

CloudPhysics Dependency Map FAQ

CloudPhysics Dependency Map provides deep insights into VM and network resource relationships. This document answers some of the most common configuration, collection, and security questions related to the new dependency map. For a more extensive discussion of our security procedures, please contact us support@cloudphysics.com.

Q. What is the new Dependency Map Feature?

The Dependency Map combines infrastructure relationships (between VMs, clusters, and datacenters) with logical relationships between application components, enabling a clear understanding of the ways applications and systems depend upon each other in your environment. These dependencies can show the scope of resources that need to move or workloads impacted if a workload is changed. These observations can be essential when planning which workloads may have egress data costs in the cloud or which applications have complex dependencies when planning an upgrade.

The new optional elevated data collection process, CloudPhysics Dependency Map can present data from within the guest OS. This data will represent the relationship between VMs and other resources based on observed processes and communications from within the guest OS. This reported data will consist of processes or process ID's, local IP addresses, local ports, protocols, and remote IP addresses. If an IP address can be associated with a known VM, the known VM name will be presented. Remote objects can be known or unknown objects within the organization or potential destinations outside of the organization.

Q. How do I gain access to the Dependency Map?

Dependency Maps are available to premium customers who have deployed the latest CloudPhysics Observer, provided the necessary credentials for data collection, and added the revised vCenter credentials for data collection.

Credentials for Guest Process Collection:
<https://www.cloudphysics.com/installing-cloudphysics/#Configuration>

Credentials for vCenter:
<https://www.cloudphysics.com/installing-cloudphysics/#Credentials>

Q. How do I start getting data into the dependency map analytics and how do I see my data?

To get started, you will need to ensure you have the latest CloudPhysics Observer and have provided additional credentials for guest process discovery in the appliance. In addition, you will need to ensure you have revised your vCenter credentials for process data collection within the Guest OS. VMware Tools will

be required in a Guest OS where data is to be collected.

Once the Observer and credentials are updated, data will start collecting within the next collection cycle and refresh approx once every 6 hours.

Credentials for vCenter:
<https://www.cloudphysics.com/installing-cloudphysics/#Credentials>

Q. How do I know if I have the most recent CloudPhysics Observer?

The CloudPhysics Observer console interface will reveal the current Observer version. Dual credentials for the Dependency Map were supported after version 2.5.0 of the CloudPhysics Observer. If you need to update your observer, you can find the most recent version at <https://www.cloudphysics.com/installing-cloudphysics/#Deployment>

Q. How do I update my CloudPhysics Observer?

You can replace your CloudPhysics observer with the latest observer available from CloudPhysics. Simply download and re-deploy the new observer. An organization token will be required to activate the observer. An organizational token is available from the CloudPhysics Welcome Page for new users or from the CloudPhysics Observer status page. Click "Reveal Token" in the left-hand instructions to receive your token. Tokens are valid for 24 hours and can be used with multiple vCenters within the Organization. Be sure to provide the same vCenter name and credentials. CloudPhysics will resume the collection of your data.

Deploying the CloudPhysics Observer:
<https://www.cloudphysics.com/installing-cloudphysics/#Deployment>

Observer Status Page for Organization Token:
<https://app.cloudphysics.com/observer-status/vsphere>

Q. What credentials do I need to provide the CloudPhysics observer?

Two different sets of credentials are required. The first set of credentials allows the observer to read data from VMware vCenter. A second credential will be required to collect guest process data and dependency data from guest operating systems. In many cases, these may be two different credentials.

Q. Do I need to change my vCenter?

If you have never set up your account for guest process collection before, you will need to revise your vCenter credentials. If you plan to use Dependency Maps or Guest Process Identification, additional VMware vCenter Policy settings will be required. This is an elevated level of Virtual Machine security to allow VMware tools to gather guest data. These features will require the VMware Tools to be present and enabled in the guest operating system.

- VirtualMachine.GuestOperations.Query
- VirtualMachine.GuestOperations.Execute
- VirtualMachine.GuestOperations.Modify

Q. What credentials are required for my vCenter user account used by the CloudPhysics Observer?

For the Server, Username, and Password, provide a Fully Qualified Domain Name or IP Address for the VMware vCenter. Example: vcenter.company.local

Note: This may be pre-populated from the PSC selection above. For the vCenter Credentials, provide a user ID and password. Note, Windows-style credentials may be required in the format of "domain\userid"

Q. What specific configurations are required within the Guest OS?

Since CloudPhysics is agentless, we rely on VMware Tools and some environment attributes of the Guest OS to ensure we can collect data. A currently supported version VMware Tools is required to request guest data. The request process collects data to a TEMP file located in the system temp folder. If the system does not have a TEMP variable or TEMP folder available, the collection process will not have the ability to create the intermediate field required for data collection. The usage of TEMP files eliminated the need to keep large lists of resources in memory.

Q. Can I use Microsoft Windows Domain credentials?

Yes, a Domain credential can be used. CloudPhysics currently uses a single user ID and password pair for all guest OS. Assuming all guest OS are on the same domain, a single domain user credential can be used.

Q. What credentials can I use for Linux?

If the organization has a single administrator ID and password, a single credential across both Windows and Linux can be used. If your environment is only Linux, a single login ID and password is required. If your environment is mixed, a common user ID and password would be required.

Q. What if I have multiple domains or different credentials for differing operating systems or locations?

At the current time, the CloudPhysics Observer is only able to use a single credential for Windows and a single credential for Linux. If you have different credentials in a different domain or location, you will be unable to collect data from both environments unless you have a common login and password.

Q. What data is collected?

Here are the data points collected from within the Guest OS with the elevated guest credentials.

- Running Guest Processes
- Installed Applications (Windows Only)
- Open network communications by process or process ID

Q. How is data collected?

The CloudPhysics Observer requests the following details from VMware vCenter to collect using VMware Tools API. CloudPhysics issues a request to VMware vCenter. VMware vCenter will use the appropriate permissions and credentials provided by CloudPhysics to request data through the VMware Tools API. The VMware tools will issue the commands and store the data in a TEMP working directory until the process completes. When data collection is complete, vCenter will connect to the guest VM through the Tools API to retrieve the data. VMware vCenter will then provide the data to the CloudPhysics Observer.

Q. How frequent is data collected? How often is the data refreshed in the Map?

Data is collected once every 6 hours. Every six hours the collection runs; any new dependencies discovered are added to the existing map. After 7 days, old dependencies that are no longer in the current map are deleted.

Q. The CloudPhysics Dependency Map says I do not have data for a specific VM, why?

You can quickly identify why a particular VM has no data by locating the VM Name in the Table View and hovering your mouse over the amber flag in the corner near the VM name. These are the most common reasons why there may not be data for a specific VM:

- No Windows Credentials
- No Linux Credentials
- No data collection
- Unknown power state (VM was starting, stopping, suspending, or resuming during an attempted collection)
- VM not powered on
- VMware Tools is not installed or running
- VMware tools not current and does not support data collection
- Unsupported OS
- No local TEMP working directory for temporary data
- Internal collection error if the collection process fails or is terminated

Q. I see VM's and other workloads not controlled by my vCenter, how did they appear in my results?

When collecting dependency data, CloudPhysics can see both source and target in the result set. CloudPhysics will render connections to discovered targets even if the systems are not managed by the vCenter. This allows the user to see all dependent devices even if they are not VMs controlled by vCenter. These dependent devices could be user desktops, network devices, or public internet IP Addresses.

Q. How do I select multiple VMs in the map view?

Here's how to manage selecting and moving nodes.

- Click on a single node to highlight its edges
- Right-click on a node to launch a context menu of options such as view single VM dependency details, hide/show edges, or dim/undim nodes (dimming nodes on both ends of an edge will dim the edge as well)
- Click a node to select it, or shift+click multiple nodes for group select
- Select multiple nodes by clicking and dragging over them while holding shift
- Click and drag a single node (or group of selected nodes) to move the selection

Q. How do I navigate and zoom in and out in the map view?

Use the mouse scroll wheel to control the ability to zoom in and out (two fingers slide up and down on some trackpads). As you zoom in, you will view more details such as node names. Click and drag an empty spot on the screen to move the view of all objects

Q. What do the shapes mean in the map view?

- Circles depict nodes that represent VMs in your filtered scope
- Triangles depict nodes that represent VMs not in your filtered scope but connected to VMs in your filtered scope
- Diamonds depict nodes representing non-VMs on your network. These can be user desktops, standalone systems, or network devices
- Pentagons depict nodes representing public non-VMs. These may be external to your organization or located within a public network segment such as a DMZ
- Filled shapes indicate that all edges are displayed
- Half-filled shapes indicate that some edges are hidden
- Hollow shapes indicate that all edges are hidden

Q. How do I find a specific port?

Using the compass filters on the left-hand side of the page, scroll down to Listening Ports. Specify a specific port you are looking for in the environment. The result set will reduce the scope only to VMs using the specific port.

Q. After updating the Guest OS credentials in the Observer, how long does it take for the Dependency Map to populate in the UI?

There are two sides, data collection and data processing:

- Collection timeline: If the Guest Credentials are set up during the initial Observer configuration, the Dependency Map collection kicks off right away. If the user adds guest credentials to an already-running observer there is a 2-minute delay. If there is a collection failure, there is a five-minute timeout and then it tries again.
- Data Processing timeline: Once dependency data is collected, it takes around 15 minutes to be processed and made available in the UI.

Q. Is it ok if the guest OS credentials are for a 'service account' or do we need an account with admin access?

A service account can be used for data collection.

Q. Where will I find error messages if my guest credentials are incorrect?

When visiting the Dependency Map page, click on the Table View icon in the top right corner to change from a Graph View to Table View. In this view, you will see a list of all VM's currently within the default scope. If a VM was unable to collect dependency data, an amber flag will appear in the corner near the VM name. Hover your mouse over this flag to see the error message as to why dependency data was not collected for a specific VM.

Q. What is the granularity of the dependency mapping? Will I see short-lived connections?

Dependency map connection data is collected once every 6 hours but most operating systems will keep a list of recent connections in their network statics lookup. If an application starts and stops within the 6-hour window, it is possible the process may not be seen, but the connection data may still persist.

Q. What if my guest OS credentials expire?

CloudPhysics will be unable to collect dependency data. Any VM with invalid credentials will be flagged in the Table View with an amber flag in the VM name table with an explanation as to why the data was unable to be collected.

Q. What happens if I remove my credentials?

When credentials are removed, we will be unable to continue to collect data but existing data will remain.

Q: Do I need to update my VMware Tools? Is there a particular version of Tools that VMs should be on?

VMware Tools is required to request data from a Guest OS. The minimum version for the tools is version 10 released in 2016.