HP ComputeSensor

Software Version: 2.10

Windows® and Linux operating systems

User Guide

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Chapter 1: Introduction

HP ComputeSensor is a light-weight performance and health collection tool that provides a quick overview of the workloads and applications that are available and running on a Virtual Machine (VM). HP ComputeSensor helps you monitor the system where it is installed and troubleshoot the resource bottlenecks by collecting metrics that indicate the health and performance of the system. The tool is deployed on the VMs to gather vital information and to provide a quick overview about the resource utilization.

The tool provides you the following:

- Overview about the system resource utilization such as CPUs, file systems, disks, and network utilization.

- Overview about the general health of the system and reasons for any available bottlenecks.

- List of the processes and resources that are being used. You can further drill down to detect the processes where the memory or CPU utilization is exceeding the limit by checking the processes that are consuming more memory or CPU.

- List of the System Events.

To install ComputeSensor on Windows nodes, see Install HP ComputeSensor on Windows Nodes.

To install ComputeSensor on UNIX nodes, see Install HP ComputeSensor on Linux or Linux-Debian Nodes.

Chapter 2: Installation Scenarios

HP ComputeSensor can be installed in the following two ways:

- **Remote Installation of HP ComputeSensor from a HP Virtualization Performance Viewer (HP vPV) Machine**

  HP ComputeSensor (Real Time Guest OS Drilldown) packages are available on the HP vPV machine. Using the hpcsinstall utility you can remotely install the packages from the vPV machine to the VM. For more information on remote installation, see "Remote Installation of HP ComputeSensor from a HP vPV Machine" below

- **Standalone Installation of HP ComputeSensor on a Virtual Machine**

  For Standalone installation, make sure you transfer the packages from the HP vPV machine (Go to the HP vPV console and browse to **Admin** -> **Integration**) to the VM. For more information on standalone installation, see "Standalone Installation of HP ComputeSensor on a Virtual Machine" on page 8

Remote Installation of HP ComputeSensor from a HP vPV Machine

HP vPV is available as a Virtual Appliance for easy deployment in vCenter. You can use the VMware vSphere Client user interface to deploy the virtual appliance.

HP ComputeSensor packages are already available, after you install HP vPV on a machine,.

The following illustration shows an environment where HP ComputeSensor package is already installed on a vPV machine:
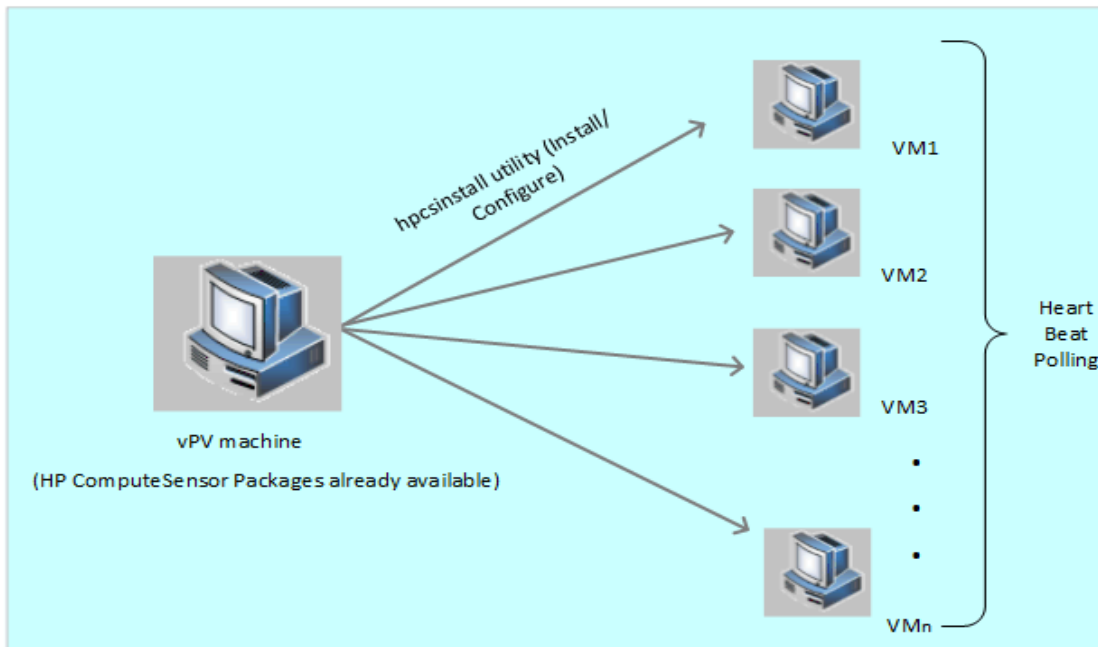
Using Registry functionality

HP ComputeSensor running on the HP vPV machine acts as a registry that contains the details of other HP ComputeSensor(s) available on the VMs in the environment. On each virtual machine in an environment, Heart Beat Polling (HBP) needs to be enabled. When HBP is enabled, the VM pushes the registry content to the target HP ComputeSensor acting as a registry.

To enable HBP, update the values mentioned in the `hpcs.hbp` namespace in the `hpcs.conf` file. For more information on configuring the values, see "Configure the Heart Beat Polling" on page 19

Using hpcsinstall Utility

You can use the hpcsinstall utility to remotely install the HP ComputeSensor on a VM in the environment.

Pre-requisites:

- HP vPV must be installed.

- SSH daemon should be running on both Windows and Linux nodes.

    To check if `sshd` is running on the remote host, follow these steps:

    a. Log on as root user.

    b. Run the following command:

        `nmap -p22  <remote_host_name>`

        sshd is running if the command returns an output as `22/tcp open ssh`.

> **Note:** Using the hpcsinstall utility HP ComputeSensor supports the following installation:
>
> **On Linux Node:** `.rpm` or `.deb` installation
>
> **On Windows Node:** `.zip` installation

You can use the following commands to install, configure or remove HP ComputeSensor on the VMs.

Steps to install HP ComputeSensor from vPV machine:

1. Log on to the vPV node with administrator privileges.

2. Go to the location: `/opt/OV/hpcs/bootstrap`

3. Run the command: **`./hpcsinstall -install -node`** *`<ip address of the node>`* **`-user`** *`<username>`* **`-pw`** *`<password>`*

Steps to remove HP ComputeSensor from vPV machine:

1. Log on to the node with administrator privileges.

2. Go to the location: `/opt/OV/hpcs/bootstrap`

3. Run the command: **`./hpcsinstall -remove -node`** *`<ip address of the node>`* **`-user`** *`<username>`* **`-pw`** *`<password>`*

> **Note:** If you have entered the wrong password for `-pw` parameter of **hpcsinstall** command, run the same command again with the correct password.

Standalone Installation of HP ComputeSensor on a Virtual Machine

HP ComputeSensor can be enabled for collecting the system performance data, events, and logs by installing the HP ComputeSensor package.

On each VM in an environment, you have to install and configure HP ComputeSensor manually.

Steps to install HP ComputeSensor on a standalone VM:

1. Log on to HP vPV with administrator privileges.

2. On the HP vPV console, go to **Admin** -> **Integrations** and download the HP ComputeSensor packages.

3. Copy the HP ComputeSensor packages from the HP vPV machine to the VM.

4. Install HP ComputeSensor. For more information on Installation, see "Installing the HP ComputeSensor" on page 10

5. Configure HBP. For more information on Configuring the HBP value, see "Configure the Heart Beat Polling" on page 19

Note: HP ComputeSensor packages can be downloaded from the HP vPV console (Go to **Admin -> Integrations**).

Chapter 3: Installing the HP ComputeSensor

The installer program available with the ComputeSensor media enables you to install the product on a node. You can install HP ComputeSensor on the following:

- Install HP ComputeSensor on Windows Nodes

- Install HP ComputeSensor on Linux or Linux-Debian Nodes

Install HP ComputeSensor on Windows Nodes

Note: You can install HP ComputeSensor on Microsoft Windows 7 SP1, 64-bit and Microsoft Windows Server 2008 R2, 64-bit operating systems.

You can perform any one of the following tasks:

- Using Graphical User Interface

- Using Silent Installation

- Using .Zip

Using Graphical User Interface

Follow these steps:

1. Log on to the node with administrator privileges.

2. Go to the location where the downloaded ComputeSensor packages are available.

3. Double-click **HPComputeSensor-02.01.002-Win5.2_64-release** to start the installer.

   The installer for HP ComputeSensor appears.

4. On the installer for HP ComputeSensor of the installation program, click **Next**

   The License Agreement page appears.

5. Read the terms of the license agreement, select the `I accept the terms in the License Agreement` option and click **Next**.

   The Destination Folder page displays the options of the installation directory.

6. You can choose the default location for installing the product or change the location as per your

requirement and click **Next**.

The Ready to Install the Program page appears.

7. Click **Install** to start the HP ComputeSensor installer program.

   The installer program starts by performing installation checks.

8. The installation wizard displays the Installer Completed dialog box after the installation is completed. Click **Finish** to complete the installation.

After the installation is completed, **HP ComputeSensor Service** starts automatically.

> **Note:** After the system reboots, **HP ComputeSensor Service** starts automatically.

Using Silent Installation

Follow these steps:

1. Log on to the node with administrator privileges.

2. Download the ComputeSensor packages from the media.

3. Open the Windows command prompt and type the name of the drive where the **HPComputeSensor-02.01.002-Win5.2_64-release** file is located.

4. Type the following command to start the installer.

   ```
   msiexec /i HPComputeSensor-02.01.002-Win5.2_64-release /qn
   ```

   After you run the command, the installation procedure begins. You will not receive any message stating the installation is successful.

After the installation is completed, **HP ComputeSensor Service** starts automatically.

> **Note:** After the system reboots, **HP ComputeSensor Service** starts automatically.

Using .Zip

Follow these steps:

1. Log on to the node with administrator privileges.

2. Extract the contents of .Zip file to a local directory.

3. Run the following command to generate the UUID:

   ```
   hpcomputesensor -genUUID
   ```

4. Configure HBP. For more information on configuring the HBP value, see "Configure the Heart Beat Polling" on page 19

5. Double-click **hpcomputesensor.exe**. The following message appears:

    ```
    Started successfully. Type the URI to connect --> http://localhost:381
    ```

6. To start HP ComputeSensor as a service, follow these steps:

    a. Open the Windows command prompt and go to the installation directory.

    b. Run the following commands:

        To register as HP ComputeSensor Service:

        ```
        hpcomputesensor.exe -rs
        ```

        To start the service:

        ```
        hpcomputesensor.exe -srs
        ```

        Note: You need to start the HP ComputeSensor only for the .Zip installation.

7. To stop the HP ComputeSensor Service, follow these steps:

    a. Open the Windows command prompt and go to the installation directory.

    b. Run the following commands:

        To stop the service:

        ```
        net stop HP Compute Sensor Service
        ```

        To un-register:

        ```
        hpcomputesensor.exe -drs
        ```

        If you have started as a process:

        Type Ctrl+c in the command prompt or close the command window which is running hpcomputesensor.exe.

Install HP ComputeSensor on Linux or Linux-Debian Nodes

Note: You can install HP ComputeSensor on the Linux (RHEL, SuSE, Ubuntu), 64-bit operating system.

You can perform any one of the following tasks:

- Using Command Line

- Using .tar or .gz

Using Command Line

Follow these steps:

1. Log on as `root` user.

2. Go to the location where the downloaded HP ComputeSensor packages are available.

3. To start the installation, type the following command according to the node:

   For Linux nodes:

   ```
   rpm -ivh HPComputeSensor-02.01.002-Linux2.6_64-release.rpm
   ```

   Note: During the installation of `rpm`, a warning message appears. You can ignore the following message:

   ```
   warning: HPComputeSensor-02.01.002-Linux2.6_64-release.rpm: Header V3
   DSA/SHA1 Signature, key ID 2689b887: NOKEY
   ```

   For Linux-Debian nodes:

   ```
   dpkg -i HPComputeSensor-02.01.002-Linux_Debian5-release.deb
   ```

   After you run the command, the installer starts performing the installation checks and installs the HP ComputeSensor.

   Note: After the system restarts, **HP ComputeSensor Service** starts automatically.

Using .tar or .gz

Follow these steps:

1. Log on as `root` user.

2. Extract the contents of .tar or .gz file to a local directory.

3. Run the following command to generate the UUID:

   `hpcomputesensor -genUUID`

4. Configure HBP. For more information on configuring the HBP value, see "Configure the Heart Beat Polling" on page 19

5. To start the HP ComputeSensor explicitly, follow these steps:

   a. Log on to the node and go to the installation directory.

   b. Run the following commands:

      To run as a daemon:

      `./hpcomputesensor -srs`

      To run as a process:

      `./hpcomputesensor`

6. To stop HP ComputeSensor Service, follow these steps:

   a. Go to the installation directory.

   b. Run the following commands:

      To find `pid` of the running process:

      `ps -ef | grep hpcomputesensor`

      Input the value of pid in the below command:

      `kill -15 <hpcomputesensor-pid>`

Verify the Installation

To verify if the installation of HP ComputeSensor is successful, check for the following:

1. Go to the following directory:

   On Windows nodes: `%HPCSInstallDir%`

   On Linux or Linux-Debian nodes: `/opt/OV/hpcs`

2. Check the **hpcstrace.log** file. The following message appears:

```
Started successfully. Type the URI to connect --> http://localhost:381
```

> **Note: On Windows nodes**: A new entry named `HP Compute Sensor` Service will be listed under **Services.msc**.

Chapter 4: Configuring the HP ComputeSensor

After you install the HP ComputeSensor, you can complete the following additional configuration tasks on the node:

- Configure the port number

- Configure the collection level

- Configure the number of threads

- Configure the connection backlog

- Configure the debug level

- Configure the target

- Configure the Heart Beat Polling interval

Follow the steps to configure the port number, collection level and debug level:

1. Log on to the node with administrator privileges.

2. Go to the directory:

   - On Windows node: `%HPCSInstallDir%`

   - On Linux or Linux Debian node: `/opt/OV/hpcs`

3. Open the **hpcs.conf** file and edit the following values in the `hpcs.runtime` namespace.

   - **Configure the Port Number**

     Modify the default port number as **port=**`<Value>`. By default, the HP ComputeSensor nodes use the port 381 for communication.

     In this instance, `<Value>` is the port number that is used by HP ComputeSensor.

     > **Note:** If you have used **HPComputeSensor-02.01.002-Win5.2_64-release** and changed the port number, you must restart **hpcomputesensor**.

   - **Configure the collection level**

     Modify the default collection interval as **collection_Interval=**`<Value>`. By default, the collection interval is set to 1 second.

In this instance, `<Value>` is the collection interval in seconds.

> **Note:** On a HP vPV machine, the default collection interval for HP ComputeSensor is 5 seconds.

- **Configure the number of threads**

  Modify the default number of threads as **num_threads=**`<Value>`. By default, the number of threads is set to 5.

  In this instance, `<Value>` is the number of worker threads allocated to handle the incoming requests from clients. Increase this value if the number of incoming requests are more from clients.

- **Configure the connection backlog**

  Modify the default connection backlog as **connection_backlog=**`<Value>`. By default, the connection backlog is set to 16384 on Windows and 128 on Linux.

  In this instance, `<Value>` is the length of the backlog socket queue for the web server. Set it to a high value such as 4096 to obtain maximum scalability.

4. Open the **hpcs.conf** file and edit the default debug level in the `hpcs.trace` namespace.

   - **Configure the debug level**

     Modify the default debug level as **Debug_Level=**`<Value>`. By default, the debug level is set to INFO.

     In this instance `<Value>` is the debug level used to get debug and error information. You can also use `INFO`, `WARN`, `ERROR`, `DEBUG`, `ALL` as value for Debug Level.

5. Open the **hpcs.conf** file and edit the default target and interval values in the `hpcs.hbp` namespace.

   - **Configure the target**

     To push the HBP events to the target HP ComputeSensor acting as a registry.

     ```
     http://<Target system ip address>:<Target HPCS
     port>/hbphandler=/lwiregistry/up
     ```

     In this instance, `<Target system ip address>` is the IP address of the target system where HP ComputeSensor registry is running.

   - **Configure the Heart Beat polling interval**

Modify the default interval in seconds as **interval=**`<Value>`. By default, the interval is set to 90.

In this instance `<Value>` is the HBP interval in seconds.

6. Restart the HP ComputeSensor.

Configure the Hyper Text Transfer Protocol Secure Communication

HP ComputeSensor requires a certificate and private key in a single file in `.PEM` format. This file is used for secure communication during the SSL handshake between the HP ComputeSensor(s) installed on the vPV node and VM. You can enable HP ComputeSensor for Hyper Text Transfer Protocol Secure (HTTPS) communication by updating the `hpcs.conf` file.

Follow these steps to update the SSL certificate in the `hpcs.conf` file:

1. Log on to the node with administrator privileges.

2. Go to the directory:

   - **On Windows node:** `%HPCSInstallDir%`

   - **On Linux or Linux Debian node:** `/opt/OV/hpcs`

3. If the PEM certificate already exists then skip this step and go to step 4, else create the PEM certificate.

   To create the PEM certificate, follow these steps:

   a. Go to the directory:

      ○ **On Windows node:** `C:\\Program Files\\HP\\HP BTO Software\\hpcs\\ssl`

      ○ **On Linux or Linux Debian node:** `/opt/OV/hpcs/ssl`

   b. Run the `pemgen.sh` or `pemgen.bat` file and follow the instructions to create the PEM certificate.

   Note: The PEM certificate will be created in the default location. If the PEM certificate already exists, check the certificate in the defined location of your environment.

4. Open the **hpcs.conf** file and edit the following values in the `hpcs.runtime` namespace.

Modify the default SSL certificate as **ssl_certificate=**`<Value>`. Set this value to enable HTTPS. This parameter has no default value.

For example:

On Linux or Linux Debian node:

`ssl_certificate=/opt/OV/hpcs/ssl/nodecert.pem`

On Windows:

`ssl_certificate=C:\\Program Files\\HP\\HP BTO Software\\hpcs\\ssl\\nodecert.pem`

In this instance, `<Value>` is the path to the file containing this system(s) Private key and certificate in PEM format.

> **Note:**
> - Once the certificate is configured, HP ComputeSensor will accept only HTTPS connection. If the certificate is configured in HP vPV, then HBP URL should be configured appropriately.
>
> - HP ComputeSensor accepts HTTP connection for `localhost`, though HTTPS connection is configured.
>
> - If HP ComputeSensor is configured on HP vPV for secure communication (HTTPS), the same should be enabled on all VMs. By default, VMs is enabled in HTTP mode.

5. Restart HP ComputeSensor.

Configure the Heart Beat Polling

Follow these steps to update the HBP in the `hpcs.conf` file:

1. Log on to the node with administrator privileges.

2. Go to the directory:

   - **On Windows node:** `%HPCSInstallDir%`

   - **On Linux or Linux Debian node:** `/opt/OV/hpcs`

3. Open the **hpcs.conf** file and edit the following values in the `hpcs.hbp` namespace.

- Configure the target

  The following command sends the HBP events to a target HP ComputeSensor acting as a registry.

  ```
  http://<Target system ip address>:<Target HPCS
  port>/hbphandler=/lwiregistry/up
  ```

  In this instance, `<Target system ip address>` is the IP address of the target system where HP ComputeSensor registry is running.

- *(Optional)* Modify the default interval in seconds as **interval=**`<Value>`. By default, the interval is set to 90.

  In this instance `<Value>` is the Heart Beat Polling interval in seconds.

  > **Note:** If a firewall is configured, then the incoming connection to HP ComputeSensor port must be enabled on HP vPV system for HBP to work.

4. Restart HP ComputeSensor.

Chapter 5: Removing the HP ComputeSensor

You can remove HP ComputeSensor from the Windows and Linux or Linux-Debian nodes.

Remove the HP ComputeSensor from Windows node

You can perform any one of the following tasks:

- Interactive Uninstallation

- Silent Uninstallation

Interactive Uninstallation

Follow these steps:

1. To remove HP ComputeSensor, go to the **Control Panel**.

2. Click **Programs and Features**.

3. Select HP ComputeSensor and click **Uninstall**.

   The Programs and Features dialog box appears.

4. Click **Yes** to confirm the removal of HP ComputeSensor.

   HP ComputeSensor is removed from the node.

Silent Uninstallation

Follow these steps:

1. Log on to the node with administrator privileges.

2. Open the Windows command prompt.

3. Run the following command:

   ```
   msiexec /x <msi file name with exact location> /qn
   ```

   The command removes HP ComputeSensor from the node.

Remove the HP ComputeSensor from Linux or Linux-Debian nodes

To remove HP ComputeSensor from Linux or Linux-Debian node(s), follow these steps:

1. Log on as `root` user.

2. Run the following command:

   For Linux nodes:

   `rpm -e hpcomputesensor`

   For Linux-Debian nodes:

   `dpkg -P hpcomputesensor`

   The command removes HP ComputeSensor from the node.

Remove the HP ComputeSensor from HP vPV machine

To remove the HP ComputeSensor from HP vPV machine, follow these steps:

1. Log on to the node with administrator privileges.

2. Go to the location: `/opt/OV/hpcs/bootstrap`.

3. Run the following command:

   ./hpcsinstall -remove -node<ip address of the node>**-user**<username>**-pw**<password>

Chapter 6: Troubleshooting HP ComputeSensor

The following section details how to troubleshoot HP ComputeSensor:

- **Problem:** HP ComputeSensor does not run after installation is completed.

  Symptom: After you complete installation, HP ComputeSensor does not run.

  Resolution: Check for the error message: `cannot bind to 381`.

  If this error message is present in the **hpcs.conf** file, configure an alternate port. To configure the port number see, .

- **Problem:** HP ComputeSensor fails to start.

  Symptom: After you complete the installation, HP ComputeSensor fails to start.

  Resolution: Follow these steps:

  a. Log on to the node with administrator privileges.

  b. Go to the directory:

     - On Windows node: `%HPCSInstallDir%`

     - On Linux or Linux Debian node: `/opt/OV/hpcs`

  c. Open the **hpcs.conf** file and set the following variable in the `[hpcs.trace]` section:

     `Debug_Level=DEBUG`

  d. Restart HP ComputeSensor and check the messages in the **hpcstrace.log** file.

- **Problem:** When same vCenter is added to multiple HP vPV machines, VM(s) Guest OS drill down menu is not enabled in all vPV machines.

  Symptom: In an environment, HP vPV (vPV1) is added to a vCenter (VC1) having HP ComputeSensor configured on multiple VMs. When you add another HP vPV machine (vPV2) in the same environment, the VMs are not able to register with the HP ComputeSensor running on vPV2. Right-click the VM, the menu option shows **Attempt Real Time Guest OS drill down** instead of **Real Time Guest OS drill down**.

  Resolution: Follow these steps:

a. Log on to the newly added HP vPV machine (vPV2) as root user.

b. Go to the location: `/opt/OV/hpcs/bootstrap`

c. Run the following command:

```
./hpcsinstall -updateConf -node <ip address of the node> -user username> -pw
<password>
```

> **Note:** Before you run `updateConf` on the vPV machine, make sure you have the correct ip address of the vPV machine in the **hpcs.ini** file present in the `/opt/OV/hpcs/packages/` location.

- **Problem:** HP ComputeSensor fails to install.

  Symptom: When installing HP ComputeSensor packages on the HP vPV machine, you get the following errors:

  ```
  file /opt/OV/hpcs/README.txt from install of HPComputeSensor-1.00.004-1.x86_64
  conflicts with file from package HPCS_Sink-2.00.003-1.x86_64
  ```

  ```
  file /opt/OV/hpcs/hpcomputesensor from install of HPComputeSensor-1.00.004-
  1.x86_64 conflicts with file from package HPCS_Sink-2.00.003-1.x86_64
  ```

  ```
  file /opt/OV/hpcs/hpcs.conf from install of HPComputeSensor-1.00.004-1.x86_64
  conflicts with file from package HPCS_Sink-2.00.003-1.x86_64
  ```

  Resolution: HP ComputeSensor packages are already available on the HP vPV machine. You must not install HP ComputeSensor again.

- **Problem:** HP ComputeSensor is not able to recognize the IP address of the system.

  Symptom: HP ComputeSensor is installed on a machine where IP address is not set. After installing HP ComputeSensor, setting the IP address does not update the changes.

  Resolution: To update the IP address, follow the steps:

  a. Log on to the node with administrator privileges.

  b. Run the following command:

  ```
  hpcomputesensor -genUUID
  ```

  c. *(Optional)* Configure the hbphandler with a target. For more information, see .

  d. Restart HP ComputeSensor.

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