VCF 9.0 Licensing - Private License Files

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Licensing Outline

Starting with version 9.0 of VMware Cloud Foundation (VCF) or VMware vSphere Foundation (vSphere Foundation), you license your environment by using a VCF Operations instance and the VMware Cloud Foundation Business Services console (vcf.broadcom.com). Subscription-based license files replace the use of the 25-character license keys.

What's New in 9.0?

- License keys are no longer used. To license your environment, you purchase a term-based subscription for a product with a specified capacity.
- A license is an object that entitles you to use the products that you purchased subscriptions for. A license can span multiple subscriptions or, when you split the default license, a license can be a portion of a subscription.
- The initial license that is automatically created in VCF Business Services console after you purchase a subscription is called a default license. The default license is a pool of capacity from all active subscriptions of the same product in the same Site ID. Available capacity is displayed in the unit of measure for the specific product.

  For example, if you purchase a VCF subscription for 500 cores, you receive a default license for 500 cores of VCF and you also receive a default license of 500 TiBs of vSAN, which are added in a separate license. If, on top of that, you purchase a vSAN add-on subscription for 200 TiBs, the new number of TiBs is added to your default vSAN license, and its capacity becomes 700 TiBs.

Note:

For more information about using your Broadcom Site ID, see knowledge base article 142873.

- There are two types of licenses - primary licenses, such as VMware Cloud Foundation and VMware vSphere Foundation licenses, and add-on licenses, such as vSAN add-on capacity or VMware Private AI Foundation with NVIDIA licenses. You no longer license individual components such as NSX, HCX, VCF Automation, and so on. Instead, for VCF and vSphere Foundation, you have a single license capacity provided for that product.

  For example, for VMware Cloud Foundation, the single license capacity provided for that product is *VMware Cloud Foundation (cores)*. This is a primary license and you must assign it to your environment before you can assign an add-on license. Components are licensed automatically after you assign the primary license to a vCenter instance. For VCF and vSphere Foundation, you also receive *VMware vSAN (TiB)* capacity. You also receive *VMware vSAN (TiB)* capacity when you purchase vSAN as an add-on. The vSAN TiB license is called an add-on license.

Licensing Details Applicable Only to Customers Using Private License Files

- Customers who are approved to use private license files for licensing their environments receive licenses for which license expiration does not apply in the product if the license usage is not reported or if the subscription expires.
  Note:

  If your subscription expires and you do not renew it, you must stop using the product. Unless otherwise exempt per your agreement with Broadcom, reporting license usage might be required, but is not enforced by the product.
- You can license your VCF Operations instance by using a private license file from the VCF Business Services console with an asymmetric public key and private key pair. You are not required to download the registration file from VCF

Operations to start the registration. If you are prohibited from any data egress from your environment or if you are licensing a standalone host, you can register by using a private license file.

– When licensing with a private license file, a max version must be selected. The max version is the highest version that can be used with the license. If you want to upgrade your VCF environment to a higher version than the max version, you must first update your license with a higher max version.

– You must keep a copy of the public key you used to create your license file in case you need to update your license in the future. If you lose your public key, you must create a new public and private key pair and import the new private key into VCF Operations or the ESX host.

• Alternatively to creating a private license file, you can register a VCF Operations instance in connected or disconnected mode. If license usage is not reported or if the subscription expires, license expiration is not enforced in the product for licenses added to a registered VCF Operations instance. You can register in connected or disconnected mode if you can egress the registration file out of your environment.

Version 9.0 High Level Licensing Workflow

1. Install a VCF Operations instance of version 9.0, or an ESX host of version 9.0. You can also upgrade your existing Aria Operations instance to VCF Operations 9.0, or your ESXi host to version 9.0.
2. Generate an RSA public key and a private key pair.
   Note:

   This key pair does not need to be generated from the product environment.
3. In the VCF Business Services console, create a private license file for your VCF Operations instance or ESX host.
4. Import the public and private key pair that you generated into your VCF Operations instance or import the private key into your ESX host.
5. Import the license file into your VCF Operations instance or ESX host.
6. If you use a VCF Operations instance to license your environment, assign the licenses to your vCenter instances.

   CLI Commands to Generate an RSA Public and Private Key Pair

   ```
   openssl genpkey -algorithm RSA -out private_key.pem -pkeyopt rsa_keygen_bits:4096
   ```

   ```
   openssl rsa -pubout -in private_key.pem -out public_key.pem
   ```

To combine the public and private key pair, you can use the following command:

```
cat private_key.pem public_key.pem > keypair.pem
```

Create a Private License File in the VCF Business Services Console

To license your VCF Operations instance or your standalone ESX host, you must create a private license file in the VCF Business Services console.

- Generate an RSA key pair in PEM format.
- Save the public and private key pair locally, for example, at /tmp/.

If you cannot provide registration or usage data for your VCF Operations instance or standalone ESX host, and received approval to use a private license file, you can use that file to license your environment or ESX host.

1. Log in to the VCF Business Services console by using your Broadcom Support Portal credentials.

2. Navigate to **License Management** > **VCF Operations Registrations**.

3. Click **Create Private License File**.

   The **Create Private License File** wizard appears.

4. Enter a display name for the license file.

5. Select whether you want to add licenses to a VCF Operations instance or an ESX host.

   Note:

   License files are different for ESX hosts and VCF Operations instances. If you do not select the correct type, when you try to import the license file in the instance, the license assignment fails. You cannot assign licenses to a vCenter instance without using a VCF Operations instance.

6. Click **Save and Next**.

7. Optional: If you want to manage the available license capacity, for example, to create new licenses and add some of the capacity to them, click **Manage Licenses**.
   a) Select the product for which you want to see the available licenses.
   b) Click **Create**.
   c) Enter a name for the new licenses, and the capacity you want to allocate to it from the total capacity.
   d) Click **Save**, and **Save and Next**.

8. Select licenses to include in the license file, and click **Save and Next**.

9. View the summary and click **Save and Next**.

10. In the text box, paste the encoded RSA public key in PEM format that you generated. The public key that you provide is not saved by Broadcom. To be able to make changes later, you must save in your records the relationship between the public key that you provide and the license file that you create.

11. Under License File, click **Download**.

12. Click **Finish**.

After you import the public and private key pair into your VCF Operations instance or the private key into your standalone ESX host, you can import the license file.

Import or Update a Public and Private Key into a VCF Operations Instance

Before you can import your license file to a VCF Operations instance, you must import your public and private key pair to the instance.

- Verify that you have generated an RSA key pair in PEM format and saved it locally, for example, at /tmp/. The RSA кеy pair used when creating the private license must be the one imported in the VCF Operations instance.

You can import only one public and private key pair into a VCF Operations instance. When you import a new public and private key pair, it overwrites the existing one. This impacts newly imported licenses, not the existing imported licenses.

You can use Swagger to import or update the public and private key pair into a VCF Operations instance, or you can run this bash shell script.

Note:

Combine the public and private key in a single .pem file, for example, /tmp/keypair.pem, in the following format:

---BEGIN PRIVATE KEY---

<Enter private key>

---END PRIVATE KEY---

---BEGIN PUBLIC KEY---

<Enter public key>

---END PUBLIC KEY---

1. Go to https://<VCF Operations Instance>/suite-api/doc/swagger-ui.html

2. Click **Authorize**.

3. To log in, use your VCF Operations credentials.

4. From the **Select a Definition** dropdown menu, switch to **Internal APIs**.

5. Navigate to the **License Manager** section.

6. Execute an API to upload a public and private key pair
   a) Expand POST API `/internal/license-manager/identity/keypair`.
   b) Click **Try it out**.
   c) To upload a .pem file that contains the public and private key pair, click **Choose File**.
   d) Click **Execute**.

7. Optional: Verify that the VCF Operations instance is in private mode.
   a) Go to the GET API `/internal/license-manager/registration/status`
   b) Click **Try it out**.
   c) Click **Execute**.

8. Optional: Verify that the connectivity mode is set to private.

Import a License File to a VCF Operations Instance

After you create a license file in the VCF Business Services console, you must upload it into the VCF Operations instance before you can assign licenses to the assets in your environment.

- Verify that you have imported your public and private key pair. For more information, see Import or Update a Public and Private Key into a VCF Operations Instance.
- Verify that you have downloaded the correct type of license file from the VCF Business Services console. For more information, see Create a Private License File in the VCF Business Services Console.

1. Log in to your VCF Operations instance.

2. Navigate to **License Management** > **Registration**.
    a) If you import a license file for the first time into this VCF Ops instance, in the **Disconnected** pane, click **Import License File**.
    b) If you imported a license file before, in the details pane of your VCF Operations instance, click **Import License File**.

    The **Import License File** dialog box appears.

3. Click **Browse**, select the license file that you downloaded from the VCF Business Services console, and click **Open**.

4. Click **Import**.

5. After the file is uploaded, click **Complete**.

Import a Private Key into an ESX Host

Before you can import your license file to an ESX host, you must import your private key by using `esxcli` commands.

- Verify that you have a generated private key that is saved locally, for example, at /tmp/key.pem.

You can import up to five private keys to an ESX host. If you must import a new private key after you exceed this limit, you must first delete one of the imported private keys. For more information, see Delete a Private Key from an ESX Host.

1. Log in to your ESX host by using ESXCLI.

2. Run the following command

   ```
   esxcli licensing credential add --file /tmp/key.pem
   ```

   The file name must be an absolute path.

Delete a Private Key from an ESX Host

You can delete a private key from an ESX host by using esxcli commands.

• Verify that you have the latest ESXCLI installed.

You can have up to 5 private keys imported to an ESX host. If you exceed this limit and want to add a new private key, you must first delete one of the imported private keys.

1. Log in to your ESX host by using ESXCLI.

2. If you want to see the list of the private keys that are imported to the ESX host, run the following command.

   ```
   esxcli licensing credential list
   ```

3. To delete the private key from the ESX host, run the following command.

   ```
   esxcli licensing credential remove --id <ID>
   ```

Import a License File to an ESX Host

To license your standalone ESX host, you must use ESXCLI and import a license file that you downloaded from the VCF Business Services console.

- Verify that you have imported your private key. For more information, see Import a Private Key to an ESX Host.
- Verify that you have downloaded the correct type of license file from the VCF Business Services console. For more information, see Create a Private License File in the VCF Business Services Console.
- Verify that you have the latest ESXCLI installed.

1. Log in to your ESX host by using ESXCLI.

2. Run the following command

```
esxcli licensing entitlement add --file /tmp/license.token
```

The file name must be an absolute path.

Update the License File in an ESX Host

If you want to replace the license file that you imported into an ESX host with a new license file, you can use `esxcli` commands.

- Verify that you have imported your private key. For more information, see Import a Private Key to an ESX Host.
- Verify that you have downloaded the correct type of license file from the VCF Business Services console. For more information, see Create a Private License File in the VCF Business Services Console.
- Verify that you have the latest ESXCLI installed.

Note:

You can only have one license files imported to an ESX host. You can replace the imported license file with a new one but you cannot import more than one license files into one ESX host.

1. Log in to your ESX host by using ESXCLI.

2. If you want to see the list of the private keys that are imported to the ESX host, run the following command.

   ```
   esxcli licensing credential list
   ```

3. Run the following command

   ```
   esxcli licensing entitlement set --id <ID> --file /tmp/license.token
   ```

   The file name must be an absolute path.

Add Licenses to a VCF Operations Instance

You can add new licenses to a VCF Operations instance or allocate more capacity to the existing licenses by using the VCF Business Services console.

- You must either use the same public and private key pair that you used when you created the first license file, or generate a new pair. If you want to use a new key pair, you must first import it into the VCF Operations instance. For more information, see Import or Update a Public and Private Key into a VCF Operations Instance.

Each time that you modify licenses, you must download a new license file.

1. Log in to the VCF Business Services console by using your Broadcom Support Portal credentials.

2. Navigate to **License Management** > **Licenses**.

3. Click **Add to VCF Operations**.

   The **Add Licenses to a VCF Operations Instance** wizard appears.

4. Select the VCF Operations instance to which you want to add the licenses, and click **Save and Next**.

5. View the summary, and click **Save and Next**.

6. Under License File, click **Download**.

7. Click **Finish**.

Update a License File in a VCF Operations Instance

To update your license file, you must generate a new license file in the VCF Business Services console and import it in the VCF Operations instance.

- You must either use the same public and private key pair that you used when you created the first license file, or generate a new pair. If you want to use a new key pair, you must first import it into the VCF Operations instance. For more information, see Import or Update a Public and Private Key into a VCF Operations Instance.

You must generate a new license file in the following cases:

- When you change the Max VCF Version,
- When you add, change, or remove a license,
- When you want to rotate the private key previously imported into the VCF Operations instance.

1. Log in to the VCF Business Services console by using your Broadcom Support Portal credentials.

2. Navigate to **License Management** > **VCF Operations Registrations**.

3. Next to the VCF Operations instance, click the vertical ellipsis button.

4. Click **Generate License File**.

   The **Generate License File** dialog box appears.

5. In the text box, paste the encoded RSA public key in PEM format.

6. Click **Generate**.

   A new dialog box appears.

7. Download the licenses file.

Useful Resources

You can read more about the license management workflows in the VCF Business Services console and VCF Operations by using the links that are included in the table.

Important:

Some of the topics listed in the table might include information about VCF Operations registration, usage reporting, updating licenses, connected and disconnected mode. That information does not apply to your use case.

Description	Chapter or topic
This chapter provides information about 9.0 changes to the licensing model, overview information about 9.0 licensing, 9.0 products and product components, supported mixed-version environments, and the vSAN add-on licenses.	Licensing Overview
This chapter provides information on how to split the default license, how to delete a split license, or reduce its capacity.	Managing Licenses in the VCF Business Services console
These topics provide information on how to assign licenses to vCenter instances, and remove them, from your VCF Operations instance.	• Assign a Primary License to a vCenter Instance • Assign an Add-on License to a vCenter Instance • Remove a License from a vCenter Instance
This chapter provides information on how to access your license usage data and check the aggregate license usage per product and per license.	License Usage Analytics