CloudCenter Suite Admin 5.1 Documentation

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Suite Admin 5.1 Home

CloudCenter Suite Administration Documentation

Cisco released CloudCenter Suite 5.1 on August 19, 2019.

- Suite Admin 5.1.0 released on August 19, 2019
- Suite Admin 5.1.1 released on September 26, 2019
- Suite Admin 5.1.2 released on November 25, 2019

Search

Suite Admin 5.1.2
updated Jan 27, 2021
view change
Backup
updated Nov 25, 2020
view change
Troubleshoot Suite Admin
updated Jan 23, 2020
view change

Release Notes

Suite Admin Release Notes

Suite Admin 5.1.2

Suite Admin 5.1.2 Release Notes

First Published: November 25, 2019

Updated:

- August 4, 2020: Removed references to SaaS EU from the entire site
- August 26, 2020: Added the *Limited Trial Program* section
- January 27, 2021: Updated the *Documentation* section to include a list of pages that were updated.

CloudCenter Suite 5.1.2 is available as installers for ALL components for all supported clouds. Contact the CloudCenter Suite Support team for additional details**.**

CloudCenter Suite 5.1.2 allows you to restore data in the following environments:

- Proxy environments. See Restore with Proxy for additional context.
- Non-proxy environments. See Restore without Proxy for additional details.

To restore data, the CloudCenter Suite requires that you launch a new cluster. If you configured the old cluster using a DNS, you must update the new IP address (from the restored cluster) that is mapped to the DNS entry. Once you update the DNS entry of your new cluster, these services will continue to work as designed.

The backup/restore feature is only available on CloudCenter Suite clusters installed using CloudCenter Suite installers and not on existing Kubernetes clusters.

No updates

While you can update just the modules without upgrading the Kubernetes cluster, you will continue to see the new CloudCenter Suite 5.1 features for each module. See Update Module for additional details.

- Before updating any module, verify that you have twice the required CPU/Memory in your cluster. A module-update scenario requires additional resources for the old pod to continue running until the new pod initializes and takes over. This additional resource requirement is temporary and only required while a module update is in progress. After the module is updated, the additional resources are no longer needed.
- You must update the Suite Admin module before you update any other CloudCenter Suite module.
- **Update only one module at at time. If you simultaneously update more than one module, your update process may fail due to limited resource availability. See Prepare Infrastructure for additional context.**
- You may see one or more error messages during the update process. Be aware that these messages will not affect the update itself.

See SaaS Access for FAQs on updating SaaS environments.

The 30-day trial is a limited program that ends on September 30, 2020. Contact a Cisco sales representative for additional details.

No updates

No updates

- Effective CloudCenter Suite 5.1.2, tenants admins can configure the Base URL of any of their ancestor tenants. The only caveat is that the admin cannot set the Base URL of child tenant for a parent tenant. See Base URL Configuration for additional details.

- After upgrading from Suite Admin 5.1.0 to 5.1.1, Kibana may not be accessible. This was a known issue in CloudCenter Suite CloudCenter Suite 5.1.1. After upgrading to CloudCenter Suite 5.1.2, Kibana is accessible and the workaround is no longer required.
- When configuring the backup storage location for the first time, CloudCenter Suite 5.1.1 uses this location as the default region. Subsequent changes to this region are no longer accepted. Once configured, you cannot change or update the backup storage location for the AWS S3 cloud region, when using CloudCenter Suite 5.1.1. This was a known issue in CloudCenter Suite 5.1.1 and has been fixed in CloudCenter Suite 5.1.2 – you can now change the backup storage location for the AWS S3 cloud region.
- When configuring a Backup, you cannot change the cloud account at any point in the process. his was a known issue in CloudCenter Suite 5.1.1 and has been fixed in CloudCenter Suite 5.1.2 – you can now change the cloud account.
- Prior to CloudCenter Suite 5.1.2, users were unable to delete a subtenant. Effective CloudCenter Suite 5.1.2, a tenant deletion is successful and tenants do not reappear post deletion.

No updates

No updates

No updates

No updates

No updates

This release addresses security vulnerabilities by upgrading OS libraries. Cisco provides updated OS and Docker files that address the security vulnerability for both applications.

When logging into the CloudCenter Suite UI in prior releases, the Tenant ID was always required. Effective CloudCenter Suite 5.1.2, users have the option to save the Tenant ID on the login page so when they open the browser and login every day they are not required to manually enter the Tenant ID.

No updates

The following APIs were introduced in CloudCenter Suite 5.1.2:

- Lists all users under the requested tenant's last login information – to help identify how often different types of users log into the application:
    - GET /suite-auth/api/v1/tenants/{tenantId}/lastLoginInfo
    - The *tenantId* must be a child of the current tenant.
    - See IDM Service API Calls 5.1.2 > *User Controller* for additional details.
- Lists the total current users as a snapshot in time long with the user count per tenant ID and the user count per role:
    - GET /suite-idm/api/v1/admin/user_statistics
    - See IDM Service API Calls 5.1.2 > *User Controller* for additional details.

The following documentation changes were implemented in CloudCenter Suite 5.1.2:

- Suite Admin 5.1.2 API Calls (Swagger API files are available for Suite Admin 5.1.2)
- Base URL Configuration (updated the Requirements section)
- Email Settings (added a note for AWS environments)
- Proxy Settings (added a new sentence to the note in Step 6)
- Restore without Proxy (added the command to remove the backup folder if it does not exist)
- VMware vSphere Appliance Setup (added note on NTP settings)
- OpenStack Installation (added a note about the SSH key pair dependency)
- VMware vSphere Installation (updated the details to upload the tenant image for OVA files, added a note to the HTTP/HTTPS settings step, updated the unique IP note, added examples to indicate that the UI does not accepts keys without the username@machine entry, NTP note, proxy allowed list tip)
- Troubleshoot Suite Admin (added the *Deployment Repo Uses the Public Repo Even if Kubernetes was Restarted* section and the *DHCP IP Allocation Mode* section)
- VMware vSphere Appliance Setup (added nuances and procedures for with/without DHCP settings and added Step 10)
- Update Module (added a new section, *Configuring Memory Limits for Modules*)
- Troubleshooting (added a new section, Expired Certificates)
- Existing Cluster Installation (updated for technical accuracy based on supported Kubernetes version)
- SaaS Access (removed references to SaaS EU)
- Backup (emphasized backup only being available on new CloudCenter Suite clusters)
- End of Support Notices (updated the page to reflect the latest information for the EOL and EOS for Cisco CloudCenter products)
- SaaS Access (added the notification for the date when the CloudCenter Suite SaaS platform will be completely decommissioned)

In some CloudCenter Suite 5.x environments it may be necessary to increase CPU and memory limits for the *common-framework-suite-prod-mgmt* pod prior to upgrade of any CloudCenter Suite module. See Update Module for details.

CloudCenter Suite 5.1.2 has the following resolved issue:

- **CSCvp23756**: After upgrading from CloudCenter Suite 5.0 to 5.0.1 and having a certificate installed in the UI, the user cannot login to the CloudCenter Suite UI.
  Resolution: CloudCenter Suite 5.1.2 includes a fix to ensure that this feature works as designed.
- **CSCvq96291**: After upgrading from Suite Admin 5.0.3 to Suite Admin 5.1 on a Kubernetes cluster that was setup as a pre-existing cluster (no installers were used other than to install products/modules), a user reported that the whole CloudCenter Suite system stopped working because the ingress controller pod continually crashed.
  Resolution: CloudCenter Suite 5.1.2 was tested with this procedure and the product installation completed on an existing, upgraded cluster, without any issues.

Suite Admin 5.1.1

Suite Admin 5.1.1 Release Notes

First Published: September 26, 2019

Updated:

- September 30, 2019: Added the supported Kubernetes version and updated cluster availability details for the Backup/Restore feature.
- October 15, 2019: Updated the Kibana search filter access in the *Known Issues* section.
- November 4, 2019: Updated the Documentation section to list modified pages.

CloudCenter Suite 5.1.1 is available as installers for ALL components for all supported clouds. Contact the CloudCenter Suite Support team for additional details**.**

CloudCenter Suite supports Kubernetes 1.15.4 and earlier releases.

CloudCenter Suite 5.1.1 allows you to restore data in the following environments:

- Proxy environments. See Restore with Proxy for additional context.
- Non-proxy environments. See Restore without Proxy for additional details.

To restore data, the CloudCenter Suite requires that you launch a new cluster. If you configured the old cluster using a DNS, you must update the new IP address (from the restored cluster) that is mapped to the DNS entry. Once you update the DNS entry of your new cluster, these services will continue to work as designed.

The backup/restore feature is only available on CloudCenter Suite clusters installed using CloudCenter Suite installers and not on existing Kubernetes clusters.

You can use the installer to upgrade the Kubernetes cluster from CloudCenter Suite 5.1.0 to a later version. During this upgrade, the base image (**CCS-*version*-Base-Image**) from the upgrader is used to upgrade the Kubernetes cluster nodes. See the following pages for additional details.

- Upgrade Approach
- Amazon EKS Upgrade
- Azure AKS Upgrade
- Google GKE Upgrade
- OpenStack Upgrade
- VMware vSphere Upgrade

To upgrade the Kubernetes cluster from CloudCenter Suite 5.0.x to CloudCenter Suite 5.1.1, follow this process:

1. Update the Suite Admin on your CloudCenter Suite 5.0.x cluster to CloudCenter Suite 5.1.1. This update introduces the Backup and Restore functionality.
2. Backup your CloudCenter Suite 5.0.x cluster. See Backup for additional details.
3. Launch a new CloudCenter Suite 5.1.1 cluster and restore the backup from the previous step. See Restore for additional details.

See SaaS Access for FAQs on updating SaaS environments.

While you can update just the modules without upgrading the Kubernetes cluster, you will continue to see the new CloudCenter Suite 5.1 features for each module. See Update Module for additional details.

- Before updating any module, verify that you have twice the required CPU/Memory in your cluster. A module-update scenario requires additional resources for the old pod to continue running until the new pod initializes and takes over. This additional resource requirement is temporary and only required while a module update is in progress. After the module is updated, the additional resources are no longer needed.
- You must update the Suite Admin module before you update any other CloudCenter Suite module.
- **Update only one module at at time. If you simultaneously update more than one module, your update process may fail due to limited resource availability. See Prepare Infrastructure for additional context.**
- You may see one or more error messages during the update process. Be aware that these messages will not affect the update itself.

See SaaS Access for FAQs on updating SaaS environments.

The load balancer that was used for the master nodes in CloudCenter Suite 5.0.x is no longer required in CloudCenter Suite 5.1.1.

No updates

No updates

No updates

No updates

No updates

No updates

No updates

See Security Considerations for details.

No updates

- If you upgrade only the Suite Admin from 5.0.x to 5.1.0, you will continue to see the **Download SSH Key** option. However, if you install CloudCenter Suite or Suite Admin using the 5.1.1 appliance in private clouds, you will no longer see the **Download SSH Key** option in the Installer success page and in the Suite Admin Details page. This is because you have provided the key being used in the placement properties page when installing CloudCenter Suite.
- System administrators no longer have root access to CloudCenter Suite clusters.
- The **Reconfigure Cloud Credentials** feature is no longer available for OpenStack environments.

The following new APIs are available effective Suite Admin 5.1.1:

- GET /suite-idm/api/v1/admin/tenant_hierarchy
  - This new API lists all tenant and subtenants with the ability to select hierarchy reporting under a tenant, along with the total tenant count, the breakdown by tenant ID with a defined tenant name, and the last login by a user for each tenant.
  - See IDM Service API Calls 5.1.1 for additional details.
- GET /suite-idm/api/v1/admin/user_statistics
  - This new API identifies the total users as a snapshot in time and includes the user count per tenant ID and user count per role.
  - See IDM Service API Calls 5.1.1 for additional details.
- GET /suite-idm/api/v1/admin/users?roles=SUITE_TENANT_ADMIN
  - This new API lists the email address of all tenant admin roles for maintenance and event notifications.
  - The roles enumeration accepts any role listed in the Suite Admin as a valid entry.
  - See IDM Service API Calls 5.1.1 for additional details.
- DELETE /suite-idm/api/v1/tenants/id?force=true
  - This new API option (force=*true*) forces a resource deletion even if resources are still attached to the requested tenant.
  - See IDM Service API Calls 5.1.1 for additional details.

The following documentation changes were implemented in CloudCenter Suite 5.1.0:

- Restore Approach (deleted this page and replaced it with the Restore page)
- Prepare Infrastructure (updated the installer vCPU requirements)
- OpenStack Installation (add the tenant network field details and added Port 6443 requirements)
- Offline Repository (added a note to clarify usability)
- Manage Clusters (added cloud-specific tips)
- Prepare Infrastructure (added the supported Kubernetes version support information)
- Backup (added a note on feature availability)
- Restore with Proxy (added a note on feature availability)
- Restore without Proxy (added a note on feature availability)
- Offline Repository (updated for technical accuracy)
- Manage Clusters (updated the OpenStack credentials note)
- VMware vSphere Installation (updated the SSH Public Key description and added nuances and clarifications to ensure technical accuracy)
- VMware vSphere Appliance Setup (added a tip in Step 4g)
- Email Settings (added a note about the save implications)
- Without Internet Access (updated for technical accuracy)

- OpenStack Installation (add port and Ubuntu clarification notes)
- Azure Appliance Setup (updated the reference link in Step 1)

CloudCenter Suite 5.1.1 has the following known issues:

- CloudCenter Suite 5.1.1 only supports air gap environments with proxy services. See Without Internet Access for additional details. Any isolated environment without proxy services is not supported.
- When configuring the VMware vSphere Appliance Setup, use lowercase characters when providing the installer hostname in the Customize vApp Properties page.
- When configuring the backup storage location for the first time, CloudCenter Suite 5.1.1 uses this location as the default region. Subsequent changes to this region are no longer accepted. Once configured, you cannot change or update the backup storage location for the AWS S3 cloud region, when using CloudCenter Suite 5.1.1.
- When configuring a Backup, you cannot change the cloud account at any point in the process.
- After upgrading from Suite Admin 5.1.0 to 5.1.1, Kibana may not be accessible. To workaround this issue, you must delete the Kibana Index file and restart the Kibana pod in your Kubernetes cluster as described in the following procedure.

    1. Access any of the pods in your Kubernetes Suite Admin cluster (for example, the license pod) using the following command.

        ```
        kubectl exec -it common-framework-suite-license-0 -n cisco /bin/bash
        ```

    2. Delete the Kibana index file using the following command.

        ```
        curl -XDELETE http://suite-logging-elasticsearch-2:9200/.kibana_1
        ```

    3. Exit this Kubernetes Suite Admin cluster pod that you just accessed.
    4. Restart the Kibana pod (search for exact name using the **kubectl get pods -n cisco | grep kibana** string) using the following command.

        ```
        kubectl delete pod <kibana pod name> -n cisco
        ```

    5. Wait for approximately 30 seconds for Kibana pod to come up.
    6. Once the Kibana pod is up and running, access **Suite Admin** > **Dashboard** > **View Modules Details** > **View Logs Kibana**.
    7. Kibana will be accessible at this point.
    8. Import the attached search filters file to the Kibana Application > **Management** > **Saved Objects** > click the **Import** link > then click **Import** within the **Import saved objects** pane and finally select the attached JSON file.

    9. Once you select the attached file in your Kibana application, click the **Import** button at the bottom of the **Import saved objects** pane.

You have now deleted the Kibana Index file, restarted the Kibana pod, and imported the search filters in your Kubernetes cluster.

This release includes fixes for internally found issues that do not change the product behavior in any way.

Suite Admin 5.1.0

Suite Admin 5.1.0 Release Notes

First Published: August 16, 2019

Updated:

- September 17, 2019: Enhanced the *Documentation* section to include a list of pages that were updated.

CloudCenter Suite 5.1.0 is available as installers for ALL components for all supported clouds. Contact the CloudCenter Suite Support team for additional details**.**

While you can update just the modules without upgrading the Kubernetes cluster, you will continue to see the new CloudCenter Suite 5.1 features for each module. See Update Module for additional details.

- Before updating any module, verify that you have twice the required CPU/Memory in your cluster. A module-update scenario requires additional resources for the old pod to continue running until the new pod initializes and takes over. This additional resource requirement is temporary and only required while a module update is in progress. After the module is updated, the additional resources are no longer needed.
- You must update the Suite Admin module before you update any other CloudCenter Suite module.
- **Update only one module at at time. If you simultaneously update more than one module, your update process may fail due to limited resource availability. See Prepare Infrastructure for additional context.**
- You may see one or more error messages during the update process. Be aware that these messages will not affect the update itself.

See SaaS Access for FAQs on updating SaaS environments.

The load balancer that was used for the master nodes in CloudCenter Suite 5.0.x is no longer required in CloudCenter Suite 5.1.0.

- **vSphere and OpenStack:**
  - **OVA and QCOW2 Images**:
    - In prior releases, the same OVA image for vSphere and QCOW2 image for OpenStack was used for both the installer and the Kubernetes cluster that is launched by the installer. Effective CloudCenter Suite 5.1.0, different images will be used for this purpose.
    - The installer includes a default Kubernetes cluster image (called, **CCS-*version*-Base-Image**) with a configurable option to override the use of this default image. See VMware vSphere Installation or OpenStack Installation for additional context. This is a change!
  - **Proxy Configuration Private Clouds**:
    - Installers support proxy configuration with two additional fields, **HTTP Proxy** and **HTTPS Proxy**, to configure the IP address and port of your proxy server.
    - If you are behind a proxy environment, you must provide the proxy settings in the installers and you will not need an offline repository.
    - See Offline Repository for additional details.
- **vSphere:**
  - **Take Me to Suite Admin Link**:

        - In CloudCenter Suite 5.0, if you select **vSphere DHCP IP Allocation** mode, once the installation completes, you see the **Suite Admin URL** link which provides the IP address of one of the Masters. This IP address cannot be controlled by the user.
        - In CloudCenter Suite 5.1, configure the IP address of the Master VIP for the **Suite Admin URL** link. This is a change!
    - **SSH Key and Username**:
        - In CloudCenter Suite 5.0, this field value was dynamically assigned.
        - In CloudCenter Suite 5.1, you can provide your own SSH key and username. This is a change!
- **OpenStack:**
    - **SSH Key**:
        - In CloudCenter Suite 5.0, this field value was dynamically assigned.
        - In CloudCenter Suite 5.1, you can provide your own SSH key. This is a change!

As a Suite Admin administrator, you can perform the following additional tasks in CloudCenter Suite 5.1:

- **Backup and Restore**:
    - The CloudCenter Suite uses the ***latest*** cloud/cloud account and bucket configurations to retrieve the list of existing backups. This option is displayed in the table in the **Admin** > **Backup** page (under the Data Recovery section in the Suite Admin UI). You can backup data to Google Cloud Storage or AWS S3. See Backup for additional details
    - To restore data, the CloudCenter Suite requires that you launch a new cluster. This is a manual process. See Restore for additional details.
    - For isolated, air gap, environments, that do not have internet access, or to back up to a local system, a manual backup procedure is available – see Isolated Environments for additional details.
- **Last Login Indicator**:
    - The log session history information for each CloudCenter Suite session provides details on the last login time, the type of login, and the location (IP address) of the person logging into the session.
    - The number of failed attempts provides a point of verification and allows the user to notice unauthorized use of the CloudCenter Suite system at any given time.
    - See Suite Admin Dashboard > *Last Login Indicator* for additional details.
- **Impersonate a User**:
    - User impersonation allows you to temporarily sign into any CloudCenter Suite module as a different user.
    - Suite and tenant administrators can impersonate all other users in their tenants and sub-tenants and take any action, regardless of the permission level of the user being impersonated.
    - See Create and Manage Users > *Impersonate User* for additional details.
- **Archive Logs on the AWS S3 Region**:
    - By default, raw log data is collected by the Kubernetes pod and saved to a temporary location on the CloudCenter Suite server.
    - The temporarily stored logs on the CloudCenter Suite server are automatically purged. This log file location is not configurable from the CloudCenter Suite.
    - If you configure an archive location for your AWS S3 region, the CloudCenter Suite logs can also be saved to the AWS S3 region besides the temporary location on the CloudCenter Suite server. If so, you can enable the archive of log files from the Suite Admin UI to the AWS S3 region using the S3 bucket name and AWS credentials.
    - See Log Archive for additional details.
- **Expanded List of Currency Codes**:
    - The Suite Admin now offers additional currency code options.
    - See Currency Conversion for a complete list.

No updates

No updates

CloudCenter Suite introduces a *Notifications* feature that is accessible from any page and can be triggered at any time by clicking the bell icon.

- This feature is available to be viewed in all modules.
- The notification content is only triggered by the Action Orchestrator and Cost Optimizer modules.
- See Suite Admin Dashboard > *Notifications* for additional details.

Users can perform the following additional tasks in CloudCenter Suite 5.1:

- **Standard Log Format Support**:
    - Where relevant, modules display the user and tenant information.
    - You can search by *userId* or *tenantId* when you view logs.
    - The log files support JSON format.
    - See Monitor Modules for additional context.
- **Delete User/Tenant**:
    - When you, as the administrator, attempt to delete a CloudCenter Suite user (or tenant or sub-tenant), the Suite Admin triggers a confirmation process to verify (with each module) that the resource can be deleted.
    - As each user/tenant/sub-tenant may have a separate set of dependencies, multi-selection is not possible for this action. This is a change!
    - See Create and Manage Users > *Delete User* and Manage Tenants > *Tenants List Page* for additional details.
- **Enable/Disable User**:
    - A new **Enable** column allows administrators to configure the state for each user.
    - This column replaces the Enable/Disable option in the Actions dropdown list. This is a change!
    - See Create and Manage Users > *Enable/Disable User* for additional details.

- **Email Link Expiration**:
    - The user receives an alert when logging in for the first time, along with a link to change the assigned password.
    - The user has 30 days to act on this message and use the link to change the password. This time period has changed from 1 day in earlier releases. This is a change!
    - See Manage Tenants > *General Settings* for additional details.

No updates

See Security Considerations for details.

The Suite Admin UI includes the following updates and changes:

- The CloudCenter Suite UI is available in the following languages and is only configurable from the UI:
    - English
    - French
    - Japanese
    - Simplified Chinese
- You can set your language of choice in one of two configuration screens once the CloudCenter Suite has been installed:
    - Administrative Level: When you configure the suite administrator. See Initial Administrator Setup > *Configure an Admin User and Tenant* for details.
    - User Level: When you edit your user profile. See Suite Admin Dashboard > *The Header* for details.
- See UI Language Availability for additional details.

The following list identifies the functions that were deprecated in Suite Admin UI:

- The Enable/Disable option in the Actions dropdown list as identified in the *Enable/Disable User* section above.
- Multi-selection is not possible when deleting users/tenants/sub-tenants as identified in the as identified in the *User Tenant Management* section above.

Suite Admin 5.1.0 includes the following new and updated APIs:

New APIs

The following list identifies the new Suite Admin APIs:

- Suite Notification Service API Calls 5.1.0
    - List notifications:
      GET /api/v1/notifications
    - Get a notification:
      /api/v1/notifications/{id}
    - Acknowledge notifications:
      PUT/api/v1/notified
- Authentication Service API Calls 5.1.0
    - Obtain the last login information:
      GET /suite-auth/api/v1/currentUser/lastLoginInfo
    - Authentication endpoint for impersonation of a child or descendant tenant. The generated JWT token will have additional SUITE_IMP role:
      POST /suite-auth/api/v1/impersonate
    - Authentication endpoint for impersonation. The generated JWT token will have additional SUITE_IMP role:
      POST /suite-auth/api/v1/impersonate/{userId}
    - Return to the original user after impersonation, restores role and creates a new JWT for the original user:
      GET /suite-auth/api/v1/returnUser
- IDM Service API Calls 5.1.0
    - Create a task:
      POST /api/v1/develop/tasks
    - Update a task:
      PUT /api/v1/develop/tasks/{id}
    - Delete a task:
      DELETE /api/v1/develop/tasks/{id}
    - Get a preflight:
      GET /api/v1/preflights/{preflightId}
    - List of users in a simplified format:
      GET /api/v1/simple_users
    - List of users for a tenant's in simplified format:
      GET /api/v1/tenants/{tenantId}/simple_users
    - List preflights under a tenant:
      GET /api/v1/tenants/{tenantId}/preflights
- Logs Service API Calls 5.1.0
    - Get log archive configuration:
      GET /api/v1/configs/archive
    - Save log archive configuration:
      POST /api/v1/configs/archive

- Delete log archive configuration:
  DELETE /api/v1/configs/archive
- Disable log archive configuration:
  POST /api/v1/configs/archive/disable
- Test permission to write to AWS S3 Bucket:
  POST /api/v1/configs/validate_s3_bucket
- Get all loggers configuration for the specified service:
  GET /api/v1/services/{serviceName}/loggers
- Set loggers configuration for a service:
  POST /api/v1/services/{serviceName}/loggers

Updated APIs

The following list identifies the updated Suite Admin APIs:

- IDM Service API Calls 5.1.0
  - Search and update tenants using the **id** parameter:
    PUT /api/v1/search/tenants
  - Search and update groups using the **id** parameter:
    PUT /api/v1/search/tenants/{tenantId}/groups Search groups
  - Delete tenants using a unique, alphanumeric **tenantId**:
    DELETE /api/v1/tenants/{tenantId}
  - Tenant-based settings includes useParent, useParentConfig detailsbased on root user credentials and updated **currencyExchange. currencyCode** details:
    - GET /api/v1/tenants/{tenantId}/effective_tenant_config
    - GET /api/v1/tenants/{tenantId}/tenant_config
    - PUT /api/v1/tenants/{tenantId}/tenant_config
    - POST /api/v1/tenants/{tenantId}/tenant_config
  - Add a product to a tenant includes preflight details:
    POST /api/v1/tenants/{tenantId}/products/{productId}
  - Check validity of new user parameter includes preflight details:
    PUT /api/v1/tenants/{tenantId}/validity/newUser
  - Delete the requested user includes preflight details:
    DELETE /api/v1/users/{userId}
- Product Registry Service API Calls 5.1.0
  - Get Product Metadata includes preflight details:
    GET /api/v1/products/{productId}
- Resource Management Service API Calls 5.1.0
  - Deletes a resource deletes the **created** (date), **id**, **lastUpdated**, **resourceName**, and **resourceType** details:
    DELETE /api/v1/resource/{resourceId}
  - Returns tenant branding information with **companyWebsite**, **contactEmail**, **privacyPolicyUrl**, **termOfServiceUrl**, **trademarkUrl** details:
    GET /api/v1/tenants/{tenantId}/branding
  - Save tenant branding information with **companyWebsite**, **contactEmail**, **privacyPolicyUrl**, **termOfServiceUrl**, **trademarkUrl** details:
    POST /api/v1/tenants/{tenantId}/branding

Deprecated APIs

The following list identifies the deprecated Suite Admin APIs:

- Logs Service API Calls 5.1.0
  - Get log files:
    GET /api/v1/products/{productId}/files
  - Get services:
    GET /api/v1/products/{productId}/services
- Resource Management Service API Calls 5.1.0
  - Get all loggers configuration for the specified service:
    GET /api/v1/services/{serviceName}/loggers
  - Set loggers configuration for a service:
    POST /api/v1/services/{serviceName}/loggers
  - Deletes the specified list of loggers configuration for the specified service:
    DELETE /api/v1/services/{serviceName}/loggers

- The documentation path differs based on your environment using the SaaS solution or the Self-Hosted solution. Consequently, the following sections were moved from the Suite Admin section to the Self-Hosted Installation section:
  - Suite Architecture
  - Suite Admin Workflow
  - Initial Administrator Setup
  - Kubernetes Cluster Management
  - Configure Smart Licenses
- The following documentation changes were implemented in CloudCenter Suite 5.1.0:
  - *Restore Approach* (deleted this page and replaced it with the Restore page)

- Prepare Infrastructure (updated the installer vCPU requirements)
- OpenStack Installation (add the tenant network field details and added Port 6443 requirements)
- Offline Repository (added a note to clarify usability)
- Manage Clusters (added cloud-specific tips)
- VMware vSphere Appliance Setup (added screenshots and tips)

CloudCenter Suite 5.1.0 has the following known issue:

- If a notification is read by one user, then this icon reflects the notification as read for all users.

The following issue was resolved in CloudCenter Suite 5.1.0:

- **CSCvq09604**: The web service global parameter does not work with proxy authentication.
  Resolution: As web service calls are routed through the proxy CloudCenter Suite 5.1 includes a fix to ensure that when proxy settings are modified on the Suite Admin, the CloudCenter Suite management pod is rebooted to apply the configuration. See Proxy Settings for additional details.

UI Language Availability

UI Language Availability

Cisco provides *English* as the only language option for CloudCenter Suite documentation.

You have multiple language options when you view the CloudCenter Suite UI.

> In CloudCenter Suite 5.1.0, the UI for the installation process (from running the installer up to the Initial Administrator Setup) is only available in *English* – you cannot change the language, not does Cisco detect your browser language at that time.
>
> The first point where you can change the language and where Cisco detects your browser language, is in the Suite Admin login page as listed in the sections below.

Cisco provides the following language choices to view the CloudCenter Suite UI:

- English
- French
- Japanese
- Simplified Chinese

The CloudCenter Suite detects your browser's language of choice and automatically displays the CloudCenter Suite UI in the same language – provided it is one of the language options listed in the above section.

Regardless of the detected browser language or the administrator settings at the time of CloudCenter Suite installation, each end user can change the language at any time from the module to which each user has access.

You can set your language of choice in one of two configuration screens:

- Administrative Level: When you configure the suite administrator. See Initial Administrator Setup > *Configure an Admin User and Tenant* for details.
- User Level: When you edit your user profile. See Suite Admin Dashboard > *The Header* for details.

Suite Admin Dashboard

Suite Admin Dashboard

The Suite Admin Dashboard displays the following information:

- The Suite Admin to administer the CloudCenter Suite as described in Initial Administrator Setup.
- Additional modules that you can install on an as-needed basis.

The Suite Admin Dashboard is visible to suite administrators configured by the Initial Administrator.

To access the Dashboard, bookmark the page to ensure easy navigation. During the course of using the Suite Admin documentation, you will see instructions to *navigate to the Suite Admin Dashboard*. This step implies that the suite administrator must access this home page to perform the remaining procedure!

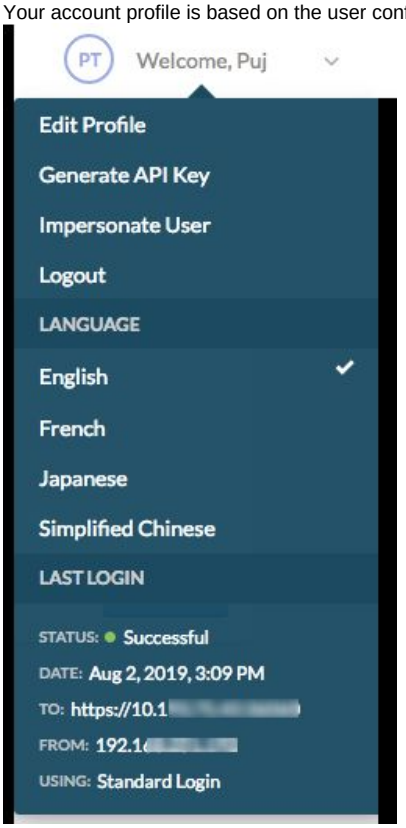
The Suite Admin Dashboard is made up of multiple panes:

- The header
- The left tree pane
- The main display pane
- The footer

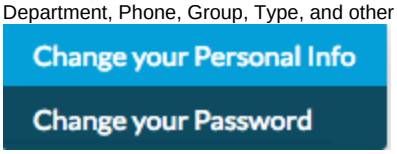
The CloudCenter Suite uses the same header for all modules installed by the Suite Admin. As such, the following items are displayed for all modules in their respective dashboards:

Edit Profile

Your account profile is based on the user configuration setup as displayed in the following screenshot.



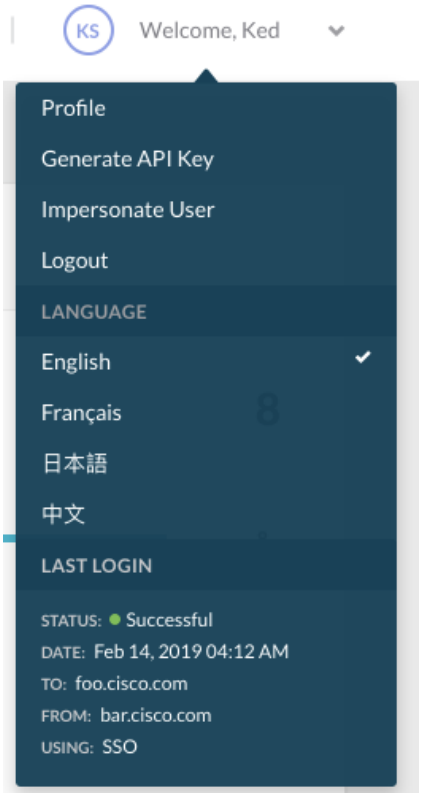
- When you click the **Profile** link, you see the profile settings based on your user level and user configuration:
    - If a user was created in the Suite Admin, then that user can edit profile details available in the Actions dropdown as displayed in the following screenshot.
    - If a user was created using SSO setup, then this SSO user cannot reset password after logging into the CloudCenter Suite.
        - SSO users can only changing their photo in their profile page.
        - The options displayed in the above screenshots are not be available to SSO users.
- If you need an *API key* to use CloudCenter Suite APIs, click **Generate API Key**. The suite administrator can generate/regenerate the API management key for any user within their tenant). See API Key for details.
- Besides, **English**, you have multiple language options to view the CloudCenter Suite UI. See UI Language Availability for additional details.
- Suite Administrators:
    - Must provide the following information either with the AD setup or when adding users individually: First Name, Last Name, and Email.
    - Can configure one or more of the following details as name-value pairs or from an AD setup: Name, Designation, Location, Department, Phone, Group, Type, and other details. Once configured, users can change the details displayed in the following screenshot:

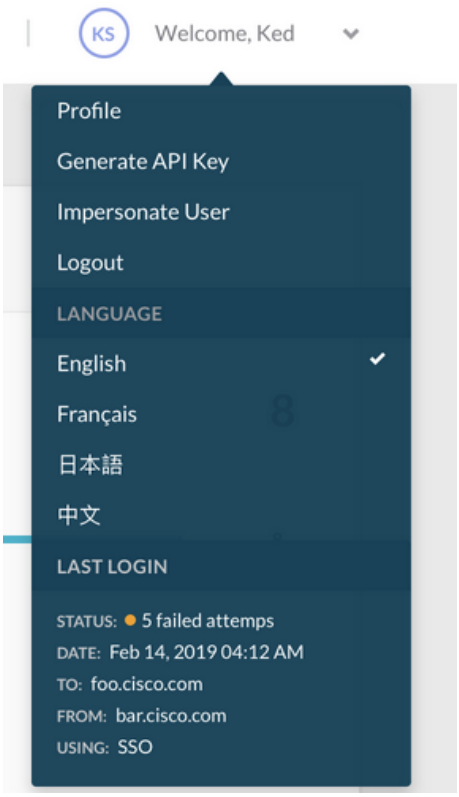


        - Personal profile information by clicking **Actions** > **Change your Personal Info**
        - User Password by clicking **Actions** > **Change your Password**

Last Login Indicator

The log session history information for each CloudCenter Suite session provides details on the last login time, the type of login, and the location (IP address) of the person logging into the session as visible in the following screenshots.



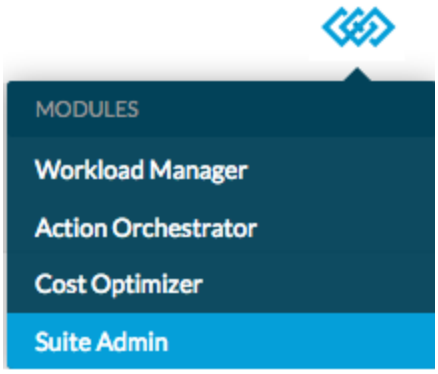


The following table identifies the last login details provided in this section.

Field	Possible Values	Description
Status	• Successful • Failed (number of failed attempts)	The number of failed attempts provides a point of verification and allows the user to notice unauthorized use of the CloudCenter Suite system at any given time. The remaining attempts are included in the number listed, but the details are only provided for the last login attempt. After 10 failed attempts, the system is locked out for 10 minutes. This user can log back in after 10 minutes.
Date	Month, day, year, and time	The full date and time format of this event is listed here.
To	The address of your CloudCenter Suite system	The DNS or IP address of the Suite Admin UI.
From	The address of the person accessing your system	The DNS or IP address of the event origination endpoint.
Using	• SSO • Standard • Impersonation	This field lists the type of login. If the event was not accessed as an SSO event or an impersonation event, you see *Standard* login displayed in this field. • See SSO Setup for additional details on SSO. • See Create and Manage Users > *Impersonate User* for additional details on impersonation.

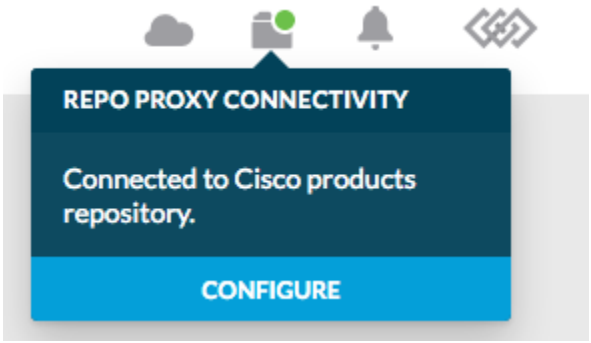
Module Navigation

To switch back and forth between the module dashboards and/or the Suite Admin dashboard as displayed in the following screenshot. See Module Lifecycle Management for details.



Offline Repo

After you create a VM from the OVA, you can use the VM as an offline repository server. If you set up this connection, the icon displays a green status circle as displayed in the following screenshot. See Offline Repository Configuration for details.



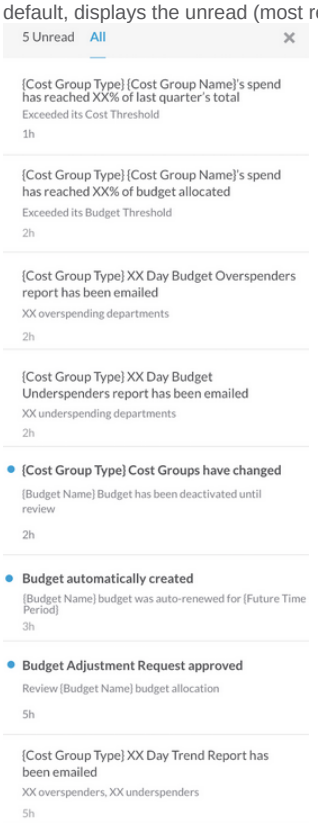
Notifications

> This feature is available for all modules, however, the notification content feed is only triggered by the Action Orchestrator and Cost Optimizer modules.

The Notifications feature is accessible from any page and can be triggered at any time.

- If triggered (bell icon), you receive the notification stream for selective events within the module.
    - Cost Optimizer Events: For example, trend and budget alerts. See Alerts Page for a complete list of notifications.
    - Action Orchestrator Events: For example, overspending alerts. See System Elements > *Workflow Events* for details.
- Each notification contains the following details:
    - The event title.
        - Notifications are listed as an aggregation for all modules.
        - The new tab icon indicates that a new tab will be opened for that notification.
    - The event details, if available, for each event.
    - The created timestamp on each notification displays the relative time (for example, 4 hours, 2 days, and so forth) if within 4 weeks and the absolute time (for example, August 10, 2019) if later than 4 weeks.
- An end user can view module-specific notifications based on their role and access level within the CloudCenter Suite.
- The grey, bell icon displays a blue circle (displayed in the following screenshot) when unread notification(s) become available for a module.

- To view notifications, click the bell icon to open the Notifications Pane to display messages as displayed in the following screenshot. The pane, by default, displays the unread (most recent notification first) notifications tab.



- To close the Notifications Pane click the **X** or click *outside* the pane, within the UI.

Cluster Management

The Suite Admin dashboard also lists *Cluster Management* icons and notifications. See Kubernetes Cluster Management for details.

The Tree pane is displayed to the left of your screen and displays a list of items that you can configure as the suite administrator. The options in the tree pane differ based on your module selection and your user level.

From this pane, the suite administrator for example, can perform the following tasks:

- User Management
- Group Management
- Tenant Management
- Smart License Management
- Admin Options Management

The default view for the Display pane is a list of modules to administer:

- The Suite Admin – Continue reading this section for additional details.
- The Workload Manager – See Workload Manager 5.1 for additional details.
- The Action Orchestrator – See Action Orchestrator 5.1for additional details.
- The Cost Optimizer – See Cost Optimizer 5.1 for additional details.

Each module represents your ability to install and administer each module. While the Suite Admin is not a typical module, it alerts the suite administrator to additional configuration capabilities.

The footer provides links to the main Cisco website – while the footer configuration defaults to Cisco, the Suite Administrator can change the following items as described in Manage Tenants > *Branding Information Tab.*

- CloudCenter Suite Documentation
- Terms of Service
- Online Privacy Policy
- Trademark information
- The CloudCenter Suite being used

See the following release notes for version-specific information:

- The CloudCenter Suite release notes
- The Suite Admin Release Notes

User Tenant Management

User Tenant Management

Create and Manage Users

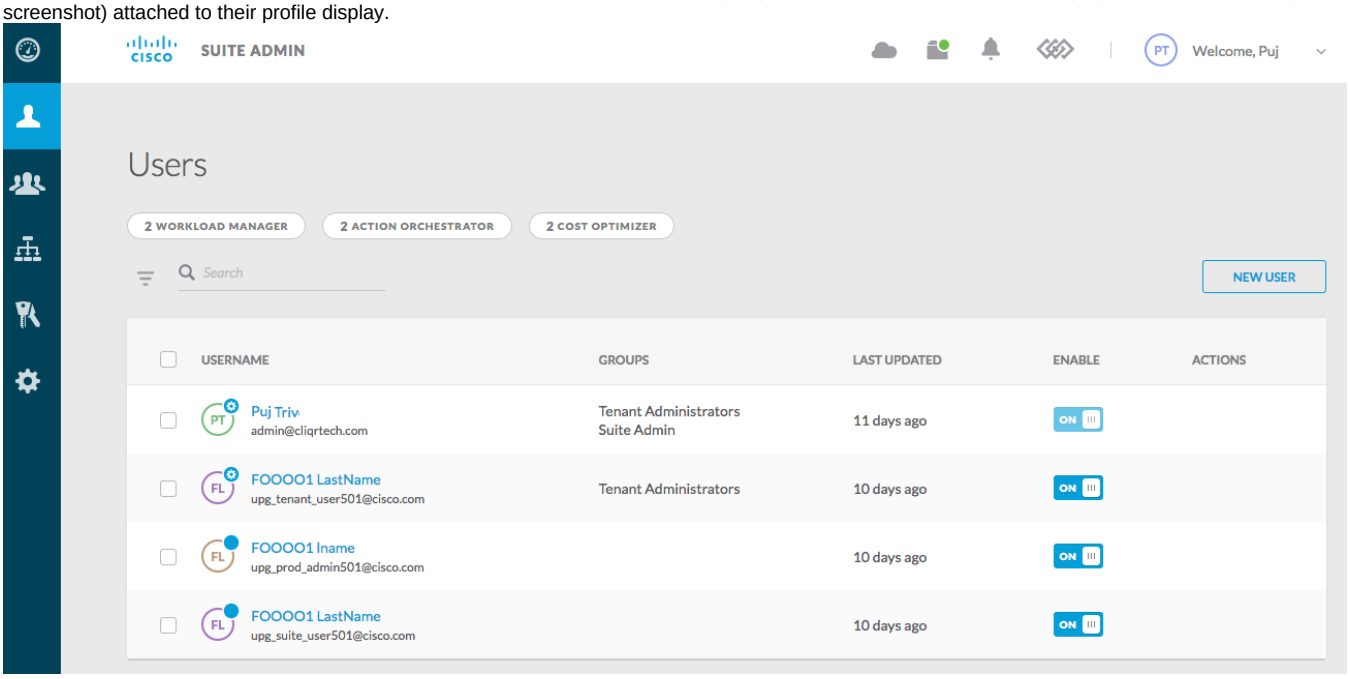
Create and Manage Users

From the Suite Admin perspective, a user refers to two main roles: the suite administrator and the tenant administrator.

When you navigate to the Users page from the Suite Admin Dashboard, you see a summary of configured users at the top of the page which displays the following details:

- The total number of CloudCenter Suite users
- The total number of Suite Admin users
- The total number of Workload Manager users
- The total number of Action Orchestrator users
- The total number of Cost Optimizer users
- The total number of cross-module users – users who can access multiple CloudCenter Suite modules.

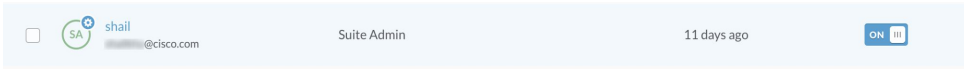
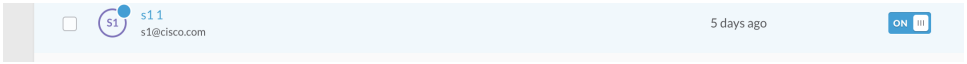
Any user who is a member of the Suite Admin, Product Admin, or Module Admin groups are identified by the admin icon (displayed in the following screenshot) attached to their profile display.



The **Groups** column identifies the groups to which each admin belongs.

Similarly, the icon for each user differs based on their permissions as identified in the following screenshots:

Type of CloudCenter Suite User	Icon in the Suite Admin UI

Suite Administrator	
Suite User	
SSO User	

The suite administrator:

- Is configured as part of the Initial Administrator Setup process.
- Is responsible for all user roles for all modules. As such, all CloudCenter Suite of modules share the same user base.
- Can add other suite administrators.

> Suite Administrator must exercise control over the number of suite administrator configured for the CloudCenter Suite as they have the highest level of permissions and privileges in the CloudCenter Suite!

You can add additional users in the Suite Admin or for each module beyond the OOB Suite Admin Groups. These users can be assigned to any module, group, or tenant depending on why they were added in the first place.

> Groups have roles and depending on the group to which a user is added, that user inherits the roles associated with the assigned group.

Tenant Administrator

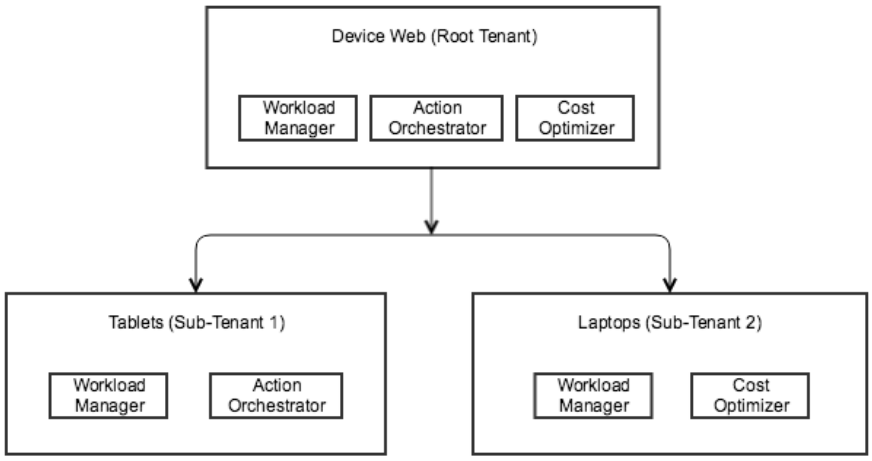
A user created with administrative permission at the tenant level is referred to as a *Tenant Admin*. A tenant admin does not have visibility into the Suite Admin Dashboard.

- While each user can be assigned a specific role with access to individual modules, each module also has its' own pre-defined roles and groups.
- The Suite Admin leaves it to the tenant admin to manage these roles and groups at the tenant level for each module.
- While a suite administrator can add unlimited tenant admins, it is better to have close control on the number of tenant admins for each module as they have the highest level of permissions and privileges for that module.

Tenant admins can perform the following tasks:

- Manage users, groups and tenants WITHIN their tenant hierarchy.
- Access modules made available for their tenant(s).
- Execute a subset of tasks as permitted by the suite administrator or their parent tenant.

The following image identifies a sample multi-tenant environment.



Each (sub)tenant does not have any default **suite admin** group and cannot execute Module Lifecycle Management or Kubernetes Cluster Management functions – they can only execute User Tenant Management functions at their tenant level.

To create a CloudCenter Suite user, follow this procedure.

1. Navigate to the Suite Admin Dashboard > **Users** page.
2. Click **Add User**.
3. Enter the details for this user in the Add User form.
4. *Optional*. Disable the **Auto Generate Password** switch if you prefer to provide your own password. If enabled, the system sends an email to the user with the link so the user can generate the password.

   To use this feature, you should have already configured the Base URL and the Email Setup to ensure that the URL is accessible and that an email can be sent to the user. See Base URL Configuration and Email Settings for additional details.

   Be sure to configure these two functions before opting to send an email to the user as this information is required to construct the links to reset the password for a new or existing user.

5. *Optional*. Provide name-value pairs for the field to be displayed and the value to be provided so the user can add more information at a later point. Some examples of name-value pair can be Designation, Badge ID, Location, Department, Phone, and other details.
6. Select the group(s) to which this user must belong.

   A user without a group can only view the landing page and not be able to navigate anywhere else!

7. Click **Save**. The newly added user can now be added to any group.

Until you add this newly-created user to a group, this user will have no role or ability to perform any actions.

To create another suite administrator for the Suite Admin, besides the administrator created as part of the Initial Administrator Setup process, follow this procedure.

1. Follow the process above to *Create a User*.
2. Navigate to the Suite Admin Dashboard > **Groups** page.
3. Locate the suite administrator group to which you want to add this user.
4. Assign the newly added user to the suite administrator group.

This newly-assigned suite administrator now has all administrative abilities associated with the suite administrator group.

To create a tenant admin, follow this procedure.

1. Follow the process above to *Create a User*.
2. Navigate to the Suite Admin Dashboard > **Groups** page.
3. Locate the tenant admin group to which you want to add this user.
4. Assign the newly added user to the tenant admin group.

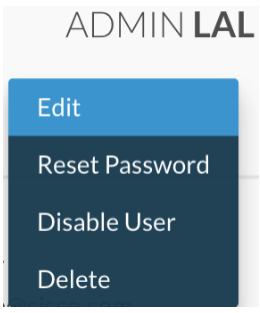
This newly-assigned tenant admin now has all administrative abilities associated with the tenant admin group.

A module administrator refers to a user who can administer any of the CloudCenter Suite modules. The suite administrator can add a user to a module-specific role to make this user a module administrator. See Understand Roles for details.

To import Active Directory data, you must follow a manual process to import user data. See SSO Setup for additional details.

Only an user administrator can disable a user. Once disabled, the user's profile updates to display this state.

On the Users list page, the **Actions** column displays a dropdown list of actions (displayed in the following screenshot) that each user can perform based on group membership and permissions. The list display begins with the available Suite Admin action for this user followed by the module-level actions.



The following table identifies the actions available at the Suite Level.

Suite-Level Actions	Multi-Select Action?	Description
Edit User	No	Users with suite administrator permissions and/or tenant administrator permissions for this tenant can edit any user's profile by changing the first/middle/last name and email, Configure metadata details, Configure groups, Reset password, or disable the user.
Reset Password	No	
Disable /Enable User	No	Once disabled, you must first enable a user to assign the user to a group and to see other Actions for this user.
Delete User	No	As each user/tenant/sub-tenant may have a separate set of dependencies, multi-selection is not possible for this action. See the *Delete User* section below for additional details. ⚠ While this function is possible in this release, selecting multiple users to delete at the same time may lead to unpredictable consequences. Only delete one user at a time.
Impersonate User	No	A suite administrator or a tenant administrator can temporarily sign into the CloudCenter Suite as a different user. See the *Impersonate User* section below for additional details.
Manage Groups	No	Users with suite administrator permissions and/or tenant administrator permissions for this tenant can manage groups. See Custom Groups by Admin for additional details.
Module-Level Actions	This is a fluid list based on which module-specific actions were made available for each tenant, user, and module. See Manage Module-Specific Content for additional details	
Generate API Key	A suite administrator can generate an API key for any user. See API Key for details.	

The Enable column allows administrators to individually enable or disable CloudCenter Suite users. Any user is enabled by default.

If a user deletion is in process, this user is automatically moved to the Disabled state as described in the *Delete User* section below.

When you, as the administrator, attempt to delete a CloudCenter Suite user (or tenant or sub-tenant), the Suite Admin triggers a confirmation process to verify (with each module) that the resource can be deleted. If all product modules confirm the deletion, then the user (or tenant or sub-tenant) deletion is permitted to proceed. If the resource cannot be deleted the module returns a failure message with information about associated resources.

As this process confirms with each module, the notification in the UI header continues to remain in the spinning state until the verification process is complete. This latency is based on the number of modules associated with this user. During this process, the user is placed in a disabled state (Delete Pending) until the deletion can be confirmed by all modules as displayed in the following screenshot.

User impersonation allows you to temporarily sign into any CloudCenter Suite module as a different user. Suite and tenant administrators can impersonate all other users in their tenants and sub-tenants and take any action, regardless of the permission level of the user being impersonated.

There are a number of reasons why you might want to impersonate a user:

- To help another user troubleshoot an issue.
- To make changes on behalf of another user (for example, a user is away on vacation and you want to manage content managed by the user on vacation).

Restrictions

When impersonating another user, be aware of the following restrictions:

- Impersonators appear as themselves in the change history.
- You can only impersonate one user at a time.
- If the user you impersonate has permission to modify your role, you cannot modify your own CloudCenter Suite role access for the duration of the impersonation.
- A tenant admin can impersonate a user within the entire sub-tenant tree – this behavior supports multiple troubleshooting and content management scenarios.
- A tenant admin can not impersonate a suite admin.
- Module Admins who manage user/groups for their module(s) are not allowed to impersonate users.
- When impersonating an Admin user (who has permission to manage groups, disable user, or delete user), then these actions cannot be performed for the originally logged in user – even if this user is an admin.

Logs

In the history and log files, the Tenant ID and email of the admin who impersonated a user will be displayed for the actions taken during the impersonation session.

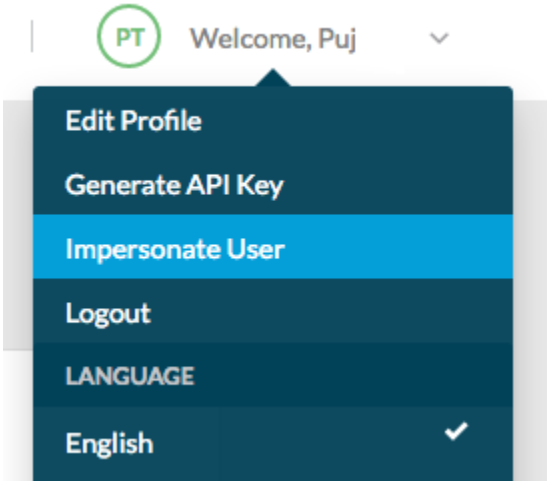
When an administrator impersonates another user and performs any operation, the log files will display the original User ID, the impersonated User ID, and the impersonated user's Tenant ID in the POD details for the corresponding service as visible in the following DEBUG snippet:

```
./common-framework-suite-idm-85dc97c79f-zjf4l:[[originalUserId=1&userId=2&tenantId=1]] 2019-07-23 19:14:39,742
DEBUG com.cisco.cpsg.idm.controller.helper.UserHelperImpl [http-nio-8080-exec-4] - product list for user 2:
[com.cisco.cpsg.prodregistry.api.v1.dto.ProductDto@77771337, com.cisco.cpsg.prodregistry.api.v1.dto.
ProductDto@2c1c70b0]
./common-framework-suite-idm-85dc97c79f-zjf4l:[[originalUserId=1&userId=2&tenantId=1]] 2019-07-23 19:14:40,161
DEBUG com.cisco.cpsg.idm.controller.helper.UserHelperImpl [http-nio-8080-exec-6] - product list for user 2:
[com.cisco.cpsg.prodregistry.api.v1.dto.ProductDto@620f9219, com.cisco.cpsg.prodregistry.api.v1.dto.
ProductDto@63c2a6be]
```

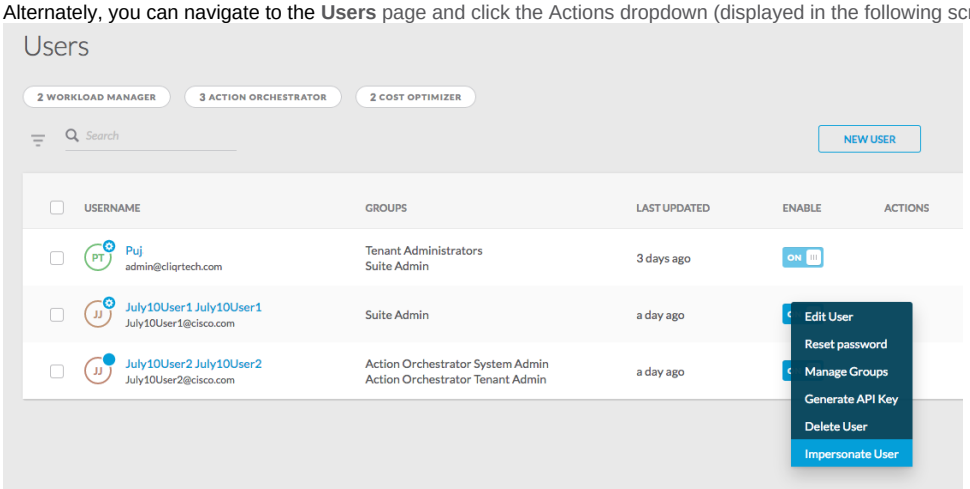
Process

To create a CloudCenter Suite user, follow this procedure.

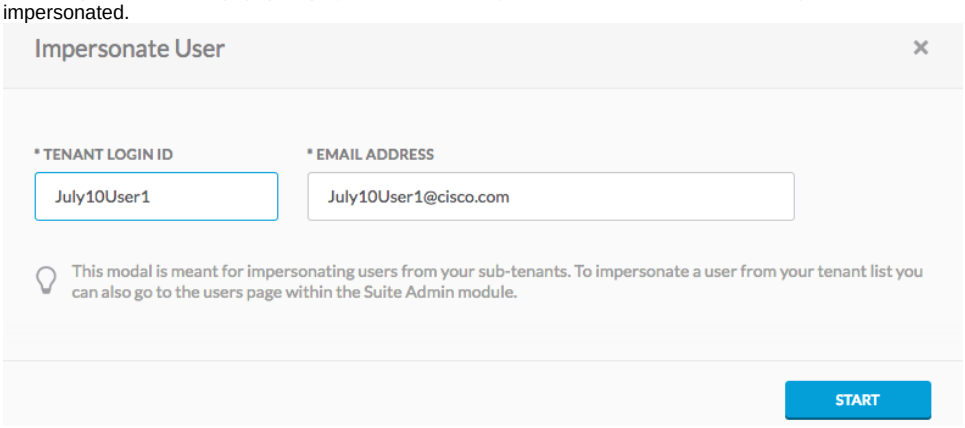
1. Navigate to the Suite Admin Dashboard and click your account profile dropdown and click the **Impersonate User** link (displayed in the following screenshot) to initiate the process.



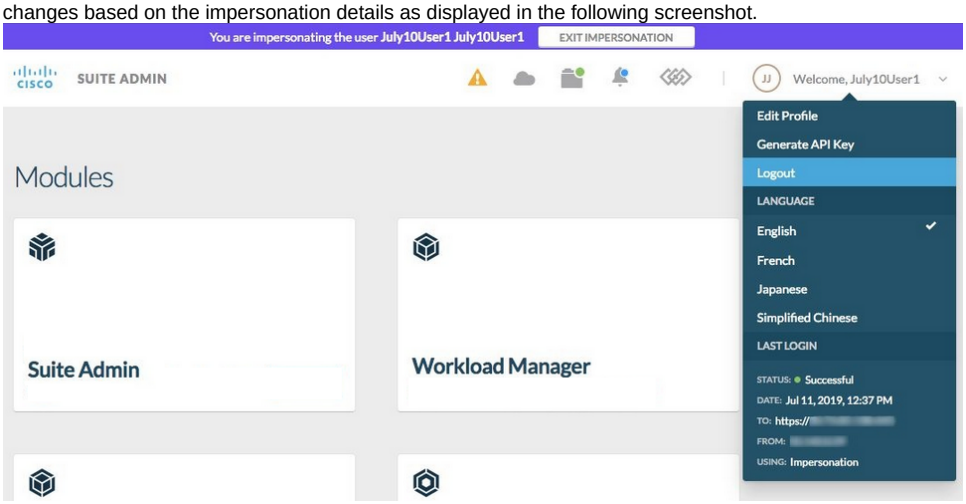
Alternately, you can navigate to the **Users** page and click the Actions dropdown (displayed in the following screenshot) for the required user.



2. In the Impersonate User popup displayed in the following screenshot, enter the Tenant Login ID and email address for the user to be impersonated.



3. Click **Start** to begin the impersonation session and click **Confirm** to confirm the impersonation for this user.
4. Once you confirm, you see a new header in the UI to indicate that you are impersonating the identified user. The Last Login session details changes based on the impersonation details as displayed in the following screenshot.



You can exit the impersonation session in one of two ways:

- Click **Logout** in your account profile dropdown to exit the impersonation mode and log out of the Suite Admin UI.
- Click **Exit Impersonation** in the impersonation header to exit the impersonation mode and continue to work in the Suite Admin UI.

Create and Assign Groups

Create and Assign Groups

A CloudCenter Suite user must belong to at least one group to be able to view resources authorized for that group. A user without a group can only view the landing page and not be able to navigate anywhere else!

When you navigate to the Groups page from the Suite Admin Dashboard, you see a summary of configured groups at the top of the page which displays the following details:

- The total number of CloudCenter Suite groups
- The total number of Suite Admin groups
- The total number of Workload Manager groups
- The total number of Action Orchestrator groups
- The total number of Cost Optimizer groups
- The total number of cross-module groups – groups with access to multiple CloudCenter Suite modules.

Any user who is a member of the Suite Admin, Product Admin, or Module Admin groups are identified by the admin icon attached to their profile display.

The **Groups** column identifies the groups to which each admin belongs.

The **Group Name column** displays **Default** next to each out-of-box, predefined group.

Two default groups are available to the suite administrator out-of-box:

- The **suite administrator** group
- The **tenant admin** group

When the suite administrator installs any module, additional, default out-of-box groups become available. These groups vary based on the module.

It is the responsibility of the module admins to administer and leverage the functionality of these module-level, default groups.

By installing the module, the suite administrator:

- Automatically inherits the module admin role.
- Can add three more module admins.

A module administrator role allows the module admin to monitor and manage the module.

When you add a user to the CloudCenter Suite, you must assign the user to at least one group to ensure that the user can view resources at a minimum.

To assign a user to a group, follow this procedure.

1. Navigate to the Suite Admin Dashboard > **Users** page and verify that the user is listed in the Users page.
2. Navigate to the **Groups** page.
3. Locate and click the group to which you want to add this user.
4. Assign the newly added user to the group.

Promote a User to be a Suite Admin

A suite administrator can promote any user to the Suite Administrator group!

To assign a user to a group, follow the procedure listed in the *Assign a User to a Group* section above.

A Tenant Administrator can promote any user to the Tenant Administrator group!

To assign a user to the Tenant Administrator group, follow the procedure listed in the *Assign a User to a Group* section above.

A Module Admin can promote any user to the Module Admin group!

To assign a user to the Module Admin group, follow the procedure listed in the *Assign a User to a Group* section above.

On the Groups list page, the **Actions** column displays a dropdown list of actions that each group member can perform based on group membership and permissions. The list display begins with the available Suite Admin action for this group followed by the module-level actions.

The following table identifies the actions available at the Suite Level.

Suite-Level Actions	Description
Manage Users	Group members with suite administrator permissions and/or tenant administrator permissions for the tenant can manage user membership by associating users to this group. See Create and Manage Users for additional context.
Delete Group	
Manage Roles	This action is only visible for custom groups. It is not available for Default, predefined groups. Users with suite administrator or tenant administrator permissions can associate roles for each module by assigning those roles to this group. See Understand Roles for additional context.
Module-Level Actions	This is a fluid list based on which module-specific actions were made available for each tenant, user, and module. See Manage Module-Specific Content for additional details.

OOB Suite Admin Groups

OOB Suite Admin Groups

Default out-of-box (predefined) groups provide a majority of the required functionality to module users. As such, enterprises will not need to create custom groups unless, this group is extremely specific to their environments. At each level, any CloudCenter Suite user can be assigned to one of the following predefined groups:

- Suite Level: The Suite Administrator Group
- Tenant Level: The Tenant Administrator Group
- Module Level: The Module Administrator Group

The Suite Admin group can execute the following roles and functions:

- User Tenant Management
- Module Lifecycle Management
- Kubernetes Cluster Management

Users in this group have access to the entire Suite Admin functionality. Additionally, if a user in this group installs a module, the default roles for that module are also assigned to this user.

The suite administrator can add any user to the Suite Admin.

The Tenant Admin group can execute the roles and function for User Tenant Management **at the tenant level** (for tenant or sub-tenant, depending on permissions and ownership).

Users in this group manage all users, groups, and sub-tenants within their own tenant. Additionally, if a user in this group installs a module, the default roles for that module are also assigned to this user.

The Module Admin group can execute the roles and function for User Tenant Management **at the module level** (not for a tenant or sub-tenant).

Users in this group have access to module-specific functionalities. A user in this group can automatically manage all users and groups for this module. For example, a Workload Manager admin can create a custom service and restrict that service to some users, but cannot delete or create a tenant.

No administrator can perform the following functions:

- Remove themselves from a default group
- Disable or delete a default group
- Reset their own password
- Create a new group with a suite administrator role

As a module admin, be aware that you can use SAML configuration for Active Directories to map existing enterprise users to the default Suite Admin groups or to default module group(s). See SSO Setup for additional context.

Custom Groups by Admin

Custom Groups by Admin

If the pre-defined roles and groups listed in OOB Suite Admin Groups are not sufficient for your environment, suite administrators have the flexibility to create custom groups and manage user membership for different modules.

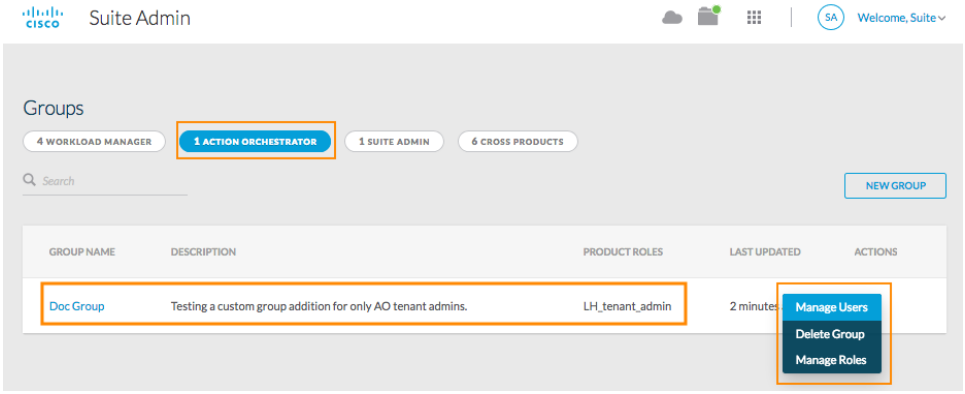
> ⚠ A suite administrator **cannot** be added to *any* custom group!

To create a custom group, follow this procedure.

1. Navigate to the Suite Admin Dashboard > **Groups** page.
2. Click **New Group**.
3. Provide a **Group Name** and **Description**.
4. Select the roles to be assigned to this group from the **Assign Roles** dropdown.

> ✓ Each CloudCenter Suite module has *default roles* provided OOB by the CloudCenter Suite. Additionally, Action Orchestrator is the only module that allows administrators to create *custom roles*. See Understand Roles for details.
>
> Custom Roles are only available for Custom groups and you can only view the **Manage Roles** action for a group's dropdown list this case. See Create and Assign Groups for details.
>
> To create a custom role, see Action Orchestrator Roles in the Cost Optimizer documentation section. Once created in the Action Orchestrator, the suite administrator can select a custom role and assign it to a custom group at any time.

5. Select the users to be added to this group from the **Associate Users** dropdown. The selected users are listed in the summary just below this field.
6. Click **Done** to save the new group. The status in the Groups list page displays the status of the custom group addition.
7. Click the Module for which you created this custom group. The following screenshot highlights the module for which a new custom group was added. As a Suite Admin user, you will also see the actions displayed in the following screenshot for this custom group.



The suite administrator can manage both the users and the roles associated with the new group as well as delete the group at will.

A tenant administrator can manage custom groups for their tenant. If deleted, the users in the deleted custom group will no longer have access to any roles associated with that group. Users will not receive any warning messages or alerts about the deletion of this custom group. Once deleted, all users revert to their default permissions and groups.

Understand Roles

Understand Roles

Roles are a collection of permissions provided to a OOB Suite Admin Group. The users within each group can perform *permitted functions* on *permitted resources* by virtue of being part of the group.

- *Permitted function* refers to configuration functions like create, view, update, delete, run, and so forth.
- *Permitted resources* differ based on the module where users in a group perform these actions. As the resources differ between modules, each user can only perform actions permitted within the authorized group.

> *You cannot assign a role to a specific user in any group.*

Permissions identify what operations can be performed on which resources based on tenant association, module restriction, and user level (see Understand User Levels).

Authorization is based on Role-Based Access Control (RBAC), but restricted to groups in this release.

> The RBAC function is inherent and cannot be configured on a per role/user basis. It is inherent because of the group association to users.

Roles are *only* associated with user groups. Coupled with permissions and Access Control Lists (ACL, see the documentation for each module for related details), roles offer the ability to perform specific tasks and view corresponding data.

Permissions can be configured and controlled by different types of roles:

- *Predefined, default roles*
- *Custom roles* are controlled by the modules to which these roles belong. These roles may be required to provide additional granularity for a resource. These roles can be configured for each module. Only the Action Orchestrator allows custom role creation.

Default/custom roles are **visible** from the Suite Admin's **Tenants** list page or the **Users** list page, which displays the configured action for each tenant or user.

See Action Orchestrator Roles for content specific to the Action Orchestrator at the tenant level.

Predefined, default roles are provided OOB by the Suite Admin for each modules. These roles cover 90% of the functionality required for you to get started with the CloudCenter Suite. These roles cannot be configured as they provide specific permission to specific resources.

Each module in the CloudCenter Suite also has default OOB roles that is specific to just that module. The suite administrator can manage these settings at the tenant level and the user level.

> Currently, the Action Orchestrator is the only module that uses the custom role configuration function. See Action Orchestrator Roles for details.

The actions displayed for each module is a fluid list that is created and made available for each tenant or user within the module.

Custom roles are **configured from the module**:

- Module admins can create custom roles within the module.

  > Currently, the Action Orchestrator is the only module that uses the custom role configuration function. See Action Orchestrator Roles for details.

  > The Workload Manager and Cost Optimizer do not allow custom role creation as all required roles are already available through this user's group membership.

- Custom roles are available to suite administrators as the administrator can associate each new or existing user with one or more roles. See Custom Groups by Admin > *Create a Custom Group* for details.
- When module admins Create a Group, they can assign custom roles for the new group. See Custom Groups by Admin for additional details.

The OOB ACLs, permissions, and roles that are predefined for each module are explained in the corresponding module documentation. See the pages identified in the following table for additional details.

Module	Page Reference
Workload Manager	See OOB Groups, Roles, and Permissions
Action Orchestrator	See Action Orchestrator Roles
Cost Optimizer	See Access and Roles

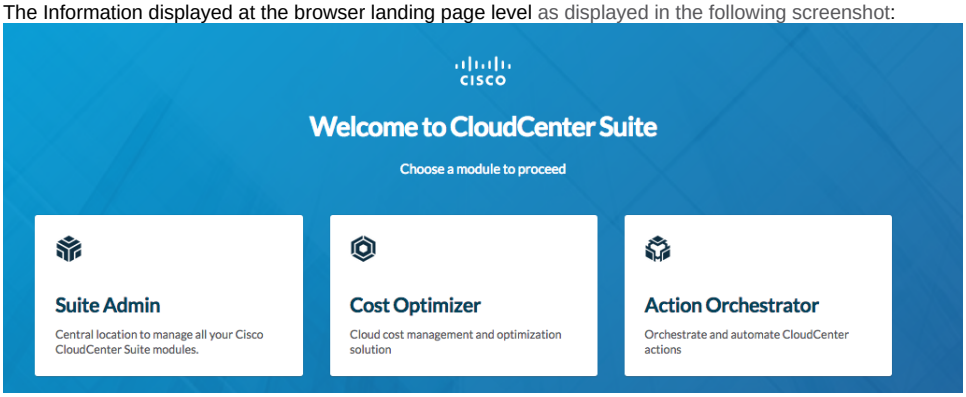
Understand User Levels

Understand User Levels

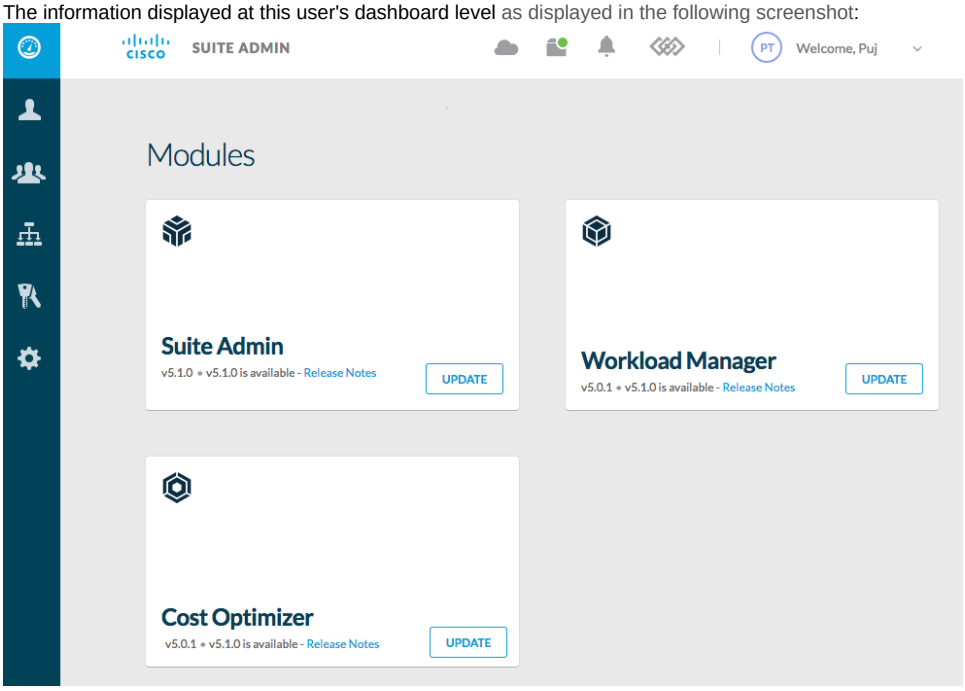
The term *user level* refers to the user's permission level. Each user level requires explicit permissions to perform specific tasks at the suite level, the cluster level, the module level, the tenant level, or the sub-tenant level.

The following screenshots displays the information presented to a user with suite-level permissions:

- The Information displayed at the browser landing page level as displayed in the following screenshot:



- The information displayed at this user's dashboard level as displayed in the following screenshot:



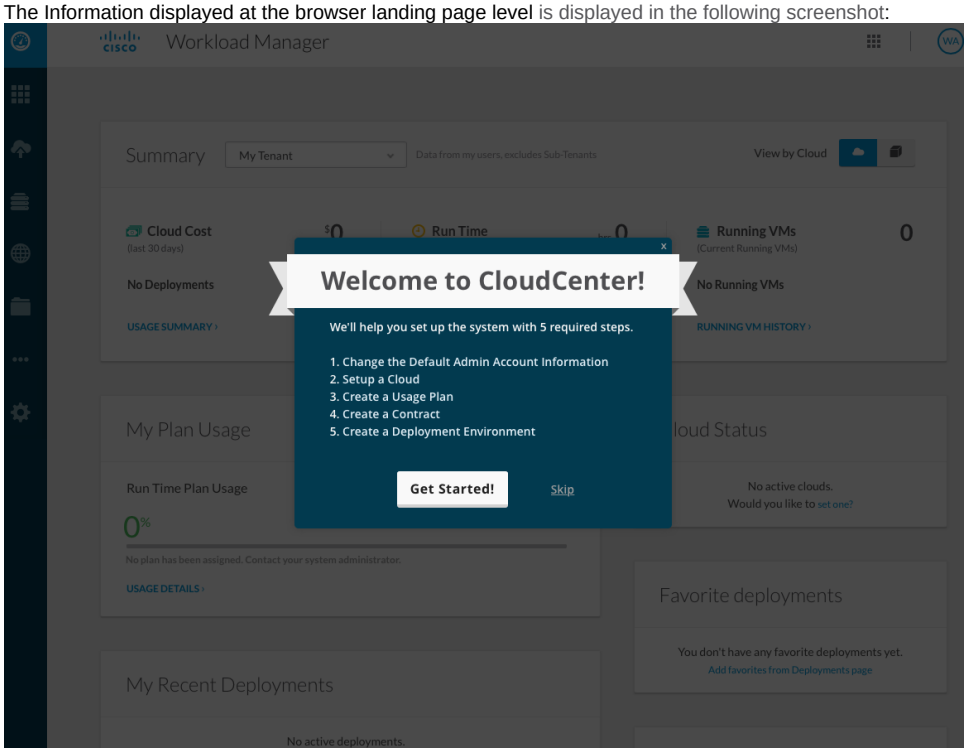
The suite administrator and/or tenant administrator has access to all installed modules as well as the Suite Admin Dashboard. Additionally, this user also has all options displayed in the Left Tree Pane.

The following screenshot displays information presented to a user with tenant level permissions to specific modules.

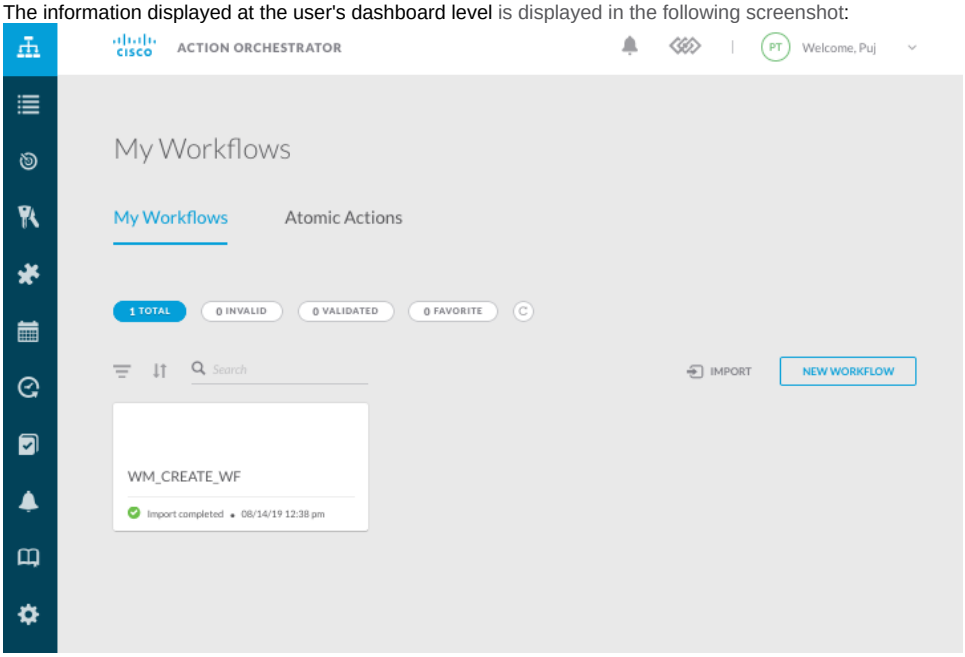
A tenant level user only has access to the permitted modules at the landing page level as well as the Dashboard level. Additionally, this user only has tenant-level options displayed in the left tree pane based on permitted user levels.

The following screenshots displays the information presented to a user with suite administrator permissions:

- The Information displayed at the browser landing page level is displayed in the following screenshot:



- The information displayed at the user's dashboard level is displayed in the following screenshot:



Note that this sub-tenant level user, has direct access into the only permitted module at the landing page level as well as the Dashboard level – this user will not be able to see any suite-level options and will only see the module-level options (in this case, the Workload Manager) displayed in the Left Tree Pane based on the user level.

The following table lists the task available to each user level and identifies the permission level as follows:

- ✅ = Permitted
- ❌ = Not permitted
- ⭐ = Permitted based on tenant ownership (if tenant owner or if sub-tenant owner)

Task	Suite Administrator	Tenant Admin	Sub-Tenant Admin	Module Admin
Module Lifecycle Management (Self-Hosted)				
Install Module	✅	❌	❌	❌
Update Module	✅	❌	❌	❌
Monitor Modules	✅	❌	❌	❌
Configure Smart Licenses	✅	❌	❌	❌
Admin Menu				
Backup	✅	❌	❌	❌
SSO Setup	✅	⭐	⭐	❌
Proxy Settings	✅	❌	❌	❌
Email Settings	✅	⭐	⭐	❌
Base URL Configuration	✅	⭐	⭐	❌
Offline Repository	✅	❌	❌	❌
Currency Conversion	✅	❌	❌	❌
Kubernetes Cluster Management (Self-Hosted)				
Cluster Status	✅	❌	❌	❌
Manage Clusters	✅	❌	❌	❌
User Tenant Management				
Create and Manage Users	✅	⭐	⭐	❌
Create and Assign Groups	✅	⭐	⭐	❌
Custom Groups by Admin	✅	❌	❌	❌
Manage Tenants	✅	⭐	⭐	❌

Manage Module-Specific Content	✓	★	★	✓

Manage Tenants

Manage Tenants

By default, the suite administrator belongs to the root tenant. The suite administrator can perform the following tasks at this level:

- Create sub-tenants
- Modify the root tenant

Each task is explained in the context of configuration tabs that are explained in the following sections.

When you navigate to the **Tenant** page from the Suite Admin Dashboard, you see the following details:

- **My Tenant**: This is always the parent tenant from each CloudCenter Suite user's perspective! The suite administrator always belongs to the root tenant that was configured during the Initial Administrator Setup.
- **Sub-Tenants**: Each tenant admin can configure sub-tenants as required. If configured, they are listed in this section. Once configured, the sub-tenant admin receives an automatic *welcome* email.

The Tenant ID and the administrator's email is also listed in this page for both the My Tenant and the Sub-Tenants sections.

The root tenant configuration in this section is restricted to modifying the Tenant Name and Tenant Login ID. Root tenant users cannot disable or delete themselves.

When configuring sub-tenants, a tenant admin can configure the following details:

- **Tenant Settings**: Tenant Name and Tenant Login ID
- **Tenant Admin Settings**: First and Last Names, Email, and Auto Generate Password (default) to trigger a new message to this user (not available for the root tenant).

  If you disable the **Auto Generate Password** switch, you must manually create a password and manually send an email to this user.

  The eye icon besides making the password visible also monitors the password rule check to ensure that you set an acceptable password based on the listed rules. The password rules are configured by the suite administrator as specified in the *User Password Rules Tab* section below.

  The SMTP settings must be set up on a per-tenant basis as required for your enterprise. See Email Settings for additional context.

  Either way, when the user's password expires, the user sees this alert when logging in for the first time, along with a link to change the assigned password. Be sure to change the password and then dismiss the alert. The user has 30 days to act on this message and use the link to change the password.

- **Module Assignment**: Select the modules that this tenant user can access by virtue of being in this tenant. The Initial Administrator can manage modules for sub-tenants at the root-tenant level

This tab is only available at the **My Tenant** level. The information in this tab is inherited from the parent tenant, if configured. However, tenant admins can overwrite this information for their respective sub-tenants.

To configure branding information at the My Tenant level, follow this procedure.

1. Click the ***link*** in the Tenant Name column to open the **Editing tenant *Tenant Name*** form. This form has three tabs.
2. Click the **General Settings** tab, if required.
3. Click the **Branding Information** tab to configure the product branding, terms of service, privacy policy, and trademark details as listed in the form. All details in this form are optional and the default Cisco settings are identified in the Suite Admin Dashboard > **Footer** section.
4. Click the **User Password Rules,** if required.
5. Click **Done**.

This tab is only available at the **My Tenant** level. The information in this tab is inherited from the parent tenant, if configured. However, tenant admins can overwrite this information for their respective sub-tenants.

On the Tenant list page, the **Actions** column displays a dropdown list of actions that each Tenant admin can perform based on group membership and permissions.

The following table identifies the actions available at the Tenant Level.

Tenant-Level Action	Description

Edit	Available at the My Tenant and Sub-Tenant levels.
Enable /Disable	Once disabled, you must first enable a user to assign the user to a group and to see other Actions for this user.
Delete	When you attempt to delete a tenant or sub-tenant, the Suite Admin triggers a confirmation process to verify (with each module) that the resource can be deleted. If all product modules confirm the deletion, then the tenant or sub-tenant deletion is permitted to proceed. If the resource cannot be deleted the module returns a failure message with information about associated resources.
Associate Modules	This action provides the tenant admin with the ability to associate or disassociate one or more installed modules for users in this tenant. See Manage Module-Specific Content > *Associate Modules* for additional details. If you disable all modules for a tenant, then users in this tenant are abandoned and cannot view an information in the CloudCenter Suite.
Impersonate User	A suite administrator or a tenant administrator can temporarily sign into the CloudCenter Suite as a different user. See Create and Manage Users > *Impersonate User* for additional details.
Module-Specific Actions	This is a fluid list based on which module-specific actions were made available for each tenant, user, and module. See Manage Module-Specific Content for additional details.

Manage Module-Specific Content

Manage Module-Specific Content

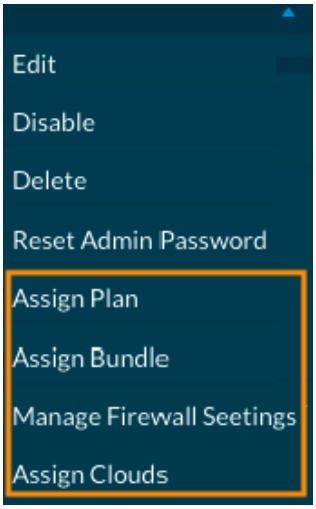
Each module in the CloudCenter Suite may have content that is specific to just that module. The suite administrator can manage these settings at the tenant level and the user level.

Currently, the Workload Manager is the only module that uses this feature. See Tenant Management in the Workload Manager documentation for an example.

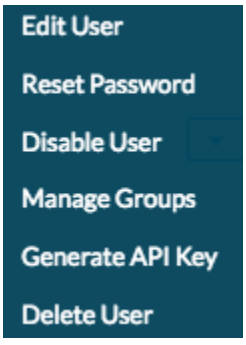
The actions displayed for each module is a fluid list based on which module-specific actions were created and made available for each tenant or user within the module – **this information is configured from the module**.

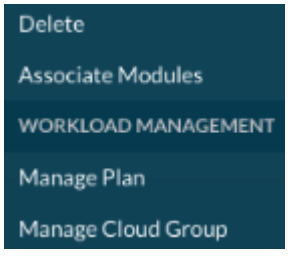
The configured content is **visible** from the Suite Admin's **Tenants** list page or the **Users** list page, which displays the configured action for each tenant or user within the Actions dropdown list.

The following screenshot displays content that is specific to the Workload Manager at the tenant level. The first few actions are specific to the Suite Admin and the module-specific actions are listed at the end of the dropdown.

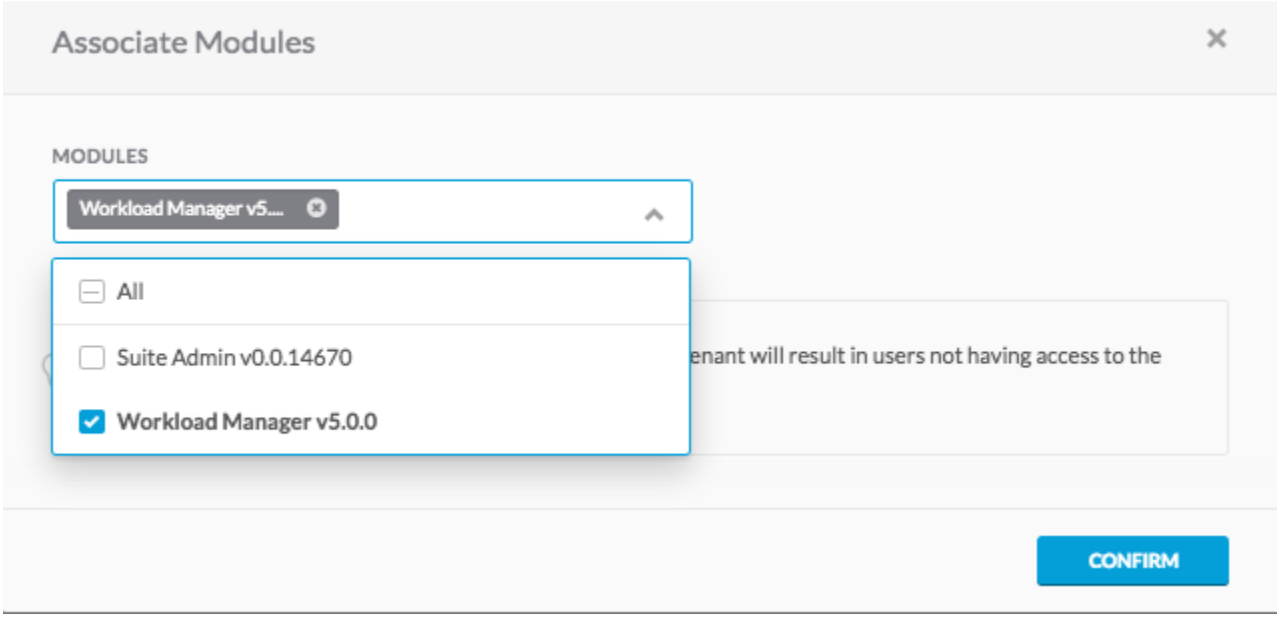


The following screenshots display content that is generally available to different users. This screenshot does not include any module-specific actions as they have not been configured.





After you add tenants (see Manage Tenants), you can provide access to modules at any time by clicking the Associate Modules option from the Actions dropdown. If you do, you will see a popup similar to following screenshot.



To configure module-specific content for a particular module, you must perform the configuration from the module for each applicable tenant or user.

This configured content for each module has the following characteristics:

- Can be made available at the tenant level for any user.
- Is *not* inherited from the parent tenant.
- Each tenant administrator can override this information for their respective tenants.

To manage content at the tenants and user levels, follow this procedure.

1. Navigate to the Suite Admin Dashboard > **Tenants** page or **Users** page.
2. Click the **Actions** dropdown for the required tenant or user.
3. Select the action from the dropdown list for the required tenant or user.
4. Proceed with the action as listed in the module documentation. The general description of each setting and action is specified in the module documentation.

Admin Menu

Admin Menu

- Backup
- Proxy Settings
- Email Settings
- Base URL Configuration
- Offline Repository Configuration
- Log Archive
- SSO Setup
- Currency Conversion

Backup

Backup Approach

You may sometimes need to backup your CloudCenter Suite setup so you have the option to recover the data when required. When you have a cluster running, it can go into a bad state for a number of reasons (resource shortage, application unavailability, infrastructure changes, undependable state and so forth). In these cases, backing up the data allows you a to recover data when required.

The backup/restore feature is only available on *new* CloudCenter Suite clusters installed using CloudCenter Suite installers and *not on* existing Kubernetes clusters.

For isolated, air gap, environments, that do not have internet access, or to back up to a local system, a manual backup procedure is available – see Without Internet Access for additional details.

Before proceeding with a backup, adhere to the following limitations:

- **Supported Clouds**: You can backup data to one of the following locations:
  - Google Cloud Storage (use the procedure below)
  - AWS S3 (use the procedure below)
- **Switching between Clouds and Cloud Accounts**:
  - While editing the storage location in the CloudCenter Suite, if you switch to a new cloud type or cloud account within the same cloud type, be aware that backups in the previously configured storage location will no longer be accessible from the CloudCenter Suite.
  - The backup files from the previously configured storage location will continue to be available via your cloud console.
- **Restoring to a Different Cluster**:
  - This feature is only supported for clusters launched by the CloudCenter Suite installer.
  - You cannot backup from and restore to the same cluster – you **can only** backup to one cluster and restore to a different cluster.
  - The backed up cluster and the target restore cluster should both be on the same cloud.
- **User Credentials**:
  - The credentials are specific to your service account in the cloud and only the user with those credentials can configure and initiate the backup.
  - If you change the credentials you will see a warning message to indicate that you cannot access previous backups.

The CloudCenter Suite does NOT provide a granular option to backup Kubernetes resources or application-specific databases.

Additionally, you CANNOT take volume snapshots.

The CloudCenter Suite uses the ***latest*** cloud/cloud account and bucket configurations to retrieve the list of existing backups, displayed in the table in the **Admin** > **Backup** page (under the Data Recovery section in the Suite Admin UI).

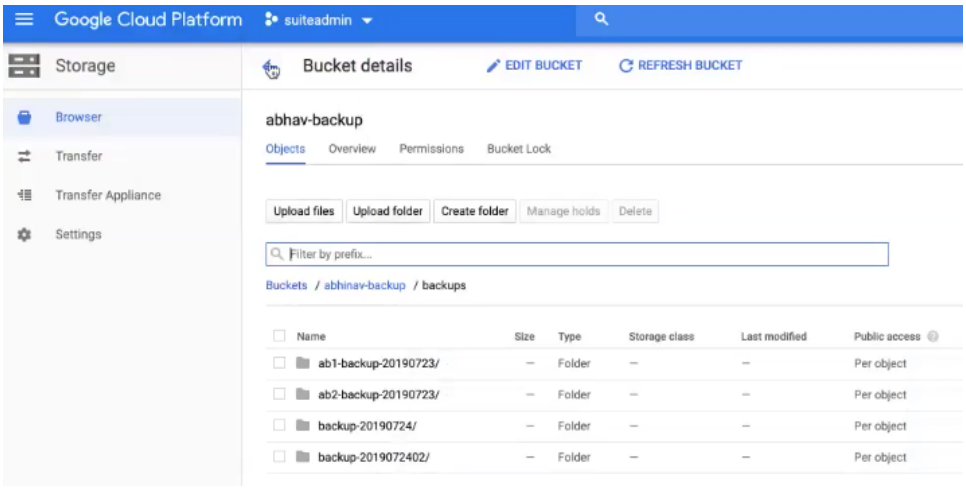
If you update the existing configuration for any reason, users cannot manage the backups from the earlier cloud/cloud account and bucket configuration.

The backup action backs up the ENTIRE *cisco* namespace.

- **Backed Up**: Any data under the Cisco (*cisco*) name space. This includes but is not restricted to the Kubernetes resources with associated application data, pod data, secrets, PersistentVolumeClaim (PVC) data, PersistentVolume (PV) data, and other relevant data associated with these sub-systems
- **Not Backed Up**: Any data that is not under the Cisco (*cisco*) name space.

Before proceeding with a backup, adhere to the following limitations:

- **General**: When configuring a backup for the first time, verify that the storage bucket is empty before scheduling any backups.
- **GCP**:
  - Configure a Storage Bucket with the required permissions: The following screenshot displays a sample storage bucket in a GCP environment:



- The cloud account used to configure the backup must have an empty **storage.bucket.list.**
- The bucket must have its ACL set to **storage.objects(create,delete,get,list).**

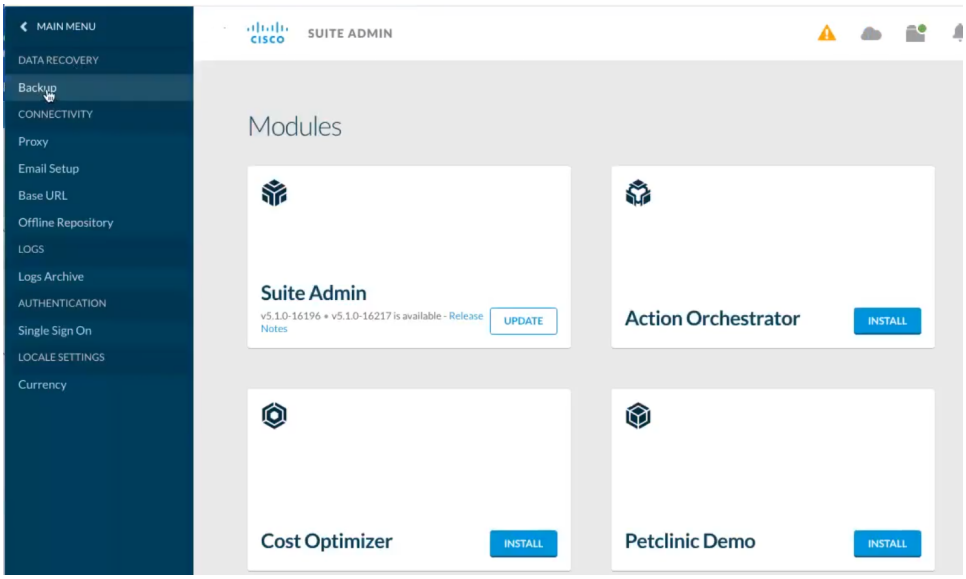
- **AWS:**
  - The storage bucket in your AWS S3 environment must be empty with the applicable ACL permission.
  - The IAM user permissions define the user privilege on the S3 bucket as listed in the following screenshot:

    In the following code block, the bucket name is defined as ***velero-cisco***– **this is just an example**! Be sure to change this value to reflect the name of your own bucket!

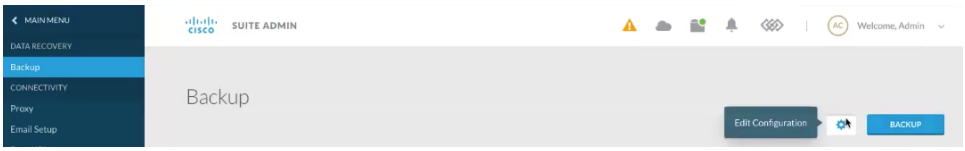
```
{
   "Version":"2012-10-17",
   "Statement":[
      {
         "Effect":"Allow",
         "Action":[
            "ec2:DescribeRegions",
            "ec2:DescribeVolumes",
            "ec2:DescribeSnapshots",
            "ec2:CreateTags",
            "ec2:CreateVolume",
            "ec2:CreateSnapshot",
            "ec2:DeleteSnapshot"
         ],
         "Resource":"*"
      },
      {
         "Effect":"Allow",
         "Action":[
            "s3:GetObject",
            "s3:DeleteObject",
            "s3:PutObject",
            "s3:AbortMultipartUpload",
            "s3:ListMultipartUploadParts"
         ],
         "Resource":[
            "arn:aws:s3:::velero-cisco/*"
         ]
      },
      {
         "Effect":"Allow",
         "Action":[
            "s3:ListBucket"
         ],
         "Resource":[
            "arn:aws:s3:::velero-cisco"
         ]
      },
      {
         "Effect":"Allow",
         "Action":"s3:ListAllMyBuckets",
         "Resource":[
            "arn:aws:s3:::*"
         ]
      }
   ]
}
```

To backup the CloudCenter Suite data, follow this procedure.

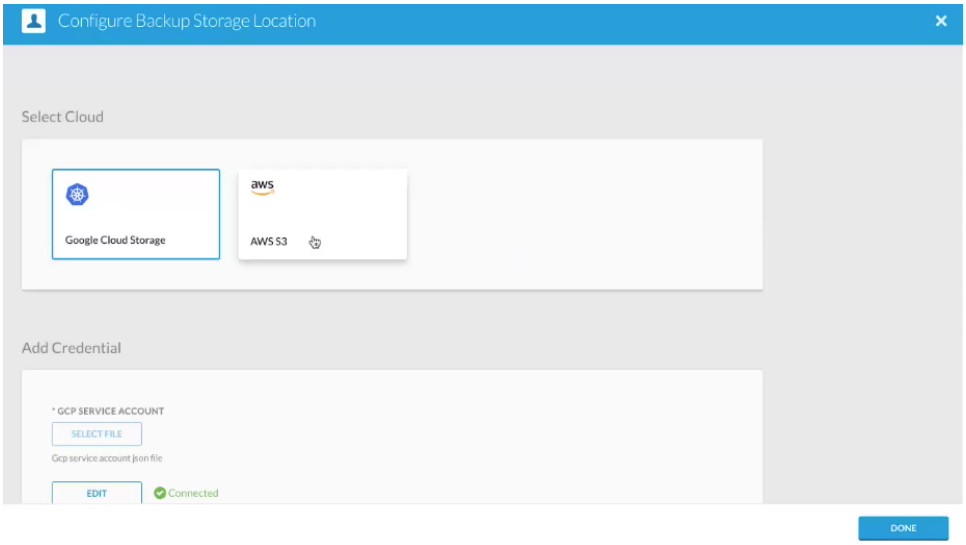
1. Navigate to the Suite Admin Dashboard.
2. Click **Admin** > **Backup** (under the Data Recovery section) to access the Backup page as displayed in the following screenshot.



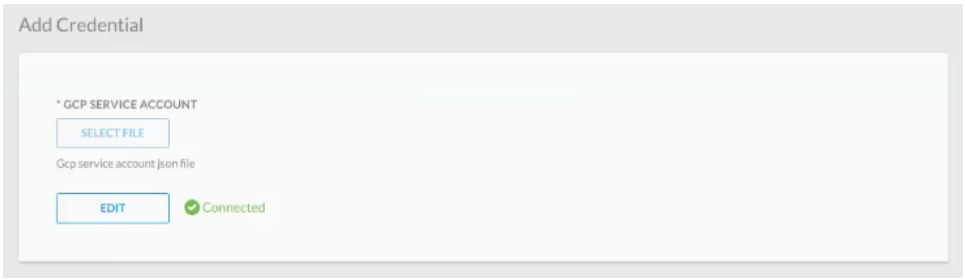
3. Click the **cog** icon in the Backup page (as displayed in the following screenshot) to configure a new backup storage location.



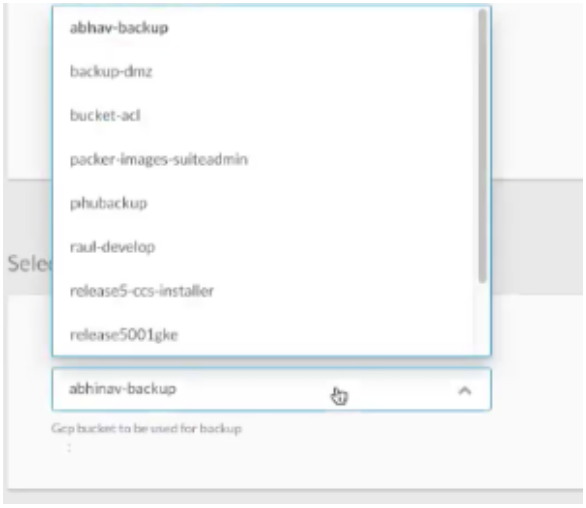
4. Select the required cloud in the Configure a Backup Storage Location page as displayed in the following screenshot.



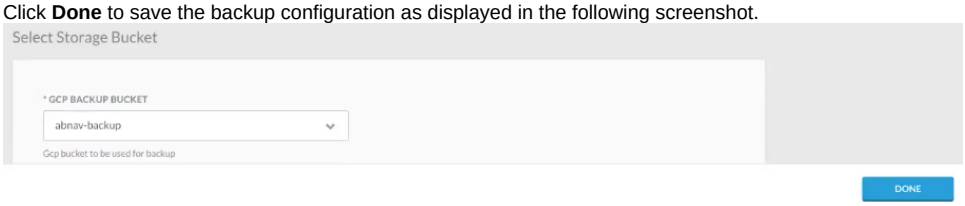
5. Depending on the selected cloud, the Add Credential section differs:
    - GCP:
        a. Select the file containing the credentials is displayed in the following screenshot.



        b. Select the Storage bucket as displayed in the following screenshot.

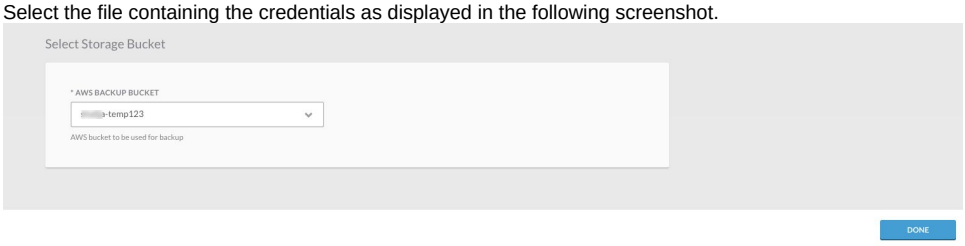


c. Click **Done** to save the backup configuration as displayed in the following screenshot.

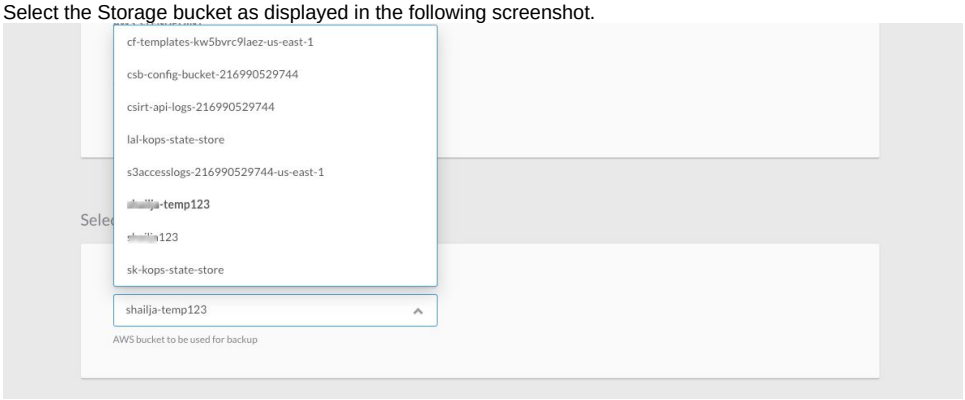


- AWS S3:

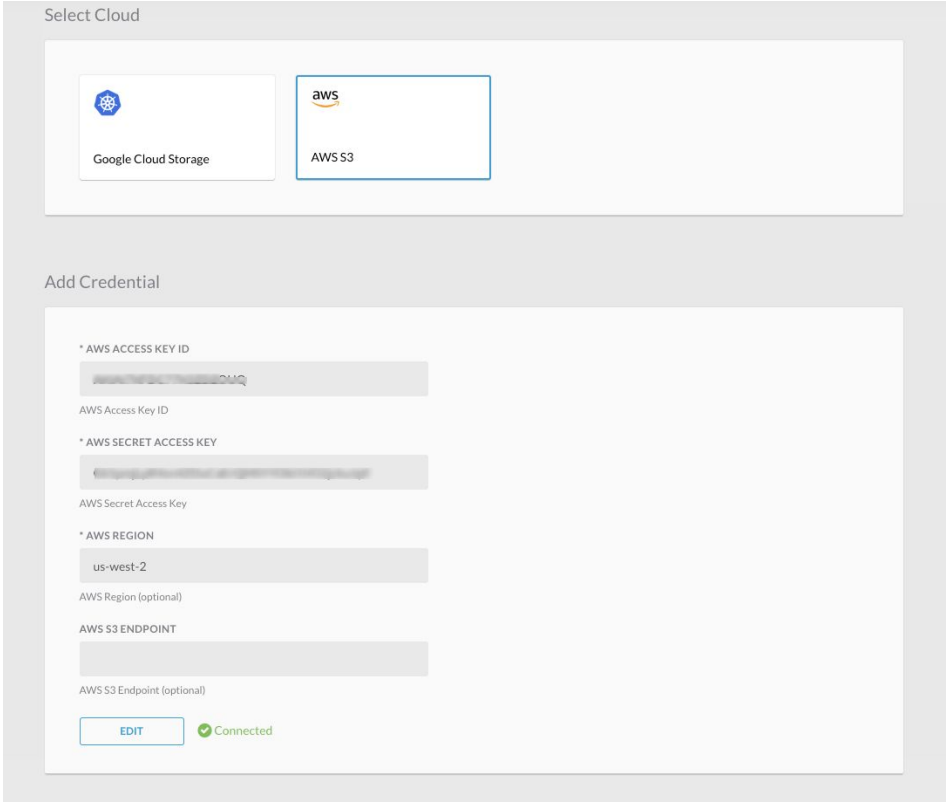
a. Select the file containing the credentials as displayed in the following screenshot.



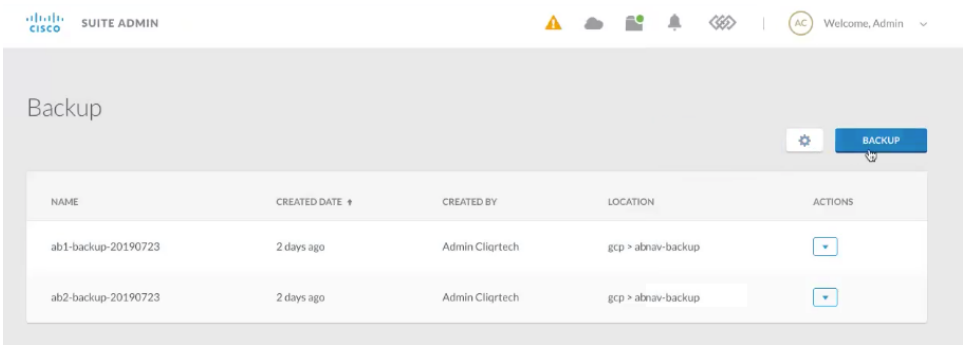
b. Select the Storage bucket as displayed in the following screenshot.



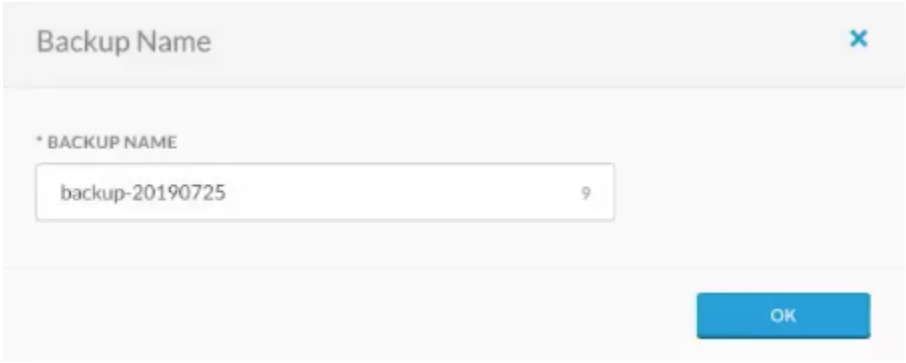
c. Click **Done** to save the backup configuration as displayed in the following screenshot.



6. Once configured, click **Backup** in the Backup page to initiate the data backup. Until you initiate the first backup, this page will be empty. Once you have initiated one or more backups, they are automatically listed in this page as visible in the following screenshot.



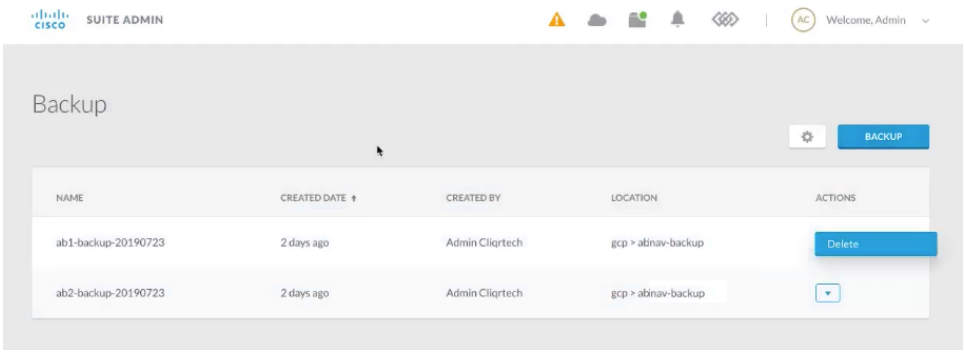
7. In the Backup Name popup, assign a unique name (by default, the current date is listed) for this backup task and click **OK** as displayed in the following screenshot.



You have now backed up the CloudCenter Suite data to a cloud of choice.

Once you have configure one or more backup settings in the Backup page, you may see the following actions in the Actions column.

- **Delete**: You can delete the configured backup as visible in the following screenshot:



- **Cancel**: You will only see the **Cancel** option when you are in the process of backing up a storage location. After you create the location, the only option you will see is **Delete**.

Back to: With Internet Access

Proxy Settings

Proxy Settings

The Suite Admin uses proxy settings for licensing and module configuration purposes. Proxy settings are disabled by default. If not provided, then no proxy configuration is set!

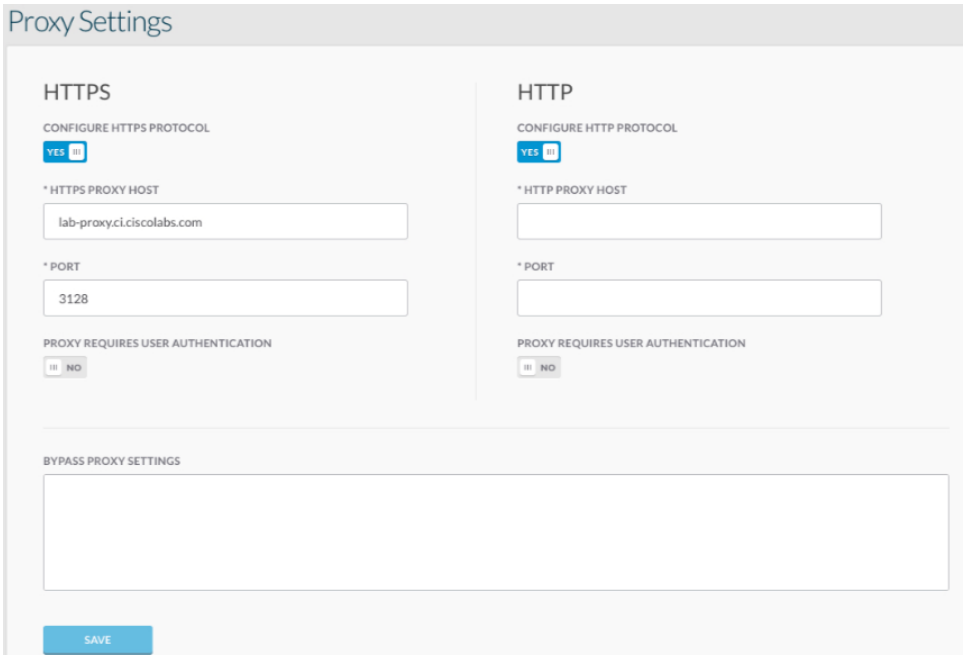
Web service calls are routed through the proxy. When proxy settings are modified on the Suite Admin, the CloudCenter Suite management pod is rebooted to apply the configuration.

Adhere to these guidelines if you decide to use a proxy server to connect to the internet:

- Only the suite administrator can configure the proxy protocol and provide the user authentication details.
- Set up the proxy server before starting the module installation processes.

To configure the internal proxy settings, follow this procedure after you have set up your proxy server and retrieve the DNS details and port number required by the proxy server.

1. Navigate to the Suite Admin Dashboard > **Admin**.
2. Click **Proxy** in the left pane to configure the enable proxy settings (disabled by default) as displayed in the following screenshot.



3. Switch on the required protocol to enable (disabled by default) your proxy setting: **HTTPS** or **HTTP**.
4. Provide the DNS name or IP address for the **HTTP Proxy Host** along with the **Port** number.
5. *Optional*. Identify if the proxy server requires the admin to be authenticated each time. If yes, provide the **User Name** and **Password** to access the Proxy server.
6. *Optional*. To bypass the proxy settings, provide a comma separate string of values in the ByPass Proxy Settings field as displayed in the following code example:

Depending on the environment where you have installed the CloudCenter Suite, you many need to include the required environments that you wish to bypass in order to access service endpoints. For example, if you are operating in a Cisco environment, include ***.cisco** to the following list. This is only an example and what you add is dependent on your environment.

To bypass the proxy settings, provide a comma separated string of values in the **ByPass Proxy Settings** field as displayed in the following *examples*:

```
localhost.*,127.0.0.1:42

# Or, to bypass specific environments. The following is another example - what you add is dependent on
your environment.

localhost.*,127.0.0.1:42,*.cisco
```

7. Click **Save** to save the proxy settings.

Email Settings

Email Settings

Email settings are required to communicate with CloudCenter Suite users when triggering the reset password function or the password auto-generation function – the email settings are used to construct the links when resetting a password for new or existing users.

The Suite Admin does not support TLS ports – it only supports SSL ports to configure SMTP mail servers.

You can enable the *SMTPS* protocol to secure SMTP at the transport layer. SMTPS uses port 465 to indicate that the client and server communicate using normal SMTP at the application layer, but the connection is secured by SSL or TLS.

If the SMTP settings are not configured for a sub-tenant, then the parent tenant's SMTP settings are used to send emails to users.

To use this function:

- The enterprise should have already setup an SMTP server.
- The user must have tenant administrator permissions.
- The SMTP configuration must be authenticated and that you are able to send and receive emails before setting up your email communication.

  When a cloud is configured in a different region using some carriers (for example, GMAIL), the carrier may assume this configuration as a suspicious activity and block the email sending functionality. This is an example of an issue with your carrier's SMTP settings.

  Example: If you send an email using GMAIL from different region/machines, then GMAIL may trigger emails for suspicious activity and stops sending emails. In this case, you must resolved this issue by following this procedure.

  1. Login into this email from gmail.com to access your account.
  2. In the https://myaccount.google.com/?utm_source=OGB&utm_medium=act page, click Security in the left pane.
  3. Search for **Access allowed for less secure apps** and turn it on to ensure that you allow access for this application.
  4. You can now configure your GMAIL email in the Email Setup page in Suite Admin.

  Be sure to resolve these issues before proceeding with the configuration.

  In AWS Environments, you must configure the application password to configure GMAIL in AWS cluster.

- You should have already configured the Base URL Configuration and completed the Email Settings to ensure that the URL is accessible and that an email can be sent to the user.

To configure SMTP details in the Suite Admin, follow this procedure.

1. Navigate to the Suite Admin Dashboard > **Admin**.
2. Click **SMTP** in the left tree pane to display the SMTP Settings page.
3. Toggle the switch to enable (disabled by default) **SMTP** settings.
4. Optional. Toggle the switch to enable **SMTPS** (Secure SMTP) at the transport level.
5. Optional. Toggle the switch to enable **TLS** security protocol if required by your SMTP server.
6. Provide the **Username**, **Password**, IP address or DNS for the **SMTP Host**, and the **Port** Number to enable SMTP authentication.
7. Click **Save** to save your edits.

   When you save the SMTP settings, be aware that you are only saving the configuration parameters to the CloudCenter Suite database and that the connection is still pending connection verification. As soon as the connection is verified by the CloudCenter Suite, the current user (who changed the SMTP configuration) is notified in the notification pane (see Suite Admin Dashboard > *Notifications*) about the connection status with details on the SMTP connection check passing/failing.

Base URL Configuration

Base URL

The Base URL provides a DNS entry, instead of an IP address, to access the CloudCenter Suite.

Functions like Email Settings and SSO Setup require the Base URL to be configured.

If you do not configure the Base URL for a particular tenant, then the Suite Admin uses the parent-level configuration details to set the host/port link.

If a tenant does not have a Base URL configured, the URL is inherited from the immediate parent where the Base URL is configured.

Prior to CloudCenter Suite 5.1.2, admins did not have the option to configure a specific parent/ancestor's Base URL for a tenant.

Effective CloudCenter Suite 5.1.2, tenants admins can configure the Base URL of any of their ancestor tenants. The only caveat is that the admin cannot set the Base URL of child tenant for a parent tenant.

To configure the Base URL, follow this procedure.

1. Navigate to the Suite Admin Dashboard > **Admin**.
2. Click **Base URL** in the left tree pane.
3. In the Base URL settings page, enter the **DNS/IP Address** and **Port** number that should be displayed in the Base URL.
4. Copy and paste the **Private Key** and/or **Certificate** details for the DNS provided in the previous step.
5. Click **Save** to save your changes and enable a direct connection to the IDP server.

Offline Repository Configuration

Offline Repository Configuration

A repository connection enables access from one of the CloudCenter Suite VMs to a local **Cisco Products Repository**. This default repository is only accessible if you have internet access. See Offline Repository for details.

If your CloudCenter Suite instance does not have internet access, you will not be able to view any dashboard in the CloudCenter Suite even after you log in.

The suite administrator's ability to view a configured repo is indicated by the green circle on the **folder icon**.

- If the CloudCenter Suite is able to connect to the Cisco Products Repository, then you'll see a green circle displayed in the Suite Admin Dashboard header.
- If not, then you must first setup the offline repository, and then configure the Suite Admin to connect to the offline repository (displayed in the following screenshot).

Clicking this icon (displayed in the screenshot above) allows you to enable a local repository connection if you are operating in an environment with no internet access.

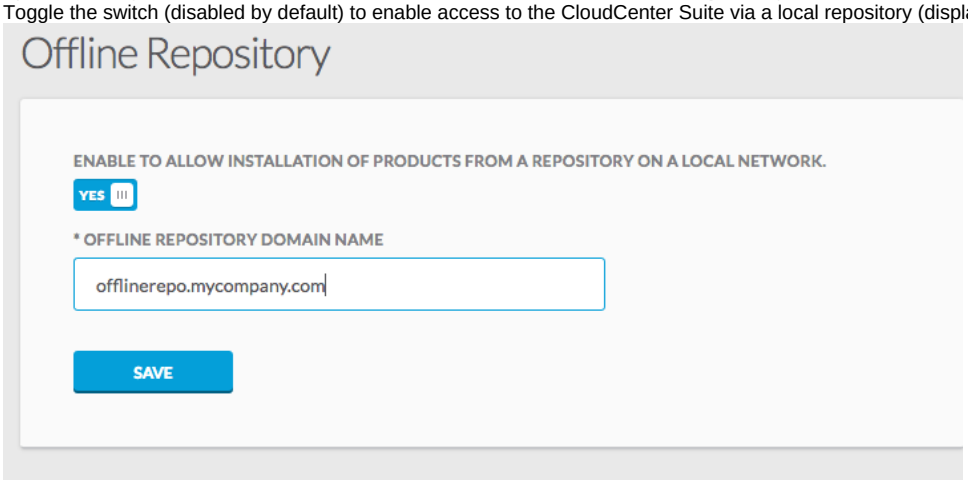
The color of the circle on the folder icon identifies the status of the repository (even if it is the default Cisco repository) connected to the CloudCenter Suite as identified in the following table.

Folder Icon Color	Description
Green	The offline repository connection is successful.
Red	The offline repository connection failed.

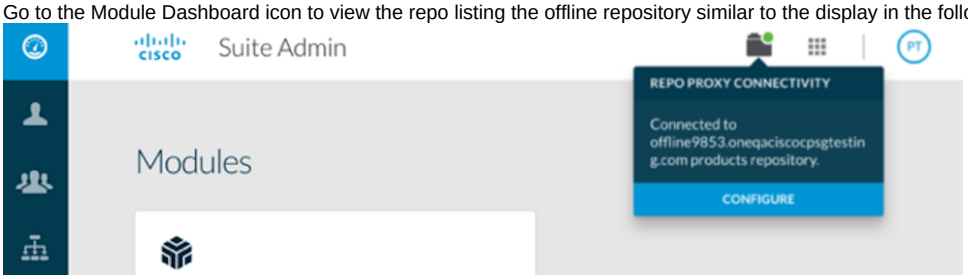
The offline repository connection in disabled by default and must be explicitly enabled to configure the DNS or IP address of the local repository.

To configure the connection to a local network repository, follow this procedure.

1. Click the folder icon to re-configure the proxy settings.
   Optional. Navigate to the Suite Admin Dashboard > **Admin** and click **Offline Repository**.
2. Toggle the switch (disabled by default) to enable access to the CloudCenter Suite via a local repository (displayed in the following screenshot).



3. Provide the DNS of the offline repository server in the URL field.
4. Click **Save** to save your changes.
5. Go to the Module Dashboard icon to view the repo listing the offline repository similar to the display in the following screenshot:



Log Archive

Log Archive

The temporarily stored logs on the CloudCenter Suite server are automatically purged on a regular basis. This log file location is not configurable from the CloudCenter Suite.

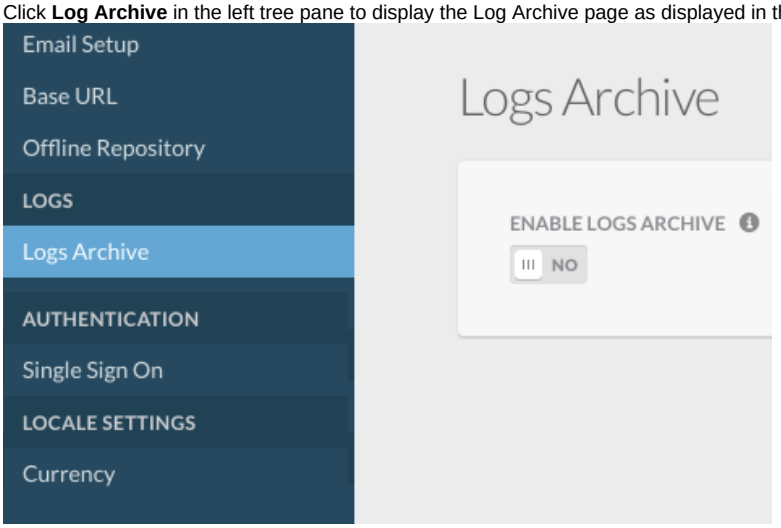
To store logs for a longer period, you can configure an archive location for your AWS S3 region – if you configure an archive location for your AWS S3 region, the CloudCenter Suite logs can also be saved to the AWS S3 region besides the temporary location on the CloudCenter Suite server. If so, you can enable the archive of log files from the Suite Admin UI to the AWS S3 region using the S3 bucket name and AWS credentials.

You should have already configured the AWS S3 region. Refer to https://docs.aws.amazon.com/AmazonS3/latest/dev/ServerLogs.html for details.

Each zip file saved in the S3 bucket is assigned a numeric value and saved with a time stamp.

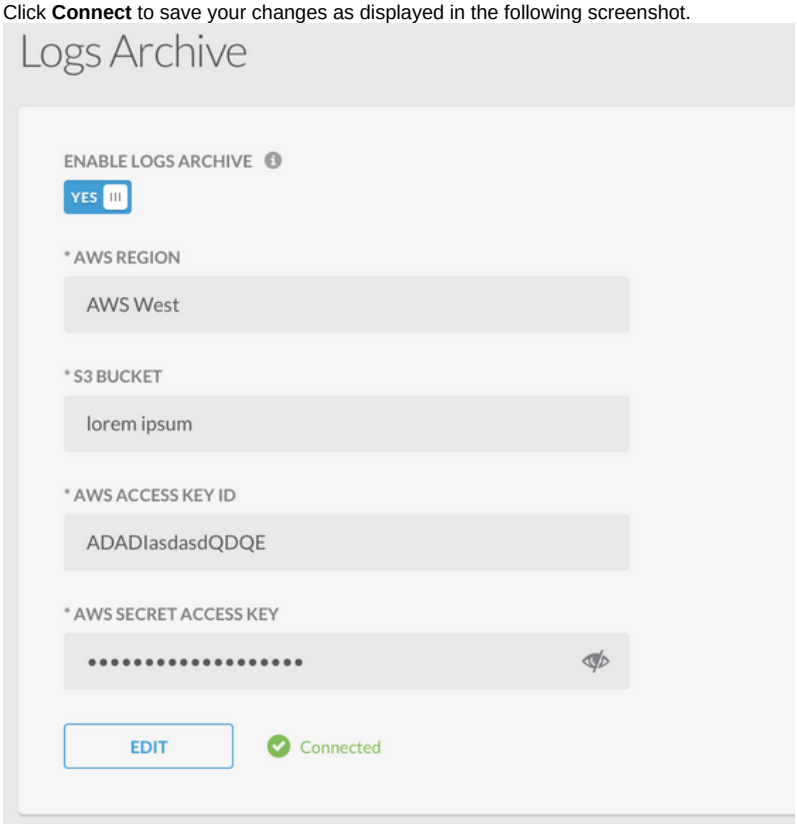
To enable log archives, follow this process.

1. Navigate to the Suite Admin Dashboard > **Admin**.
2. Click **Log Archive** in the left tree pane to display the Log Archive page as displayed in the following screenshot.

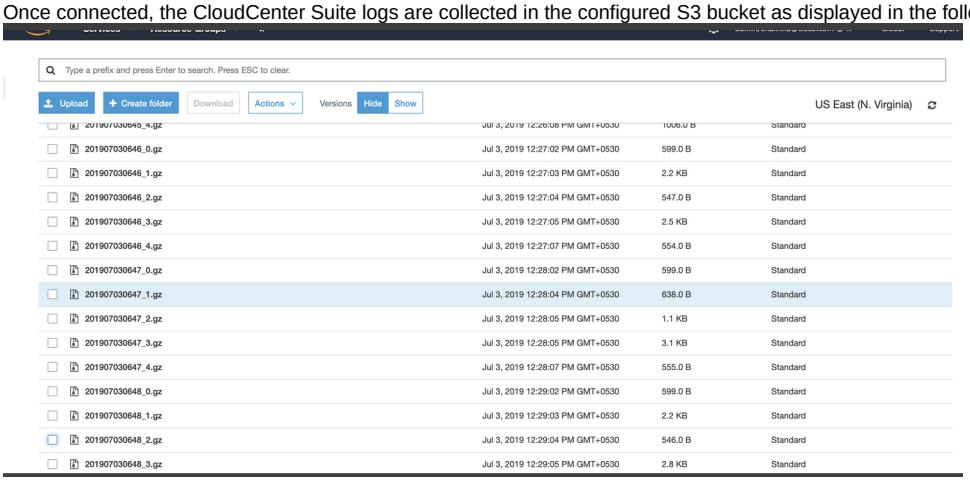


3. Toggle the **Enable Logs Archive** switch to enable (disabled by default) the archive of log files.
4. Configure the **AWS Region**, **S3 Bucket**, **AWS Access Key ID**, and **AWS Secret Key Access** details.

5. Click **Connect** to save your changes as displayed in the following screenshot.



Once connected, the CloudCenter Suite logs are collected in the configured S3 bucket as displayed in the following screenshot.



You can disable the log archives at any time by toggling the **Enable Logs Archive** switch and confirming your actions in the resulting popup. Disabling the configuration will only save future logs to the temporary CloudCenter Suite location where they are automatically purged.

SSO Setup

Single Sign On (SSO) Setup

Some enterprises have their own Active Directory (AD) or other similar setup and prefer to use those credentials to login into the external applications and platforms. The CloudCenter Suite does not support direct AD authentication, and instead supports integration using a Single Sign On (SSO) setup between the Suite Admin as a Service Provider (SP) and a customer's Identity Provider (IdP) such as ADFS.

Requirements

You should have already configured the Base URL Configuration for the root tenant in order to use this functionality. This URL is used to download the service provider metadata. You can retrieve the data by clicking on the URL and accessing the metadata for the IdP attributes.

The CloudCenter Suite only supports AD through a SSO IdP that supports SAML 2.0 protocol (for example, Ping Identity, ADFS, Shibboleth, and so forth).

Each tenant can point to its own SSO:

- Tenant Admins can configure each tenant to have a dedicated alias hostname and use an external IdP to authenticate its users.
- Each tenant and user has a **Tenant Login ID** to associate with an external organization and user.

If you delete a user from the IdP database, the deleted user cannot log into the CloudCenter Suite, but any configuration and associated dependencies continue to remain in the Suite Admin.

To configure SSO, perform this procedure.

1. Navigate to the Suite Admin Dashboard > **Admin**.
2. Click **Single Sign On** in the left tree pane to display the Single Sign On page.
3. Toggle the switch to enable (disabled by default) users to use Single Logout.

   If you do not enable single log out, be aware that users cannot logout until the token expires.

4. Configure the IdP URL for the Metadata in the **IdP Settings** section using HTTP or HTTPS protocol.
5. Toggle the switch if you prefer users to have a **Single Logout** from the IdP to log out of each session.

   SSO Sessions in different browsers are independent of each other. Enabling the **Single Logout** switch does not terminate all sessions.

   By terminating the current SSO or IdP session, you are only terminating that session on that browser. The remaining sessions remain active until their JWT token expires or the user explicitly logs out of each session.

6. Provide the IdP mapping attributes to connect the Suite Admin properties to the IdP properties.
7. Click **Save** to save your changes.

This flow provides the required information to setup ADFS in *Windows* 2016 for a vSphere environment.

This is a sample setup flow and you can adapt the information to your environment based on your requirements.

Setup ADFS in Your Environment

To setup ADFS in *Windows* 2016 for a vSphere environment, follow these steps.

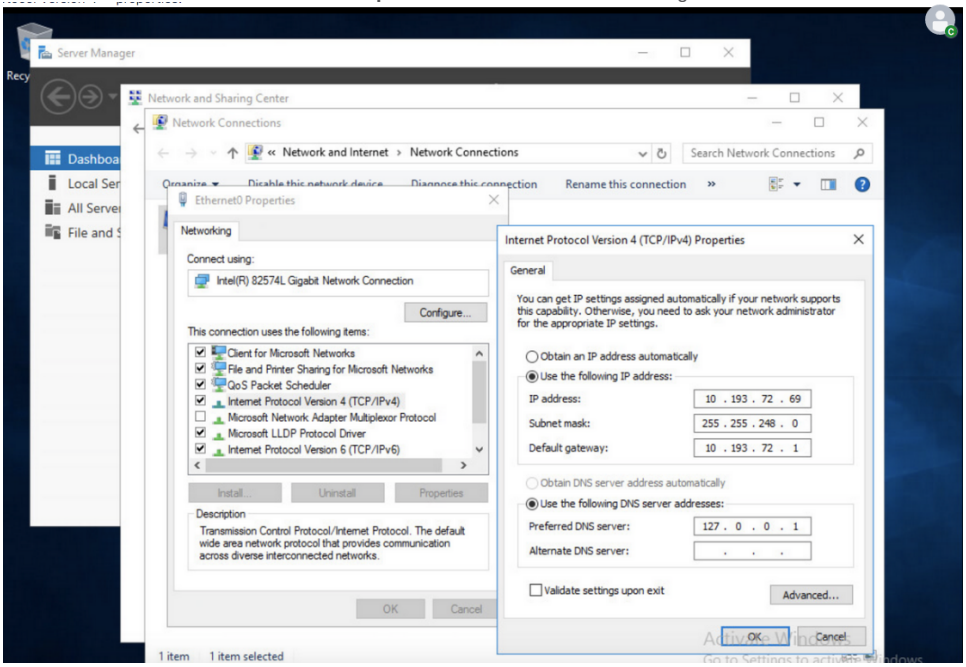
1. Create a new Windows 2016 VM in your vSphere environment.

   You can clone a new VM using the base_windows2016 template from *CliqrTemplate*.

   To use this template, you must login using administrator credentials – contact CloudCenter Suite Support to obtain the administrator credentials.

2. Login into the administrator account using the default password.
3. Configure the VM Network settings.

    a. Access **Control panel** > **Network and Internet (View network status and tasks)** > **Change adapter settings** and right click **Ethernet0**.
    b. Select **Properties**.
    c. Select **Internet Protocol Version 4** > **Properties** as reflected in the following screenshot.



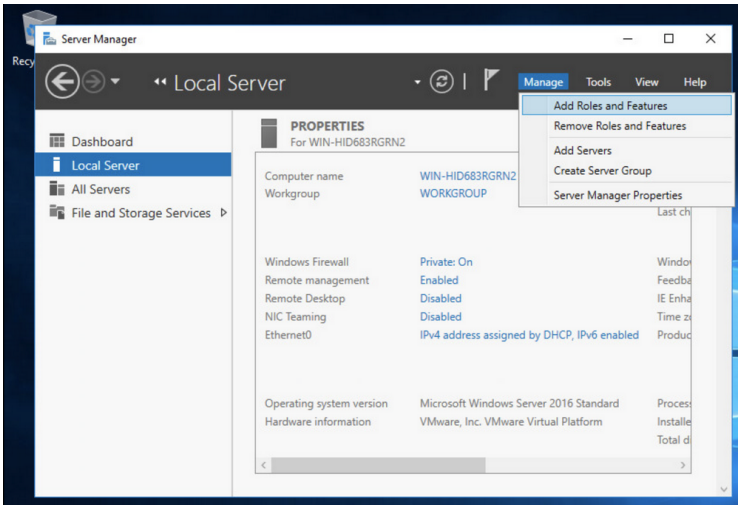
    d. Assign the static IP address, default gateway, subnet mask, and DNS.

4. Change the hostname.

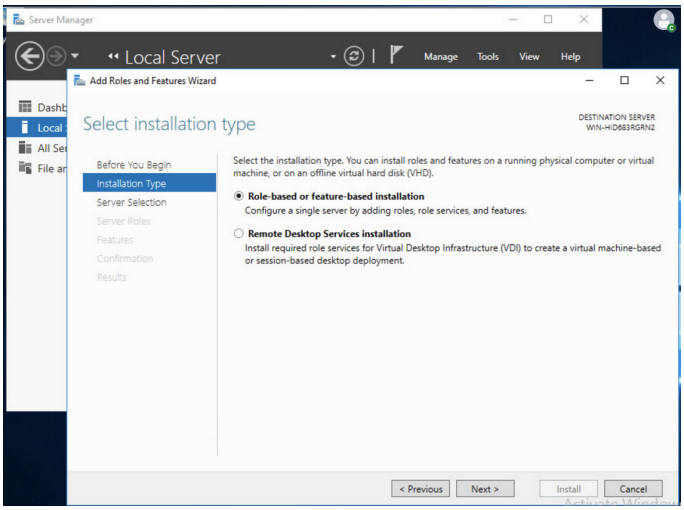
    a. Access **Server Manager** > **Local Server**.
    b. Update the computer/host name.
    c. Enable **Remote Desktop** and turn off **IE Enhanced Security**.
    d. Save your changes and restart the VM for the changes to apply.

5. Synchronize the System Date and Time.
6. Install Active Directory Domain Services.

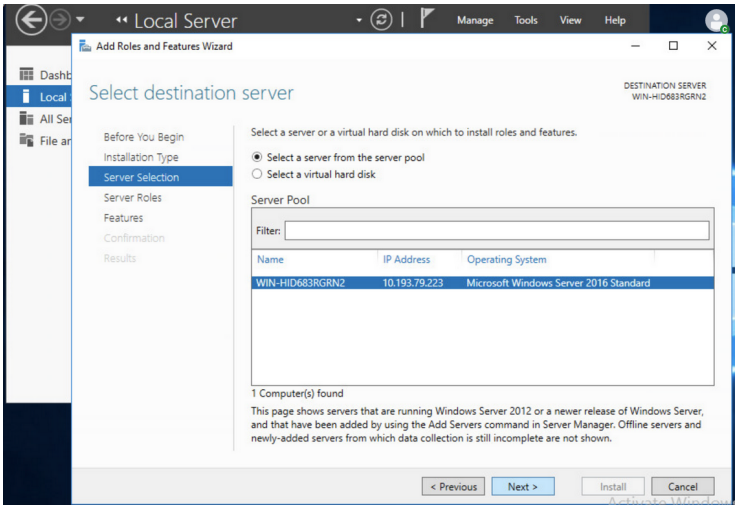
    a. Access **Server Manager** > **Manage** > **Add Roles and Features** as reflected in the following screenshot.



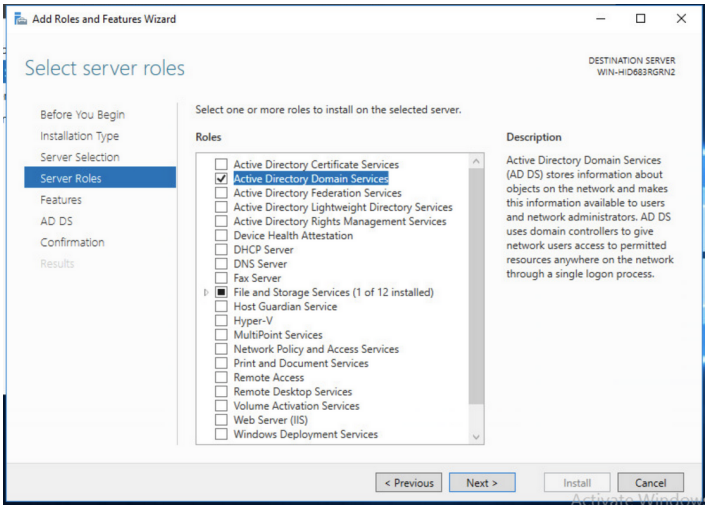
    b. Select the type of Installation as reflected in the following screenshot.



c. Select the destination server as reflected in the following screenshot.



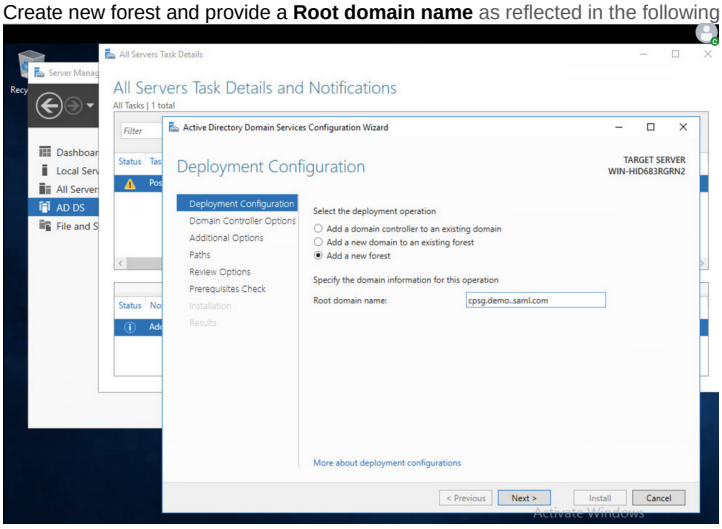
d. Select **Active Directory Domain Services** as reflected in the following screenshot.



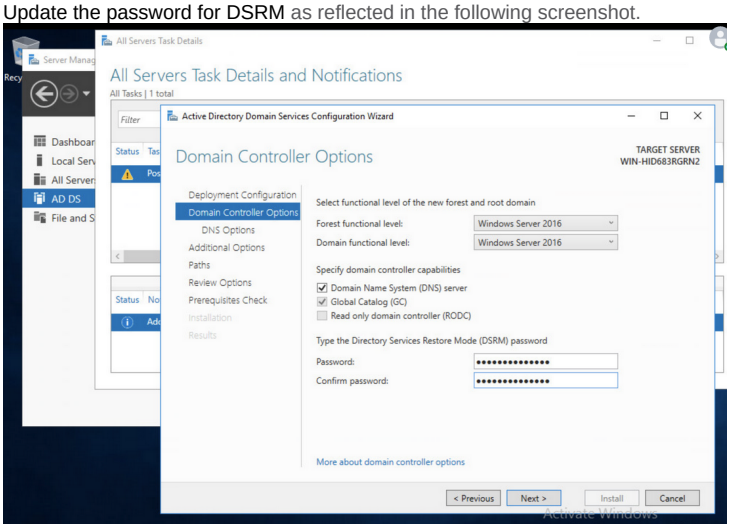
e. Follow the default configuration steps.

7. Configure the AD DS.

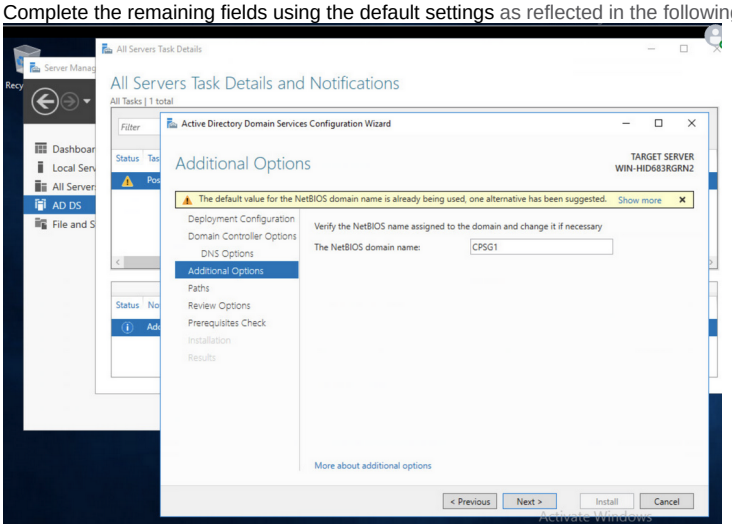
a. Create new forest and provide a **Root domain name** as reflected in the following screenshot.



b. Update the password for DSRM as reflected in the following screenshot.



c. Complete the remaining fields using the default settings as reflected in the following screenshot.



d. Save your configuration and restart the VM.

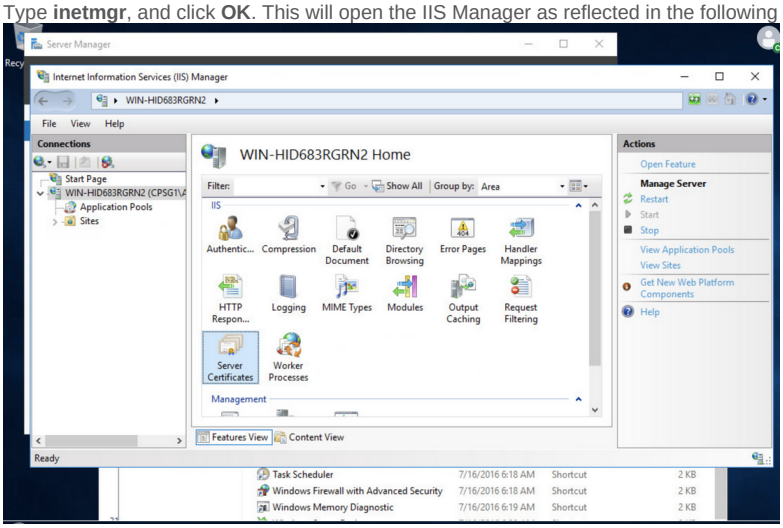
8. Install a DNS Server.

    i. Access **Server Manager** > **Manage** > **Add Roles and Features** > **DNS Install**.
    ii. Complete the configuration using the default values for the remaining fields.

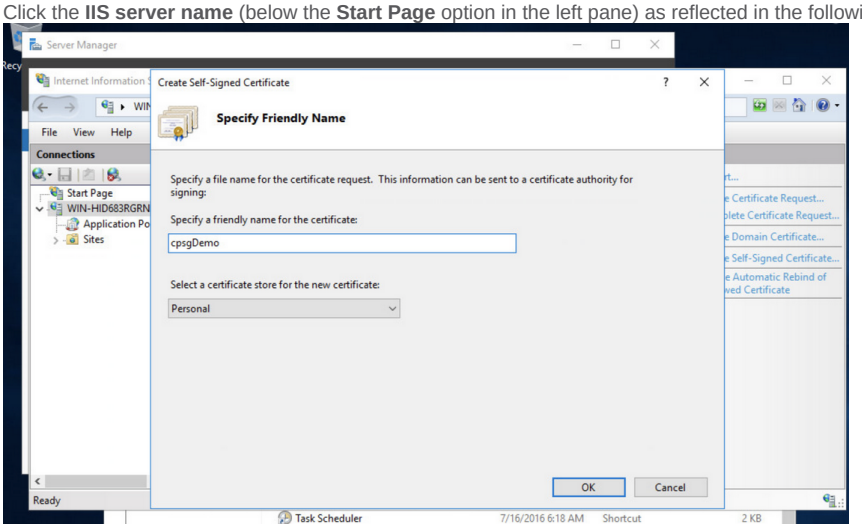
9. Install the Web Server (IIS Manager)

    a. Access **Server Manager** > **Manage** > **Add Roles and Features** > **IIS Manager Install**.
    b. Complete the configuration using the default values for the remaining fields.
    c. From the Windows **Start** menu, go to **Run** (or press **Window** + **R** keys, for MACs press **Command** + **R** keys) to open the Run window.

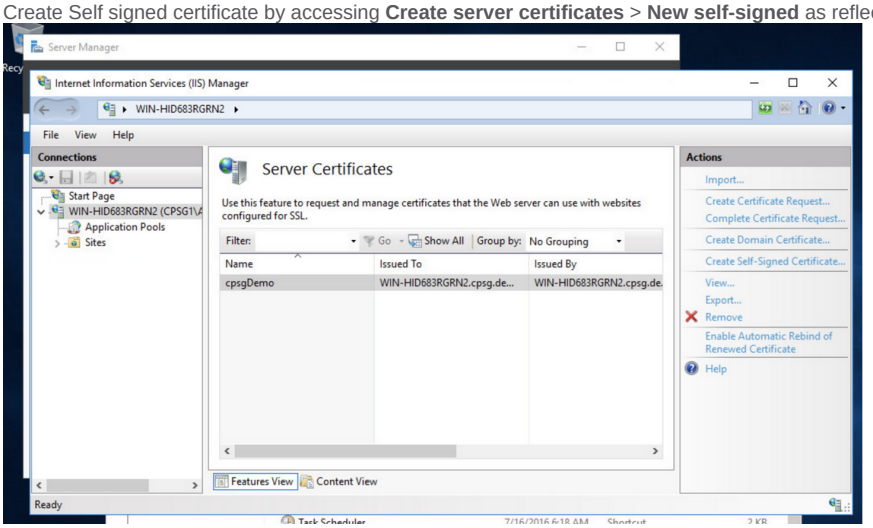
d. Type **inetmgr**, and click **OK**. This will open the IIS Manager as reflected in the following screenshot.



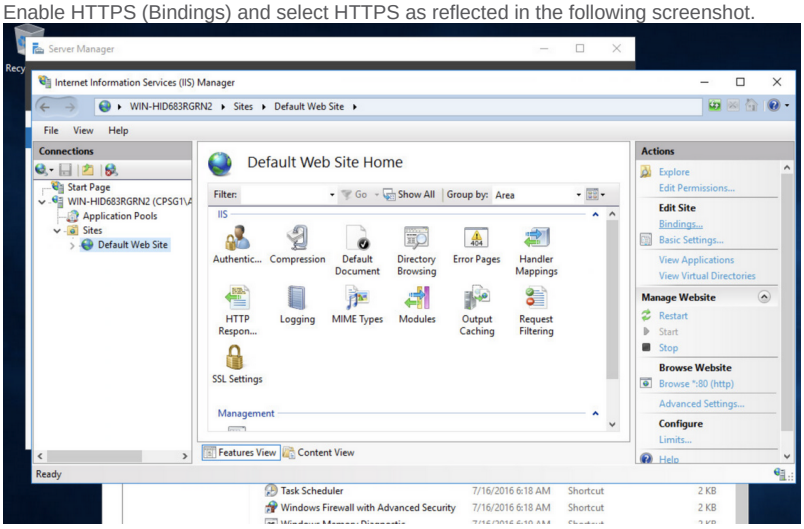
e. Click the **IIS server name** (below the **Start Page** option in the left pane) as reflected in the following screenshot.



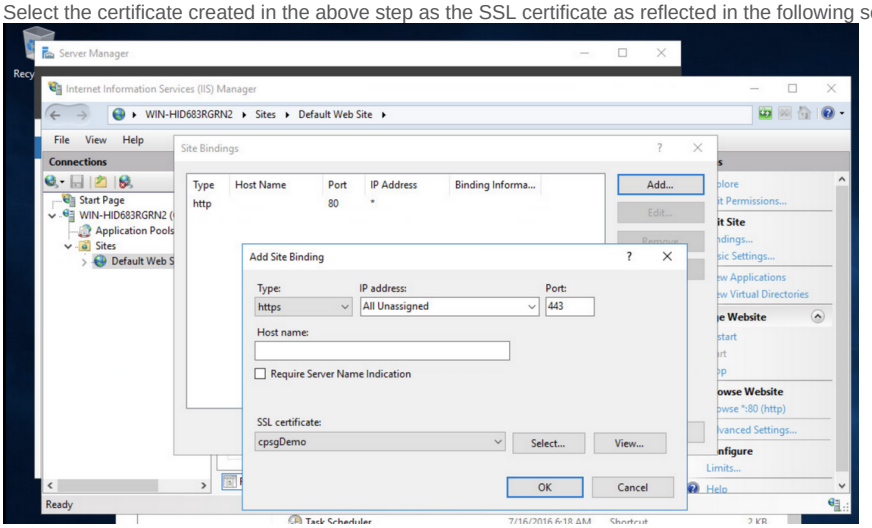
f. Create Self signed certificate by accessing **Create server certificates** > **New self-signed** as reflected in the following screenshot.



g. Enable HTTPS (Bindings) and select HTTPS as reflected in the following screenshot.



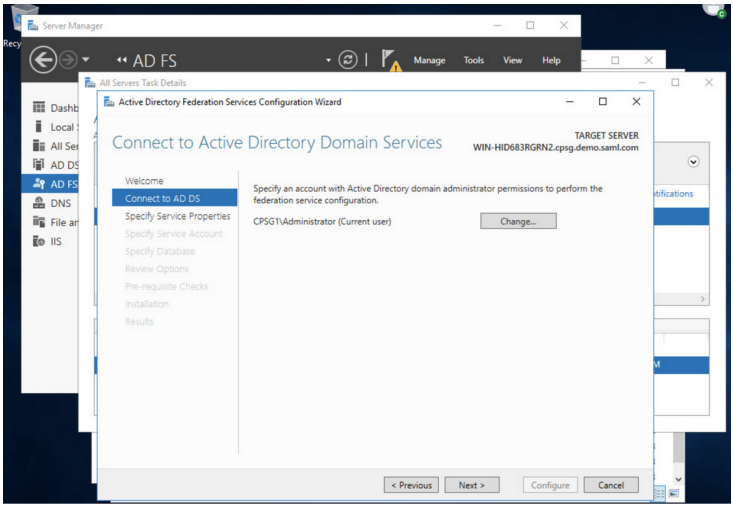
h. Select the certificate created in the above step as the SSL certificate as reflected in the following screenshot.



i. Click **OK** and close the window.

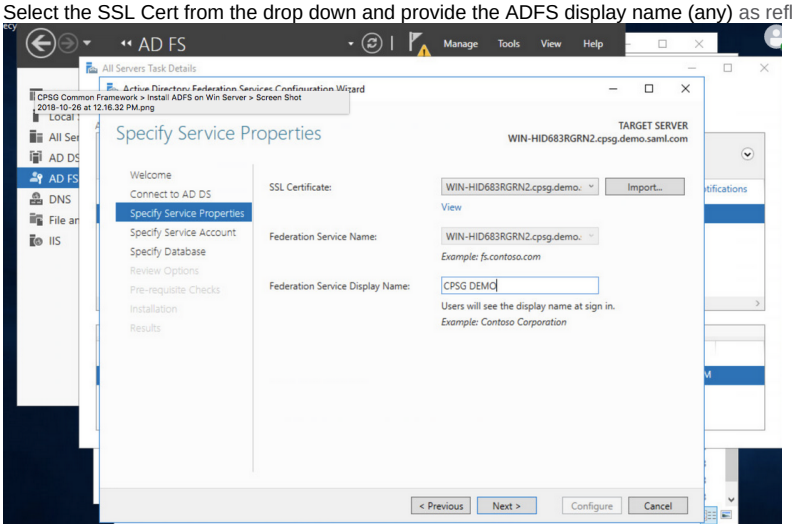
10. Install ADFS (connect ADFS to ADDS).

a. Access **Server Manager** > **Manage** > **Add Roles and Features** > **ADDS Install** as reflected in the following screenshot.

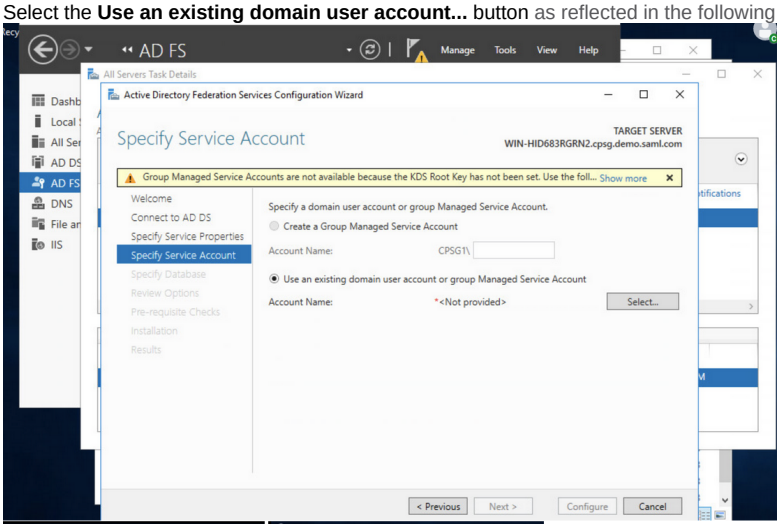


b. Select Create the first federation server.

i. Select the SSL Cert from the drop down and provide the ADFS display name (any) as reflected in the following screenshot.

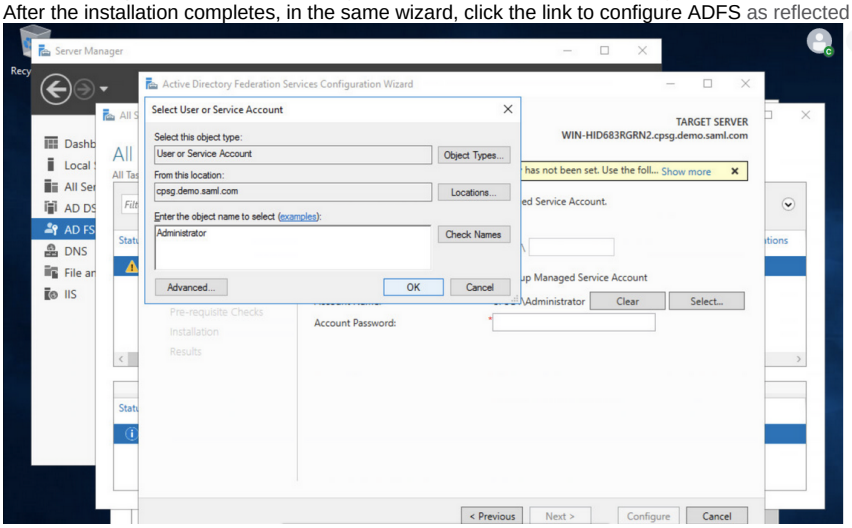


ii. Select the **Use an existing domain user account...** button as reflected in the following screenshot.



iii. Complete the installation using the default values for the remaining fields.

c. After the installation completes, in the same wizard, click the link to configure ADFS as reflected in the following screenshot.



11. Enable IpdInitiatedSingleSignOn:

a. Access PowerShell
b. Enable IPD initiated single sign-on and verify using the following commands.

```
# Set-AdfsProperties -EnableIdPInitiatedSignOnPage $true
# Get-AdfsProperties
```

12. Verify the AD FS installation:
    a. Check if you can download the metadata using the following URL format.

```
https://<IP_Address>/FederationMetadata/2007-06/FederationMetadata.xml
```

    b. Check if you can access the Single Sign On (SSO) page using the following URL format.

```
https://<IP_Address>/adfs/ls/IdpInitiatedSignon.aspx
```

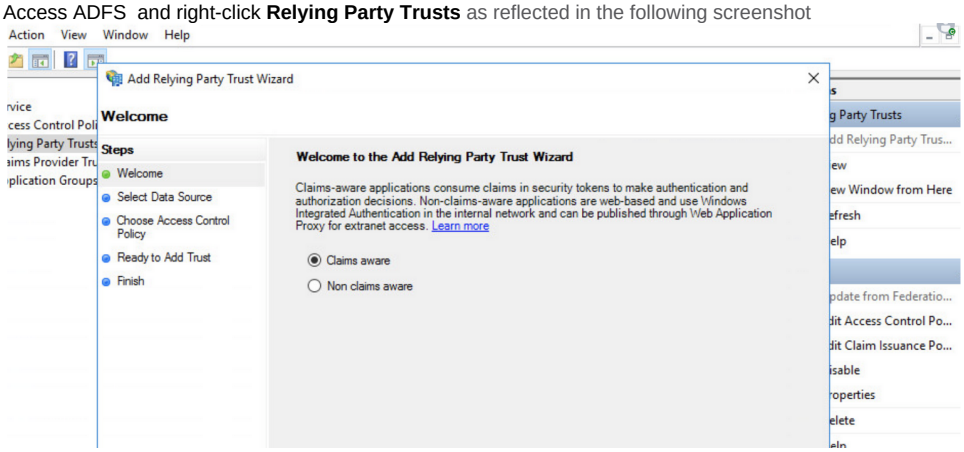
You have now setup ADFS in *Windows* 2016 for a vSphere environment.

Establish a Third-Party Trust for SSO

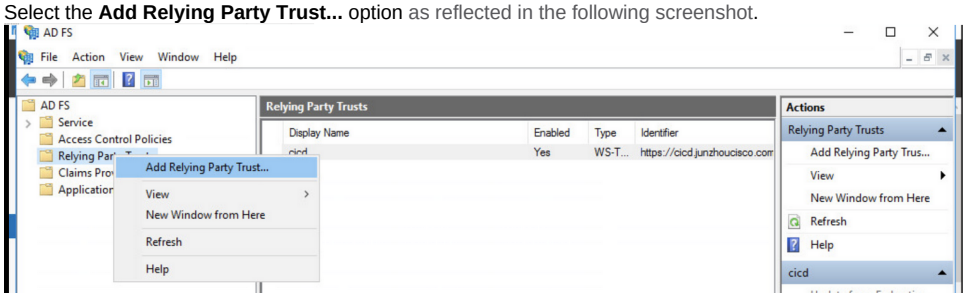
You must establish a trust between the service provider and ADFS to ensure SSO. To perform this task, add the Suite Admin to the third-party trust using its metadata file by following these steps.

> **For ADFS to authenticate, the Base URL must match the IP address and port number in the metadata file.**
>
> **When you configure the Suite Admin to Enable SSO, enter the IP address and port number of your Suite Admin in the Base URL Configuration.**

1. Access ADFS and right-click **Relying Party Trusts** as reflected in the following screenshot



2. Select the **Add Relying Party Trust...** option as reflected in the following screenshot.



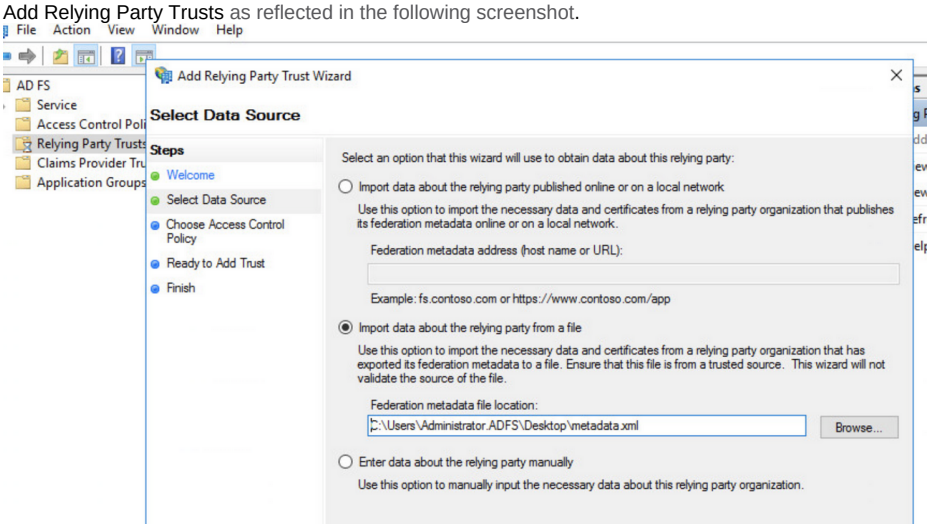
3. Download the Suite Admin's metadata file using the following URL and save it on the local disk of your Windows server.

> The *tenant_host_name* and *port_number* are the defined in tenant's Base URL Configuration.

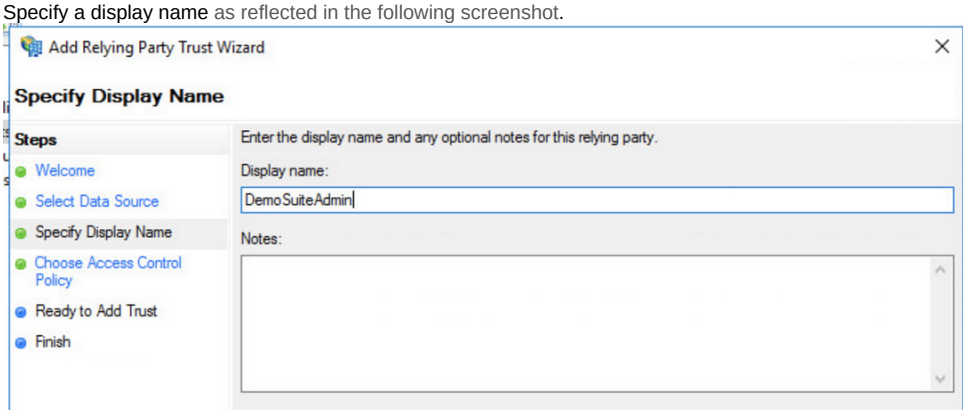
```
https://<tenant_host_name>:<port_number>/suite-saml/saml/metadata
```

4. Upload the metadata file to the Relying Party Trust by following these steps.

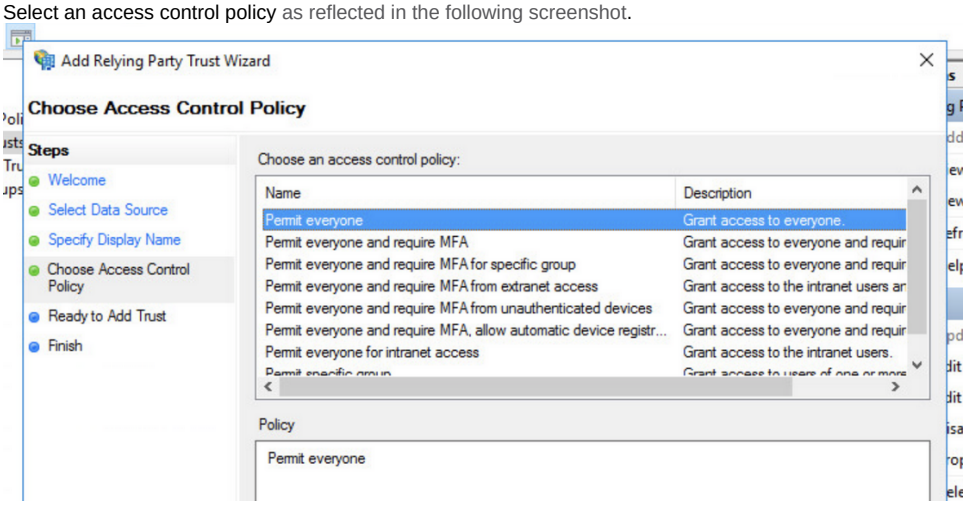
a. Add Relying Party Trusts as reflected in the following screenshot.



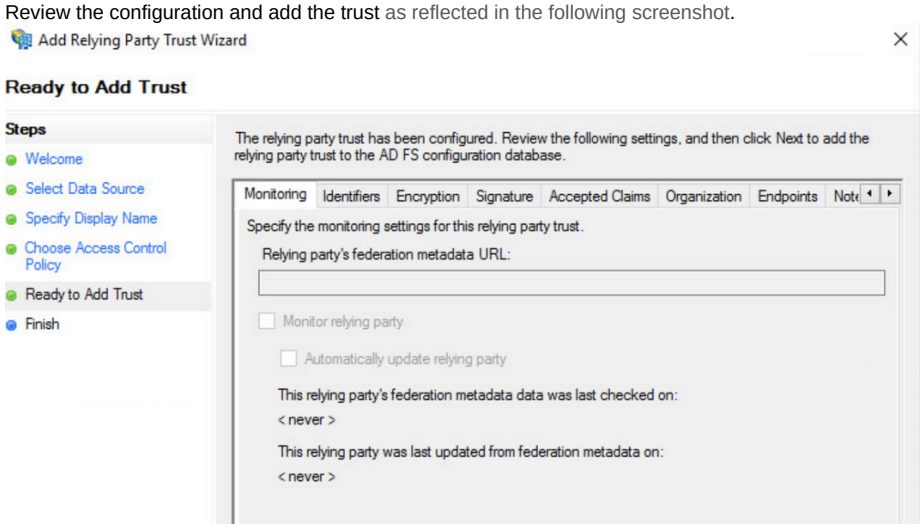
b. Specify a display name as reflected in the following screenshot.



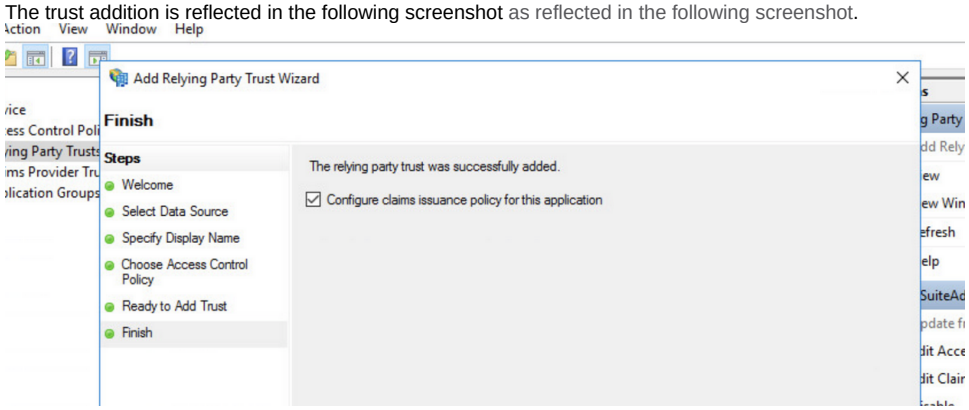
c. Select an access control policy as reflected in the following screenshot.



d. Review the configuration and add the trust as reflected in the following screenshot.



e. The trust addition is reflected in the following screenshot as reflected in the following screenshot.



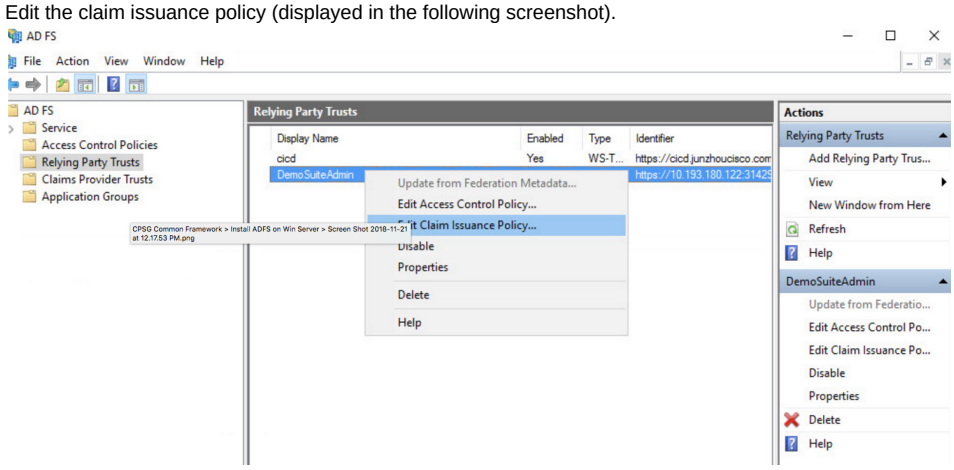
You have now established a trust between the service provider and ADFS.

Adding Claims

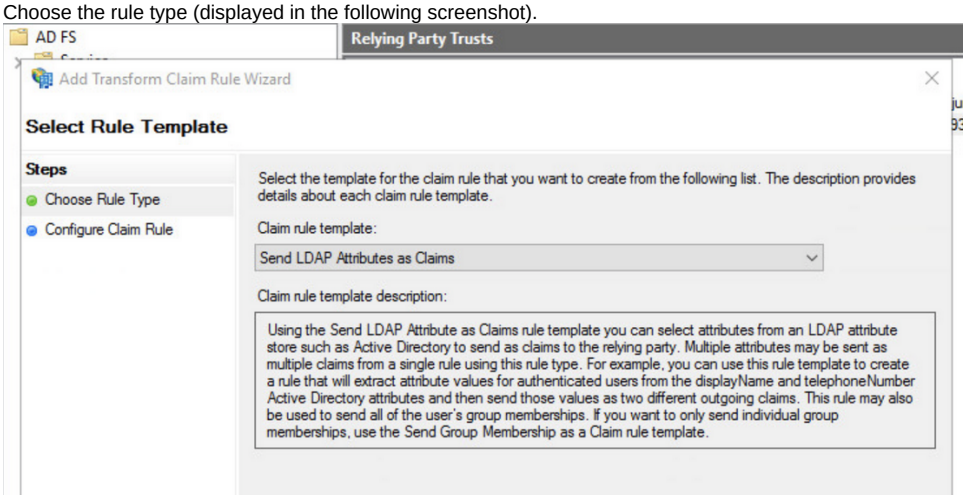
To setup claim rules (**LDAP and Transform rules**) so you can transform the IdP properties to suite properties and vice versa, follow this procedure.

1. Create rule 1: Send LDAP attributes as claims – When you use the **Send LDAP Attributes as Claims** rule template, you can select attributes from an LDAP attribute store, such as Active Directory or ADDS to send their values as claims to the relying party. This rule essentially maps specific LDAP attributes from an attribute store that you define to a set of outgoing claims that can be used for authorization.

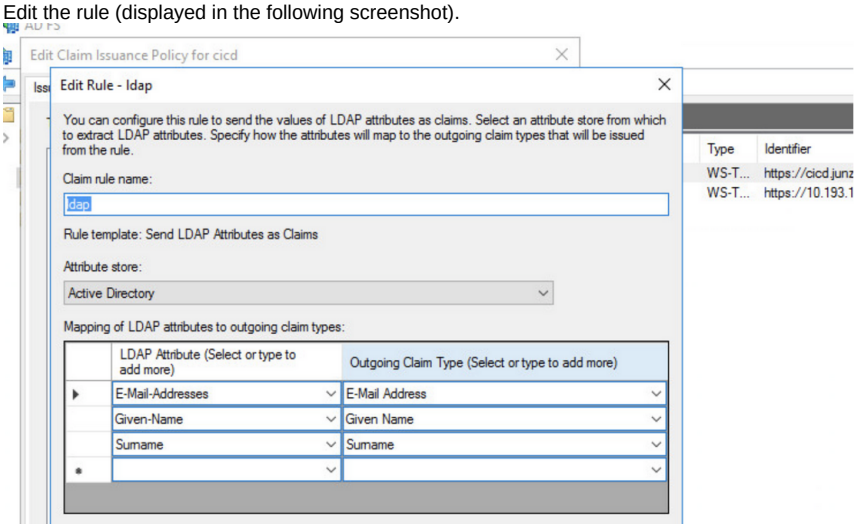
   a. Edit the claim issuance policy (displayed in the following screenshot).



b. Choose the rule type (displayed in the following screenshot).

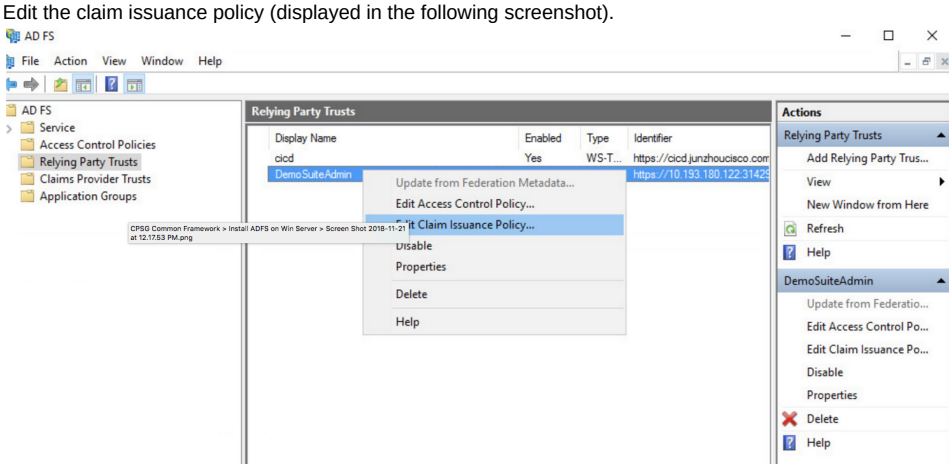


c. Edit the rule (displayed in the following screenshot).

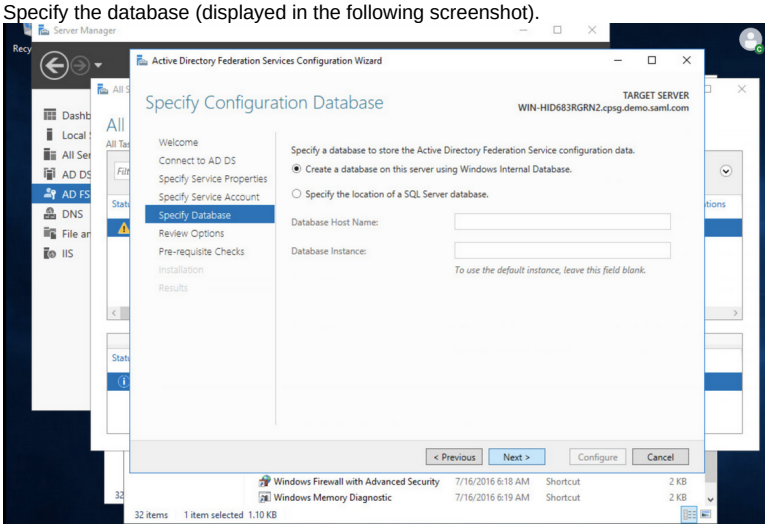


2. Create Rule 2: Transform an Incoming Claim – By using the **Transform an Incoming Claim** rule template in ADFS, you can select an incoming claim, change its claim type, and optionally change its claim value.

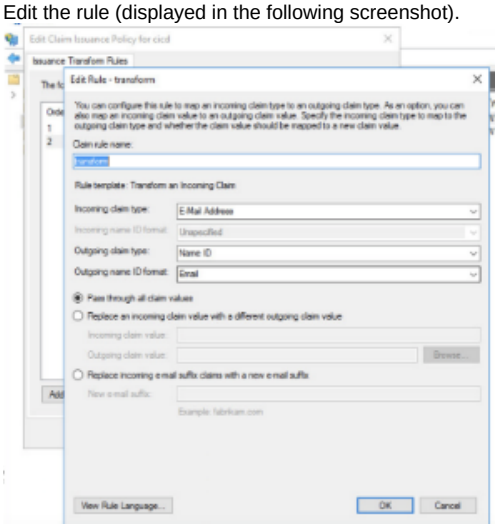
a. Edit the claim issuance policy (displayed in the following screenshot).



b. Specify the database (displayed in the following screenshot).

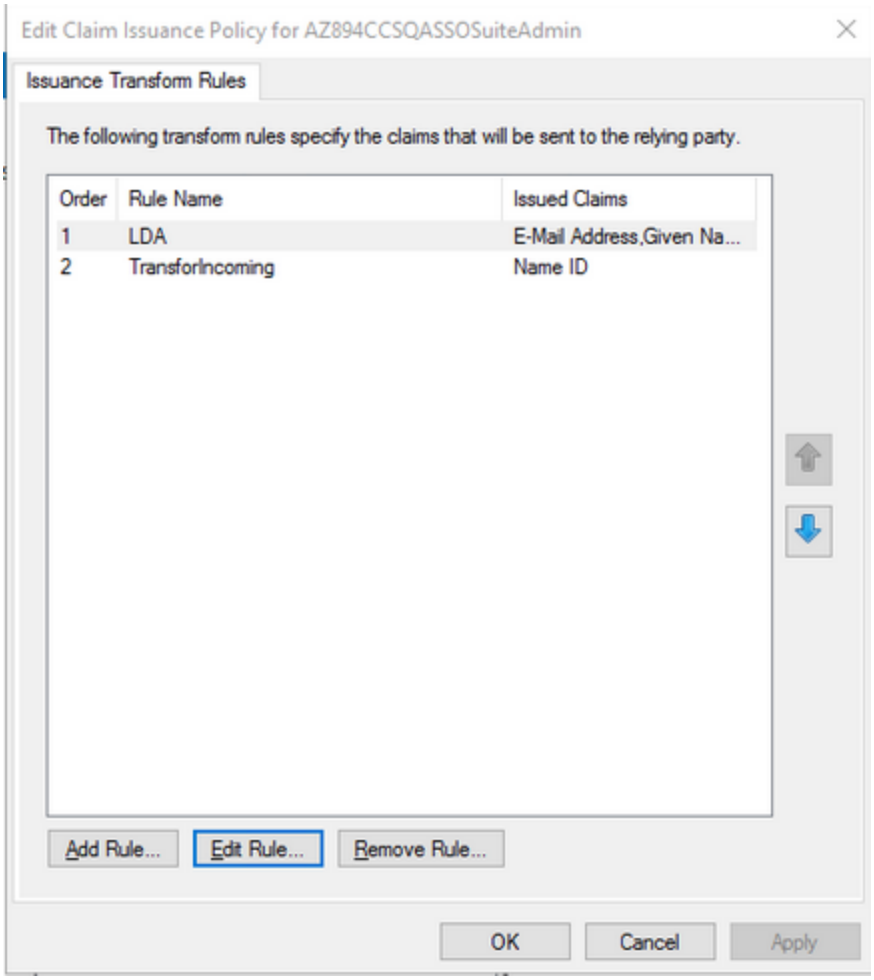


c. Edit the rule (displayed in the following screenshot).

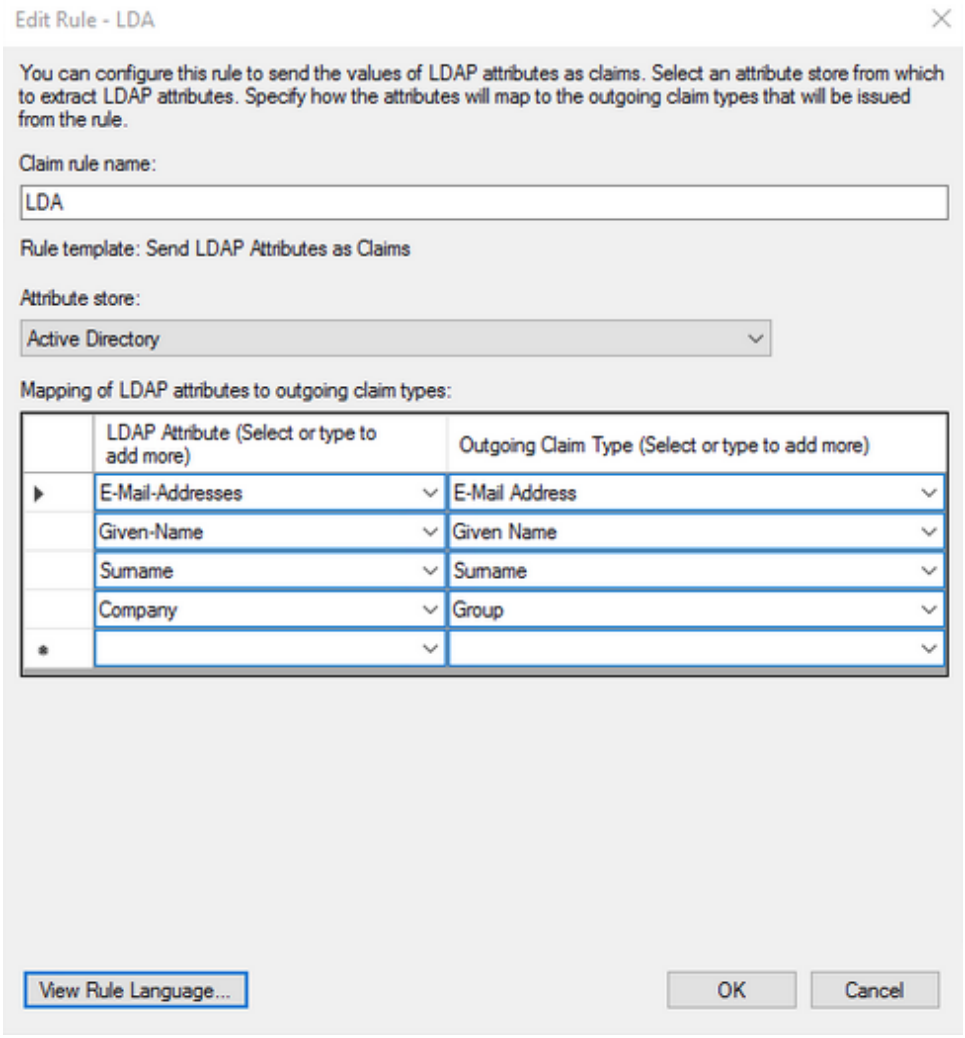


d. Make note of the following items so you can use the same information in the Suite Admin SSO Configuration page.

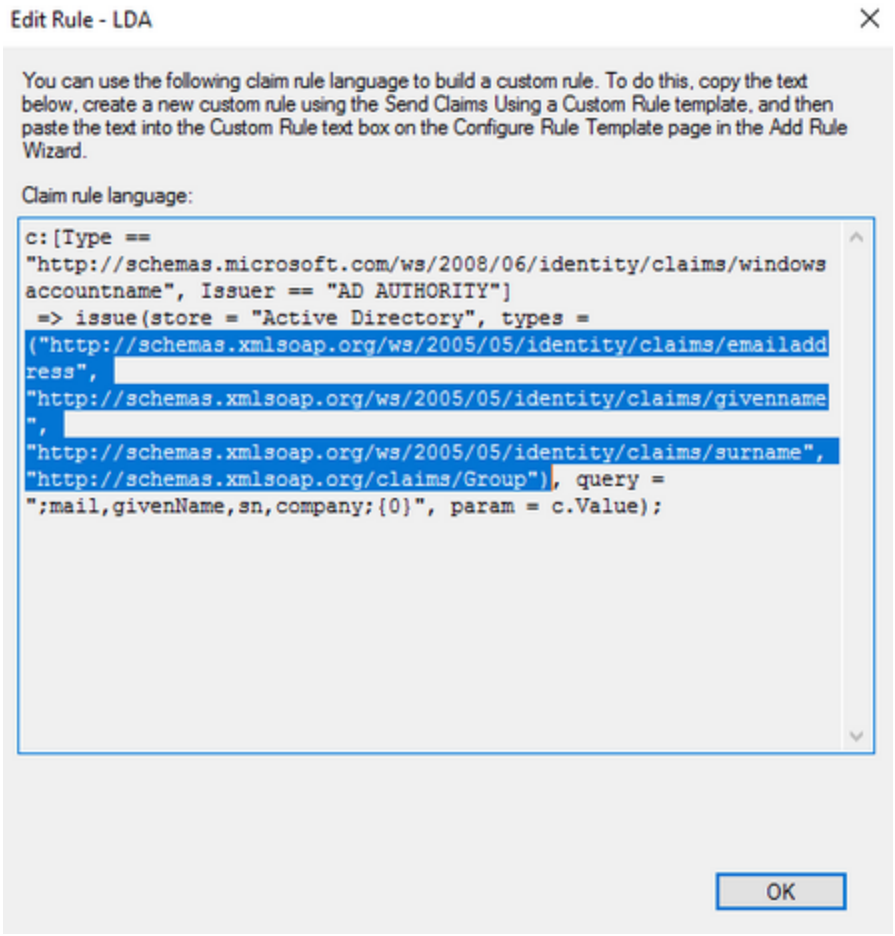
   i. Access the claims sent to the relying party (displayed in the following screenshot).



ii. LDAP attribute mapping to outgoing claim types (displayed in the following screenshot).



iii. AD paths in exactly as listed in the Claim rule language (displayed in the following screenshot).



You have now setup claim rules to transform the IdP properties to suite properties and vice versa.

Update the Local host to Resolve ADFS and Tenant Hostname

To make domain name of ADFS to be resolvable, add it to /etc/hosts file.

```
# sudo vi /etc/hosts
<IP_address_adfs> win-qa-adfs.cpsg.qa.saml.com
<Kubernetes_IP_address> <tenant_host_name>
```

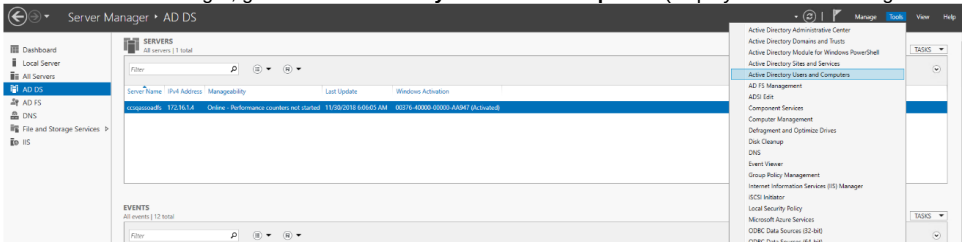
Creating a New User in ADDS

The system time for the ADFS server and the Suite Admin server must be synchronized before authentication.

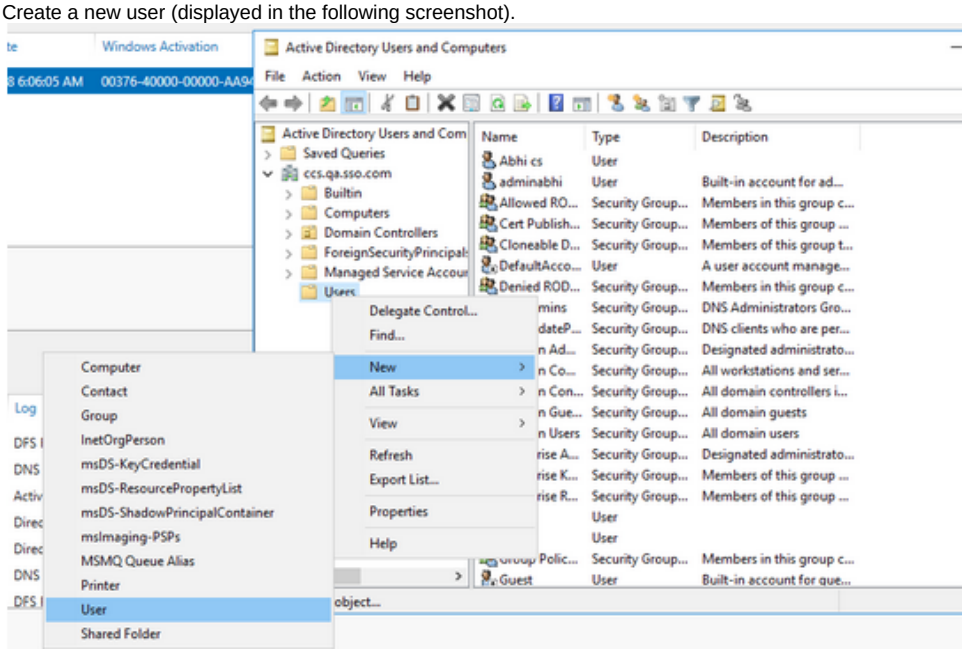
If the time difference between these two systems are different, then the authentication might fail.

To create a new user in ADDS, follow this procedure.

1. From the Server Manager, go to **Active Directory Users and Computers** (displayed in the following screenshot).



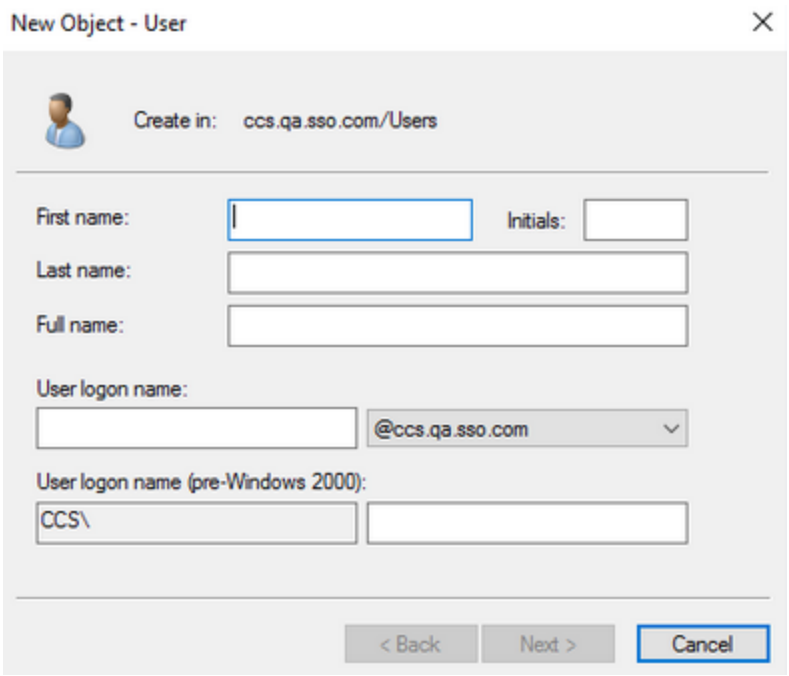
2. Create a new user (displayed in the following screenshot).



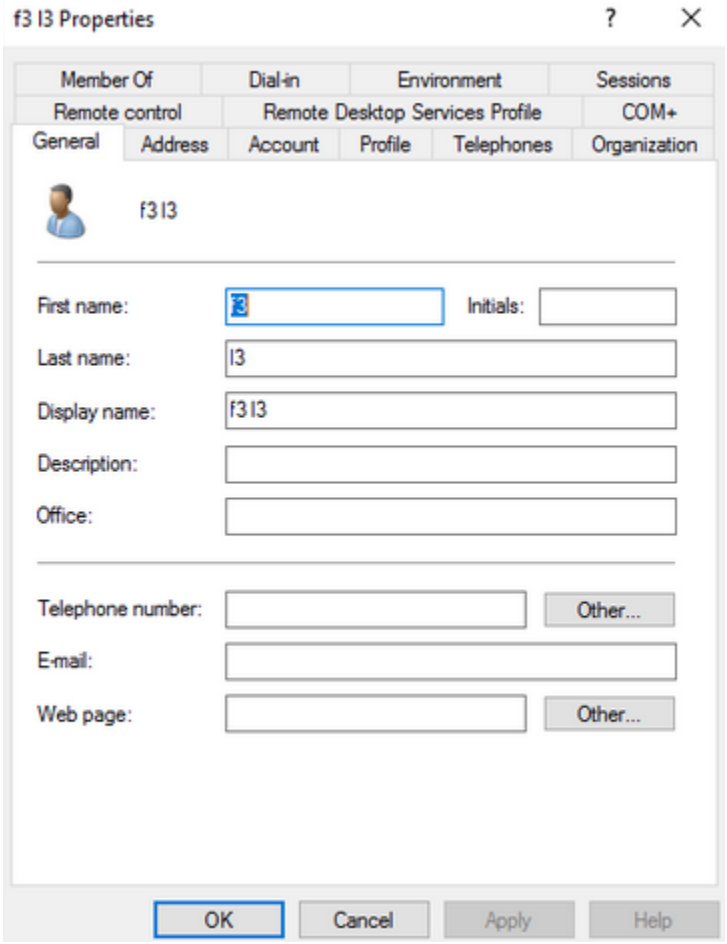
3. Enter the following details:

   a. First Name
   b. Last Name
   c. User logon name

4. Click **Next** > Enter the password and finish the user creation.



5. Right-click and access the properties for the created user.



6. Enter the email – this information is used for authentication when this user tries login from the ADFS

To set up SSO from the Suite Admin, perform this procedure.

1. After the Initial Administrator Setup, login into Suite Admin as the root user.
2. Locate the base URL for this server.
3. Go to Base URL page in the Configuration menu and enter the Base URL from Step 2.
4. For private clouds, enter the port for the node port service (leave it blank for public clouds).
5. Save your changes.
6. Set up ADFS as listed in the *ADFS SAML SSO – Sample Integration and Setup* above.
7. Once you configure Suite Admin with ADFS, note the details to map each field in the Suite Admin as listed in the previous sections.
8. Create one user in ADFS as listed in the previous sections.
9. Login into Suite Admin as the root user and access the SSO Setup page in the Suite Admin UI.
10. Enable SSO.
11. Enter the appropriate IdP metadata details in each field as identified in the *Accessing Claims* section above.
12. Open the https://<**IP_Address**>/FederationMetadata/2007-06/FederationMetadata.xml link.
13. From this file, get the information for the First Name, Last Name, Email, User Group, and Tenant Id based on the appropriate mapping provided in the *Creating a New User in ADDS* section above. The following path are merely some examples – you must find the actual values when creating the user and claim mappings.
    - First Name: http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname
    - Last Name: http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname
    - email: http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailaddress
14. Populate the SSO fields, and click **Save**.
15. Logout and execute the BASE URL. The expected outcome is that the Base URL will redirect the user to the ADFS page https://<**IP_Address**>/adfs/ls/IdpInitiatedSignon.aspx

    ⚠ The Suite Admin login page is not displayed when you execute the Base URL, instead the configured ADFS sign on page is displayed.

16. Enter the username/password of the user created in ADFS. Click the **Submit/Login** button. The expected outcome is that the user can login to the Suite Admin and view the Product Dashboard page base on this user's permission level (see Understand User Levels for details).
17. To generate certificates for the new domain, follow these steps:

    a. Install the certbot tool by running the following command to get the certbot package.

```
brew install certbot
```

b. Use AWS Route53 to create a domain name for the IP.

```
sudo certbot certonly --server https://acme-v02.api.letsencrypt.org/directory --manual --preferred-
challenges dns -d '<preferreddomain.name.com>'
```

c. Once this command is executed, you see a message similar to the following message:

```
Please deploy a DNS TXT record under the name_acme-challenge.pujt.oneqaciscocpsgtesting.com with
the following value: FU5.....................JWR4gy.......gno
```

d. Before continuing, verify that the record is deployed.
e. Now in AWS Route53, add this information again in the record.
f. Wait for 2-3 minutes for it to replicate so that the record can be reached by letsencrypt.org.
g. Now press **Enter** so the private key and certs are created and a message similar to the following message is presented to you.

```
- Congratulations! Your certificate and chain have been saved at: /etc/letsencrypt/live/user.
oneqaciscocpsgtesting.com/fullchain.pem Your key file has been saved at: /etc/letsencrypt/live
/user.oneqaciscocpsgtesting.com/privkey.pem Your cert will expire on 2019-03-04. To obtain a new
or tweaked version of this certificate in the future, simply run certbot again. To non-
interactively renew *all* of your certificates, run "certbot renew" - If you like Certbot, please
consider supporting our work by: Donating to ISRG / Let's Encrypt: https://letsencrypt.org/donate
Donating to EFF: https://eff.org/donate-le
```

h. Copy the certs and then use this information to create the Base URL Configuration.

You do not need to create this user in Suite admin, as the authentication is performed by ADFS.

You have now configured the ADFS SAML SSO integration.

Currency Conversion

Currency Conversion

The CloudCenter Suite provides support for the following currencies to analyze cost reports, billing units, or savings functions used in the Workload Manager and Cost Optimizer modules:

- AED = United Arab Emirates Dirham
- AUD = Australian Dollar
- BRL = Brazilian Real
- CAD = Canadian Dollar
- CHF = Swiss Franc
- CNY = Chinese Yuan Renminbi
- EUR = European Euro
- GBP = British Pound
- HKD = Hong Kong Dollar
- IDR = Indonesian Rupiah
- INR = Indian Rupee
- JPY = Japanese Yen
- KWD = Kuwaiti Dinar
- MXN = Mexican Peso
- RUB = Russian Ruble
- SEK = Swedish Krona
- SGD = Singapore Dollar
- SAR = Saudi Riyal
- TRY = Turkish Lira
- USD = US Dollar (default)

All User input fields accept and display values in USD.

Requirements

Once you select the currency option of choice, you must also enter the conversion factor for this currency.

Changing from the default USD currency to any other currency in this list may impact billing for environments as currency information is used by and not limited to the multiple features in the CloudCenter Suite.

To configure the conversion rate to the selected currency, follow this procedure.

1. Navigate to the Suite Admin Dashboard > **Admin**.
2. Click **Currency** in the left tree pane to view the Currency page.
3. Select the currency from the dropdown list.
4. Assign the conversion rate for this currency for 1 USD.
5. Click **Save** to register your changes.

Troubleshoot Suite Admin

Troubleshoot Suite Admin

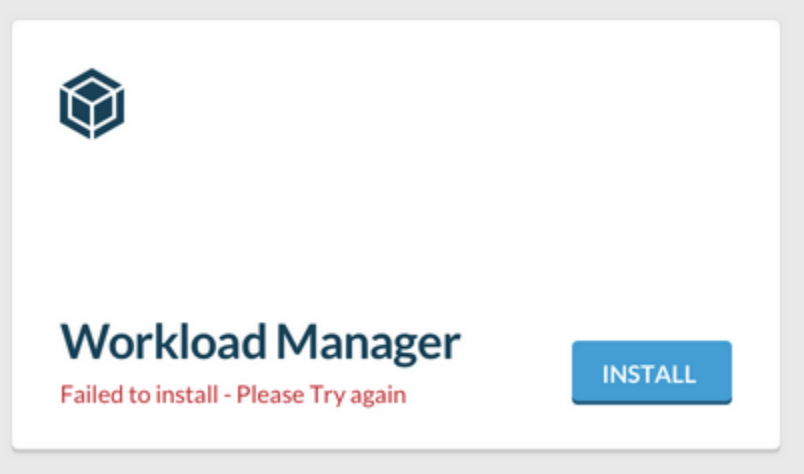
This section lists some of the issues that you may encounter and suggests workarounds.

See Monitor Modules > *Download Logs*.

See Monitor Modules > *View Logs in Kibana*.

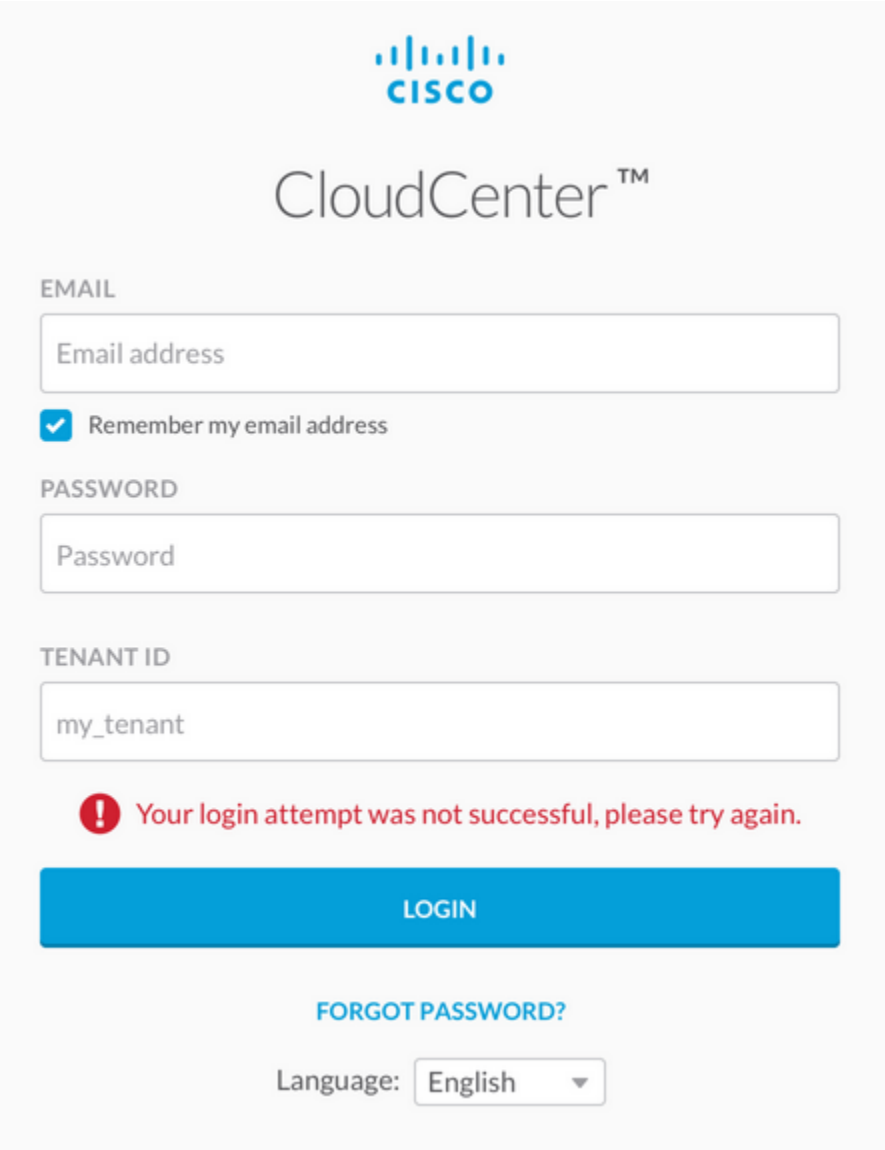
See Monitor Modules > *Configure Grafana Dashboard Alert*.

When installing the CloudCenter Suite for a OpenStack Installation or a VMware vSphere Installation, you have the option to configure NTP server details. If you do not provide the NTP details, workers and nodes may not have their time synchronized with each other. This can potentially cause modules to fail during an installation or upgrade as displayed in the following screenshot.

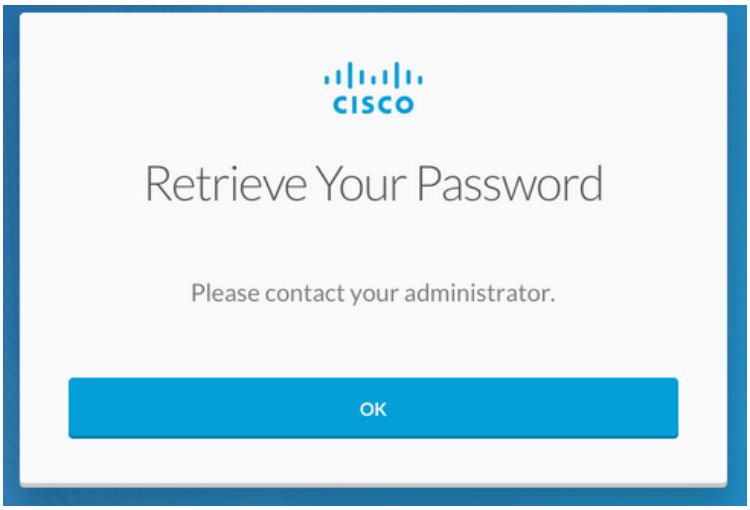


To workaround this issue, be sure to synchronize the server time for all instances running the CloudCenter Suite.

If your session has timed out during an idle session, you may sometimes see the message displayed in the following screenshot – even if you have entered the right credentials. Try logging in again.



If you are unable to login due to a wrong password as visible in the following screenshot, contact your suite administrator to reset the password (see Create and Manage Users > User Actions for details).



A user who only belong to one group is abandoned if the group was only specific to one module and if that module was uninstalled. In this case, the abandoned user must follow up with one of the CloudCenter Suite administrators based on their enterprise policies. If a user does not have any active roles, this user may see a blank screen on log in.

If you log in as root admin, configure SSO, and was subsequently timed out, you may not be able to log back in. This is because the ADFS user may not have the roles mapped and will not be able to access any modules. This user may not be able to login by using the direct URL (ui/auth/login).

To address this issue, be sure to complete the SSO Setup, add the ADFS user to the Suite Admin Group *before* any session timeout.

If you initially use the public repository to install the CloudCenter Suite, the repo for deployments and other activities may continue to point to the public repository. If so, your deployments may continue to reference the public repo even for cases where the Kubernetes nodes were restarted.

After an offline repo is registered with the CloudCenter Suite, users may expect Deployments to **automatically and immediately** pickup images from the offline repo. This is not the natural behavior.

During product installation/upgrade events, the repository settings are set to Helm (the package manager for Kubernetes). Consequently, offline repository settings are only registered after the next upgrade or new product installation event.

To workaround this natural behavior, you can opt to start a new cluster with the offline repository during the first event to ensure that your environment continues to use this offline repository.

When you uninstall the Workload Manager or Cost Optimizer modules in the Suite Admin, the Kubernetes Persistent Volume Claims (PVCs) are not deleted – they are retained as is for the Suite Administrator to take appropriate steps to backup or manually delete the PVC. The secrets for the Workload Manager and the Cost Optimizer are not deleted when you uninstall the product. To work around this issue, the Suite Administrator must clean up their instances using one of the following suggestions.

- Backup PVC: Take a snapshot of the volume backing up the PVC or just the data contained within. Refer to the Kubernetes Documentation for additional details.
- Delete PVC: Manually delete the PVCs by running the following command:

```
kubectl delete pvc -n <namespace>
```

Suite Admin API

Suite Admin API

API Overview

CloudCenter Suite API Overview

The payloads for the CloudCenter Suite APIs are visible in the API documentation section for each module.

CloudCenter Suite APIs provide support for the CloudCenter Suite modules: Suite Admin API, Workload Manager API, Action Orchestrator API, and Cost Optimizer API.

The User, Groups, and Tenant APIs are part of the Suite Admin and each API using these services have an additional prefix in the URI. The payloads for the CloudCenter Suite APIs are visible the API documentation section for each module.

The v2 APIs, where available, provide structured responses with minimum details and provides links for nested resources as well as improved search, sort, and pagination filters.

The CloudCenter Suite API date and time values are formatted in Unix time to the millisecond level. The APIs are agnostic to dates and time zones.

CloudCenter Suite APIs support the following request methods:

- **GET**: To query or view the server information based on a CloudCenter Suite deployment
- **PUT**: To replace the entire object for update operations
- **POST**: To perform a CloudCenter Suite task or creating the resource
- **DELETE**: To remove specific aspects of the CloudCenter Suite deployment

CloudCenter APIs issue responses for all APIs using both JSON and XML formats. You can set the response format by sending the appropriate Content-Type request headers:

- JSON (Default)

```
Content-Type: application/json Accept: application/json
```

- XML

```
Content-Type: application/xml Accept: application/xml
```

- CSV (Only for Reports)

The CSV format only applies to report-based APIs

```
Content-Type: application/csv Accept: text/csv
```

For each API request, you see two common attributes displayed in the API response:

```
{
  "resource": "https://<HOST>:<PORT>/v1/users/",
  "size": 12,
  "pageNumber": 0,
  "totalElements": 12,
  "totalPages": 1,
  "users": [
    {
      "id": "2",
...
```

- The **resource** URL: A unique URL that provides access to the requested *CloudCenter Suite Resource*.
- The POST and PUT API calls additionally provide an **id** attribute for each new *CloudCenter Suite Resource*.

The pagination information differs based on the API version:

- **v1 APIs**: The GET (view or list) APIs support pagination by default. CloudCenter Suite APIs use the following attributes to provide paginated results:

```
{
  "resource": "https://<HOST>:<PORT>/v1/users/",
  "size": 12,
  "pageNumber": 0,
  "totalElements": 12,
  "totalPages": 1,
  "users": [
    {
      "id": "2",
...
```

- **v2 APIs**: Requires the *page* and *size* attributes for any request. The default size for v2 APIs now list 50 records by default.

Pagination Request Attributes

page

- **Description:** The total number of pages in for the API listing.
  - Default = 0
  - If **size=0**, then the *page* value is ignored.
  - If not specified (**page=0&size=20**), the default size (default = 20) value displays the first 20 elements, which is equal to one page
  - If you specify both the page and the size values, the following applies:

If you specify...	...then
size=21	Elements numbered 21 - 40 entities are displayed, which is equal to 2 pages
page=0 (or not specified)	The first set of 20 elements in the list, elements 1 to 20 are displayed
page=1	The second set of 20 elements in the list, elements 21 to 40 are displayed
page=2	The third set of 20 elements in the list (the third page). if the page does not have more than 10 elements, then only those 10 elements are displayed.
page=1&&size=10	A set of 10 elements, Elements 11 to 20 are displayed
page=1&&size=20	A set of 20 elements, Elements 21 to 40 are displayed
page=2&&size=10	A set of 10 elements, Elements 21 to 30 are displayed

- **Type**: Integer

size

- **Description**: Total number of records that any list page should contain. The default is:
  - v1 APIs = 20 records
  - v2 APIs = 50 records
- **Type**: Integer

Pagination Response Attributes

- v1 APIs:
  pageResource
  - **Description**: Identifies the pagination information for each resource
  - **Type**: Sequence of attributes for v1 APIs

size (see above)
pageNumber • **Description**: The page number that the client wants to fetch. Page numbers start with 0 (default). • **Type**: Integer
totalElements • **Description**: The number resources that an API call returns • **Type**: Long
totalPages • **Description**: The number of pages in a response • **Type**: Integer

- v2 APIs:
  pageResource
  - **Description**: Identifies the pagination information for each resource
  - **Type**: Sequence of attributes for v2 APIs

resource • **Description**: Unique URL to access this resource. • **Type**: String
size (see above)
pageNumber • **Description**: The page number that the client wants to fetch. Page numbers start with 0 (default). • **Type**: Integer
totalPages • **Description**: The number of pages in a response • **Type**: Integer
jobs • **Description**: Array of JSON objects that use **jobs** as the key. • **Type**: Array of JSON objects
previousPage • **Description**: A resource link to the previous page. • **Type**: URI as a string
nextPage • **Description**: A resource link to the following page. • **Type**: URI as a string
lastPage • **Description**: A resource link to the last page. • **Type**: URI as a string

- **v1 APIs**: All list APIs support sorting by default and use the query-string parameters to provide sorted results with a comma-separated set of property names.
  - Sorting Order:
    - Ascending order: Default when you specify the property.
    - Descending order: Append a dash ⛔ to the property.
  - Example:
    - **sort=id,name**: Sort by ID property in ascending order and then sort by name property in ascending order.
    - **sort=id,name-,description**: Sort by ID property in ascending order, then sort by name property in descending order, and finally sort by description in ascending order.

- Property name validation: Property names in sort parameters are validated. For example, APIs that return a list of users can sort only on properties exposed by the user object as sortable.
- The following example displays the use of sorting and pagination attributes in the same API request.

```
curl -k -X GET -H "Accept: application/json" -u cliqradmin:D3DD6F7874E6B26B "https://test.cliqr.com/v1/users?
detail=true&page=0&size=30&sort=firstName

> GET /v1/users?detail=true&page=0&size=30&sort=firstName HTTP/1.1
> Authorization: Basic Y2xpcXJhZG1pbipEM0RENkY3ODc0RTZCM1ZC
> User-Agent: curl/7.37.1
> Host: test.cliqr.com
> Accept: application/json
>
< HTTP/1.1 200 OK
```

- **v2 APIs**: Requires the *sort* attributes for any request.

sort

- **Description**: Sorts API responses based on the format specified.
- **Type**: String
  - Sorting order:
    - Ascending order = ASC
    - Descending order = DESC
  - Default: Sort criteria is based on *startTime* and DESC order.
  - Format: sort=[*attribute*, *order*]
  - Example: [endTime,ASC]
  - Sorting attributes:

id
- **Description**: Unique, system-generated identifier for this *resource*.
- **Type**: String

status
- **Description**: Status of the operation. See the *APIs for the relevant module* to view a list of all job operations.
- **Type**: Enumeration

Enumeration	Description
SUBMITTED	The operation has been submitted
RUNNING	The operation is currently in progress
SUCCESS	The operation succeeded
FAIL	The operation failed

startTime/endTime
- **Description**: Start/End time for this resource. Unix epoch time in milliseconds.
- **Type**:
  - v1 APIs = Long
  - v2 APIs = Epoch time as a String

totalCost
- **Description**: Identifies the total cost per hour of the job for billing purposes. See the Cost Optimizer APIs section to view additional details.
- **Type**: Float

nodeHours
- **Description**: The number of VM hours for this resource. See the Cost Optimizer APIs section to view additional details.
- **Type**: Float

name
- **Description**: The name assigned for this *CloudCenter Suite Resource*. Valid characters are letters, numbers, underscores, and spaces.
- **Type**: String

deploymentEntity.name
- **Description**: Identifies evolving resource details about the deployment. The deploymentEntity attribute uses the *deploymentEntity.name* format, where **.name** is a search value for deploymentEntity and deploymentEntity itself is a JSON object.

  Instead of placing the deployment name at the top level search and adding numerous query parameters, this format allows for nested search results. The top level **name** is the job name and deploymentEntity.**name** is the deployment name.

- **Type**: JSON objects

favoriteCreationTime
- **Description**: If the job was configured as a favorite job, then this attribute identifies the time when this configuration took place. See the *Favorite Deployments* section for the relevant release for additional context.
- **Type**: Epoch time as a String

This attribute is only available for v2 APIs.

search

- **Description**: Searches API responses based on the format specified.
- **Type**: String
  - Format: search=[field, searchType, *SearchExpression1*, *SearchExpression2*]
  - Example: search =[startTime, gt, 01/01/2016]
  - Search Expressions:
    - *pattern*: Provide a pattern using the format provided in the *searchTypes* table below.
    - searchTypes

searchType	Format
eq	==
ne	!=
el	LIKE *pattern*%
fl	LIKE %*pattern*
eln	NOT LIKE *pattern*%
fln	NOT LIKE %*pattern*
fle	LIKE %*pattern*%"
gt	> *searchValue*
lt	< *searchValue*
ge	>= *searchValue*
le	<= *searchValue*
gtlt	> *searchValue* && *searchValue*
gtelt	>= *searchValue* && < *searchValue*
gtlte	> *searchValue* && <= *searchValue*
gtelte	>= *searchValue* && <= *searchValue*
emp	Empty string
noemp	Not Empty string
nu	Null value
nn	Not Null Value

    - searchValue:

searchValue	SearchType Availability
id	eq
startTime	eq, nu, gtlt
endTime	eq, nu, nn, gtlt
totalCost	eq, gt, ge, le, gtlt, gtlte, gtelte, gtelt
favoriteCreationTime	eq, nu, ,nn gtlt
jobStatusMessage	el, eln, fl, fln, fle, nn, emp, noemp
nodeHours	eq, gt, ge, le, gtlt, gtlte, gtelte, gtelt
name	eq, nn, eln, fle, fln, el, emp, noemp, fl
description	eq, nn, eln, fle, fln, el, emp, noemp, fl

deploymentEntity.name	eq, nn, eln, fle, fln, el, emp, noemp, fl
ownerEmailAddress	eq
cloudFamily	eq, nu
status	eq, nu

The HTTP Status code and the Location URL (highlighted in blue in the following example) is provided in the Response Header when Create *resource* API calls are successful:

```
curl -k -X POST -H "Content-Type: application/json" -H "Accept: application/json"
cliqradmin:D3DD6F7874E6B26B https://test.cliqr.com/v1/users -d '{
    "firstName": "User 02",
    "lastName": "Cliqr",
    "password": "cliqr",
    "emailAddr": "user.02@cliqr.com",
    "companyName": "Cliqr, Inc",
    "phoneNumber": "14085467899",
    "externalId": "",
    "tenantId": 1
}'

> POST /v1/users HTTP/1.1
> Authorization: Basic Y2xpcXJhZGlpbjpEM0RENkY3ODc0RTZCMjZC
> User-Agent: curl/7.37.1
> Host: test.cliqr.com
> Content-Type: application/json
> Accept: application/json
> Content-Length: 217
>
< HTTP/1.1 201 Created
< Server: Apache-Coyote/1.1
< Set-Cookie: JSESSIONID=0E85227543C66D55E06449582091C2B4; Path=/; Secure; HttpOnly
< osmosix_content: true
< X-Frame-Options: SAMEORIGIN
< Pragma: no-cache
< Expires: Thu, 01 Jan 1970 00:00:00 GMT
< Cache-Control: no-cache
< Cache-Control: no-store
< Location: https://test.cliqr.com/v1/users/12
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Vary: Accept-Encoding
< Date: Fri, 07 Aug 2015 20:59:18 GMT
```

Both admins and users can use CloudCenter Suite REST APIs.

Your login credentials determine if you are an admin (platform (root), tenant admin, or co-admin) or a user. If you do not have the required Permission Control level to access any *resource*, you receive the HTTP 403 status error mentioned in the HTTP Status Codes section.

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- Suite Admin API
- Workload Manager API
- Action Orchestrator API
- Cost Optimizer API

API Authentication

API Authentication

CloudCenter Suite APIs require the following authentication details for each API call:

- Username
- API access key

> ⚠ The authentication HTTP header is not required when making standalone REST API calls using the username/API Key credentials.

Standalone CURL Request Example:

```
curl -H "Accept:application/json" -H "Content-Type:application/json" -u writer:BED74F4D9BFE0DA0 -X GET
https://<HOST>:<PORT>/v1/users/27
```

In this CURL request example:

- **writer1** is the username
- **BED74F4D9BFE0DA0** is the API accessKey

Your tenant administrator can retrieve the username and API access key from the UI. See API Key for additional details.

On successful authentication, CloudCenter Suite sends a browser cookie to maintain the authentication session. The cookie forwards the information to the server for each API call so you do not need to authenticate each time you make an API call. If you do not want to maintain cookies in your browser, you can send the authentication information for each API request. Once authenticated, you can begin making API calls.

The CloudCenter Suite authentication session times out after 15 minutes. If you use a REST client to make API calls by authenticating through the UI's, this session timeout applies to the REST client as well.

However, if you add and save the REST client authentication headers or if you issue CURL commands with the authentication details, you can circumvent the session timeout restriction.

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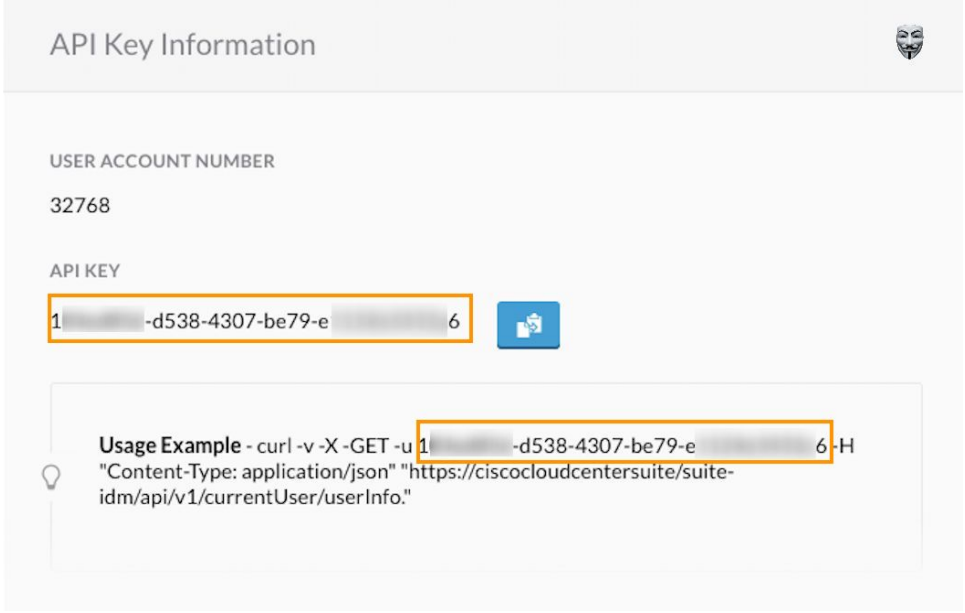
API Key

Generate API Key

You need an **API key** to use CloudCenter Suite APIs. Suite administrators or tenant administrator (for their respective tenants) can generate/regenerate an API key by using the Suite Admin UI or the **user_api_key** API call.

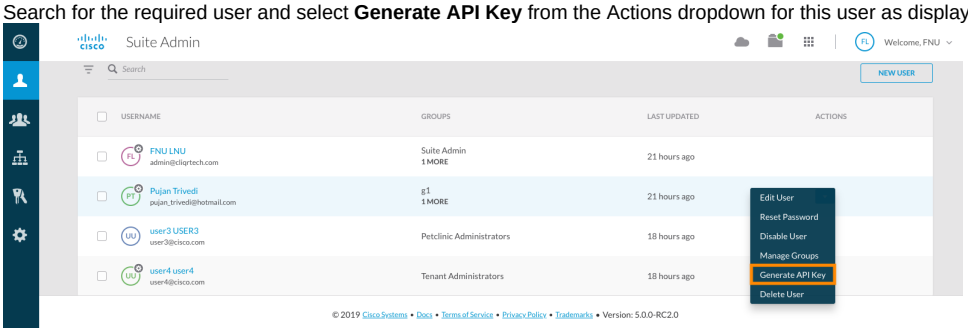
To generate the API key from the UI for yourself, follow this procedure:

1. Navigate to the Suite Admin Dashboard and click your account profile dropdown.
2. Click the **Generate API Key** link to generate a new API key.
3. Click **Yes** to replace the API key. You can now use this key to make REST API calls as listed in the Usage Example in the following screenshot.



To generate the API key from the UI for another user, follow this procedure:

1. Navigate to the Suite Admin Dashboard > **Users**.
2. Search for the required user and select **Generate API Key** from the Actions dropdown for this user as displayed in the following screenshot.



3. Click the **Generate API Key** link to generate a new API key. This user can now make REST API calls using new API key.

To generate the API key using the Suite Admin API call, follow this procedure:

1. Issue the Password Service API Calls > **/api/v1/users/{userId}/user_api_key** API POST call to generate/regenerate the API key for yourself or for any other user.

```
POST https://host-port/suite-password/api/v1/users/1/user_api_key
```

2. Retrieve the *apiKey* from the response for this API.

```
{
   "userId":1,
   "apiKey":"1.......-d538-4307-be79-e.........6",
   "accountNumber":"32768"
}
```

3. Use this *apiKey* to make REST API calls.

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- Suite Admin API
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Base URI Format

Base URI Format

The base URI format is **https:// <host>:<port>/*...***

The host is generally represented as <HOST> in all CloudCenter APIs. It represents the IP address or the DNS name.

The host differs based on your DNS or IP address and port usage**.**

The port is generally represented at <PORT> in all CloudCenter APIs. It represents the port used to connect to the CCO server for the API connection. The <PORT> in the REST endpoint is ***optional***. You can decide if you want to use the port for each API call. All CloudCenter API requests and responses display <PORT> in all examples.

```
curl -H "Accept:application/json" -H "Content-Type:application/json" -u \
cloudcenteradmin:40E45DBE57E35ECB -X GET https://<HOST>:<PORT>/...
```

If you do not specify the port, then API requests default to Port 443 for a HTTPS connection when accessing CloudCenter Suite REST APIs.

The CloudCenter Suite 5.0.0 API version can be v1 or v2 as applicable. The version is identified for each API, where applicable.

Parameters used to make the API call are displayed after the APIs and are called out after the description.

Attribute Type	Description
String	Any combination of characters. Maximum of 255 characters.
Integer	A whole number value. Restricted to 32-bit values.
Long	A whole number value. Restricted to 64-bit values.
Float	A number with or without a decimal point. Displayed as a string in the response.
Boolean	A logical true or false value. May be passed to API requests as true or false or 1 or 0.
Enumeration	A predefined list of values, for example STANDARD or TENANT describes the possible values for each type. Only listed values are permitted, other values result in an error.
JSON Object	A method to parse JavaScript Object Notation (JSON) and return the object value to which a specified name is mapped.
Name-Value Pair	A name–value pair where each element is an attribute–value pair.
Array	A sequential collection of like elements corresponding to the element's data type. The type of the array is determined by the types of the elements (can be String, Integer, Name-Value Pair Type)
Perms List	Lists the permissions for specific user if the user is logged in. An empty response is *also* indicative of the resource not being currently supported.
Metadata	Metadata information associated with the cloud provider.

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HTTP Status Codes

HTTP Status Codes

CloudCenter APIs return one or more of the following HTTPS status codes for all (synchronous and asynchronous) API requests:

HTTP Response Code	Status	Description
200	Success	Successful GET and PUT
201		Successful POST (when a resource is created)
202		Request accepted for a time-consuming task (asynchronous update and created requests). See Shared 5.1 Synchronous and Asynchronous APIs for more details You can issue GET calls until the request completes.
204		Successful DELETE
30x	Redirecti on	Only displays if a client calls an API using HTTP instead of HTTPS
400	Client failure	Validation error. This category has additional error codes in the response body for each API (as applicable).
401		Not authenticated
403		Forbidden. You do not have the required permission level to access the *CloudCenter Resource*
404		Resource not found
500	Server failure	Server error: The server failed to respond to this request due to an internal error

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- Suite Admin API
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CSRF Token Protection

CSRF Token Protection

Cisco provides CSRF protection for all API calls. When an API call is made by you or the CloudCenter Suite, be aware that a CSRF token is required for the following scenarios:

- If the request method is **POST**, **PUT**, or **DELETE**
  and
- If the request **Content-Type** is not **application/json**

For example, the following functions require the CSRF token:

- Suite Admin Resource Management Service API Calls that use the following functions:
  - Company logo upload
  - User avatar upload
- Workload Manager API Calls that use the following functions
  - Application profiles
  - Logo upload
  - Services logo upload
  - Import applications
  - Cloud account management API calls
  - DELETE calls that change the database contents

If the CSRF token is missing or incorrect, you will see a 403 error due to the CSRF token protection.

If you see this error, you must first set the CSRF token in the request header for the affected API.

To set a CSRF token, add **X-CSRF-TOKEN** to the header name (case sensitive, all uppercase).

To obtain the CSRF token, follow this procedure.

1. You must first pass authentication. See API Authentication for details.
2. Once authenticated, use one of the following APIs to retrieve the CSRF token from the response body (**csrfToken** attribute). See Authentication Service API Calls for details.
   a. Login API (/suite-auth/login)
   b. Token Refresh API (/suite-auth/api/v1/token)
   c. CSRF Token API (/suite-auth/api/v1/csrfToken)

See the following request for examples of using a CSRF Token.

Java Rest Client Example

```
WebResource.Builder builder = webResource.type(MediaType.APPLICATION_JSON).header("X-CSRF-TOKEN", "<TOKEN>");
```

Python Example

```
headers = {'content-type': 'application/json', 'X-CSRF-TOKEN': '<TOKEN>'}

requests.delete(url, headers = headers, verify=False)

requests.post(url, json=jobJson, headers = headers, verify=False)
```

Where **<TOKEN>** is retrieved as specified in the *Retrieving the CSRF Token* section above.

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- Suite Admin API

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API Permissions

API Permissions – Allowed Roles

Each API identifies the permissions and roles required to execute that API call. Permissions for each API are governed by Role Based Access Control (RBAC) as explained in Understand Roles and user level as explained in Understand User Levels.

Users can find their permission level by executing the **GET /suite-idm/api/v1/currentUser/userInfo** API listed in the IDM Service API Calls > *User Controller* section.

Based on the current user's permissions the Suite Admin APIs display enumerations for the **Allowed Role(s)** described in the following table.

Allowed Role(s) Enumeration	Description
SUITE_ADMIN	The initial administrator described in Initial Administrator Setup. This user can perform the following tasks: • Module Lifecycle Management • Manage Clusters
SUITE_TENANT_ADMIN	The tenant administrator set up as part of the root tenant configuration described in Manage Tenants. This user can perform the following tasks: • Manage sub-tenants • Create, update, and delete sub-tenant users (including createTenantWithAdmin atomic operation) • Tenant resource management including Email Settings, Branding Information, and so forth
SUITE_USER	Any user added to the CloudCenter Suite. A newly-added user can only view the Suite Admin Dashboard, if not assigned to a group.
SUITE_USER_ADMIN	A SUITE_ADMIN can promote any SUITE_USER to the Suite Administrator group as described in Create and Assign Groups. This user can perform the following tasks: • Manage users and groups • Create, update, delete users and groups • Assign roles to users and groups • Manage passwords for users
SUITE_OUTOFBOX_USER	A SUITE_ADMIN can promote any SUITE_USER to be a SUITE_OUTOFBOX_USER, which basically implies that this user has been added to one or more OOB Suite Admin Groups.
SUITE_RESET_PASSWORD	Users with SUITE_ADMIN permissions and/or SUITE_TENANT_ADMIN for this tenant as described in Create and Manage Users > *User Actions.* This user can perform the following tasks: • Edit any user's profile by changing the first/middle/last name and email • Configure metadata details • Configure groups • Reset password • Disable a user

See OOB Groups, Roles, and Permissions for details.

See Action Orchestrator Roles for details.

See Access and Roles for details.

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Synchronous and Asynchronous Calls

Synchronous and Asynchronous Calls

CloudCenter Suite APIs support both synchronous and asynchronous calls. Some APIs return data in the response body and others will only return an HTTP status. For example, CloudCenter DELETE calls return a **Status 204 No Content** after deleting the *resource* in the background.

Synchronous APIs indicate that the program execution waits for a response to be returned by the API. The execution does not proceed until the call is completed. The real state of the API request is available in the response.

Asynchronous APIs do not wait for the API call to complete. Program execution continues, and until the call completes, you can issue GET requests to review the state after the submission, during the execution, and after the call completion. Use the **Get Operation Status** API to retrieve the status of an asynchronous operation.

As asynchronous calls may take some time to complete, they return HTTP Status Codes responses containing information with an HTTP Status Code, which allows you to retrieve the progress, status, response, and other information for the call.

After submitting an asynchronous API call:

1. Retrieve the resource URL from the HTTP Status Codes.
2. Use this location URL and query the system using GET calls. While the call is in progress and you issue the GET request, you get additional details of the operation being performed. These details are only available while the operation is in various states of execution (RUNNING, SUCCESS, FAILED).
3. When the asynchronous API call completes successfully, issue a GET request to view the SUCCESS state and the resource URL for this operation.

Call States

In the following example of a Create Cloud Account API:

- The various states of execution (RUNNING, SUCCESS, FAILED) are highlighted in corresponding colors
- The first and last GET requests are in bold to show the sequence of events

```
Location: https://test.cliqr.com/v1/operationStatus/f503c52a-d13b-4b62-840d-0faa22ccbb78

{ "operationId": "f503c52a-d13b-4b62-840d-0faa22ccbb78", "status": "RUNNING", "msg": "Updating
Image permissions...", "progress": 50, "timestamp": 1438850245522, "additionalParameters": null,
"operationHistory": [ ], "subtaskResults": null, "resourceUrl": "https://test.cliqr.com/v1/
operationStatus/f503c52a-d13b-4b62-840d-0faa22ccbb78" }
curl 'https://test.cliqr.com/v1/operationStatus/f503c52a-d13b-4b62-840d-0faa22ccbb78' -H 'Accept:
application/json'

{ "status": "RUNNING", "msg": "Updating Image permissions...", "resource": "https://
test.cliqr.com", "additionalParameters": [] }
…
curl 'https://test.cliqr.com/v1/operationStatus/f503c52a-d13b-4b62-840d-0faa22ccbb78' -H 'Accept:
application/json'

{ "status": "RUNNING", "msg": "Saving cloud account...", "resource": "https://test.cliqr.com/
https://test.cliqr.com/v1/operationStatus/f503c52a-d13b-4b62-840d-0faa22ccbb78",
"additionalParameters": [ ] }
curl 'https://test.cliqr.com/v1/operationStatus/f503c52a-d13b-4b62-840d-0faa22ccbb78' -H 'Accept:
application/json'

{ "status": "SUCCESS", "msg": "Cloud Account is saved successfully.", "resource": "https://
test.cliqr.com/https://test.cliqr.com/v1/operationStatus/f503c52a-d13b-4b62-840d-0faa22ccbb78",
"additionalParameters": [ ] }
```

Operation ID Availability

Operation IDs (displayed below the Location URL in the above image) allow you to query the status of asynchronous APIs and are only available for a brief period as identified in the following table:

Operation ID Availability	Description
5 minutes	The Operation ID is available for five minutes if the operation completes (regardless of success or failure).
1 hour	The Operation ID is available for one hour if the operation times out and does not complete.

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Suite Admin 5.1.2 API Calls

Suite Admin 5.1.2 API Calls

Refer to the Suite Admin 5.1.2 JSON files.

Suite Admin 5.1.1 API Calls

Suite Admin 5.1.1 API Calls

Refer to the Suite Admin 5.1.1 JSON files.

Suite Admin 5.1.0 API Calls

Suite Admin 5.1.0 API Calls

Refer to the Suite Admin 5.1.0 JSON files.