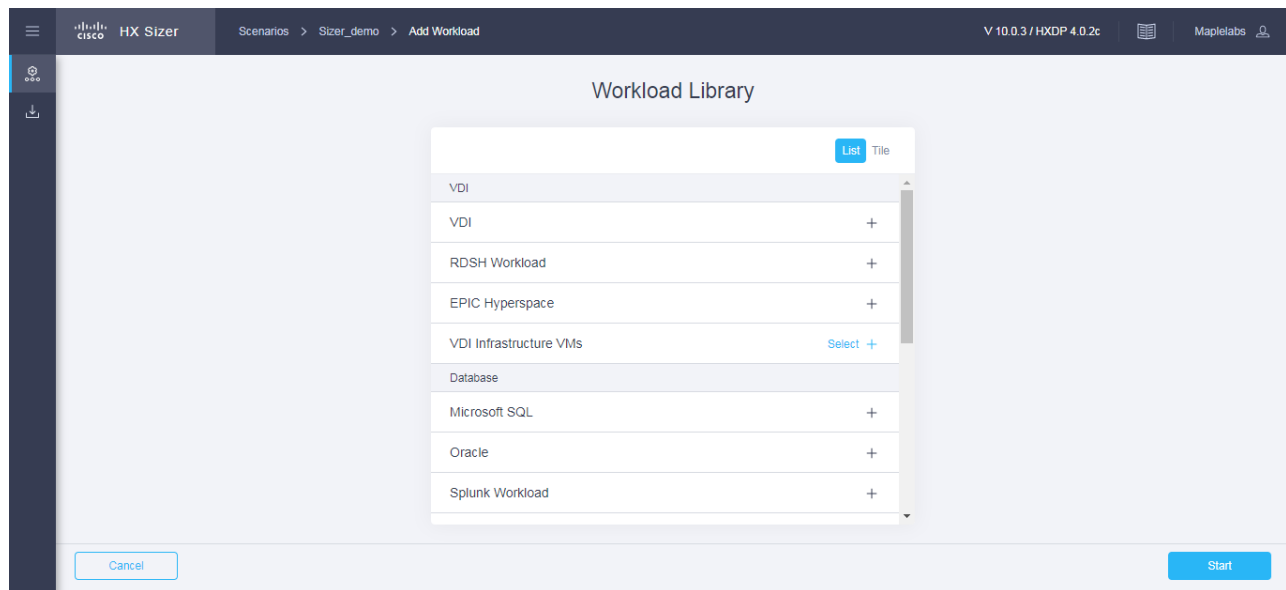
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add an VDI Infrastructure VMs Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **VDI Infrastructure VMs** (shown as follows). Click **Start**.



Step3 On the **VDI Infrastructure Profile** page, complete the following fields:

Step 1
VDI Infrastructure Profiler

The disabled VMs will not be considered during sizing.

Broker Type *
Citrix

Assign Fixed Cluster
Auto

Broker VM

vCPUs *
4

RAM *
8 GiB

Storage (GB) *
32

Count *
2

Provisioning VM

Prev Cancel Next >

UI Element	Description
Broker Type drop-down list	Choose from a list of predefined values: <ul style="list-style-type: none"> • Citrix • Horizon
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload
Broker Type Profile Depending on the Broker Type you choose, the recommended values will change. Modify the vCPUs, RAM, Storage (GB) and Count values.	

Step4 On the **Infrastructure Configuration** page, complete the following fields.

Step 2
Infrastructure Configuration

Replication Factor *
RF 3

Performance Headroom (Nodes) *
1

Infrastructure Compression Amount without Hardware Acceleration (%)
10

Infrastructure Dedupe Amount (%) *
30

Net Savings
37.00% (1.59 : 1)

RAM Overprovisioning *
1

CPU Overprovisioning *
1

< Prev Cancel Save

UI Element	Description
Data Replication Factor drop-down list	RF3 is recommended for data redundancy.
Performance Headroom (nodes) field	Enter the number of nodes used for Fault Tolerance. Recommended is 1 node. Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.
Compression Savings (%) field	Recommended is 10%
Deduplication Settings (%) field	Recommended is 30%
CPU Overprovisioning field	Enter value for CPU Overprovisioning. Default is 1.
RAM Overprovisioning field	Enter value for RAM Overprovisioning. Default is 1.

Step5 Click **Save**.

Add RDSH Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

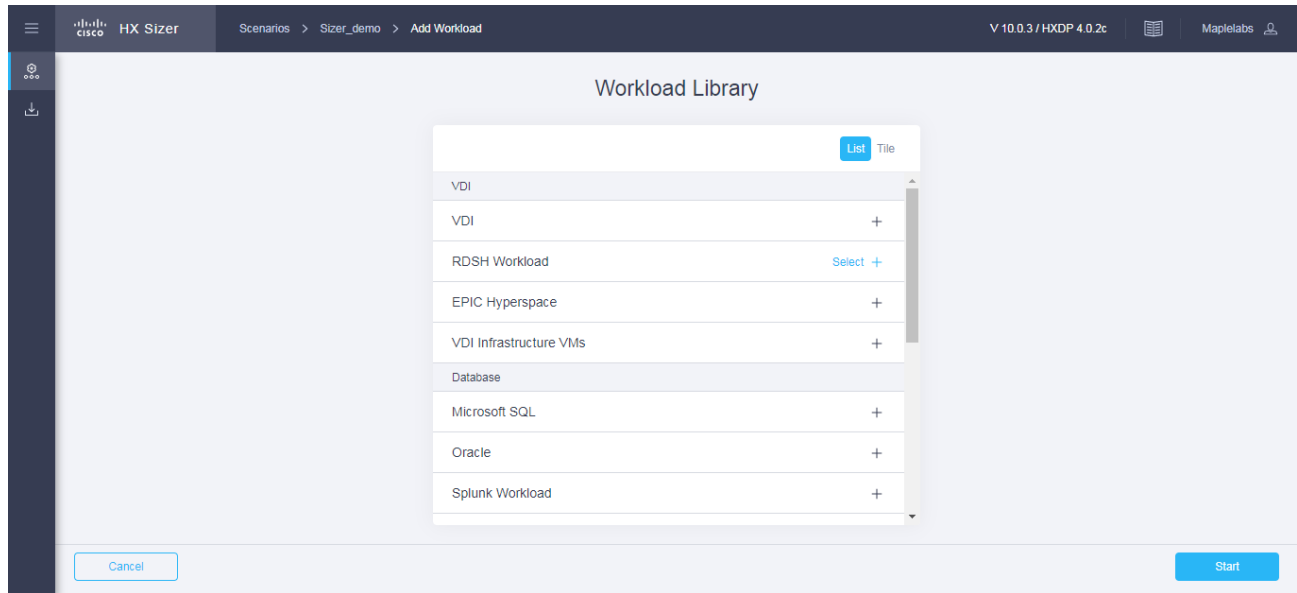
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add RDSH Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **RDSH Workload** (shown as follows). Click **Start**.



Step3 On the RDSH Profile page, complete the following fields:

UI Element	Description
Workload Name field	Name of the Workload
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload

User Type drop-down list	Choose from a list of predefined resource consumption values: <ul style="list-style-type: none"> • Task Worker • Knowledge Worker • Power User • Custom User—If the predefined resource consumption values in the templates listed do not meet your requirements, select the Custom User option to manually enter the Desktop Compute Profile and Desktop Storage Profile values.
Broker Type drop-down list	Choose from a list of predefined values: <ul style="list-style-type: none"> • Citrix • Horizon

UI Element	Description
Total Users field	Enter the total number of users. The limit is 1 - 30,000 users.
Do the desktops require GPU?	Indicate if the desktops need to use GPUs.
Host User Home Directories on HX Cluster?	Enable if hosting User Home Directories on HX Cluster.
VM Compute Profile Depending on the User Type you choose, the recommended values will change.	
vCPUs field	<ul style="list-style-type: none"> • Task Worker—8 vCPU • Knowledge Worker—8 VCPUs • Power User—8 VCPUs
Users per VM field	<ul style="list-style-type: none"> • Task Worker—30 • Knowledge Worker—30 • Power User—30
Clock per Session field	<ul style="list-style-type: none"> • Task Worker—325 MHz • Knowledge Worker—375 MHz • Power User—400 MHz
Max vCPU Overprovisioning Ratio field	<ul style="list-style-type: none"> • Task Worker—2 • Knowledge Worker—2 • Power User—2

RAM per VM (GiB) field	<ul style="list-style-type: none"> • Task Worker—32 GiB • Knowledge Worker—32 GiB • Power User—32 GiB
VM Storage Profile	
OS Image Size (GB) field	Recommended is 50 GB

Step4 On the **Infrastructure Configuration** page, complete the following fields.

The screenshot shows the 'Infrastructure Configurations' step in the Cisco HX Sizer. The left sidebar indicates the progress through 'RDSH Profile' and 'Infrastructure Configurations'. The main area contains the following configuration fields:

- Replication Factor ***: RF 3 (dropdown menu)
- Fault Tolerant Node ***: 1 (dropdown menu)
- Data Compression Amount (%) ***: 20 (slider)
- Dedupe Compression Amount (%) ***: 20 (slider)

Below these fields, it shows a **Net Savings** of 36.00% (1.56 : 1). At the bottom, there are links for further documentation: Veeam Availability on HX, Cohesity, Veeam, and Commvault. Navigation buttons at the bottom include '< Prev', 'Cancel', and 'Save'.

UI Element	Description
Replication Factor drop-down list	RF3 is recommended for data redundancy.
Fault Tolerant Node drop-down list	Enter the number of nodes used for Fault Tolerance. Recommended is 1 node. Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.
Data Compression Amount (%) field	Recommended is 20%
Dedupe Compression Amount (%) field	Recommended is 20%

Step5 Click **Save**.

Database Workloads

Add Microsoft SQL Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

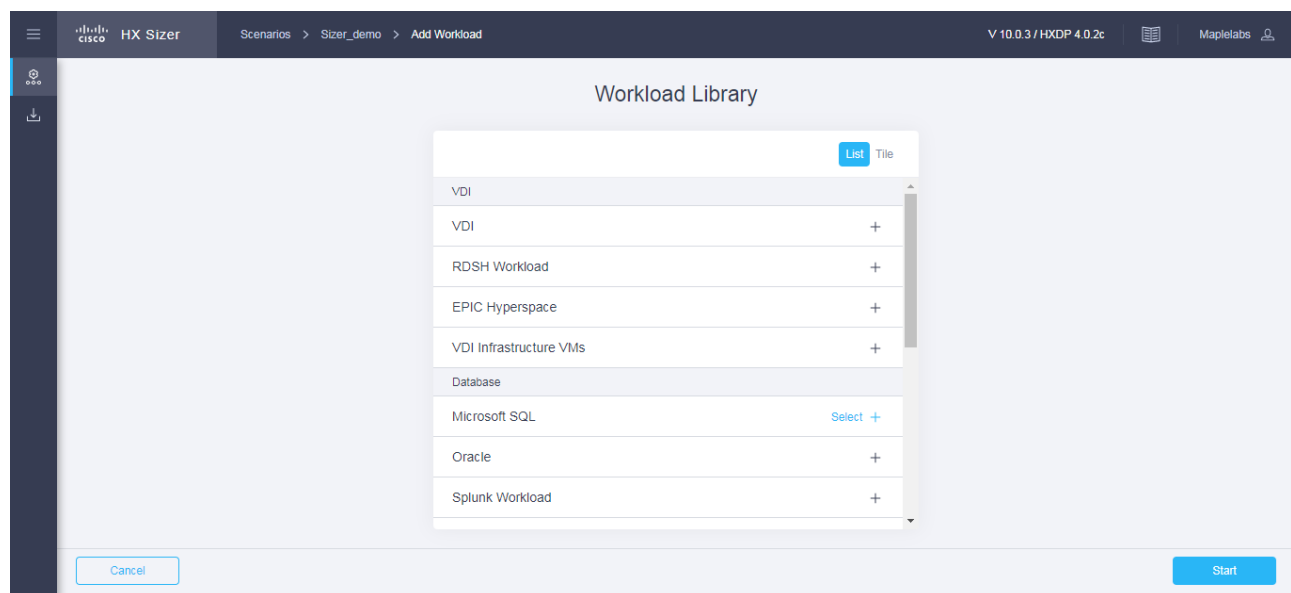
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add a Microsoft SQL Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **Microsoft SQL** (shown as follows). Click **Start**.



Step3 On the **Microsoft SQL Profile** page, complete the following fields:

The screenshot shows the 'Microsoft SQL Profile' configuration page in the HX Sizer tool. The page is titled 'Step 1 Microsoft SQL Profile'. It contains several input fields and dropdown menus for configuring a workload. The 'Workload Name' field is set to 'MSSQL-2'. The 'Assign Fixed Cluster' dropdown is set to 'Auto'. The 'Database Type' dropdown is set to 'OLTP'. The 'Database Profile' dropdown is set to 'Small'. The 'Number of Databases' field is set to '1'. The 'Compute Profile' section shows 'vCPUs' set to '2'. The 'Storage Profile' section shows 'Database Size' set to '400' and 'GIB'. There is a 'Workload Profile' section with a 'Customize' button. At the bottom, there are 'Prev', 'Cancel', and 'Next' buttons.

UI Element	Description
Workload Name field	Enter a name of the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
Database Type drop-down list	<p>You can choose OLTP or OLAP database type.</p> <ul style="list-style-type: none"> • OLTP—Represents transactional workloads. The Sizer assigns a workload that consists of 8K 70% read, 30% write; 100% random, when sizing for the specified number of IOPS for OLTP. • OLAP—Represents query, reporting, or analytics workloads. The Sizer assigns a workload that consists of large sequential reads when sizing for the specified throughput for OLAP.
Database Profile drop-down list	<p>Choose from a list of predefined Database Profile values:</p> <ul style="list-style-type: none"> • Small • Medium • Large • Custom—If the predefined values in the templates listed do not meet your requirements, select the Custom option to manually enter Compute Profile and Storage Profile values.
Number of Databases field	Enter the total number of databases.
Compute Profile Depending on the Database Profile you choose, the recommended values will change.	

vCPUs field	<ul style="list-style-type: none"> • Small—2 vCPUs • Medium—4 vCPUs • Large—8 vCPUs
vCPU Provisioning Ratio field	Recommended is 2 vCPUs.
RAM (GB) field	<ul style="list-style-type: none"> • Small—8 GB • Medium—16 GB • Large—32 GB
Storage Profile Depending on the Database Profile you choose, the recommended values will change.	
Database Size (GB) field	<ul style="list-style-type: none"> • Small—400 GB • Medium—1000 GB • Large—4000 GB
IOPS field	IOPS changes based on the Database Type you choose. For OLTP Database Type, the following values are recommended: <ul style="list-style-type: none"> • Small—1000 IOPS • Medium—3000 IOPS • Large—10000 IOPS For OLAP Database Type, the following values are recommended: <ul style="list-style-type: none"> • Small—100 MB/s • Medium—200 MB/s • Large—800 MB/s
Database Overhead (%) field	<ul style="list-style-type: none"> • Small—45% • Medium—40% • Large—30%

Click **Next**.

Step4 On the **Infrastructure Configuration** page, complete the following fields:

The screenshot shows the 'Infrastructure Configurations' page in the Cisco HyperFlex Sizer. The page is titled 'Step 2 Infrastructure Configurations'. It features a 'Standard Cluster' button and a 'Stretch Cluster' button. Below these are several configuration fields: 'Data Replication Factor' (RF 3), 'Fault Tolerant Nodes' (1), 'Compression Amount (%)' (20), and 'Data Dedupe Amount (%)' (10). A 'Net Savings (%)' field shows 28.00% (1.39 : 1). At the bottom, there is a checkbox for 'Enable Remote Replication' which is currently unchecked. The page has a 'Save' button at the bottom right.

UI Element	Description
Cluster Type button	<ul style="list-style-type: none"> • Normal • Stretch - The Stretch Cluster provides a high-availability cluster for data of high importance. This cluster is spread across two geographic regions and will be available even if one site goes down completely for any reason, such as a natural disaster.
Data Replication Factor drop-down list	RF3 is recommended for data redundancy.
Fault Tolerant Node drop-down list	<p>Enter the number of nodes used for Fault Tolerance. Recommended is 1 node.</p> <p>Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.</p>
Compression Amount (%) field	Recommended is 20%
Data Dedupe Amount (%) field	Recommended is 10%
Enable Remote Replication? check box	<p>Choose to enable remote replication. You can now set Workload placement and site failure protection as follows:</p> <p>Primary Workload Placement drop-down list</p> <ul style="list-style-type: none"> • Site A • Site B <p>Site Failure Protection (% Workload)—Recommended is 100%</p>

Step5 Click **Save**.

Add Oracle Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with caution.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

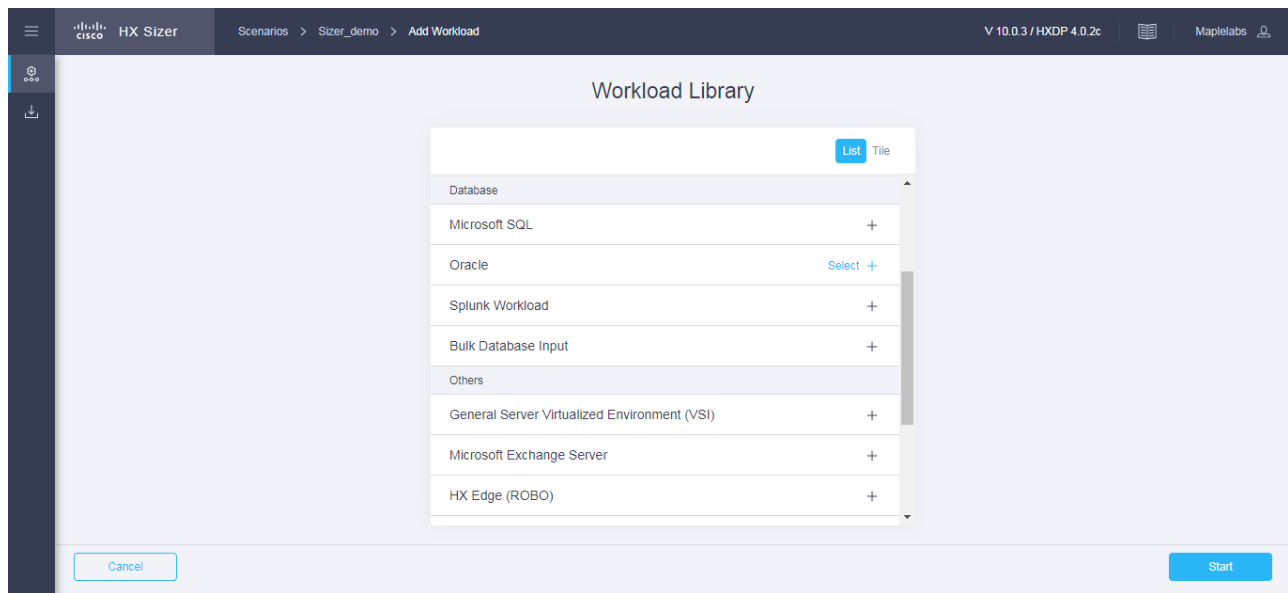
Please refer to the following links for more details on the implications of RAM overprovisioning.

<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

Step1 Click the + Add Workload icon under **Workloads**.

Step2 On the **Workload Type** page, select **Oracle** (shown as follows). Click **Start**.



Step3 On the **Oracle Profile** page, complete the following fields:

The screenshot displays the 'Oracle Profile' configuration step in the Cisco HX Sizer. The breadcrumb trail at the top indicates the path: Scenarios > Sizer_demo > Add Workload > ORACLE-1. The version is V 10.0.3 / HXDP 4.0.2c. The left sidebar shows the progress: 1. Oracle Profile (selected) and 2. Infrastructure Configurations. The main area contains the following fields:

- Workload Name ***: ORACLE-1
- Assign Fixed Cluster**: Auto (dropdown)
- Database Type ***: OLTP (dropdown)
- Database Profile**: Small (dropdown)
- Number of Databases ***: 1 (spinner)
- Workload Profile**: A blue bar with a 'Customize' button.
- Compute Profile**: vCPUs * 4 (spinner)
- Storage Profile**: Database Size * 400 (spinner) and GiB (dropdown)

At the bottom, there are 'Prev', 'Cancel', and 'Next >' buttons.

UI Element	Description
Workload Name field	Enter a name of the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
Database Type drop-down list	<p>You can choose OLTP or OLAP database type.</p> <ul style="list-style-type: none"> • OLTP—Represents transactional workloads. The Sizer assigns a Workload that consists of 8K 70% read, 30% write; 100% random, when sizing for the specified number of IOPS for OLTP. • OLAP—Represents query, reporting, or analytics workloads. Sizer assigns a workload that consists of large sequential reads, when sizing for the specified throughput for OLAP.
Database Profile drop-down list	<p>Choose from a list of predefined Database Profile values:</p> <ul style="list-style-type: none"> • Small • Medium • Large <p>Custom—If the predefined values in the templates listed do not meet your requirements, select the Custom option to manually enter Compute Profile and Storage Profile values.</p>
Number of Databases field	Enter the total number of databases.

UI Element	Description
Compute Profile Depending on the Database Profile you choose, the recommended values will change.	
vCPUs field	<ul style="list-style-type: none"> • Small—4 vCPUs • Medium—8 vCPUs • Large—16 vCPUs
vCPU Provisioning Ratio field	Recommended is 2 vCPUs.
RAM (GB) field	<ul style="list-style-type: none"> • Small—16 GB • Medium—64 GB • Large—96 GB
Storage Profile Depending on the Database Profile you choose, the recommended values will change.	
Database Size (GB) field	<ul style="list-style-type: none"> • Small—400 GB • Medium—1000 GB • Large—4000 GB
IOPS field	IOPS changes based on the Database Type you choose. For OLTP Database Type, the following values are recommended: <ul style="list-style-type: none"> • Small—6000 IOPS • Medium—10000 IOPS • Large—30000 IOPS For OLAP Database Type, the following values are recommended: <ul style="list-style-type: none"> • Small—200 MB/s • Medium—400 MB/s • Large—1000 MB/s
Database Overhead (%) field	<ul style="list-style-type: none"> • Small—45% • Medium—40% • Large—30%

Click **Next**.

Step4 On the **Infrastructure Configuration** page, complete the following fields:

UI Element	Description
Cluster Type button	<ul style="list-style-type: none"> • Normal • Stretch - The Stretch Cluster provides a high-availability cluster for data of high importance. This cluster is spread across two geographic regions and will be available even if one site goes down completely for any reason, such as a natural disaster.
Data Replication Factor drop-down list	RF3 is recommended for data redundancy.
Fault Tolerant Node drop-down list	<p>Enter the number of nodes used for Fault Tolerance. Recommended is 1 node.</p> <p>Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.</p>
Compression Amount (%) field	Recommended is 30%
Data Dedupe Amount (%) field	Recommended is 0%
Enable Remote Replication? check box	<p>Choose to enable remote replication. You can now set Workload placement, and site failure protection as follows:</p> <p>Primary Workload Placement drop-down list</p> <ul style="list-style-type: none"> • Site A • Site B <p>Site Failure Protection (% Workload)—Recommended is 100.</p>

Step5 Click **Save**.

Add Splunk Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

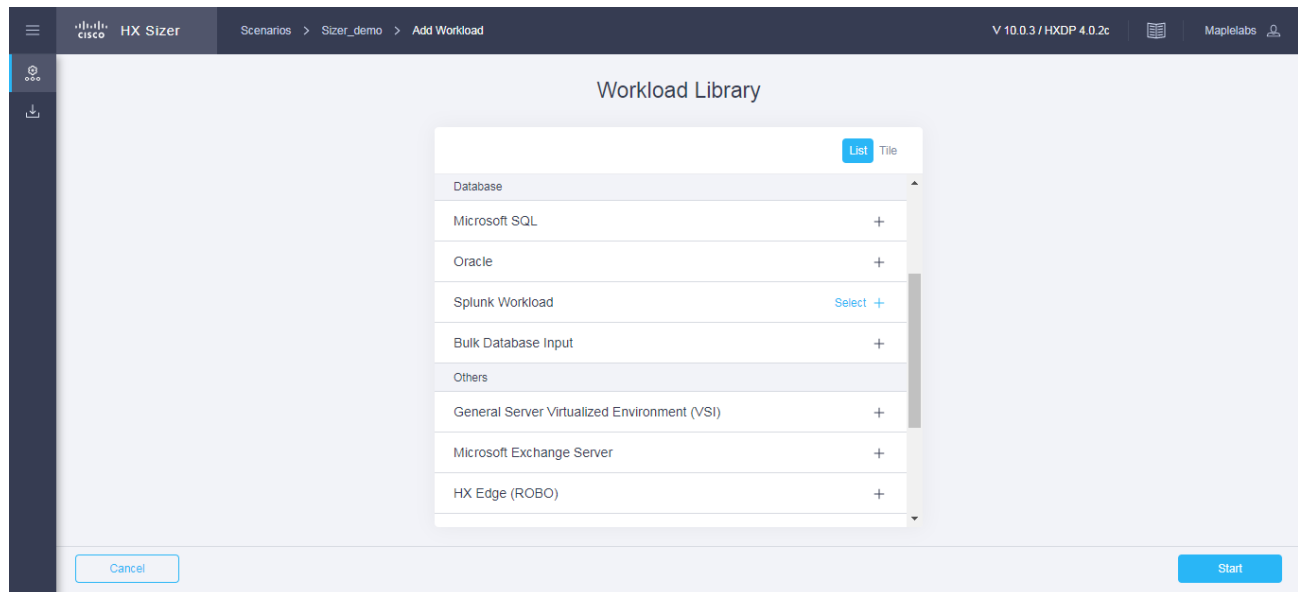
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add Splunk Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **Splunk Workload** (shown as follows). Click **Start**.



Step3 On the Splunk Profile page, complete the following fields:

Step 1
Splunk Profile

Name *
SPLUNK-1

Assign Fixed Cluster
Auto

Profile Type *
Enterprise Security

Daily Data Ingest *
1 TB

Max Volume per Indexer *
100 GB

Storage Accumulation
HX + Splunk

Hot Tier (in days) *
10

Cold Tier (in days) *
10

Prev Cancel Next >

UI Element	Description
Workload Name field	Name of the Workload
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
Profile Type drop-down list	<p>Choose from a list of predefined profile values:</p> <ul style="list-style-type: none"> • Enterprise Security • IT Service Intelligence • ITOA (IT Operations Analytics) <p>Depending on the Profile Type chosen, the VM Type values change. It can also be Customized based on requirement.</p>
Daily data ingest field	Enter the value for Daily data ingest.
Max Volume per Indexer field	Enter value for Max Volume per Indexer.
Storage Accumulation drop-down list	<p>Choose from a list of predefined profile values:</p> <ul style="list-style-type: none"> • HX + Splunk • HX + Splunk Smartstore <p>Depending on the Storage Accumulation you choose, the recommended values for Hot tier, Cold Tier, Frozen Tier and Splunk Level Replication will change.</p>

Step4 On the **Infrastructure Configuration** page, complete the following fields.

Progress

1 Splunk Profile

2 Infrastructure Configurations

Step 2

Infrastructure Configurations

A replication factor of three is highly recommended for all environments except HyperFlex Edge. A replication factor of two has a lower level of availability and resiliency.

Replication Factor *

RF 3

Fault Tolerant Node *

1

Compression Savings (%) without Hardware Acceleration *

0

Dedupe Savings (%) *

0

Net Savings

0.00% (1.00 : 1)

We recommend having a backup strategy for your production environment. In addition to protection from other failures -

< Prev

Cancel

Save

UI Element	Description
Replication Factor drop-down list	RF2 is for data redundancy.
Fault Tolerant Node field	<div>Enter the number of nodes used for Fault Tolerance. Recommended is 1 node.</div> <div>Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.</div>
Compression Savings (%) field	<div>Splunk is assumed to provide net compression savings of 50%</div> <div>Recommended is 0%.</div>
Deduplication Settings (%) field	Recommended is 0%

Step5 Click **Save**.

Add Bulk Database Input Workload

To change the default values, click **Customize**.

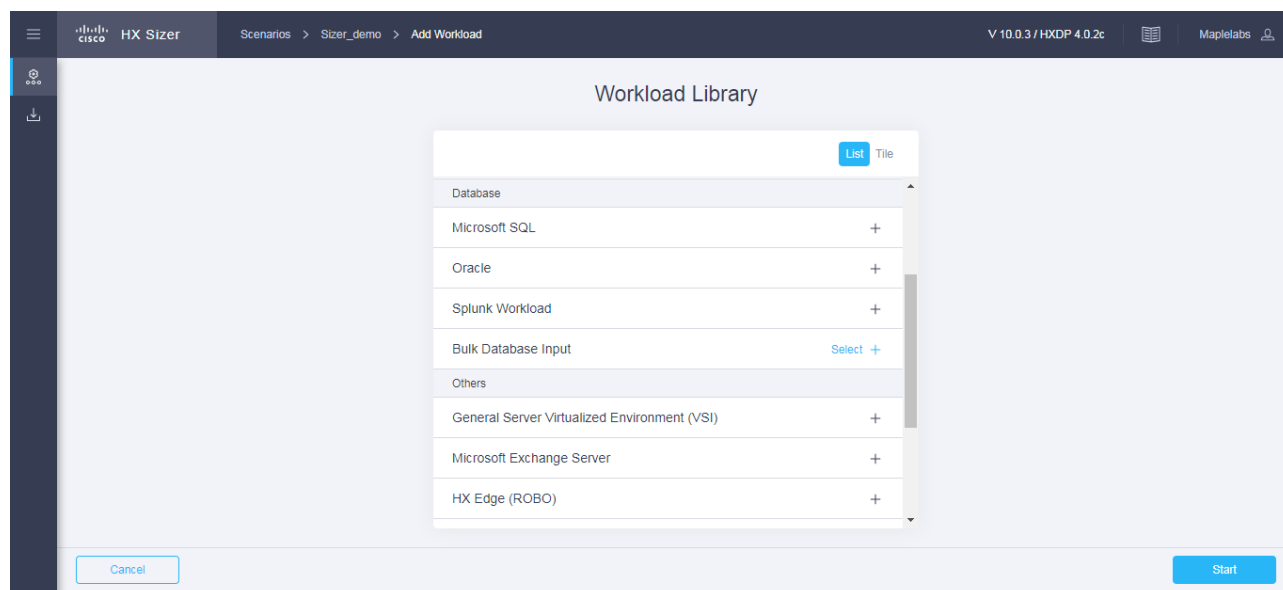


Attention The recommended values are based on performance tests and should be changed with care.

To add a Bulk Database Input Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **Bulk Database Input** (shown as follows). Click **Start**.



Step3 On the **Workload Profile** page, complete the following fields:

Download Bulk Database workload modeling spreadsheet template from the link provided. Fill out workload details properly based on the template provided before uploading. Upload the completed spreadsheet.

UI Element	Description
Workload Input field	Upload an Excel file to process workload inputs.

Step4 Click **Save**.

Other Workloads

Add General Server Virtualized Environment (VSI) Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

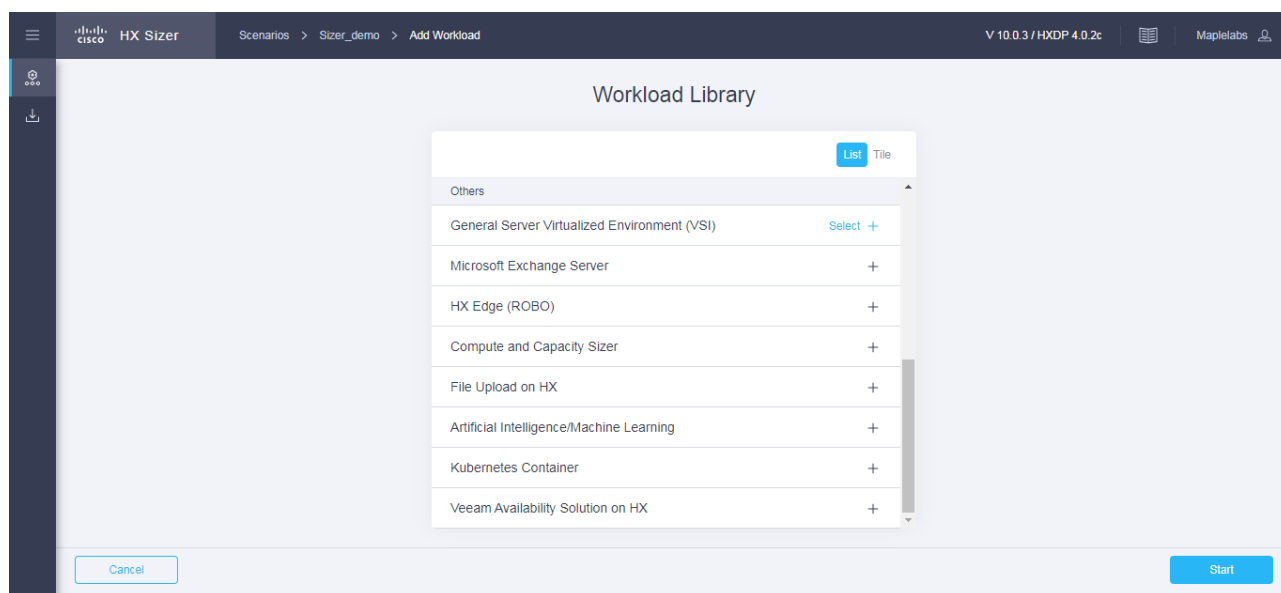
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add a General Server Virtualized Environment (VSI) Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **General Server Virtualized Environment (VSI)** (shown as follows). Click **Start**.



Step3 On the **VSI Profile** page, complete the following fields:

Step 1
VSI Profile

Workload Name *
VSI-1

Assign Fixed Cluster
Auto

VM Type
Small

No. of VMs *
1

Workload Profile [Customize](#)

Compute Profile

vCPUs *
2

vCPU Overprovisioning Ratio *
4

Storage Profile

Average storage IOPS
50

Application Data Size *
50 GB

No. of Snapshots
5

Os Image Size *
20 GB

[Prev](#) [Cancel](#) [Next >](#)

UI Element	Description
Workload Name field	Enter a name for the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
VM Type drop-down list	Choose from a list of predefined resource consumptions values: <ul style="list-style-type: none"> • Small • Medium • Large • Custom—If the predefined resource consumption values in the templates listed do not meet the requirements, select Custom option to enter profile values on the Infrastructure Configuration page.
Number of VMs field	Enter the number of VMs.
VM Compute Profile Depending on the VM Type you choose, the recommended values will change.	
vCPUs field	<ul style="list-style-type: none"> • Small—2 vCPUs • Medium—4 vCPUs Large—8 vCPUs
vCPU Overprovisioning Ratio field	Recommended value for all VM Types is 4 vCPUs. <ul style="list-style-type: none"> • The total number of vCPUs that can be packed per core.
RAM (GB) field	<ul style="list-style-type: none"> • Small—8 GB • Medium—16 GB • Large—32 GB
VM Storage Profile <ul style="list-style-type: none"> • Depending on the VM Type you choose, the recommended values will change. 	

UI Element	Description
Average 8K Storage IOPS field	<ul style="list-style-type: none"> • Small—50 IOPS • Medium—100 IOPS • Large—200 IOPS
User / Application Data Size (GB) field	<ul style="list-style-type: none"> • Small—50 GB • Medium—200 GB • Large—750 GB
OS Image Size (GB) field	<p>Recommended is 20 GB.</p> <ul style="list-style-type: none"> • Size of the OS image for the VM.
Number of Snapshots field	Recommended is 5 snapshots.
Working Set Size (%) field	Recommended is 10%

Click **Next**.

Step4 On the **Infrastructure Configuration** page, complete the following fields.

UI Element	Description
Cluster Type button	<ul style="list-style-type: none"> • Normal • Stretch - The Stretch Cluster provides a high-availability cluster for data of high importance. This cluster is spread across two geographic regions and will be available even if one site goes down completely for any reason, such as a natural disaster.
Data Replication Factor drop-down list	RF2 is recommended for better availability.
Fault Tolerant Node drop-down list	<p>Enter the number of nodes used for Fault Tolerance. Recommended is 1 node.</p> <p>Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.</p>
Compression Savings (%) field	Recommended is 20%
Deduplication Savings (%) field	Recommended is 10%
Enable Remote Replication?	<p>Choose to enable remote replication. You can now set Workload placement and site failure protection as follows:</p> <p>Primary Workload Placement drop-down list</p> <ul style="list-style-type: none"> • Site A • Site B <p>Site Failure Protection (% Workload)—Recommended is 100.</p>

Step5 Click **Save**.

Add Microsoft Exchange Server Workload

To change the default values, click **Customize**.

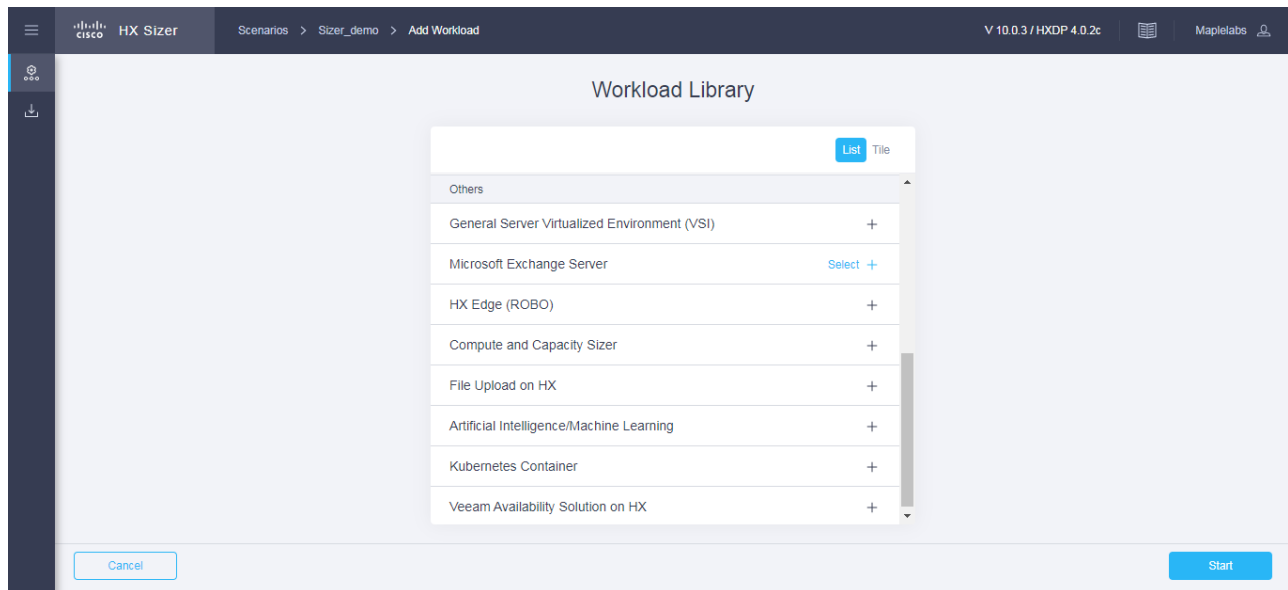


Attention The recommended values are based on performance tests and should be changed with care.

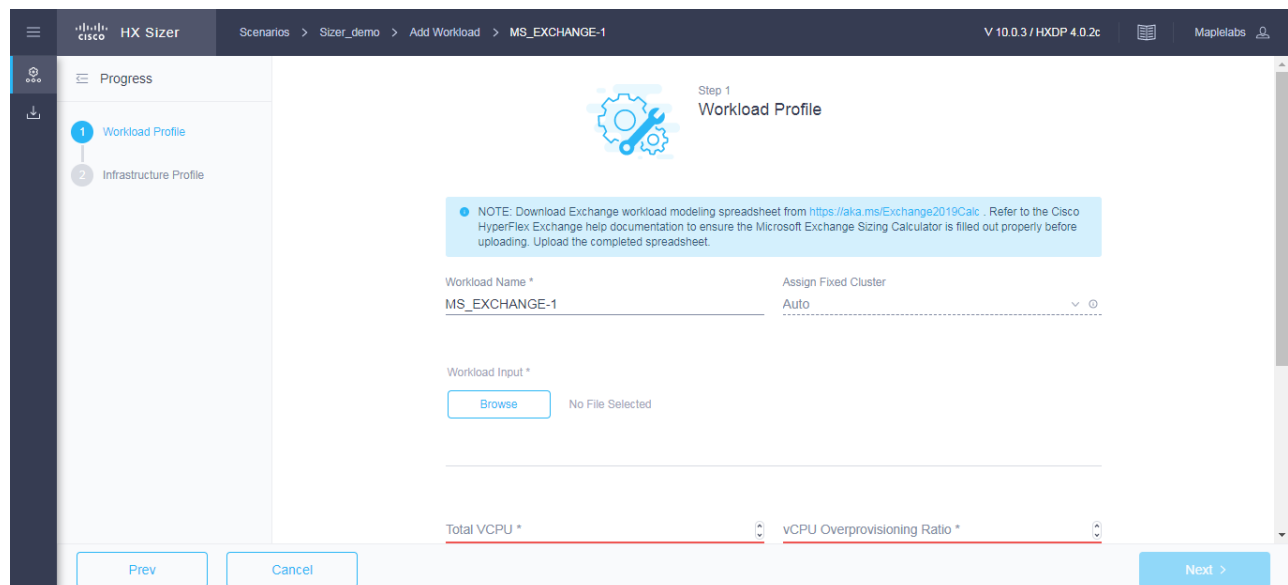
To add a Microsoft Exchange Server Workload:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** page, select **Microsoft Exchange Server** (shown as follows). Click **Start**.



Step3 On the **Workload Profile** page, import the values from a file.



UI Element	Essential Information
Workload Name field	Enter a name for the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
Workload Input Type	<p>Download the Microsoft Exchange Workload modeling spreadsheet from Microsoft Exchange 2013 Server Role Requirements Calculator.</p> <p>Important Ensure that the Microsoft Exchange 2013 Sizing Calculator is filled out properly, refer to the Configure the Microsoft Exchange 2013 Server Role Requirements Calculator, on page 41.</p> <p>Upload the completed .XLSM spreadsheet to process workload inputs.</p>
vCPUs field	Total number of cores required for all the MS Exchange Servers after accounting for system overhead. Intel E5-2630 v4 is used as the reference CPU for core count.
vCPU Overprovisioning Ratio field	Total number of vCPUs that can be packed per core.
Total RAM (GB) field	The total RAM required for all guest VMs, after accounting for system overhead.
Effective User Capacity (GB) field	This value depends on the Dedupe or Compression savings. You can change the Deduplication and compression savings on the Infrastructure Configuration Page.
DB IOPS field	Average 16KB IOPS, with 100% random 60/40 read/write ratio.
Log IOPS field	Average 32KB IOPS, with 100% random 60/40 read/write ratio.
Maintenance IOPS field	Average 64KB IOPS, with 100% random 60/40 read/write ratio.
Future Growth (%) field	Specify percentage to allow for future growth of the environment for Physical Cores, RAM, and Effective User Capacity.

Click Next.

Step4 On the **Infrastructure Configuration** page, complete the following fields.

UI Element	Essential Information
Cluster Type button	<ul style="list-style-type: none"> • Normal • Stretch - The Stretch Cluster provides a high-availability cluster for data of high importance. This cluster is spread across two geographic regions and will be available even if one site goes down completely for any reason, such as a natural disaster.
Data Replication Factor field	RF3 is recommended for better availability.
Fault Tolerant Node field	<p>Number of nodes of Fault Tolerance.</p> <p>Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of node failure.</p>
Compression Savings (%) field	<p>By default is set to 15%.</p> <p>The allowed range is 0-99%</p>
Deduplication Settings (%) field	<p>By default is set to 15%.</p> <p>The allowed range is 0-99%</p>

Step5 Click **Save**.

Add HX Edge (ROBO) Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

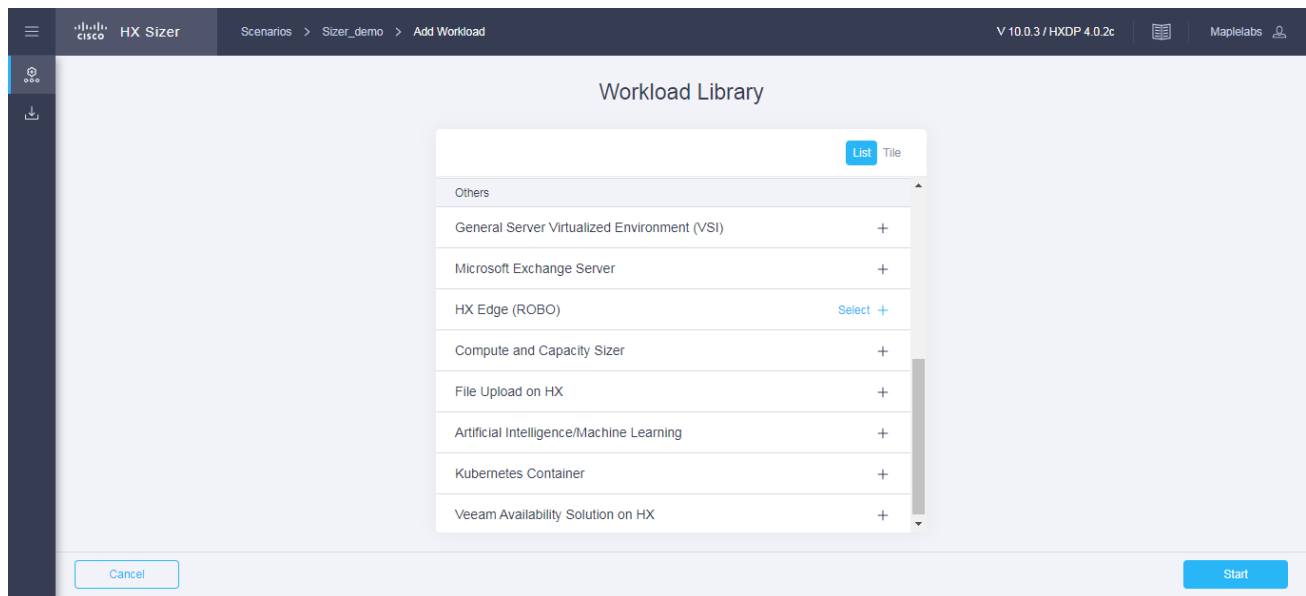
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add a HX Edge (ROBO) Workload:

Step1 Click the + icon under **Workloads**.

Step2 On the **Workload Type** page, select **HX Edge (ROBO)** (shown as follows). Click **Start**.



Step3 On the **HX Edge Profile** page, complete the following fields:

Step 1
HX Edge Profile

Workload Name *
EDGE-1

Assign Fixed Cluster
Auto

VM Type
Small

No. of VMs *
1

Workload Profile Customize

Compute Profile

vCPUs *
2

vCPU Overprovisioning Ratio *
4

Storage Profile

Average storage IOPS
50

Application Data Size *
50 GB

No. of Snapshots *
5

Os Image Size *
20 GB

Prev Cancel Next >

UI Element	Description
Workload Name field	Enter a name for the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
VM Type drop-down list	Choose from a list of predefined resource consumptions values: <ul style="list-style-type: none"> • Small • Medium • Large • Custom—If the predefined resource consumption values in the templates listed do not meet the requirements, select the Custom option to enter profile values on the Infrastructure Configuration page.
Number of VMs field	Enter the number of VMs.
VM Compute Profile Depending on the VM Type you choose, the recommended values will change.	
vCPUs field	<ul style="list-style-type: none"> • Small—2 vCPUs • Medium—4 vCPUs • Large—8 vCPUs
vCPU Overprovisioning Ratio field	Recommended value for all VM Types is 4. <ul style="list-style-type: none"> • The total number of vCPUs that can be packed per core.
RAM (GB) field	<ul style="list-style-type: none"> • Small—8 GB • Medium—16 GB • Large—32 GB
VM Storage Profile Depending on the VM Type you choose, the recommended values will change.	
Average 8K Storage IOPS field	<ul style="list-style-type: none"> • Small—50 IOPS • Medium—100 IOPS

	<ul style="list-style-type: none"> • Large—200 IOPS
User / Application Data Size (GB) field	<ul style="list-style-type: none"> • Small—50 GB • Medium—100 GB • Large—750 GB
OS Image Size (GB) field	Recommended is 20 GB. Size of the OS image for the VM.
Number of Snapshots field	Recommended is 5 snapshots
Working Set Size (%) field	Recommended is 10%

Click **Next**.

Step4 On the **Infrastructure Configuration** page, complete the following fields.

The screenshot shows the 'Infrastructure Configurations' page in the Cisco HX Sizer. The left sidebar indicates the progress: 1. HX Edge Profile, 2. Infrastructure Configurations. The main area contains the following configuration fields:

- Data Replication Factor:** RF 2 (dropdown)
- Fault Tolerant Nodes:** 1 (dropdown)
- NIC:** Any (dropdown)
- Compression Amount (%):** 20 (slider)
- Data Dedupe Amount (%):** 10 (slider)
- Net Savings (%):** 28.00% (1.39 : 1)

At the bottom, there are buttons for '< Prev', 'Cancel', and 'Save'. A note at the bottom states: 'For further documentation, the links to the specific backup solutions for HX are provided below.'

UI Element	Description
Data Replication Factor drop-down list	Caution Edge workload is supported only with RF 2.
Fault Tolerant nodes drop-down list	<p>Enter the number of nodes used for Fault Tolerance. Recommended is 1 node.</p> <p>Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.</p> <p>Edge workload is only supported with RF2 and N+0 / N+1 configuration</p>
NIC Details drop-down list	<ul style="list-style-type: none"> • Any — Recommended • Single Switch, 1G • Double Switch, 1G • 10G
Compression Savings (%) field	<ul style="list-style-type: none"> • Recommended is 20%
Deduplication Savings (%) field	<ul style="list-style-type: none"> • Recommended is 10%

Step5 Click **Save**.

Add Compute and Capacity Sizer (RAW) Workloads

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

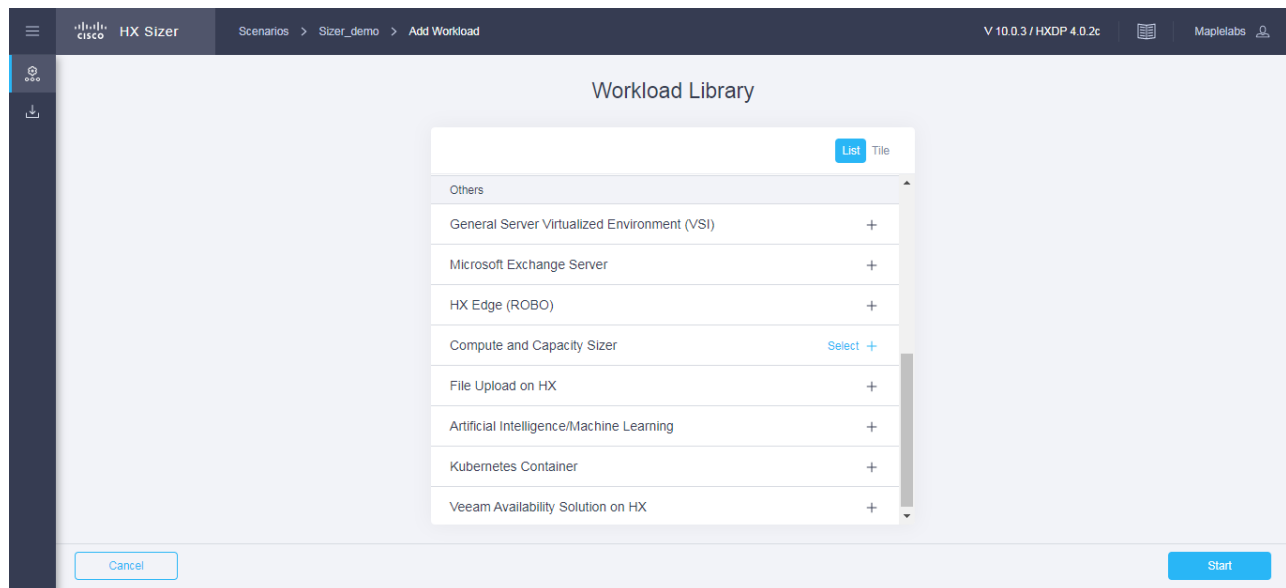
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add a Compute and Capacity Sizer (RAW) Workload:

Step1 Click the + icon under **Workloads**.

Step2 On the **Workload Type** tab, select **Compute and Capacity Sizer** (shown as follows). Click **Start**.



Step3 On the **Workload Profile** page, complete the following fields:

UI Element	Description
Workload Name field	Enter a name for the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
CPU Unit field	<ul style="list-style-type: none"> • Cores by default • Clock
Total vCPUs field	<p>Default is 2 vCPUs.</p> <p>The total number of cores required for all the guest VMs after accounting for system overhead.</p>
CPU Overprovisioning Ratio field	<p>Default is 1 vCPU.</p> <p>The total number of vCPUs that can be packed per core.</p>
Total RAM (GB) field	<p>Default is 128 GB.</p> <p>The total RAM required for all guest VMs after accounting for system overhead.</p>
RAM Overprovisioning Ratio field	<p>Default is 1.</p> <p>The Total amount of RAM Provisioned per GB of RAM installed in the system.</p>
Effective User Capacity (GB) field	<p>Default is 1000 GB.</p> <p>This value depends on the dedupe or compression savings. You can change the deduplication and compression savings on the Infrastructure Configuration page.</p>
Future Growth (%) field	Specify the percentage to allow for future growth of the environment for Physical Cores, RAM, and Effective User Capacity.

Click **Next**.

Step4 On the **Infrastructure Configuration** page, complete the following fields.

The screenshot shows the 'Infrastructure Profile' configuration page in the Cisco HX Sizer. The page is titled 'Step 2 Infrastructure Profile'. On the left, there is a 'Progress' sidebar with two steps: '1 Workload Profile' and '2 Infrastructure Profile'. The main area contains a warning message: 'A replication factor of two has a lower level of availability and resiliency. Replication factor of three is highly recommended.' Below this, there are several configuration fields: 'Cluster Type' with 'Normal' selected, 'Replication Factor *' set to 'RF 3', 'Fault Tolerant Node *' set to '1', 'Compression Savings (%) without Hardware Acceleration *' set to '0', and 'Dedupe Savings (%) *' set to '0'. At the bottom, there is a 'Net Savings' section showing '0.00% (1.00 : 1)'. The bottom of the page has three buttons: '< Prev', 'Cancel', and 'Save'.

UI Element	Description
Cluster Type button	<ul style="list-style-type: none"> • Normal • Stretch - The Stretch Cluster provides a high-availability cluster for data of high importance. This cluster is spread across two geographic regions and will be available even if one site goes down completely for any reason, such as a natural disaster.
Data Replication Factor field	RF3 is recommended for better availability.
Fault Tolerant nodes drop-down list	Number of nodes of Fault Tolerance. Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.
Compression Savings (%) field	By default set to 0%. The allowed range is 0-99%.
Deduplication Settings (%) field	By default, set to 0%. The allowed range is 0-99%.

Step5 Click **Save**.

Add File Upload on HX Workloads

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

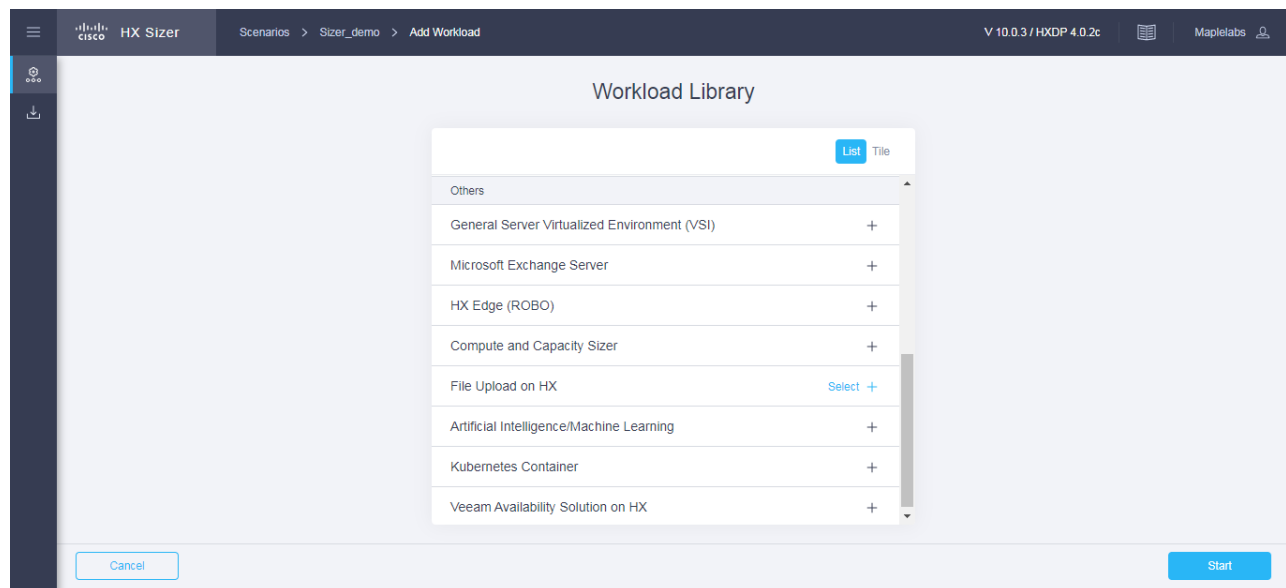
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add the File Upload on HX Workloads:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** tab, select **File Upload on HX** (shown as follows). Click **Start**.



Step3 On the **Workload Profile** page, you can choose to enter the values manually or you can import them from a file.

Step 1
Workload Profile

NOTE: We recommend using the HX Workload Profiler to estimate the resources used by existing environments. RVTools give a point in time estimate of the usage which may lead to large errors in the estimates.

Workload Name *
RAW_FILE-1

Assign Fixed Cluster
Auto

Workload Type *
Sizer Upload Summary from HX Profiler

Workload Input *
Browse No File Selected

Prev Cancel Next

UI Element	Description
Workload Name field	Enter a name for the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
Workload Input Type drop down list	<ul style="list-style-type: none"> 30-day summary from the HX Profiler tool. (The CSV file can be downloaded from the HX Profiler tool for a 30-day duration period.) RV Tools Output
Size for field	<ul style="list-style-type: none"> Provisioned - 'Provisioned' will size for the provisioned CPU/Memory/Disk capacity of Hosts & VMs. Utilized - 'Utilized' will size for the actual utilized CPU/Memory/Disk capacity of Hosts & VMs; Utilized will usually be less than provisioned Recommended is 'Utilized'.
Total vCPUs field	<p>Default is 2 vCPUs.</p> <p>The total number of cores required for all the guest VMs after accounting for system overhead.</p>
CPU Overprovisioning Ratio field	<p>Default is 1 vCPU.</p> <p>The total number of vCPUs that can be packed per core.</p>
Total RAM (GB) field	<p>Default is 128 GB.</p> <p>The total RAM required for all guest VMs after accounting for system overhead.</p>
RAM Overprovisioning Ratio field	<p>Default is 1.</p> <p>The Total amount of RAM Provisioned per GB of RAM installed in the system.</p>

Effective User Capacity (GB) field	Default is 1000 GB. This value depends on the dedupe or compression savings. You can change the deduplication and compression savings on the Infrastructure Configuration page.
Future Growth (%) field	Specify the percentage to allow for future growth of the environment for Physical Cores, RAM, and Effective User Capacity.

Click **Next**.

Step4 On the **Infrastructure Configuration** page, complete the following fields.

UI Element	Description
Cluster Type button	<ul style="list-style-type: none"> • Normal • Stretch - The Stretch Cluster provides a high-availability cluster for data of high importance. This cluster is spread across two geographic regions and will be available even if one site goes down completely for any reason, such as a natural disaster.
Data Replication Factor field	RF3 is recommended for better availability.
Fault Tolerant nodes drop-down list	<p>Number of nodes of Fault Tolerance.</p> <p>Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.</p>
Compression Savings (%) field	<p>By default, set to 0%.</p> <p>The allowed range is 0-99%.</p>
Deduplication Settings (%) field	<p>By default, set to 0%.</p> <p>The allowed range is 0-99%.</p>

Step5 Click **Save**.

Add Veeam Availability Solution on HX Workloads

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

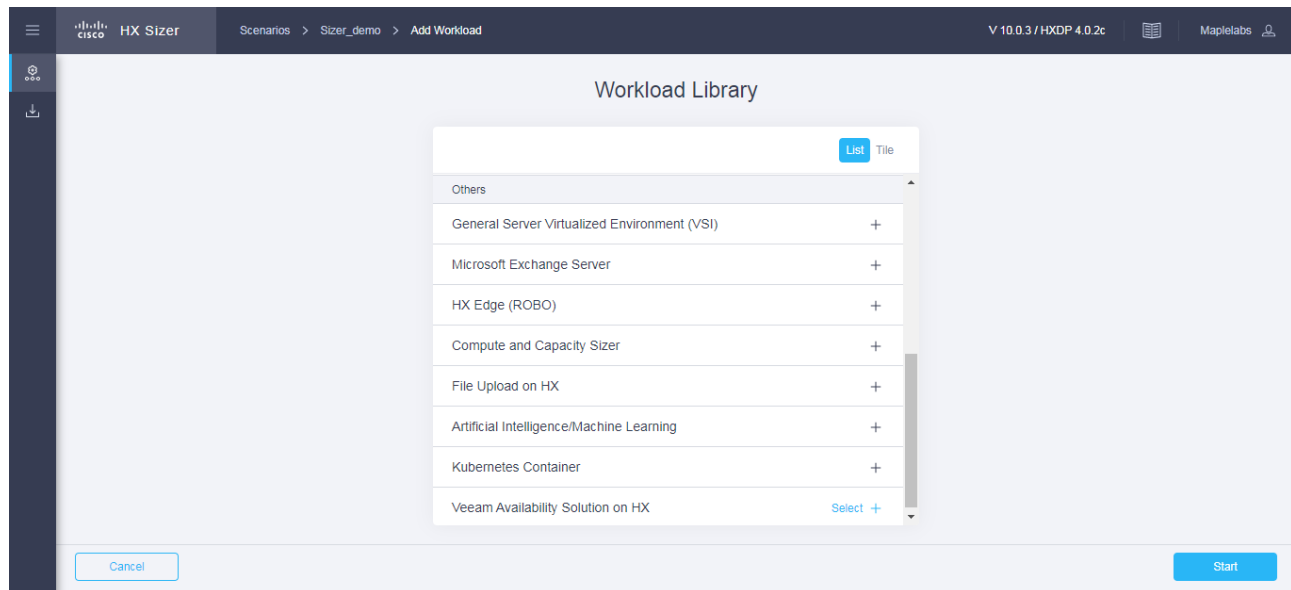
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

To add a Veeam Availability Solution on HX Workloads:

Step1 Click the + Add Workload button under **Workloads**.

Step2 On the **Workload Type** tab, select **Veeam Availability Solution on HX** shown as follows). Click **Start**.



Step3 On the **Profile** page, you can choose to enter the values manually or you can input them from a calculation file.

UI Element	Description
Workload Name field	Enter a name for the Workload.
Total Storage Capacity Requirement field	Please visit http://rps.dewin.me to perform your calculations. Use the total capacity output and insert into the Total Storage Requirement field.

For the Infrastructure Configuration values, these are the following non-editable fields values used in Sizing.

UI Element	Description
Data Replication Factor field	RF2 is recommended.
Fault Tolerant nodes drop-down list	0 Number of nodes of Fault Tolerance. Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.
Compression Savings (%) field	By default, set to 0%. The external link is already handling Compression savings.
Deduplication Settings (%) field	By default, set to 0%. The external link is already handling Compression savings.

Step4 Click **Save**.

Add Kubernetes Container Workload

To change the default values, click **Customize**.



Attention The recommended values are based on performance tests and should be changed with care.

Note: RAM Overprovisioning can be considered by modifying the input RAM by the appropriate RAM overprovisioning factor.

Example: 4 GB of RAM / Overprovisioning Ratio of 2 = 2 GB of RAM.

Please refer to the following links for more details on the implications of RAM overprovisioning.

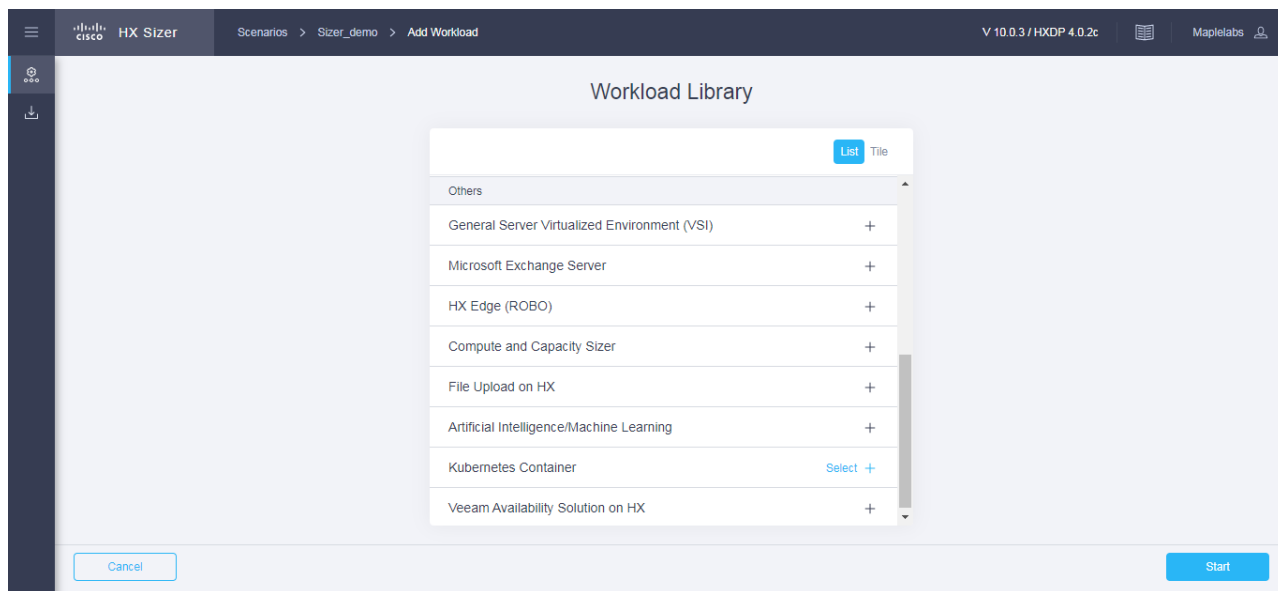
<https://kb.vmware.com/s/article/2097593>

<https://kb.vmware.com/s/article/2080735>

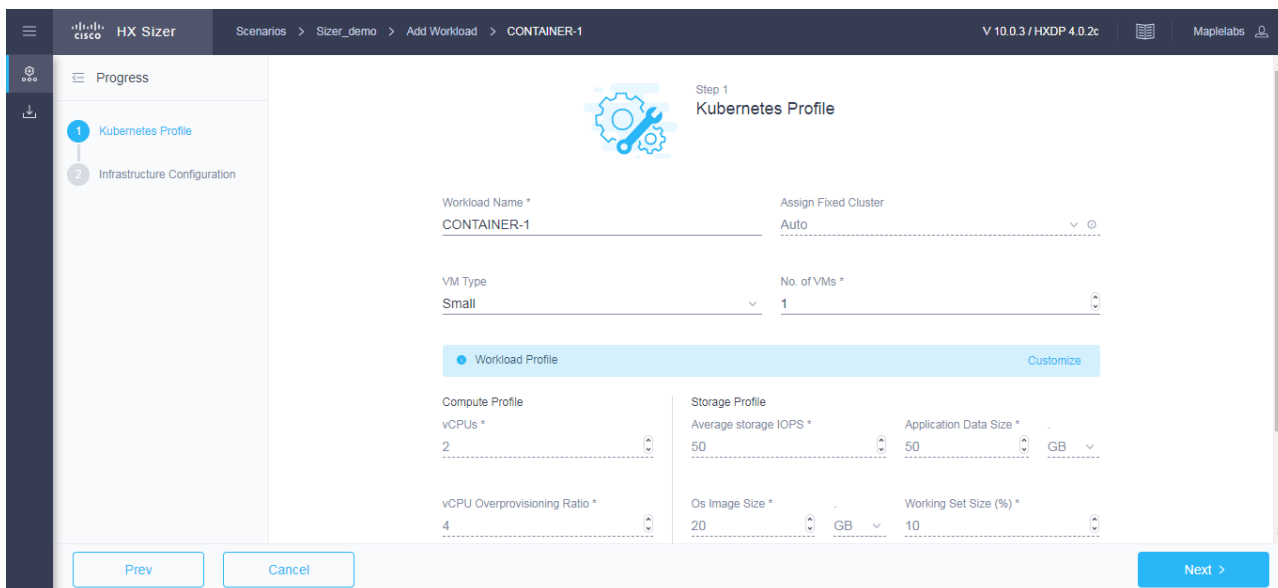
To add a Kubernetes Container Workload:

Step1 Click the + Add Workload icon under **Workloads**.

Step2 On the **Workload Type** page, select **Kubernetes Container** (shown as follows). Click **Start**.



Step3 On the **Container Profile** page, complete the following fields:



UI Element	Description
Workload Name field	Enter a name for the Workload.
Assign Fixed Cluster drop-down list	Choose the Fixed Cluster to assign for workload.
Container Type drop-down list	Choose from a list of predefined resource consumptions values: <ul style="list-style-type: none"> • Small • Medium • Large • Custom—If the predefined resource consumption values in the templates listed do not meet the requirements, select Custom option to enter profile values on the Infrastructure Configuration page.

UI Element	Description
Number of Containers field	Enter the number of Containers.
Container Compute Profile Depending on the Container Type you choose, the recommended values will change.	
vCPUs field	<ul style="list-style-type: none"> • Small—2 vCPUs • Medium—4 vCPUs • Large—8 vCPUs
vCPU Overprovisioning Ratio field	Recommended value for all VM Types is 4 vCPUs. The total number of vCPUs that can be packed per core.
RAM (GB) field	<ul style="list-style-type: none"> • Small—8 GB • Medium—16 GB • Large—32 GB
Container Storage Profile Depending on the Container Type you choose, the recommended values will change.	
Average Storage IOPS field	<ul style="list-style-type: none"> • Small—50 IOPS • Medium—100 IOPS • Large—200 IOPS
User / Application Data Size (GB) field	<ul style="list-style-type: none"> • Small—50 GB • Medium—200 GB • Large—750 GB
OS Image Size (GB) field	Recommended is 20 GB. Size of the OS image for the VM.
Working Set Size (%) field	Recommended is 10%

Click **Next**.

Step 4 On the **Infrastructure Configuration** page, complete the following fields.

UI Element	Description
Data Replication Factor drop-down list	RF3 is recommended for better availability.
Fault Tolerant nodes drop-down list	Enter the number of nodes used for Fault Tolerance. Recommended is 1 node. Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.
Compression Savings (%) field	Recommended is 20%
Deduplication Savings (%) field	Recommended is 10%

Step 5 Click **Save**.

Add Artificial Intelligence/Machine Learning Workload

To change the default values, click **Customize**.

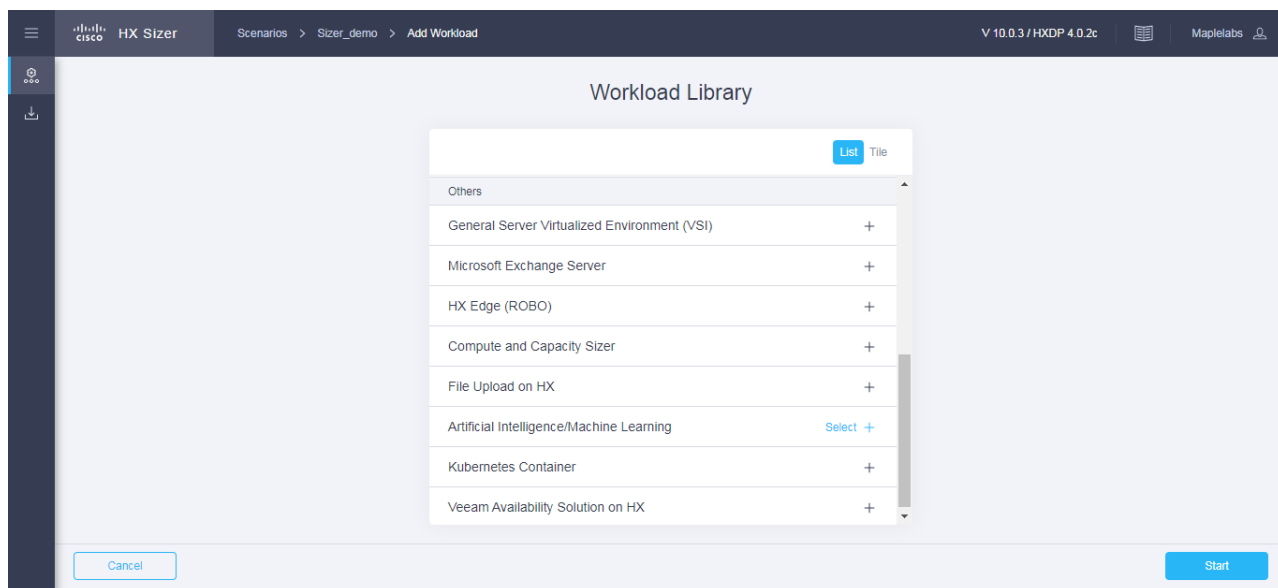


Attention The recommended values are based on performance tests and should be changed with care.

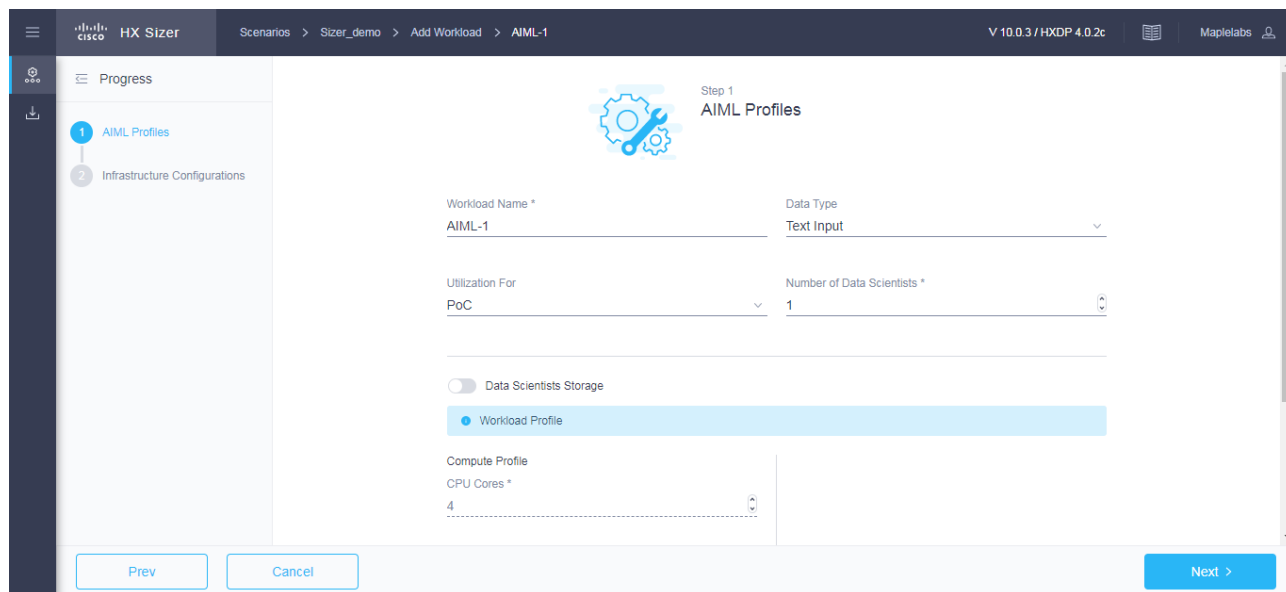
To add a Artificial Intelligence/Machine Learning Workload:

Step1 Click the + icon under **Workloads**.

Step2 On the **Workload Type** page, select **Artificial Intelligence/Machine Learning** (shown as follows). Click **Start**.



Step3 On the **AIML Profile** page, complete the following fields:



UI Element	Description
Workload Name field	Enter a name for the Workload.
Number of Data Scientists field	Enter the number of Data Scientists.
Input Source drop-down list	Choose from a list of predefined resource consumptions values: <ul style="list-style-type: none"> • Text Input • Video, Voice, Images

UI Element	Description
Expected Utilization drop-down list	Choose from a list of predefined resource consumptions values: <ul style="list-style-type: none"> • POC • Serious Development
Storage on HX cluster field	Enable if Storage on HX cluster ?
Compute Profile Per Data Scientist Depending on the Input Source and Serious Development you choose, the recommended values will change.	
CPU Cores (per Data Scientist) field	<ul style="list-style-type: none"> • Text Input / POC —4 Cores • Text Input / Serious Development —8 Cores • Video, Voice, Images / POC – 8 Cores • Video, Voice, Images / Serious development – 8 Cores
System RAM (per Data Scientist) field	<ul style="list-style-type: none"> • Text Input / POC —64 GB • Text Input / Serious Development —128 GB • Video, Voice, Images / POC – 128 GB • Video, Voice, Images / Serious development – 128 GB
GPUs (per Data Scientist) field	<ul style="list-style-type: none"> • Text Input / POC — 1 • Text Input / Serious Development —1 • Video, Voice, Images / POC – 1 • Video, Voice, Images / Serious development – 8

Click **Next**.

Step 4 On the **Infrastructure Configuration** page, complete the following fields.

UI Element	Description
Data Replication Factor drop-down list	RF3 is recommended for better availability.
Fault Tolerant nodes drop-down list	Enter the number of nodes used for Fault Tolerance. Recommended is 1 node. Setting Performance Headroom adds additional nodes to the cluster to ensure that there is enough performance bandwidth in case of a node failure.
Compression Savings (%) field	Recommended is 0%
Deduplication Savings (%) field	Recommended is 20%

Step 5 Click **Save**.



CHAPTER 4

Configure Microsoft Exchange 2013 Server Role Requirements Calculator

- [Configure the Microsoft Exchange 2013 Server Role Requirements Calculator, on page 41](#)
- [Troubleshooting, on page 44](#)

Configure the Microsoft Exchange 2013 Server Role Requirements Calculator

Overview

Download the Microsoft Exchange Workload modeling spreadsheet from [Microsoft Exchange 2013 Server Role Requirements Calculator](#). Read the Microsoft Exchange Calculator Readme file for comprehensive guidance on using the calculator.

Cisco HyperFlex Sizer provides the BOM for the primary datacenter only. This section provides the parameters that should be configured on the **Input Tab** of the Microsoft Exchange Calculator. Customers who plan to deploy in multiple datacenters and stretch the Database Availability Group (DAG) must complete the input for the secondary datacenter under **Site Resilience Configuration**. Completing this input ensures that the primary datacenter Compute and Storage requirements are properly sized to handle all users in the event that the secondary datacenter is down.

Exchange Environment Configuration

Configuration Settings	Value
Exchange Server Version	2016
Global Catalog Server Architecture	64-bit
Server Role Virtualization	Yes
High Availability Deployment	Yes If a DAG is planned, ensure that <i>High Availability Deployment</i> is set to Yes and that the proper number of database copy instances are selected for each site.

Tier-1 [2,3,4] User Mailbox Configuration

Ensure that the user mailbox tiers are set to the appropriate initial and maximum mailbox sizes. With HyperFlex, adding additional persistent tier disks or adding converged nodes to the cluster expands the usable storage on the cluster automatically. Adding additional databases, expanding the HyperFlex datastore, or expanding the Windows LUN where an online database is located, is instant and can occur without any downtime.

Configuration Settings	Value
User Mailbox Configuration Settings	
Number of Days in a Work Week field	5 days
Tier-1 User Mailbox Configuration field	
Total Number of Tier-1 User Mailboxes / Environment field	10000 Tier-1 User Mailboxes/Environment
Projected Mailbox Number Growth Percentage field	0%
TotalSend/Receive Capability / Mailbox/Day field	200 messages
Average Message Size (KB) field	75 KB
Initial Mailbox Size (MB) field	2048 MB
Mailbox Size Limit (MB) field	10240 MB

Backup Configuration

Configuration Settings	Value
Backup Methodology field	<p>Backup Methodology can have a sizing impact. The recommended methodology is to utilize the Cisco HyperFlex native snapshot, along with a third-party backup application that will keep a copy of the backup off the cluster, typically in a backup repository.</p> <p>The following backup methodology options are available:</p> <ul style="list-style-type: none"> • (Recommended) Hardware VSS Backup/Restore—Requires the smallest amount of capacity to restore LUNs. • Software VSS Backup/Restore—Requires a larger capacity to restore LUNs. • Exchange Native Data Protection—Requires a larger capacity to restore LUNs. • VMware redo-log snapshots—Large restore LUNs must be provisioned on each Exchange Server to provide enough space to pull a copy of the backup and then enable roll forward recovery. • Exchange Native Data Protection with lagged database copies—Large restore LUNs must be provisioned on each Exchange Server to provide enough space to pull a copy of the backup and then enable roll forward recovery.
Backup Frequency field	Weekly Full or Daily Incremental
Backup/Truncation Failure Tolerance field	3
Network Failure Tolerance (Days) field	0 days

Storage Options

Configuration Settings	Value
Automatically Calculate Number of Exchange Database Volumes Required	<p>Yes</p> <p>If set to <i>No</i>, carefully size and ensure that enough Exchange Data Volumes are selected so that the databases fit on the server. If they do not fit, you will be unable to upload the spreadsheet into the Cisco HyperFlex Sizer, and a warning will appear on cell G216 on the Role Requirements tab.</p>
Number of AutoReseed Volumes per Server	1 AutoReseed Volumes

Server Configuration

The Microsoft Exchange Calculator is based on a particular baseline CPU. To properly calculate the megacycle to actual CPU consumption, enter both the number of vCPUs for the Microsoft Exchange Server VM in *Processor Cores / Server*, and the *SPECint2006 Rate Value* for the Cisco HyperFlex Server. For example values, refer to [SPEC CINT2006 Result](#).

Server Configuration	Processor Cores / Server	SPECint2006 Rate Value
Primary Datacenter Mailbox Servers	16	2330
Secondary Datacenter Mailbox Servers	16	2330

Troubleshooting

Error Message	Recommended Solution
One or more workloads have exceeded the maximum CPU limits.	Toggle to <i>HX+Compute</i> or include <i>All-Flash</i> options if not already set. Split the Workload into smaller Workloads.
No SmartPlay hyperconverged nodes have been chosen, due to filters. Please change the filters.	For <i>All-Flash</i> Option, select <i>SmartPlay Hyperconverged Nodes</i> from the <i>Customize</i> option.

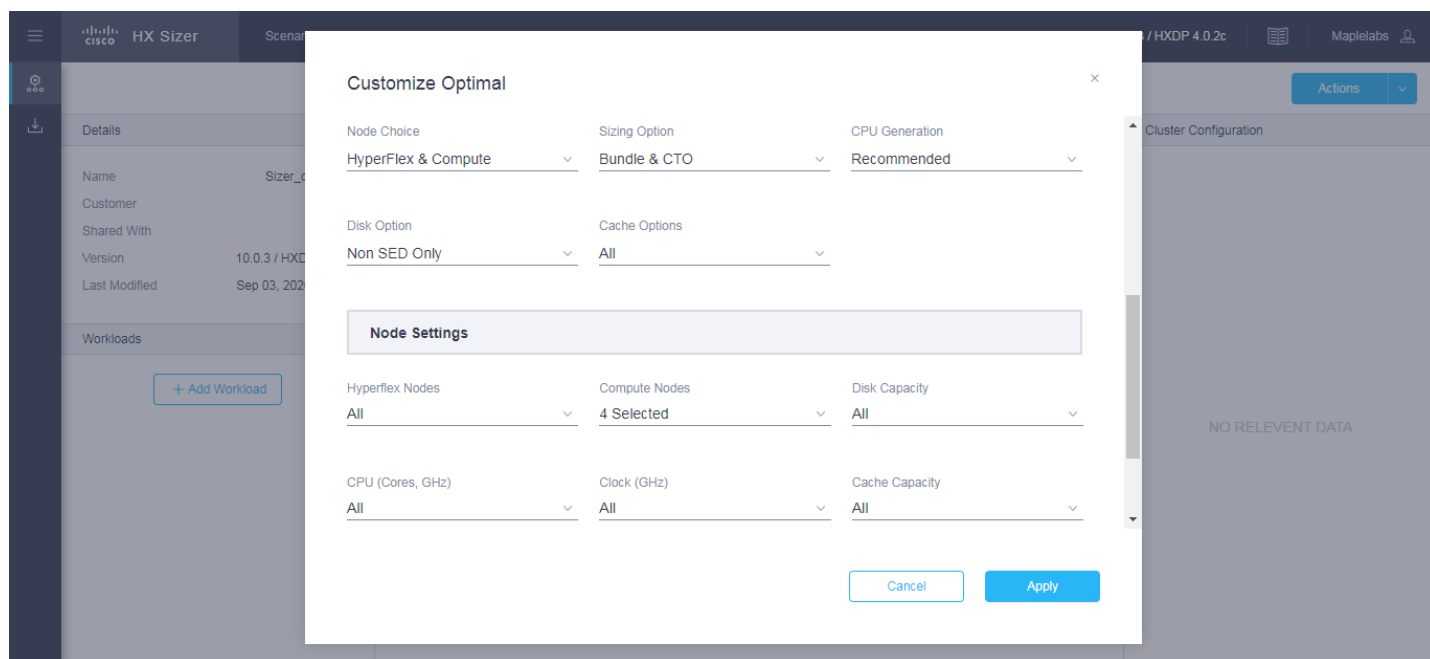


Appendix

Options for Sizing

To customize options for sizing:

- Step 1** Using the Customize button on the top-right screen, customize the Hyperflex Nodes, Compute Nodes, CPU, RAM Slots, and RAM options (shown as follows):



UI Element	Description
Threshold button	<p>Set the sizing threshold to one of the following:</p> <ul style="list-style-type: none"> • Standard—Default • Conservative • Aggressive • No Hypervisor Reservation <p>The threshold setting controls the target utilization of clusters being sized.</p>
Hypervisor field	<p>Choose the type of Hypervisor for which you want to do sizing:</p> <ul style="list-style-type: none"> • ESXi—Default • Hyper-V
Discount % field	Input the Discount % for Bundle and CTO
Include Software Cost button	<ul style="list-style-type: none"> • N/A • 1 Year • 3 Years – Default <p>Includes HX Software License and Hypervisor License</p>
Hardware Acceleration field	<p>Choose to include Hyperflex Acceleration Engine</p> <ul style="list-style-type: none"> • Auto - Default • On • Off
Single Cluster field	<p>Choose option for Single Cluster</p> <ul style="list-style-type: none"> • Yes • No – Default
Node Choice button	<p>Choose the type of node for which you want to size:</p> <ul style="list-style-type: none"> • HyperFlex & Compute—Default • HyperFlex Only
Sizing Option button	<ul style="list-style-type: none"> • Bundle Only—Size for bundle nodes only. • Bundle & CTO—Size both bundle and Configure to Order nodes. • CTO only – Size for Configure to Order nodes only.
CPU Generation button	<p>Choose the type of CPU SKUs to include for size:</p> <ul style="list-style-type: none"> • All • Recommended - Default • Skylake • Cascade Lake

Disk Option button	Select the type of disk: <ul style="list-style-type: none"> • All • Non-SED Only - Default • SED Only (Self-Encrypting Drive Only) • FIPS Only • LFF Only (Large Form Factor)
Cache Option button	Select the type of disk: <ul style="list-style-type: none"> • All - Default • SED Only (Self-Encrypting Drive Only) • NVMe (Non-Volatile Memory Express) • Optane Only
You can also customize HyperFlex Nodes, Compute Nodes, CPU, RAM, Disk Options, Cache Capacity Options and Modular LANs.	

Step2 You can also choose to customize the Threshold, Node Choice, Sizing Option, and Disk Option.

Step3 Click **Apply**. The changed options are saved, and the new result can be viewed from the Scenario Page.

