Advanced troubleshooting for Stop error 7B or Inaccessible_Boot_Device

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This article provides steps to troubleshoot "Stop error 7B: Inaccessible_Boot_Device". This error might occur after some changes are made to the computer, or immediately after you deploy Windows on the computer.

Applies to: Windows 10

Causes of the Inaccessible_Boot_Device stop error

Any one of the following factors might cause the stop error:

- Missing, corrupted, or misbehaving filter drivers that are related to the storage stack
- File system corruption
- Changes to the storage controller mode or settings in the BIOS
- Using a different storage controller than the one that was used when Windows was installed
- Moving the hard disk to a different computer that has a different controller
- A faulty motherboard or storage controller, or faulty hardware
- In unusual cases, the failure of the TrustedInstaller service to commit newly installed updates is because of component-based store corruptions
- Corrupted files in the Boot partition (for example, corruption in the volume that's labeled **SYSTEM** when you run the `diskpart > list vol` command)
- If there's a blank GPT entry before the entry of the Boot partition

Troubleshoot this error

Start the computer in Windows Recovery Mode (WinRE) by following these steps.

1. Start the system by using the installation media for the installed version of Windows .
2. On the **Install Windows** screen, select **Next** > **Repair your computer**.
3. On the **System Recovery Options** screen, select **Next** > **Command Prompt**.

Verify that the boot disk is connected and accessible

Step 1

At the WinRE Command prompt, run `diskpart`, and then run `list disk`.

A list of the physical disks that are attached to the computer should be displayed and resemble the following display:

Output

```
  Disk ###  Status         Size     Free     Dyn  Gpt

  --------  -------------  -------  -------  ---  ---

  Disk 0    Online         **size*  GB      0 B        *
```

If the computer uses a Unified Extensible Firmware Interface (UEFI) startup interface, there will be an asterisk (`*`) in the `GPT` column.

If the computer uses a basic input/output system (BIOS) interface, there won't be an asterisk in the `Dyn` column.

Step 2

If the `list disk` command lists the OS disks correctly, run the `list vol` command in `diskpart`.

`list vol` generates an output that resembles the following display:

Output

```
  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info

  ----------  ---  -----------  -----  ----------  -------  ---------  -------
-

  Volume 0         Windows RE   NTFS   Partition    499 MB  Healthy

  Volume 1     C   OSDisk       NTFS   Partition    222 GB  Healthy    Boot

  Volume 2         SYSTEM       FAT32  Partition    499 MB  Healthy    System
```

> **Note**
>
> If the disk that contains the OS isn't listed in the output, you'll have to engage the OEM or virtualization manufacturer.

Verify the integrity of Boot Configuration Database

Check whether the Boot Configuration Database (BCD) has all the correct entries. To do this step, run `bcdedit` at the WinRE command prompt.

To verify the BCD entries:

1. Examine the **Windows Boot Manager** section that has the **{bootmgr}** identifier. Make sure that the **device** and **path** entries point to the correct device and boot loader file.

   If the computer is UEFI-based, here's example output:

   ```
   Console

   device                  partition=\Device\HarddiskVolume2
   path                    \EFI\Microsoft\Boot\bootmgfw.efi
   ```

   If the machine is BIOS-based, here's example output:

   ```
   Console

   Device                  partition=C:
   ```

   > **Note**
   >
   > This output might not contain a path.

2. In the **Windows Boot Loader** that has the **{default}** identifier, make sure that **device**, **path**, **osdevice**, and **systemroot** point to the correct device or partition, winload file, OS partition or device, and OS folder.

   > **Note**

If the computer is UEFI-based, the file path value that's specified in the **path** parameter of **{bootmgr}** and **{default}** contains an **.efi** extension.

```
X:\Sources>bcdedit

Windows Boot Manager
--------------------
identifier              {bootmgr}
device                  partition=\Device\HarddiskVolume2
path                    \EFI\Microsoft\Boot\bootmgfw.efi
description             Windows Boot Manager
locale                  en-US
inherit                 {globalsettings}
integrityservices       Enable
default                 {default}
resumeobject            {794a37b9-6ff0-11e6-8ad9-8d64679fc580}
displayorder            {default}
toolsdisplayorder       {memdiag}
timeout                 30

Windows Boot Loader
-------------------
identifier              {default}
device                  partition=C:
path                    \Windows\system32\winload.efi
description             Windows 8.1
locale                  en-US
inherit                 {bootloadersettings}
recoverysequence        {794a37bd-6ff0-11e6-8ad9-8d64679fc580}
integrityservices       Enable
recoveryenabled         Yes
isolatedcontext         Yes
allowedinmemorysettings 0x15000075
osdevice                partition=C:
systemroot              \Windows
resumeobject            {794a37b9-6ff0-11e6-8ad9-8d64679fc580}
nx                      OptOut
pae                     ForceDisable
bootmenupolicy          Standard
```

If any of the information is wrong or missing, we recommend that you create a backup of the BCD store. To do this, run `bcdedit /export C:\temp\bcdbackup`. This command creates a backup in *C:\temp* that's named **bcdbackup**. To restore the backup, run `bcdedit /import C:\temp\bcdbackup`. This command overwrites all BCD settings by using the settings in **bcdbackup**.

After the backup completes, run the following command to make the changes:

Console

```
bcdedit /set *{identifier}* option value
```

For example, if the device under {default} is wrong or missing, run this command to set it: `bcdedit /set {default} device partition=C:`

If you want to completely re-create the BCD, or if you get a message that states that "**The boot configuration data store could not be opened. The system could not find the file specified,** " run `bootrec /rebuildbcd`.

If the BCD has the correct entries, check whether the **winload** and **bootmgr** entries exist in the correct location, which is in the specified path in the **bcdedit** command. By default, **bootmgr** in the BIOS partition is in the root of the **SYSTEM** partition. To see the file, run `Attrib -s -h -r`.

If the files are missing, and you want to rebuild the boot files, follow these steps:

1. Copy all the contents under the **SYSTEM** partition to another location. Alternatively, you can use the command prompt to navigate to the OS drive, create a new folder, and then copy all the files and folders from the **SYSTEM** volume, like shown here:

   Console

   ```
   D:\> Mkdir  BootBackup
   R:\> Copy *.* D:\BootBackup
   ```

2. If you're using Windows 10, or if you're troubleshooting by using a Windows 10 ISO at the Windows Pre-Installation Environment command prompt, you can use the `bcdboot` command to re-create the boot files, like shown here:

   Console

   ```
   Bcdboot <**OSDrive* >:\windows /s <**SYSTEMdrive* >: /f ALL
   ```

   For example, if we assign the `<System Drive>` (WinRE drive) the letter R and the `<OSdrive>` is the letter D, we would use the following command:

   Console

```
Bcdboot D:\windows /s R: /f ALL
```

> **Note**
>
> The **ALL** part of the `bcdboot` command writes all the boot files (both UEFI and BIOS) to their respective locations.

If you don't have a Windows 10 ISO, format the partition and copy **bootmgr** from another working computer that has a similar Windows build. To do the formatting and copying, follow these steps:

1. Start **Notepad**.
2. Press Ctrl+O.
3. Navigate to the system partition (in this example, it's R).
4. Right-click the partition, and then format it.

Troubleshooting if this issue occurs after a Windows Update installation

Run the following command to verify the Windows update installation and dates:

Console

```
Dism /Image:<Specify the OS drive>: /Get-packages
```

After you run this command, you'll see the **Install pending** and **Uninstall Pending** packages:

```
Package Identity : Package_for_KB4459941~31bf3856ad364e35~amd64~~6.3.1.2285
State : Install Pending
Release Type : Update
Install Time : [redacted]

Package Identity : Package_for_KB4462930~31bf3856ad364e35~amd64~~6.3.1.0
State : Installed
Release Type : Update
Install Time : [redacted]

Package Identity : Package_for_KB4467694~31bf3856ad364e35~amd64~~6.3.1.0
State : Installed
Release Type : Security Update
Install Time : [redacted]

Package Identity : Package_for_RollupFix~31bf3856ad364e35~amd64~~9600.18874.1.4
State : Superseded
Release Type : Security Update
Install Time : [redacted]

Package Identity : Package_for_RollupFix~31bf3856ad364e35~amd64~~9600.19155.1.5
State : Uninstall Pending
Release Type : Security Update
Install Time : [redacted]

Package Identity : Package_for_RollupFix~31bf3856ad364e35~amd64~~9600.19182.1.6
State : Install Pending
Release Type : Security Update
Install Time : [redacted]
```

1. Run the `dism /Image:C:\ /Cleanup-Image /RevertPendingActions` command. Replace C: with the system partition for your computer.

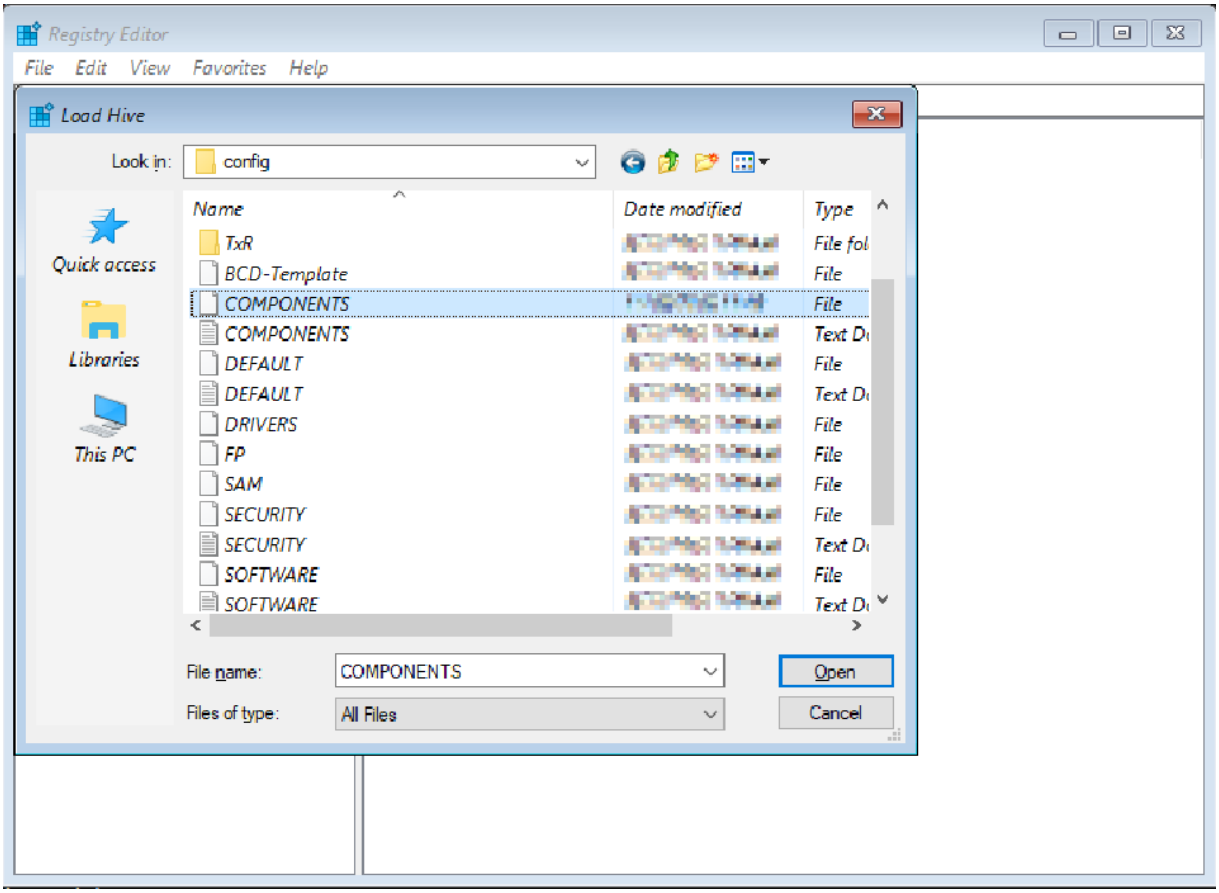
```
X:\Sources>dism /Image:C:\ /Cleanup-Image /RevertPendingActions

Deployment Image Servicing and Management tool
Version: 10.0.17134.1

Image Version: 6.3.9600.17709

The scratch directory size might be insufficient to perform this operation. This can cause unexpected behavior.
Use the /ScratchDir option to point to a folder with sufficient scratch space. The recommended size is at least 1024 MB.


Reverting pending actions from the image...
The operation completed. Revert of pending actions will be attempted after the reboot.
The operation completed successfully.
```

2. Navigate to *OSdriveLetter:\Windows\WinSxS*, and then check whether the *pending.xml* file exists. If it does, rename it to *pending.xml.old*.

3. To revert the registry changes, type *regedit* at the command prompt to open **Registry Editor**.

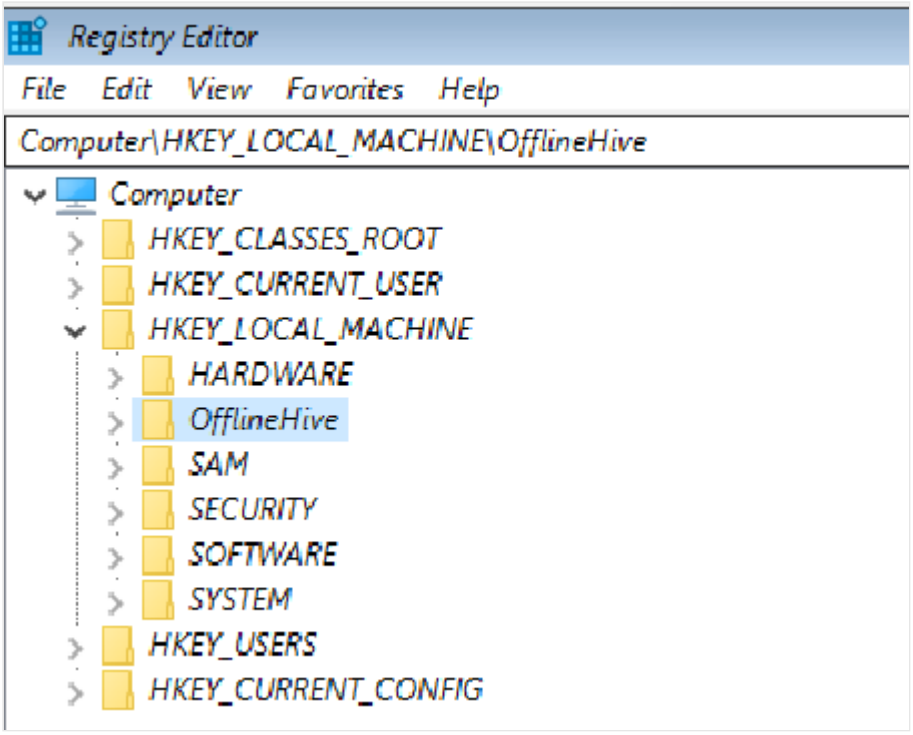
4. Select **HKEY_LOCAL_MACHINE**, and then go to **File** > **Load Hive**.

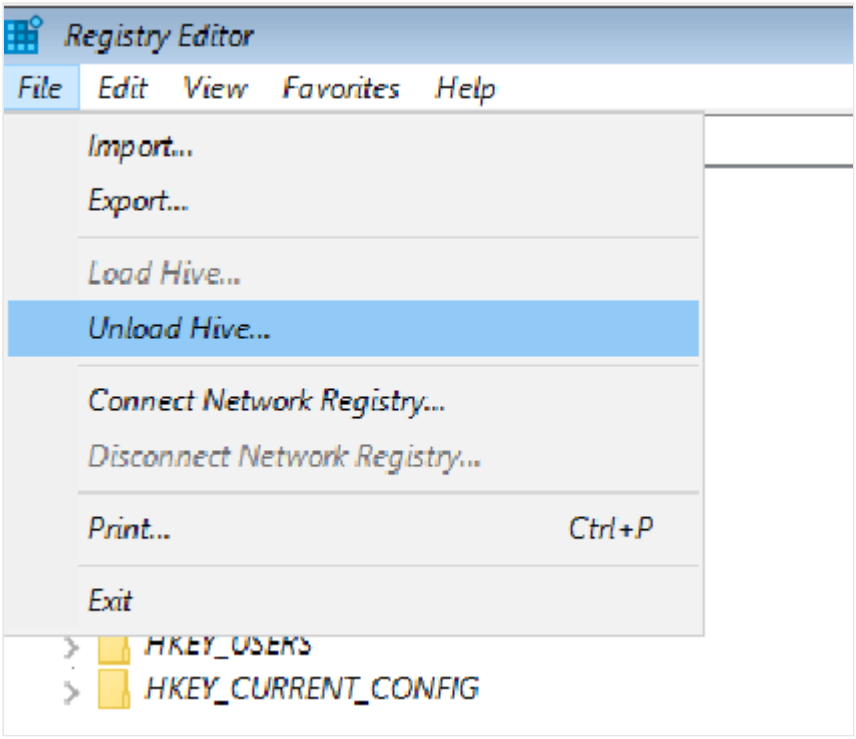
5. Navigate to *OSdriveLetter:\Windows\System32\config*, select the file that's named *COMPONENT* (with no extension), and then select **Open**. When you're prompted, enter the name *OfflineComponentHive* for the new hive.



6. Expand `HKEY_LOCAL_MACHINE\OfflineComponentHive`, and check whether the **PendingXmlIdentifier** key exists. Create a backup of the **OfflineComponentHive** key, and then delete the **PendingXmlIdentifier** key.

7. Unload the hive. To do this unloading, highlight **OfflineComponentHive**, and then select **File** > **Unload hive**.





8. Select **HKEY_LOCAL_MACHINE**, go to **File** > **Load Hive**, navigate to *OSdriveLetter:\Windows\System32\config*, select the file that's named **SYSTEM** (with no extension), and then select **Open**. When you're prompted, enter the name **OfflineSystemHive** for the new hive.

9. Expand **HKEY_LOCAL_MACHINE\OfflineSystemHive**, and then select the **Select** key. Check the data for the **Default** value.

10. If the data in `HKEY_LOCAL_MACHINE\OfflineSystemHive\Select\Default` is **1**, expand `HKEY_LOCAL_MACHINE\OfflineHive\ControlSet001`. If it's **2**, expand `HKEY_LOCAL_MACHINE\OfflineHive\ControlSet002`, and so on.

11. Expand `Control\Session Manager`. Check whether the **PendingFileRenameOperations** key exists. If it does, back up the **SessionManager** key, and then delete the **PendingFileRenameOperations** key.

Verifying boot critical drivers and services

Check services

1. Follow steps 1-10 in the "Troubleshooting if this issue occurs after a Windows Update installation" section. (Step 11 doesn't apply to this procedure.)

2. Expand **Services**.

3. Make sure that the following registry keys exist under **Services**:

   - ACPI
   - DISK
   - VOLMGR
   - PARTMGR
   - VOLSNAP
   - VOLUME

   If these keys exist, check each one to make sure that it has a value that's named **Start**, and that it's set to **0**. If it's not, set the value to **0**.

   If any of these keys don't exist, you can try to replace the current registry hive by using the hive from **RegBack**. To do this step, run the following commands:

```
Console

cd OSdrive:\Windows\System32\config
ren SYSTEM SYSTEM.old
copy OSdrive:\Windows\System32\config\RegBack\SYSTEM
OSdrive:\Windows\System32\config\
```

Check upper and lower filter drivers

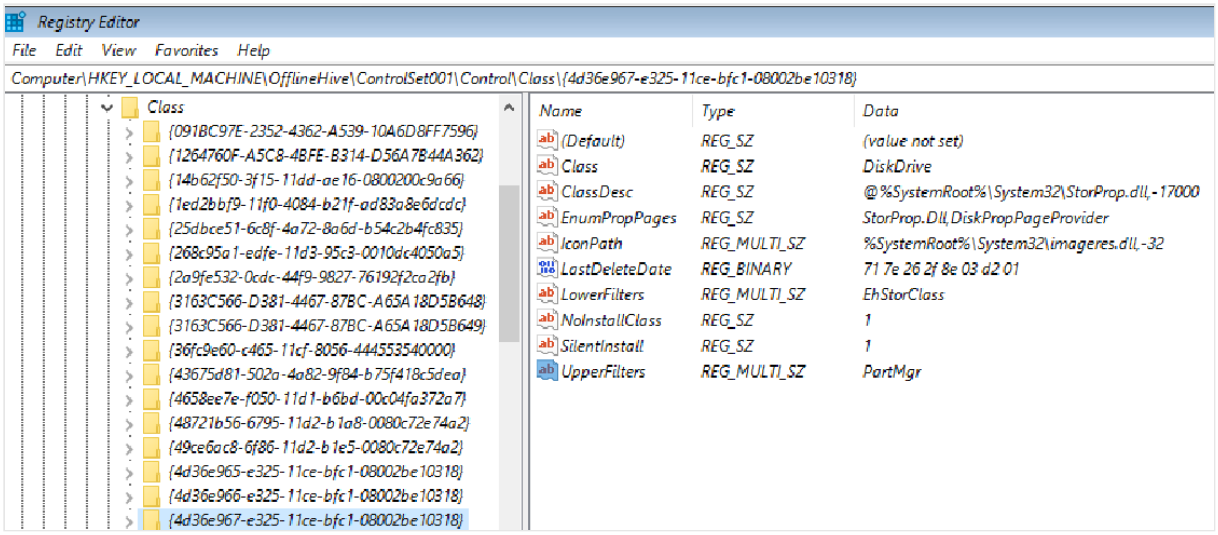
Check whether there are any non-Microsoft upper and lower filter drivers on the computer and that they don't exist on another, similar working computer. If they do exist, remove the upper and lower filter drivers:

1. Expand `HKEY_LOCAL_MACHINE\OfflineHive\ControlSet001\Control`.
2. Look for any **UpperFilters** or **LowerFilters** entries.

> **Note**
>
> These filters are mainly related to storage. After you expand the **Control** key in the registry, you can search for **UpperFilters** and **LowerFilters**.

You might find these filter drivers in some of the following registry entries. These entries are under **ControlSet** and are designated as **Default**:

- `\Control\Class\{4D36E96A-E325-11CE-BFC1-08002BE10318}`
- `\Control\Class\{4D36E967-E325-11CE-BFC1-08002BE10318}`
- `\Control\Class\{4D36E97B-E325-11CE-BFC1-08002BE10318}`
- `\Control\Class\{71A27CDD-812A-11D0-BEC7-08002BE2092F}`



If an **UpperFilters** or **LowerFilters** entry is non-standard (for example, it's not a Windows default filter driver, such as PartMgr), remove the entry. To remove it, double-click it in the right pane, and then delete only that value.

> **Note**

There could be multiple entries.

These entries might affect us because there might be an entry in the **Services** branch that has a START type set to 0 or 1, which means that it's loaded at the Boot or Automatic part of the boot process. Also, either the file that's referred to is missing or corrupted, or it might be named differently than what's listed in the entry.

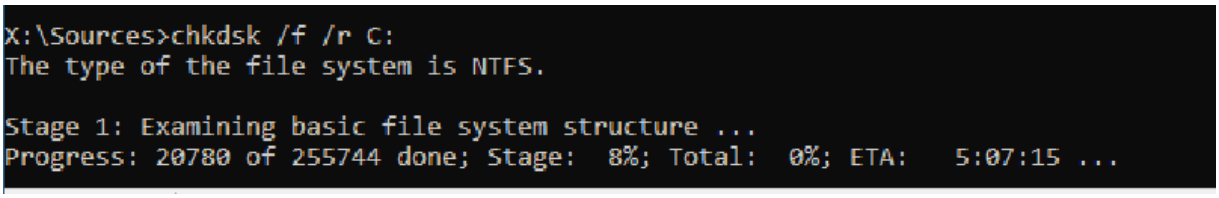
> **Note**
>
> If there's a service that's set to **0** or **1** that corresponds to an **UpperFilters** or **LowerFilters** entry, setting the service to disabled in the **Services** registry (as discussed in steps 2 and 3 of the Check services section) without removing the **Filter Driver** entry causes the computer to crash and generate a 0x7b Stop error.

Running SFC and Chkdsk

If the computer still doesn't start, you can try to run a `chkdisk` process on the system drive, and then also run System File Checker. Do these steps by running the following commands at a WinRE command prompt:

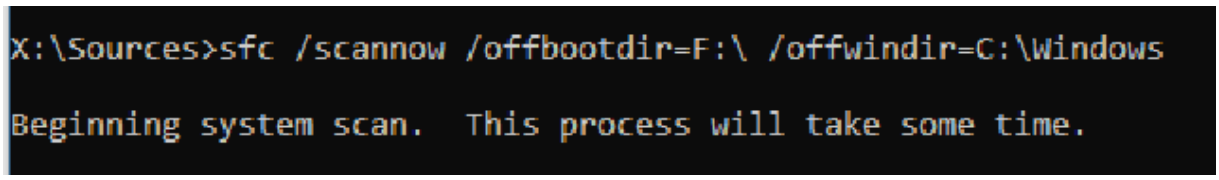
- Console

```
chkdsk /f /r OsDrive:
```



- Console

```
sfc /scannow /offbootdir=OsDrive:\ /offwindir=OsDrive:\Windows
```



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