



HPE INFOSIGHT CROSS-STACK ANALYTICS FOR VMWARE

Feature overview and collection details



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EXECUTIVE SUMMARY

This document provides a brief overview of HPE InfoSight Cross-Stack Analytics for VMware and how it is set up and configured to be accessible on the HPE InfoSight web portal. However, the main intent is to provide information on what configuration and statistics are gathered from VMware®. This white paper will help readers understand the scope and details about what telemetry data is collected and visible in HPE InfoSight.

FEATURE SUMMARY

Cross-Stack Analytics for VMware is an integral, classic component of the HPE InfoSight platform. With this feature, HPE Storage customers can gain valuable insights into applications and workloads running on virtualized infrastructure. One unique aspect of HPE InfoSight is that it enables customers to see in-depth statistics and trending not only for VMware objects, but also for the storage layer. This allows for un-siloed deep analysis and troubleshooting spanning multiple data center technologies. With HPE Nimble Storage dHCI, for example, users can get insights into an additional infrastructure stack thanks to integration with the HPE physical servers used to run VMware ESXi™. This allows them to stay up to date with HPE Service Pack for ProLiant (SPP) compliance, firmware/driver status, compute hardware failures, and other concerns, as well as spot issues with virtualization or storage. HPE Primera and HPE 3PAR customers can use Cross-Stack Analytics to identify the source of latency for a specific VM (host or storage), identify a noisy neighbour, and even find latency hotspots spanning the entire datastore footprint. This helps to troubleshoot those hard-to-find issues.

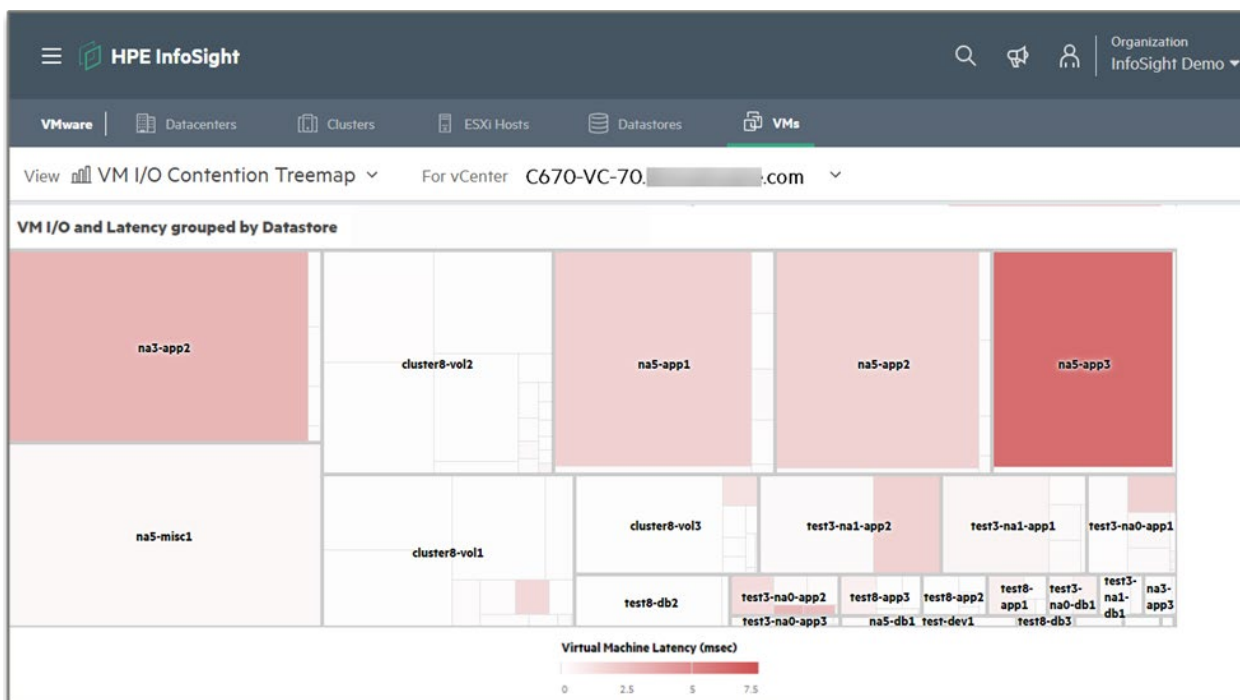


FIGURE 1. Cross-Stack Analytics for VMware on an HPE Primera array showing VM latency hotspots for all VMware datastores in the cluster. Larger boxes mean more I/O; darker red colors indicate higher latency.



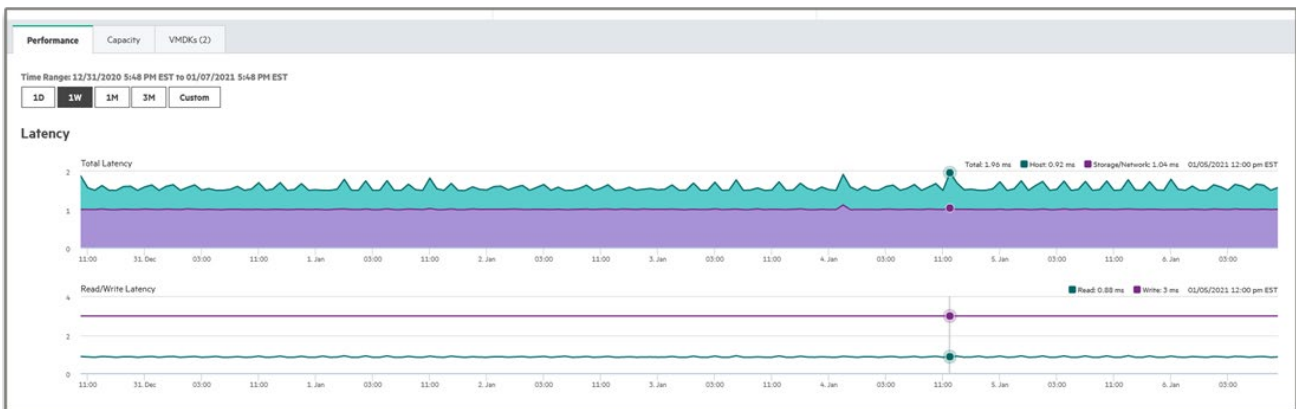


FIGURE 2. For HPE Primera and HPE 3PAR arrays, Cross-Stack allows you to identify the source of latency at the VM level and easily differentiate between latency from the host versus the storage array.

Cross-Stack Analytics for VMware empowers administrators to not only gain insights into their virtualized and storage environments, but also to benefit from guided troubleshooting. In the spring of 2020, HPE InfoSight introduced a consolidated VMware and HPE Nimble Storage recommendation engine, which has been integrated within the Cross-Stack Analytics pages. Combining storage and VMware-specific diagnoses and action items, this VM recommendation engine is made possible with the assistance of machine learning (ML) and in-house subject matter expertise, both of which leverage peer learning via the rich telemetry information provided by HPE InfoSight.

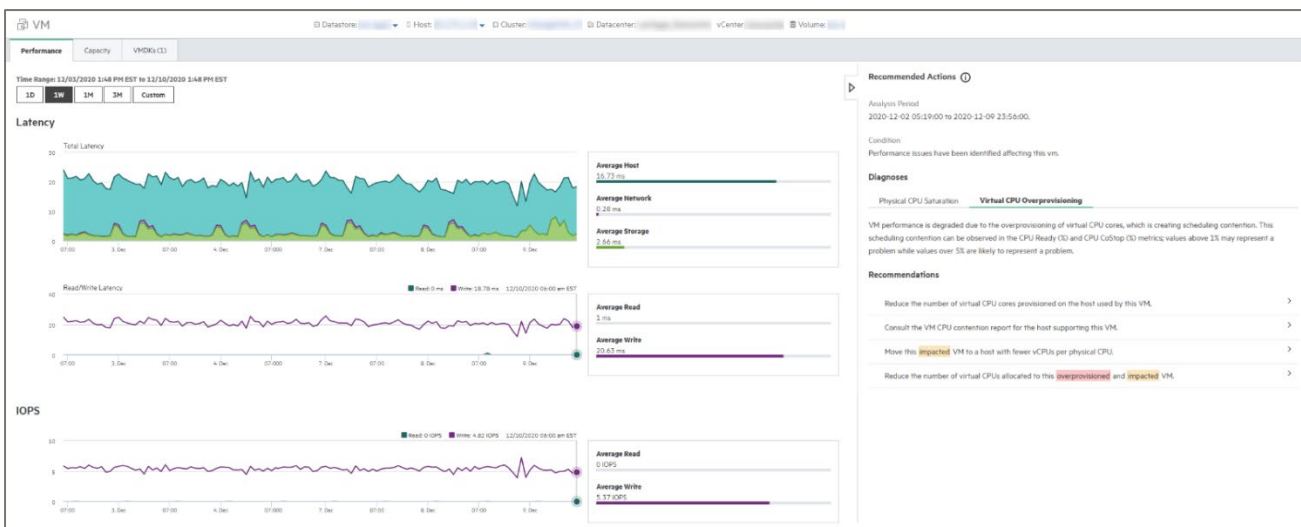


FIGURE 3. VM recommendations for HPE Nimble Storage as seen in Cross-Stack Analytics for VMware

One major advantage of having a centralized pool of customer telemetry data is the ability to use ML models to recognize reoccurring patterns with wellness, configuration, or performance issues. VM Recommendations is the latest breakthrough technology to take advantage of the HPE cloud-based data lake, which is one of the largest in the industry. The HPE data lake covers storage, virtualization, storage networking, compute, and hyper-converged infrastructure. HPE InfoSight added Microsoft Hyper-V integration for HPE Nimble Storage customers in the summer of 2020 and plans to extend visibility up the stack into the application layer in 2021.



CONFIGURATION AND SET UP

Currently, Cross-Stack Analytics for VMware is only available when using HPE Storage arrays. The methods to configure Cross-Stack Analytics for VMware vary depending on which product is used.

Enabling HPE InfoSight Cross-Stack Analytics for VMware on HPE Nimble Storage arrays

The process of enabling HPE InfoSight Cross-Stack Analytics for VMware involves two tasks:

1. Configure the VMware plug-in on one or more HPE Nimble Storage arrays.
2. Configure access to the VMware diagnostic content for the HPE InfoSight account.

When configuration is complete, a collector on the HPE Nimble Storage array starts pulling data from VMware vCenter® and reporting it to HPE InfoSight along with the regular data from the array. Within 24 hours after HPE InfoSight Cross-Stack Analytics for VMware is enabled, data is displayed in the HPE InfoSight portal under Infrastructure → Virtualization.

NOTE

The quickest way to determine whether HPE InfoSight Cross-Stack Analytics for VMware has been enabled for an HPE InfoSight organization is to see whether the Top VMs visualization is displayed on the Operational Dashboard. On the HPE InfoSight web portal, navigate to **Nimble Storage** → **Operational Dashboard**. If the Top VMs visualization is present in the dashboard, HPE InfoSight Cross-Stack Analytics for VMware is enabled.

Configuring the HPE Nimble storage array

To configure the VMware plug-in for HPE Nimble Storage, connect to the storage array and from the menu, select **Administration** → **VMware Integration**. Add a vCenter and complete the fields appropriately. When the plug-in is configured, test the status of the connection to verify that the array is communicating properly with vCenter.

You have the option of registering a web client, a thick client, or a VASA provider:

- The web client is for HTML5-based vCenter clients.
- The VASA Provider is for VMware vSphere Virtual Volumes™ (VVols) capabilities.

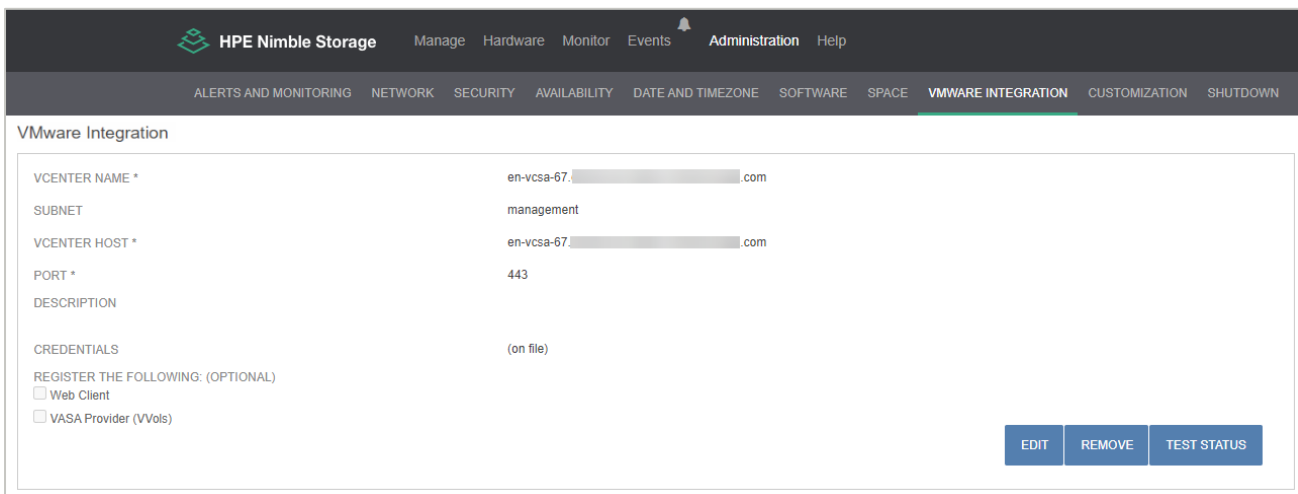


FIGURE 4. VMware integration configuration on an HPE Nimble Storage array console

NOTE

Administrative permissions are not needed for HPE InfoSight Cross-Stack Analytics for VMware to access vCenter. Read privileges are the only requirement for HPE InfoSight to collect data. This requirement can be easily addressed by adding a read-only user in vCenter.



Configuring the HPE InfoSight web portal

After the VMware Integration plug-in is registered on one or more arrays for the account, you can configure HPE InfoSight Cross-Stack Analytics for VMware for the account in HPE InfoSight. To begin, select **Settings** → **Telemetry Settings** from the HPE InfoSight menu.

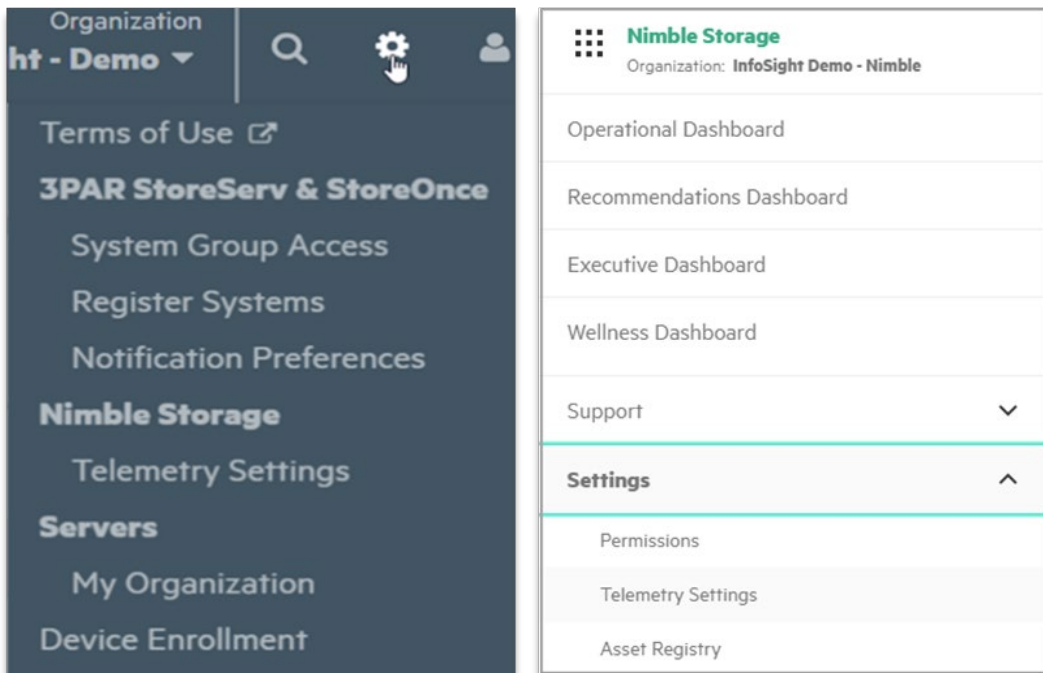


FIGURE 5. Configuring HPE InfoSight Cross-Stack Analytics for VMware from the HPE InfoSight web portal classic view (left) and the new UI (right)

The main HPE InfoSight Cross-Stack Analytics for VMware page lists all the arrays that have VMware integration enabled, as shown in Figure 6.

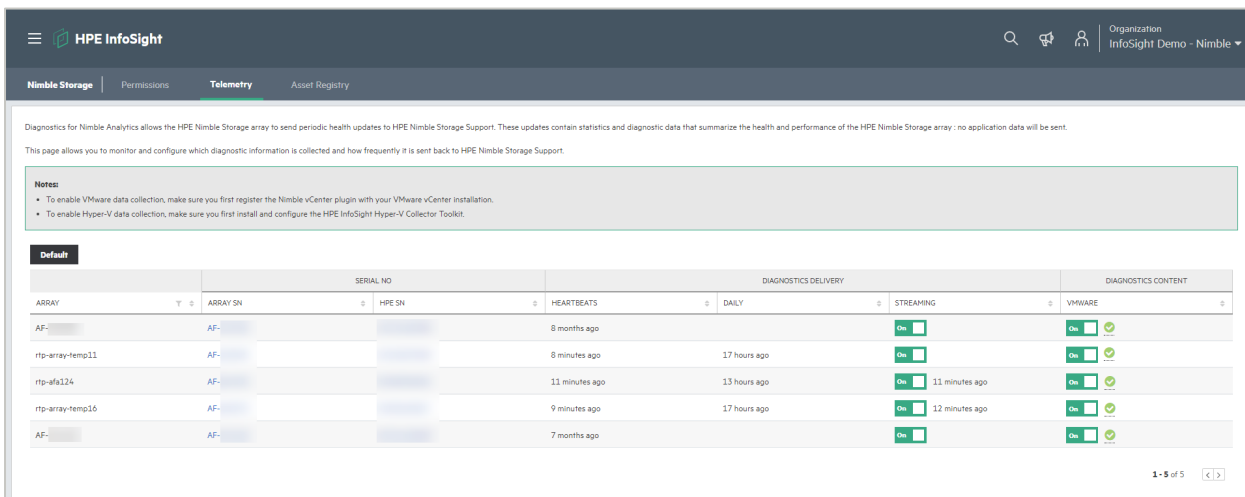


FIGURE 6. Verifying registration of the vCenter Plug-in in HPE InfoSight

NOTE

It takes several hours for HPE InfoSight to register the VMware integration. If you have successfully configured the VMware integration on the array but HPE InfoSight does not reflect that the integration has been registered, it is likely that the registration data has not yet been processed by HPE InfoSight.



The streaming data and VMware fields should be toggled on. The heartbeat and daily fields indicate the last time that HPE InfoSight received data from the array about HPE InfoSight Cross-Stack Analytics. After data is received by HPE InfoSight, it must still be processed on the back-end before it can be made available to the user through the HPE InfoSight portal visualizations.

When configuration is complete, the full range of statistics and functionality for HPE InfoSight Cross-Stack Analytics becomes accessible in HPE InfoSight.

Enabling HPE InfoSight Cross-Stack Analytics for VMware on HPE Primera and HPE 3PAR arrays

You can configure HPE Primera, HPE 3PAR, and HPE Nimble Storage arrays to collect performance and configuration information from vCenter. This data is then sent to HPE InfoSight for analysis and reporting. With Cross-Stack Analytics for VMware, both storage and VMware administrators can get a better picture of VM-to-datastore and datastore-to-volume mapping and usage. Registering the vCenter instances that are associated with HPE Primera and HPE 3PAR storage arrays is required in order for this information to become available in HPE InfoSight. One or more vCenter instances may be associated with each storage array.

You can accomplish this for an HPE Primera array from the Primera UI. Go to **Settings** → **VMware vCenter** and click the “+” sign in the top right-hand corner of the screen. Then enter the required information. The default vCenter port is 443.

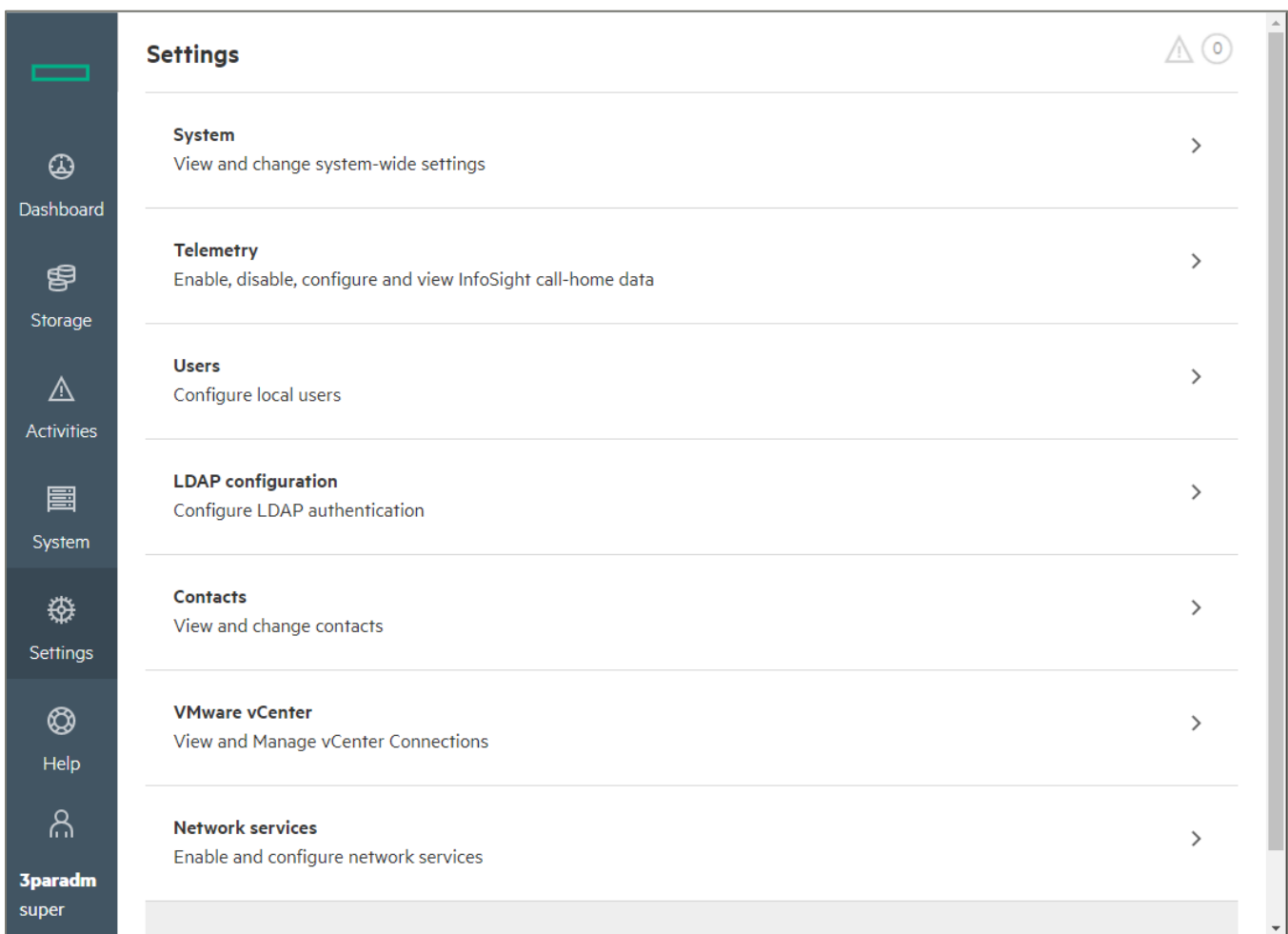


FIGURE 7. Configuring vCenter in the Primera UI: Step 1, select **VMware vCenter**



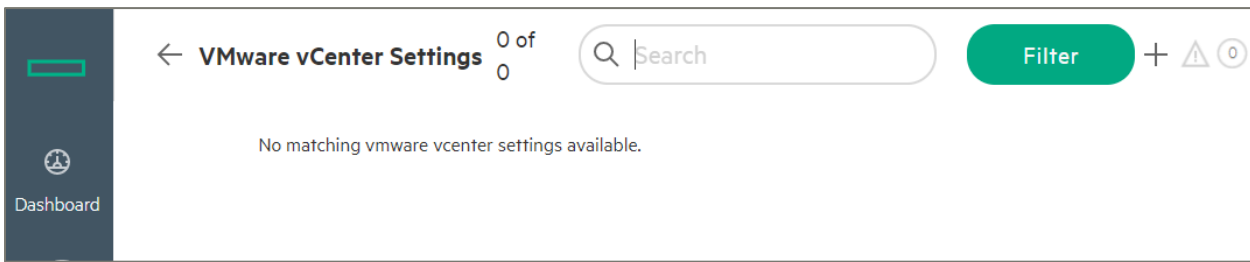


FIGURE 8. Configuring vCenter in the Primera UI: Step 2, select “+” to enter a new instance

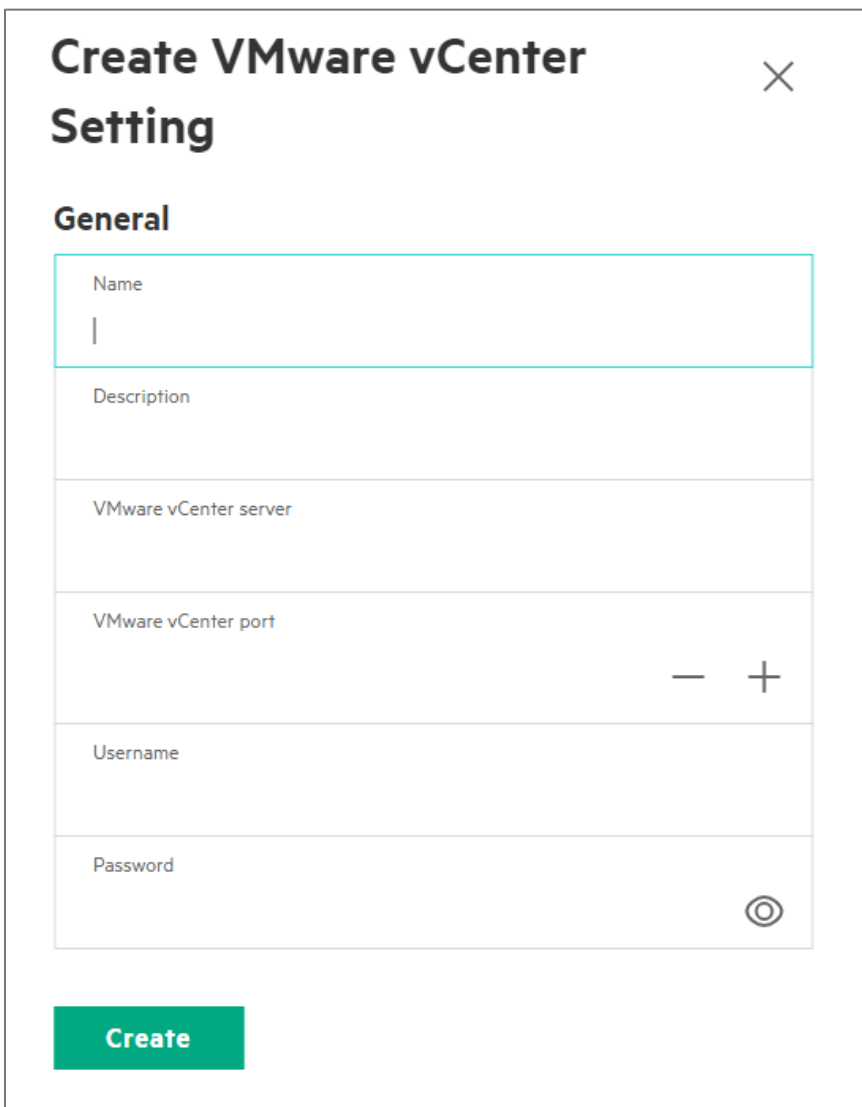


FIGURE 9. Configuring vCenter in the Primera UI: Step 3, enter the required information

For an HPE 3PAR array, collection of VMware data is enabled from the service processor.

From the service processor:

1. On the main menu, select **Systems**.
2. On the Actions menu, select **Edit system**.



3. Scroll down to the **Cross-Stack Analytics** section of the dialog that opens and follow the instructions. The default vCenter port is 443.

NOTE

A remote device access (RDA) transport agent is required to collect VMware data. You can find a complete list of other requirements in the [HPE InfoSight for HPE Storage User Guide for HPE Primera](#), [HPE 3PAR StoreServ](#), and [HPE StoreOnce](#).

CROSS-STACK ANALYTICS FOR VMWARE COLLECTION OBJECTS

The following list shows all the VMware objects that are gathered as part of the collection process. The list is the same whether the process is triggered from an HPE Nimble array or an HPE Primera or HPE 3PAR service processor.

Configuration

For more information, refer to the [vSphere Web services API page](#)

ClusterComputeResource	HostFibreChannelHba	IscsiPortInfo
ClusterDasSummary	HostHostBusAdapter	KeyAnyValue
ClusterDasConfigInfo	HostImageProfileSummary	LicenseManagerLicenseInfo
ClusterDasVmSettings	HostInternetScsiHba	LinkLayerDiscoveryProtocolInfo
ClusterDrsConfigInfo	HostInternetScsiHbaDigestProperties	Network
HostCpuInfo	HostInternetScsiHbaSendTarget	PhysicalNic
Datastore	HostInternetScsiHbaStaticTarget	PhysicalNicCdpInfo
DistributedVirtualPortgroup	HostInternetScsiTargetTransport	PhysicalNicHintInfo
DistributedVirtualSwitchHostMemberPortBacking	HostInternetScsiHbaProperties	PhysicalNicIpHint
DistributedVirtualSwitchHostMemberPortSpec	HostInternetScsiHbaV6Address	PhysicalNicNameHint
DistributedVirtualSwitchPortConnection	HostMountInfo	ScsiLun
DistributedVirtualSwitchProductSpec	HostMultipathInfoLogicalUnit	SharesInfo
DVPortgroupConfigInfo	HostMultipathInfoPath	StorageProfile
DVPortSetting	HostNetworkSystem	VirtualDisk
DVSDFailureCriteria	HostNicTeamingPolicy	VirtualHardware
DvsHostInfrastructureTrafficResource	HostProxySwitchHostLagConfig	VirtualMachine
DvsHostInfrastructureTrafficResourceAllocation	HostProxySwitchSpec	VirtualMachineSnapshot
DVSSecurityPolicy	HostPortGroup	VmwareDistributedVirtualSwitch
Extension	HostService	VmwareDistributedVirtualSwitchVlanSpec
Folder	HostServiceInfo	VMwareDVSConfigInfo
HostDateTimeSystemTimeZone	HostStorageSystem	VMwareDVSPvlanMapEntry
HostDnsConfig	HostSystem	VMwareUplinkPortOrderPolicy
	HostVirtualNic	VmwareUplinkPortTeamingPolicy
	HostVirtualSwitch	



Performance

For more information, refer to the [this VMware article](#).

- | | |
|---------------------------------------|---|
| cpu.usage.average | net.packetsRx.summation |
| cpu.usagemhz.average | net.packetsTx.summation |
| cpu.ready.average | net.droppedRx.summation |
| cpu.costop.summation | net.droppedTx.summation |
| cpu.maxlimited.summation | net.errorsRx.summation |
| cpu.usagemhz.summation | net.errorsTx.summation |
| | |
| datastore.totalReadLatency.average | mem.active.average |
| datastore.totalWriteLatency.average | mem.usage.average |
| datastore.numberReadAveraged.average | mem.swapinRate.average |
| datastore.numberWriteAveraged.average | mem.swapoutRate.average |
| | |
| disk.read.average | mem.vmmemctl.average |
| disk.write.average | virtualDisk.totalReadLatency.average |
| disk.kernelReadLatency.average | virtualDisk.totalWriteLatency.average |
| disk.deviceReadLatency.average | virtualDisk.read.average |
| disk.kernelWriteLatency.average | virtualDisk.write.average |
| disk.deviceWriteLatency.average | virtualDisk.numberReadAveraged.average |
| disk.queueReadLatency.average | virtualDisk.numberWriteAveraged.average |
| disk.queueWriteLatency.average | |

VMware Support Bundle

In addition to what is listed here, a VMware support bundle is also collected and included with the payload going from the HPE Nimble Storage array to HPE InfoSight.

NOTE

For more information on what is included with this standard VMware log collection set, see [Collect vSphere Log Files](#).



Resources, contacts, or additional links

Interactive demo—HPE InfoSight

www.hpe.com/us/en/resources/solutions/infosight-test-drive.html

Demo video—Announcing VM Recommendations live on HPE InfoSight

<https://youtu.be/XXIPOnjbeFg>

Lightboard video—Troubleshooting inconsistent application performance with HPE InfoSight’s Cross-stack Analytics for VMware

<https://www.youtube.com/watch?app=desktop&v=7QY70Bn7LnA&list=RDCMUCAdEqOhSnzILBtaapu567AQ&index=4>

Lightboard video—Troubleshooting misconfigured backup time with HPE InfoSight’s Cross-stack Analytics for VMware

<https://www.youtube.com/watch?app=desktop&v=7QY70Bn7LnA&list=RDCMUCAdEqOhSnzILBtaapu567AQ&index=4>

Blog—Cross-stack Analytics for VMware, composite customer case study

https://community.hpe.com/t5/Around-the-Storage-Block/HPE-Infosight-Cross-Stack-Analytics-saves-a-customer-millions-in/ba-p/7025439#.X_S4i9hKiUl

HPE InfoSight Security: Secure Predictive Analytics in the Cloud

infosight.hpe.com/InfoSight/media/cms/active/public/tmg_HPE_InfoSight_Security—Secure_Predictive_Analytics_in_the_Cloud_doc_version_family.pdf

HPE InfoSight Getting Started

infosight.hpe.com/InfoSight/media/cms/active/pubs_InfoSight_Getting_Started_.pdf

HPE InfoSight User Guide for HPE Nimble Storage

infosight.hpe.com/InfoSight/media/cms/active/pubs_InfoSight_User_Guide_for_HPE_Nimble_Storage_.pdf

HPE InfoSight Getting Started—HPE Primera, HPE 3PAR StoreServ, and HPE StoreOnce

https://support.hpe.com/hpsc/public/docDisplay?docId=a00094611en_us

Secure Analytics in the Cloud for HPE 3PAR StoreServ and HPE StoreOnce devices

infosight.hpe.com/app/media/InfoSight_Security_Whitepaper.pdf

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hpe.com/storage/infosight

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