Resource Pool

US SIGNAL®

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Overview

This document provides an overview of how-to steps to set up a Resource Pool environment within US Signal. It includes Two-factor Authentication for vCloud Director setup instructions. This guide also delivers answers to technical questions surrounding the necessary steps for the deployment, installation, and activation of Microsoft products offered under the licensing agreement. Additionally, this guide includes instructions on how to configure Multi-site vCloud.

Please note that ADFS is optional and if you are using an identity provider that supports Security Assertion Markup Language (SAML) such as Duo, Okta, AzureAD, or others. Then 2FA may be integrated directly to Cloud Director without configuring ADFS.

Two-factor Authentication Setup for vCloud Director

Below is a high-level outline of what steps customers can take to setup Active Directory Federation Services with Two-Factor Authentication for their vCloud Director Organization (requires Two-Factor to already be deployed within their domain).

Customer acknowledges that the steps below are for reference only and are based on testing performed solely by US Signal using vCloud Director v10.1. Configuration and setup using these steps is done so at the customer's own choice and does not guarantee full protection against security risk. The customer's internally defined security practices should be maintained at all times.

1. It is important to note that if ADFS authentication fails, vCloud Director will give the customer the option to use local authentication for the vDC organization.
2. Install and configure ADFS on server located in customer's Active Directory domain. (This server can reside in US Signal IaaS if desired).

3. Install Internet Information Services and configure to require SSL encryption.
4. Configure for ADFS on server located in customer's Active Directory domain and open port 443 inbound from the Internet as needed (our testing included installing IIS on the same server ADFS was installed on).
5. Retrieve the federation XML file from IIS server.
6. Navigate to **vCloud Director Organization --> Administration --> Identity Providers --> SAML**. 7. Click Edit and Fill in the Entity ID.
8. Click "Identity Provider" and activate the option "Use SAML Identity Provider".
9. Copy and paste the contents of the federation XML file into the Metadata XML text box located under Metadata XML.
10. Click Save.
11. In ADFS, Create a Relying Party Trust using the following format: **https://cloud.ussignalcom.net/cloud/org/<ORG-NAME>/saml/SSO/alias/vcd**
12. Create outgoing and incoming claim rules in ADFS:
   a. Outgoing claim maps LDAP attribute User-Principal-Name to Name ID   b. Incoming claim maps Name ID to Name ID
13. Setup any two-factor authentication method that is compatible with ADFS 3.0 assuming ADFS is deployed on Server 2012 R2. (Duo was used for testing, but anything that works with ADFS should work as the customer controls both the user and two factor authentication methods).
14. Import SAML users into vCloud director using the import function located at a. **Organization --> Administration --> Access Control --> Users --> Import Users**.

After this setup is complete, the customer will navigate to their organization's vCloud Director URL. Then the login request is re-directed to their ADFS login site, which will notify vCloud Director of the success or failure of the Two Factor authentication request.

Microsoft Licensed Virtual Machines

The following section will outline the self-service deployment and activation process of licensed Microsoft Windows Server virtual machines and vApps into the US Signal vCloud Director environment.

Deploying a new Windows Server Virtual Machine

1. Log into your vCloud Director environment with a user account designated with Organization Administrator access and select the Data center card in which you will be spinning up a new Virtual Machine.

2. Confirm that Virtual Machines is selected from the left panel and select New VM.
   a. Enter the desired Name and Computer Name.
   b. In the list of server templates available for deployment, select which OS version you would like to deploy into your environment. Ensure to choose a template located in the same region as your Resource Pool for a faster deployment process. Notice the template naming format contains the data center location preceding the Operating System version and Storage profile. For Example, GRR is in Grand Rapids and DTW is in Detroit.
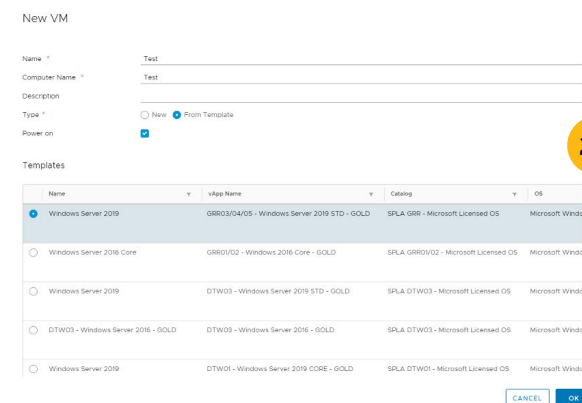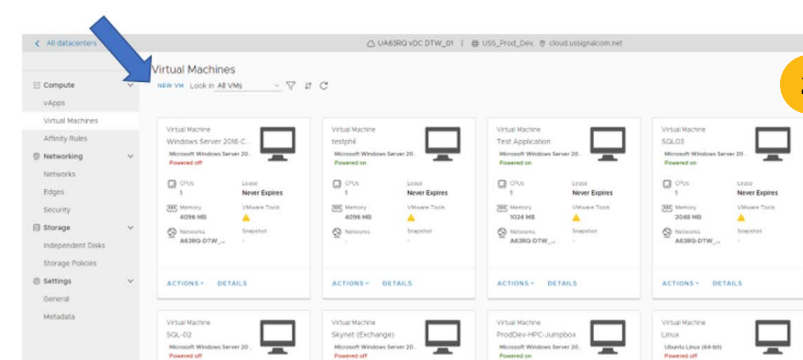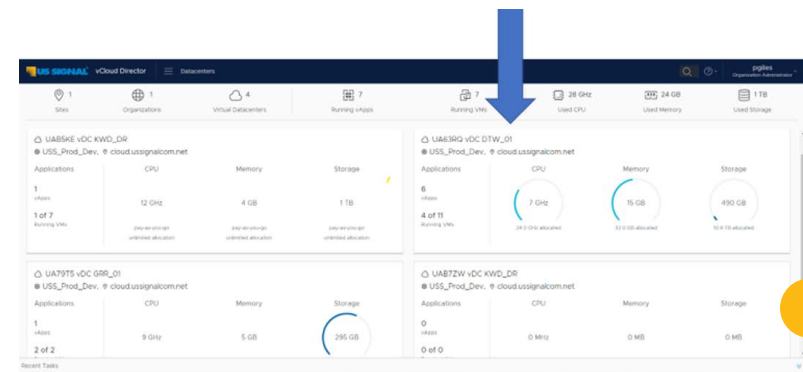
c. Under the available templates, the storage policy can be selected by checking the "Use custom storage policy" check box then selecting your desired policy.

d. Click "Ok" to create the VM.

   i. Once the VM has been created, if you would like to modify the resources assigned to the virtual machine you can modify the number of CPUs, memory amount, and hard drive size by clicking "Details" within the Virtual Machine card. Inside the Details menu, the resource options can be modified within the Hardware section.

   ii. After network connectivity has been established for Windows 2012, 2016, and 2019 Virtual Machines, the server will be automatically activated with Microsoft.

Installing Microsoft Applications

If you have licensed a qualifying Microsoft application (SQL, Exchange, etc.) through US Signal you will have the ability to attach Microsoft install media to vCloud Director virtual machines for software installation. License keys have already been embedded into the software installation process. **Note: if you are missing any of your ordered Microsoft install media from your catalog, please reach out to US Signal's Technical Operations Center**.

1. To install media from your catalog, click "Actions" in the virtual machine card in which you would like to install the license product on and select Insert Media from the drop-down menu.

2. Select the media you would like to attach to the virtual machine. The supported applications and versions offered through US Signal's SPLA licenses are outlined in the FAQ section of this document. Once the media has been inserted you can log on to the VM and perform the installation of the application.

3. Once the application installation has been completed remove the media from the virtual machine by right-clicking the virtual machine and selecting Eject CD/DVD.

Remote Desktop Services Licensing

1. Install the role for Remote Desktop Services on a virtual machine in the US Signal vCloud Director environment. This virtual machine will then serve as the licensing manager for your RDS environment in your US Signal cloud environment.

2. You can reference the Microsoft TechNet documentation for installing the Remote Desktop Services to ensure it fits your use case and the role is installed per vendor best practice guidelines.
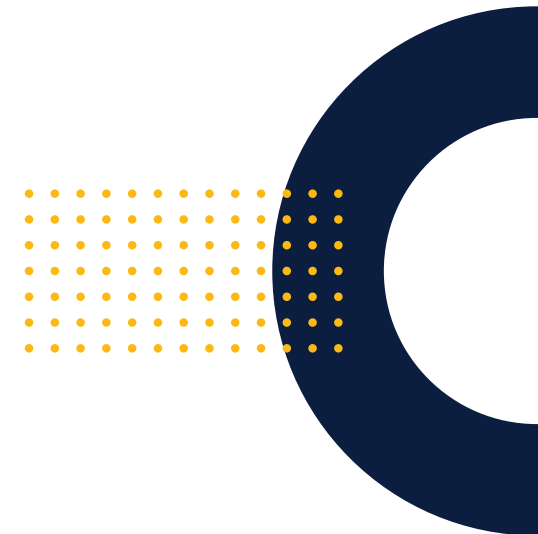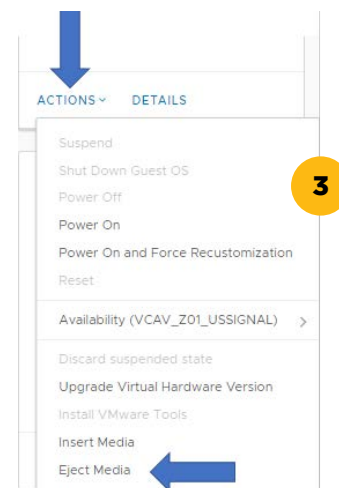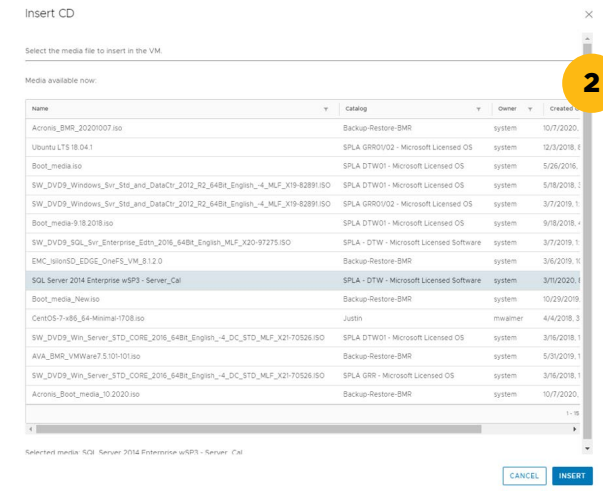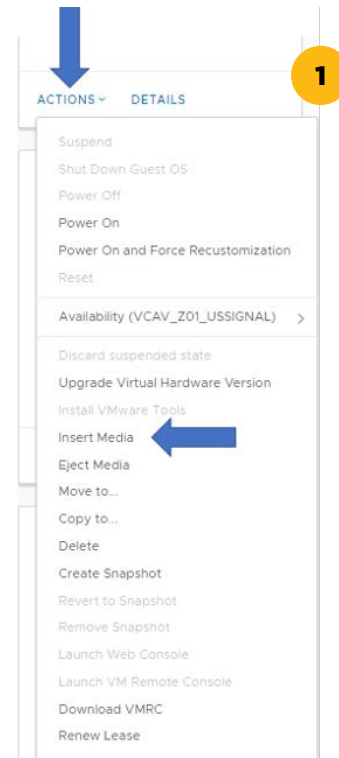
3. Once the Remote Desktop Services roles is installed and you have activated the license server you will need to retrieve your Server ID, which will be provided to the US Signal Technical Operations Center during the RDS licensing process.

    a. Right-click the server in RD Licensing Manager and select Properties.

   b. Under the connection method tab, modify the connection method to Telephone and document the License Server ID value.

4. At this point, please work with the US Signal Technical Operations Center to install SPLA RDS license packs on your server.

    a. Right-click the server in RD Licensing Manager and select Install Licenses.

    b. Contact the US Signal Technical Operations Center via phone or email with the following information to complete the activation process.

> **Customer Name**
> **Circuit ID License**
> **Server ID**

The contact information can be found in the FAQ section of this document and on the US Signal website.

    c. US Signal will provide a License Key Pack ID, which will be entered into the field in the below screenshot. After the successful activation the RDS SALs will be available for assignment in your RD Licensing server.
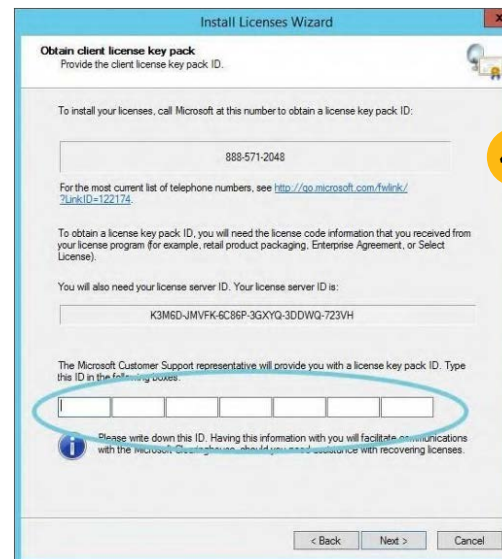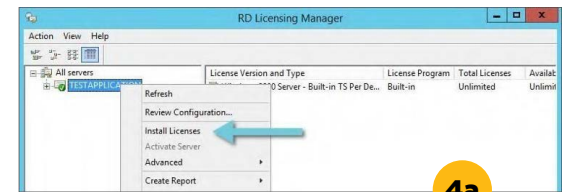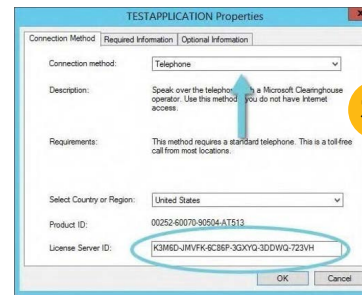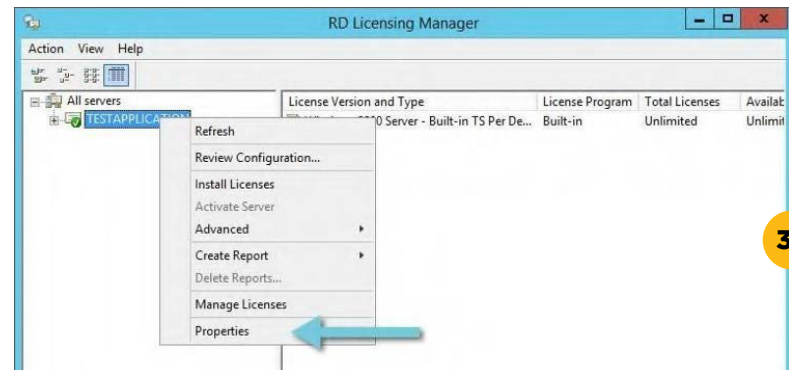
Tenant App

If you have enabled the Tenant App to gain real time insight into your resource pool utilization it can easily be accessed via the top navigation bar. Once this premium add-on has been added and collected data, you will be able to view historical and real-time utilization metrics of the Org vDC, vApps, VMs, and associated networks. The Tenant App will provide the user with data on well over 700 metrics in the dashboard to drill into, graph, compare, and export.

Use cases include, but are not limited to:

+ At-a-glance view of resources in use
+ Budget or Capacity planning – acquisitions, growth, optimization
+ Viewing if VMs in a vAPP have a snapshot and its summary
+ View over/under-utilized VMs based on CPU or Memory
+ Make size recommendations
+ Graph CPU-Ready percent to view possible CPU scheduler queue
+ Filter alerts for the entire vDC and export a "to-do" list
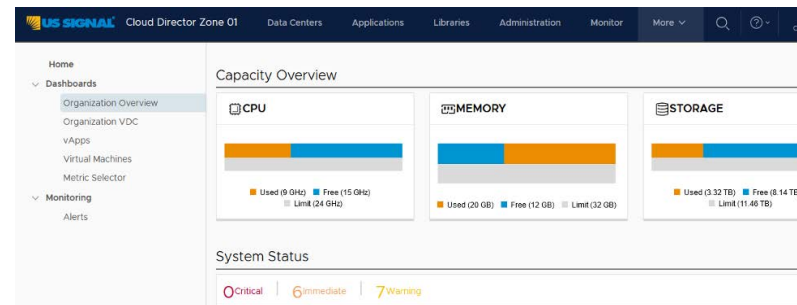
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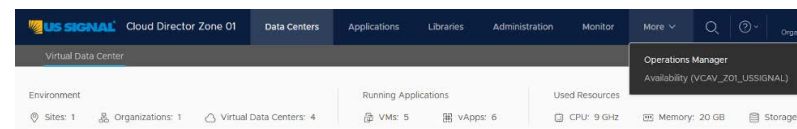
^ **How-to navigation bar**
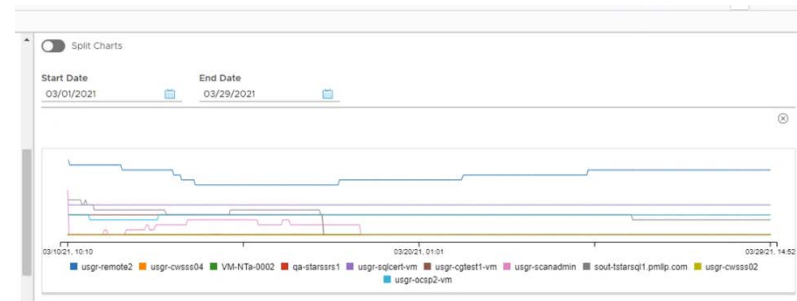
^ **Example graph**

Multi-site vCloud Director

Please note if you have a Resource Pool in Southfield that pre-dates March 1, 2021 it is in a vCloud instance that is shared with Grand Rapids. Please engage your US Signal Sales representative for a Professional Services Statement of Work to migrate to the new independent vCloud instance at Southfield.

Configuring Multi-site vCloud (may also be known informally as Federation) must be performed by you from within the respective vCloud environment. Please refer to VMware documentation for detailed information but from a high level there are two methods. The preferred method is to use your authenticator tool to coordinate access between the vCloud instances. A second option would be to export XML configurations files from each vCloud and upload the XML files to the opposite vCloud instance.

This allows on an admin on a user-by-user basis to create logins that have access to both vClouds from a single URL – however, a user must have the same user-name and password in both instances of vCloud. Itis important to note, that not all users will have this access by default when Multi-site vCloud is configured allowing the customer granular control over their organization's role-based-access-control (RBAC) policies.

FAQ

What Operating System types are available with US Signal 3rd Party Licensing?

The Operating Systems are offered as templates within vCloud Director and need to activate with Microsoft. This requires each deployed OS to have a connection to the Internet for initial activation.

The current available Windows Server OS types are listed below:
+ Windows Server Standard 2012, 2012 R2, 2016, 2019

What other Microsoft products are available with US Signal 3rd Party Licensing?

The following products are currently available:
+ Exchange Server Standard and Enterprise 2013, 2016, 2019
+ SQL Server Standard and Enterprise 2012, 2014, 2016, 2017, 2019
+ Office Professional & Standard 2013, 2016, 2019
+ Microsoft Remote Desktop Services Licensing

What are the key support dates of the Microsoft Software that is available from US Signal?

US Signal licenses Microsoft products currently under active mainstream support up until the Extended Support Date ends.

Product	Version	Mainstream Support End Date	Extended Support End Date
Windows Server	2012 2012 R2 2016 2019	10.9.2018 10.9.2018 1.11.2022 1.9.2024	10.10.2023 10.10.2023 1.12.2027 1.9.2029
SQL Server	2012 2014 2016 2017 2019	7.11.2017 7.9.2019 7.13.2021 10.11.2022 1.7.2025	7.12.2022 7.9.2024 7.14.2026 10.12.2027 1.8.2030
Exchange Server	2013 2016 2019	4.10.2018 10.13.2020 1.9.2024	4.11.2023 10.14.2025 10.14.2025
Office	2013 2016 2019	4.10.2018 10.13.2020 10.10.2023	4.11.2023 10.14.2025 10.14.2025

Can I load my own OS from scratch or import a virtual machine and use US Signal license keys?

While license keys cannot be supplied directly to end users, Virtual Machine (VM) templates are provided for each offered operating system. VMs can be quickly deployed from our licensed templates and then applicable applications and data can be migrated to the licensed machine.

How do I license Microsoft software within the US Signal Cloud?

There are multiple options for using Microsoft software licenses within the US Signal cloud. Whether you choose to utilize a dedicated or multi-tenant cloud solution.

License eligible Microsoft products through US Signal

US Signal is authorized to provide specific Microsoft products per the terms of the Microsoft Service Provider License Agreement. Licensing eligible products through US Signal allows for the flexibility of month-to-month billing without being tied up in complex long-term software contracts.

1. **Bring Your Own Software License**
   If you have already purchased Microsoft Software via an eligible Volume Licensing Agreement, you are able to bring select Microsoft licenses to a shared environment with License Mobility through Software Assurance benefit.

2. **License Mobility and RDS Extended Rights**
   US Signal is a Microsoft Authorized Mobility Partner, which provides you with the option of bringing your own eligible licenses to the US Signal Cloud. You will need to confirm that the application is on the list of software products.

   Windows Server Remote Desktop User Licenses (RDS) with active Software Assurance follows the same process as License Mobility eligible products. The key difference is that RDS is covered under what Microsoft calls Extended Rights. Extended Rights only apply to RDS User licenses (device licenses are ineligible), and the cloud deployment process described below is required for RDS licenses in both shared and dedicated environments.

A summary of Microsoft's required steps for deploying licenses through License Mobility or Extended rights is available via the following link by clicking here.

Once eligibility is confirmed, Microsoft requires completion of the following steps to be compliant.

Within 10 days of deployment, you must complete the License Verification Form and provide it to your Microsoft representative or preferred resell partner.

A License Verification Form is required in 3 specific scenarios:

1. When eligible licenses are deployed with an Authorized Mobility Partner.
   a. Each time additional licenses are deployed; a new form is required.
2. When your Software Assurance is renewed.
3. When you renew your Volume Licensing Agreement.

Can changes be made to the size of the boot disk for provided Microsoft VM templates?

Yes, as long as the drive is being extended and not compressed. The underlying Operating System has to support such a change. Windows Server 2008 and 2012 both support extending the boot disk.

Does US Signal perform Microsoft auditing of my cloud resources?

No. However the Microsoft SPLA states that Microsoft reserves the right to audit any of our customers. US Signal is not directly responsible for ensuring its customers are operating in compliance with Microsoft.

What are best practices for license key management within the US Signal Cloud?

If bringing your own licenses, it is imperative to review the licensing terms for each vendor's agreement, as they may have unique requirements surrounding bringing licenses to a shared or dedicated cloud environment.

1. License keys ordered through US Signal

If you are using licenses ordered through US Signal, we recommend that you use US Signal provided keys. There are many different scenarios in which a US Signal key may be required. Whether that be migrating a server from your own premises to US Signal owned equipment, installing software on an existing VM, upgrading to a new version, transitioning from your own licenses to US Signal provided licenses, or some other scenario.

2. Bring your own license keys

Software that you own that you are deploying in the US Signal cloud requires that you use the license keys from your own software license agreement.

What should I do with US Signal license keys if terminating a US Signal Service?

If you are going to be stopping a service with US Signal, you must end usage of the US Signal provided key and dispose of it. There may be additional steps to take if migrating out of the US Signal cloud, such as replacing the US Signal key with the key from your own software license agreement.

1. Software License Key Replacement

Typically, software license keys can be swapped from a menu within the software application. This should be a simple process, but it is helpful to refer to the software manufacturers documentation for assistance. And be sure to have both the US Signal provided key, and the key from your agreement on hand when swapping the key out as some software does require an active key to be applied to avoid disruption in software functionality.

*Some US Signal provided software has unique license key characteristics to watch out for, including but not limited to the following:

Microsoft SQL Server – SQL contains an embedded key. To replace it, you will need to extract and apply your own key from your own installation file.

Microsoft Remote Desktop Services - any RDS license packs activated by US Signal will need to be revoked and replaced with a license pack from your own agreement.

Can changes be made to the size of the boot disk for provided Microsoft VM templates?

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If you need support for any reason: Licensing Activation, Operating System Troubleshooting or Licensing Questions, please contact US Signal's Technical Operations Centers 24x7x365.

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