
# IFWRotate

## Instructions

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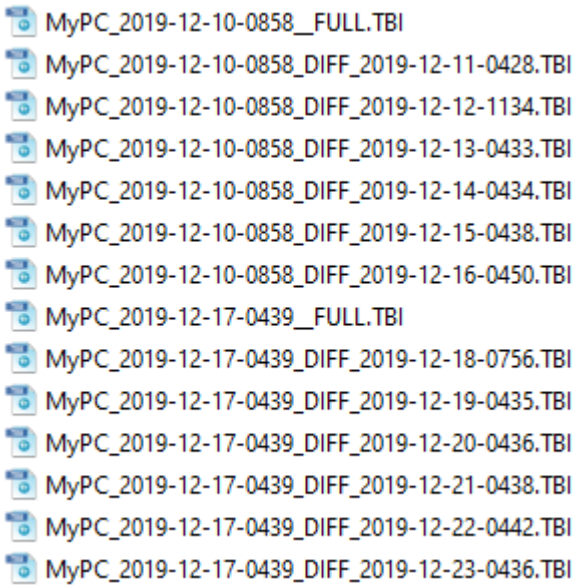
# Introduction & Requirements

The IFWRotate batch file maintains multiple iterations of a particular backup. Each time the batch file is run a backup will be created. The filename will include the date and time. For example, the first time the batch file is run, `<file name>_2020-01-10-2315__FULL.tbi` will be created. On the next run, `<file name>_2020-01-11-2315__FULL.tbi` will be created. (Assuming it's run the next day at the same time.) Once the number of backups reaches the number specified, the oldest backup (or backup set) is deleted.

IFWRotate can be setup to rotate only Full image backups or Full & Differential image backups. Differential backups based on a Full backup along with any associated hash files will be deleted when the base Full backup is deleted.

Since IFWRotate manages the backup sets by amount instead of by date, it allows you to easily keep the number of sets you want, whether run manually at times of your choosing, run automatically via a scheduled task, or both.

Here is an example showing Full backups followed by six Differential backups:




## Requirements

- Windows 2000 or later (including XP, Vista, and Windows 7/8.x/10)
- Image for Windows installed in Windows

**Note:** Since Image for Windows requires elevated privileges, running IFWRotate will trigger a UAC prompt if UAC is enabled (the default).

# Using IFWRotate

Make sure the IFWRotate.cmd file is not blocked by Windows security (if necessary, see the Troubleshooting section for more information).

Make a copy of the IFWRotate.cmd file for each backup set you wish to maintain. For example, you may name the file to backup your Windows 10 partition BackupWin10.cmd.

Using Windows Notepad (or another plain text editor), edit the file and set the variables to the desired values.

**Note:** Examples and basic instructions are also in the IFWRotate.cmd file.

The following variables need to be set:

### TBIBase

Specifies the folder where the backup files will be saved. In all cases, omit the trailing backslash, even for root directories (e.g. C: or D:). Also, omit quotation marks. The path can include spaces.

**Note:** This path/folder should exist. If it doesn't, create it before running IFWRotate.

**Example:** `set TBIBase=D:\My Backups`

A UNC path can also be specified for this variable.

**Example:** `set TBIBase=\\server\backups\mybackups`

**Note:** Make sure the share is accessible or IFWRotate and/or Image for Windows may not function as expected. If necessary, use the `TBILogin` variable below to specify the network share login details. If IFWRotate cannot access the path it will be unable to count the previous image backups, which will result in only Full images being created and no images being deleted. In this case, it may be necessary to add credentials for the share to the user account running IFWRotate.

### TBIName

Specifies the desired backup filename to be used for the backups. In all cases, omit the file extension. The filename can include spaces.

**Note:** This is the "base" filename used for creating the Full and Differential filenames.

Backup images will have the same "base" name as the specified TBIName value with the date, time, and "__FULL" appended (for Full images) or "_DIFF_", date, and time appended (for Differential images).

**Example:** `set TBIName=MyPC`

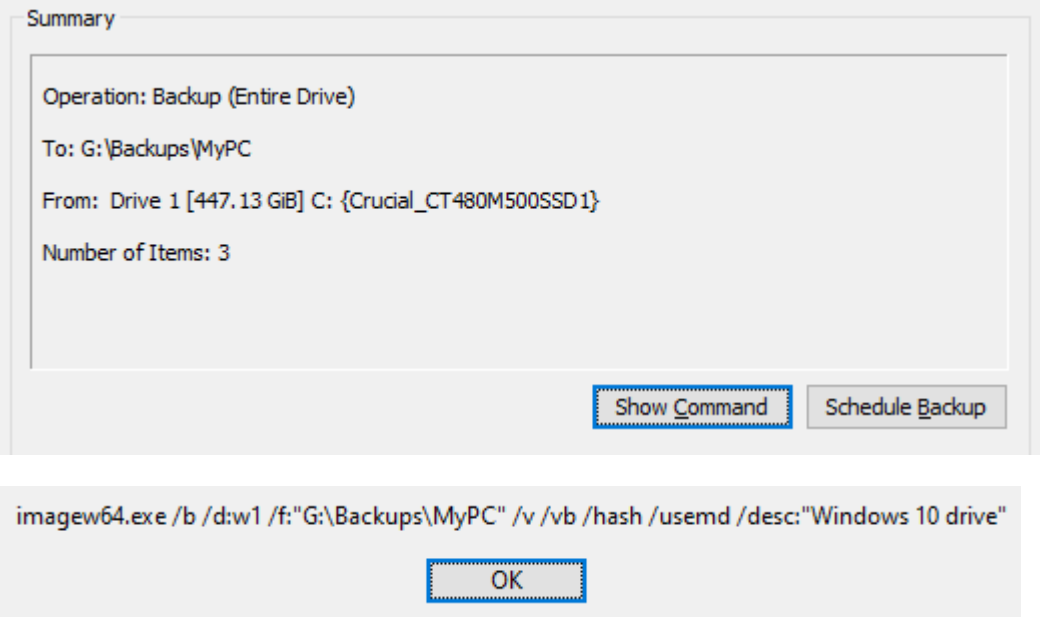
Created Full image filename example:
`MyPC_2020-01-12-1754__FULL.tbi`

Created Differential image filename example:
`MyPC_2020-01-12-1754_DIFF_2020-01-13-1821.tbi`

When sorted normally by name in Explorer, the Differential image files will be listed after their base Full image (as shown in the screenshot in the Introduction & Requirements section.).

## TBIParms

Specifies the parameters that should be used by Image for Windows to perform a normal Full backup. This is where you specify the source drive and partition(s) for the backup. If you need help figuring out which parameters to use, run Image for Windows, setup the Full backup how you want, and use the **Show Command** button to view the parameters.




**Note:** Do not include “imagew.exe” or the "/f" Image for Windows option here. It will be added automatically by IFWRotate. Additionally, if you need to use the Image for Windows “/login” option to access a network share, use the `TBILogin` script variable below instead of specifying /login here.

**Example:** `set TBIParms=/b /d:w0 /vb`

The above example would back up the entire hard drive 0 and then do a byte-for-byte validation.

**Example:** `set TBIParms=/b /d:w0@0x1,0x2 /v`

The above example would back up the first two partitions on the first drive and then do a standard validation.

## TBIPath

Specifies the path to the Image for Windows program (imagew.exe, imagew64.exe). Omit quotation marks and the trailing backslash. `TBIPath` only needs to be set if not using the installation (or default) path.

**Example (default path for 32-bit Windows):**
```
set TBIPath=C:\Program Files\TeraByte Drive Image Backup and Restore Suite
```

**Example (default path for 64-bit Windows):**
```
set TBIPath=C:\Program Files (x86)\TeraByte Drive Image Backup and Restore Suite
```

## TBIMaxFullCnt

Specifies the maximum number of Full image backups you want. Each Full backup created counts as one in the backup set. Differential backups are not included in the Full count. This number must be between 2 and 99.

**Example:** `set TBIMaxFullCnt=4`

This will create a new Full backup each time it's run. After four have been created, running it again will delete the oldest Full backup (and any associated Differential backups) and create a new Full backup.

If you want a Full backup every day of the week going back seven days, you would set this value at `7` and run IFWRotate once a day (scheduled or manually).

**Note:** If the number of existing backup sets (Fulls or Fulls + Differentials) exceed the number specified, the older sets will be deleted when a new Full is created. This may result in multiple sets being deleted. For example, if you had a previous maximum of 7 and changed it to 3, the oldest sets will be deleted to bring the count down to the new maximum of 3 when a new Full is created.

## TBIMaxDiffCnt

Specifies the maximum number of Differential image backups you want created for each Full backup. A setting of `0` (zero) will create only Full backups. If you want to create Differential backups, set the value to `1` or higher (max. 99).

**Example:** `set TBIMaxDiffCnt=6`

This will create six Differentials for each Full until the specified number of Full backups exist. At that point, the oldest Full will be deleted (along with any associated Differential backups) and a new Full backup will be created.

If you schedule IFWRotate to run every day and you want a new Full backup each week for four weeks with a Differential backup on each day in between, you would set the parameters as shown below:

```
set TBIMaxFullCnt=4
```

```
set TBIMaxDiffCnt=6
```

IFWRotate will create four Full backups (each with six Differential backups) before starting to delete the oldest backup set. When the oldest backup set is deleted, the remaining backups will only cover three weeks since the new Full backup and its Differential backups haven't been created yet. If you wish to have four weeks of backups available at all times, you should set `TBIMaxFullCnt` to `5` and allow room for five backup sets.

## TBIDifParms

Specifies any parameters needed when creating a Differential backup. Do not include the "/b", "/base", or "/f" Image for Windows options as those are automatically included by IFWRotate. Additionally, if you need to use the Image for Windows “/login” option to access a network share, use the `TBILogin` script variable below instead of specifying /login here.

**Example:** `set TBIDifParms=/vb`

This will make Image for Windows do a byte-for-byte validation on a Differential backup.

## TBILogin

Specify the network login details (if needed to access a network share). Do not set if network login is not required. If you include the login details here, don't include them in `TBIParms` or `TBIDifParms`. See the Image for Windows manual for details using the "/login" parameter.

**Note:** When this variable is used the script must be run with administrator privileges. This is necessary so the script gains access to the network share in addition to Image for Windows. Without access, the script will be unable to count the existing backup sets.

**Example:** `set TBILogin=/login:"\\server\share*username*password"`

**Example:** `set TBILogin=/login:"\\BackupServer\Win10Backups*John*mypassword"`

When this variable is used, Image for Windows will log into the share before backup set counts are processed (the "/log:0", "/hide", and "/quit" options are specified automatically), then counts are processed, and then Image for Windows is run again to create the appropriate backup.

### ProtectIt

Specify method to use when disabling TeraByte's ProtectIt service to allow old backup sets to be deleted when saved to the protected `TeraByte_TBI_Backups` folder.

It is only necessary to enable this option when the `TBIBase` variable is set to a `TeraByte_TBI_Backups` folder (or sub-folder) and ProtectIt is enabled on the system. If this option is set, this script must be run with administrative privileges (otherwise, old backup sets will not be deleted). Using TBOSDT (`1`) is recommended as it does not require removing protection in order to delete the files. TBOSDT (TeraByte OS Deployment Tool) is normally installed along with Image for Windows. If TBOSDT is used, TBOSDT must be installed or tbosdtw.exe must exist in the script's folder. Additionally, the script's folder must have write access.

Valid values for this option are:
`0` = ProtectIt not used or does not need to be disabled (default).
`1` = Use TBOSDT to delete files.
`2` = Disable ProtectIt service when deleting files then re-enable.

**Example:** `set ProtectIt=1`

## Optional Command Line Parameters

IFWRotate supports the following command line parameters:

**Note:** The command line parameters are not case sensitive.

`/f` Forces a new Full image to be created. Rotation rules for the maximum number of Full images will still be enforced.

`/d` Forces a new Differential image to be created. Using this option will create a Differential image even if it will exceed the maximum number specified.
**Note:** The Differential image will be based on the newest Full image. If no Full image exists, a Full image will be created instead of a Differential.

For example, if you have a copy of IFWRotate.cmd named BackupMyData.cmd and you want to create a Differential backup (even if it would go over the set limit), you would run the following command:

```
BackupMyData /d
```

If you need to force a certain type of backup frequently, you may want to create a shortcut that includes the parameter.

# Running from a Task

Once you have IFWRotate configured how you want it, you may want to create a task for it. This task may be scheduled or unscheduled. Tasks are especially handy in newer versions of Windows (Vista, Windows 7/8.x/10) to avoid getting the UAC prompt. A shortcut to the task can be created to run it whenever you want.

## Creating a Task

The task is created using the Windows Task Scheduler. Please note that, depending on which version of Windows you're using, there may be some differences not detailed here.

- **Windows XP**

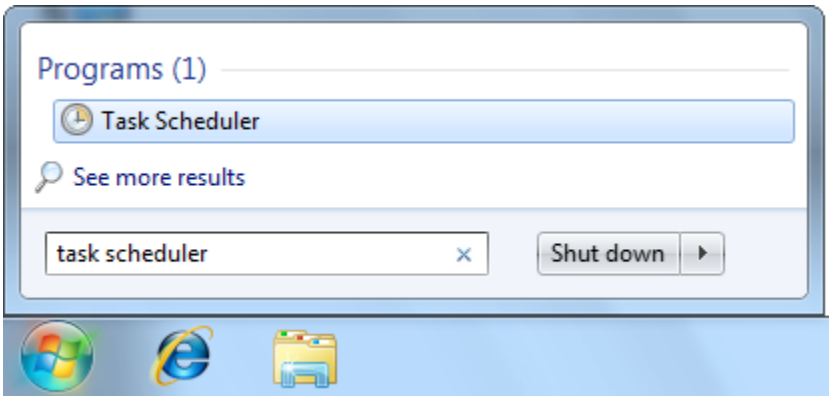
    1. Log into an Administrator account (if not already).
    2. Start the **Task Scheduler**:
       *Start >> All Programs >> Accessories >> System Tools >> Scheduled Tasks*
       You can also access the Task Scheduler from the Control Panel.
    3. Double-click the **Add Scheduled Task** option.
    4. Click **Next**.
    5. Click the **Browse** button and browse to the copy of the IFWRotate.cmd file you want to use.
    6. Name the task and select the schedule option you want.
    7. Enter the user name and password for the account under which the task should run. In most cases, this will be the account you're logged into.
    8. If you need to edit any of the advanced scheduling options, check the option to display them after the wizard finishes. **Note:** You can access these any time by right-clicking on the task and selecting Properties from the pop-up menu.
    9. Click **Finish**.

- **Windows Vista, Windows 7/8.x/10**

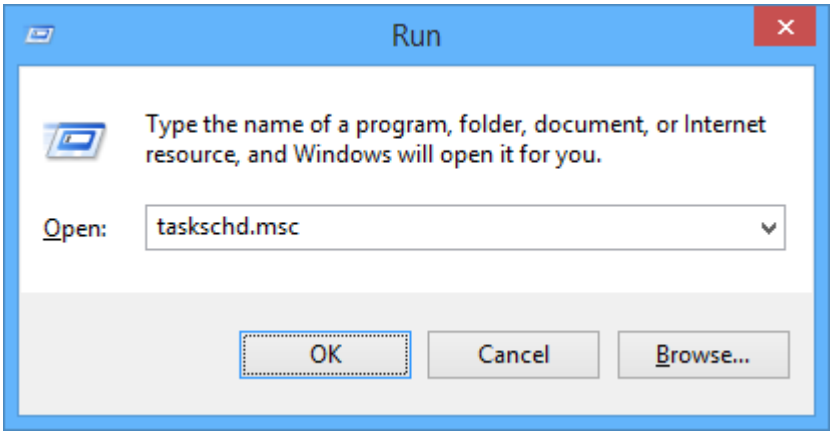
    1. Log into an Administrator account, if not already.
    2. Start the **Task Scheduler**:

       **Windows 7:**
       *Start Menu >> All Programs >> Accessories >> System Tools >> Task Scheduler*
       You can also just click the **Start** button and type `Task Scheduler` into the

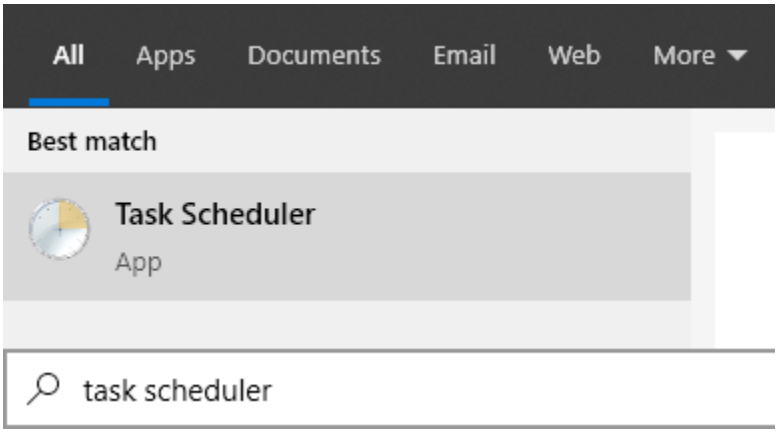
search box.



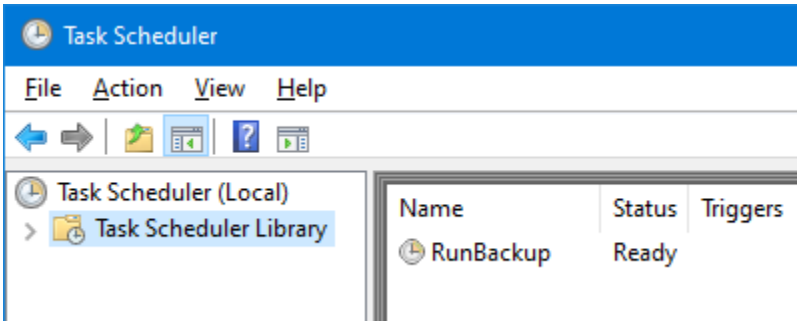

**Windows 8.x:**
Press **WinKey+R** to bring up the Run dialog. Type `taskschd.msc` into the Open box and click **OK**. (By default, the Task Scheduler is not searchable from the Start Menu.)




**Windows 10:**
*Start Menu >> Windows Administrative Tools >> Task Scheduler*
You can also just click the **Start** button and type `Task Scheduler` to search.

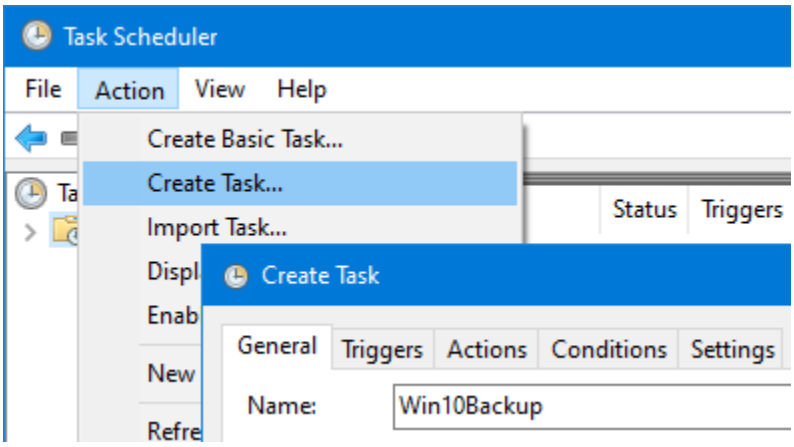


3. To see any existing tasks, click on **Task Scheduler Library** in the tree on the left.

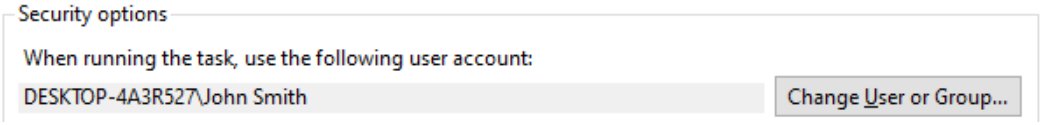



4. To create the new task, make sure **Task Scheduler Library** is selected, then click on the **Action** menu and select **Create task...**. The Create Task **General** tab should be displayed.

5. Enter a name for the task.

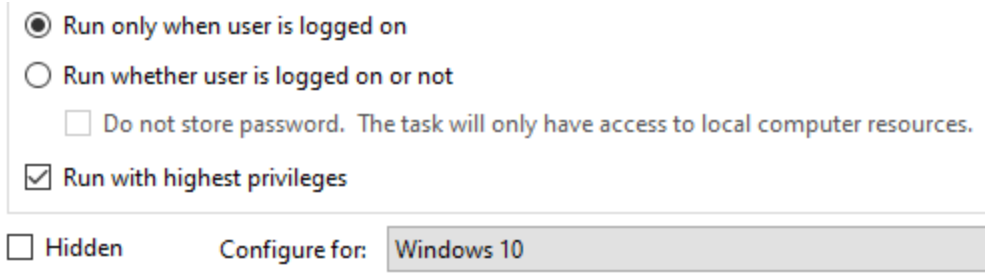



6. If you need to select a different administrator user for the task, click the **Change User or Group...** button.

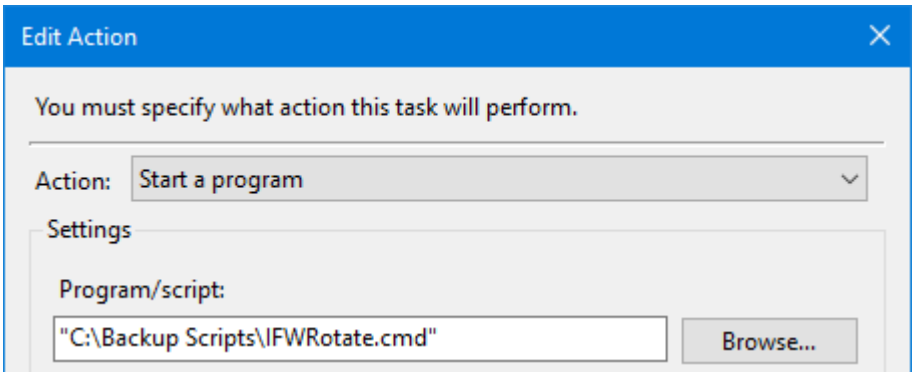



7. If you want to see the Image for Windows GUI when the task is run, select the **Run only when user is logged on** option. If you don't want to see the Image for Windows GUI when the task is run, select the **Run whether user is logged on or not** option. **Note:** Until you know the task runs correctly, it's recommended to use the first option.

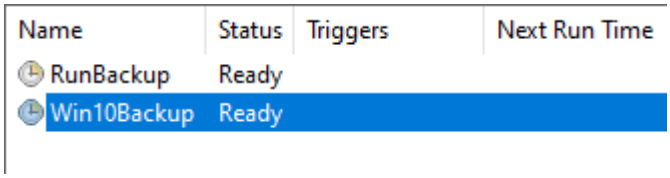
8. Select the **Run with highest privileges** option. **Note:** If you don't select this option, the task may not run correctly.




9. If setting up a schedule for the task, click the **Triggers** tab and setup the desired options. If running the task manually (via a Shortcut, for example), you can skip this step.
10. Click the **Actions** tab and then the **New...** button.
11. The default action **Start a program** should be selected. Click the **Browse** button, browse to the copy of the IFWRotate.cmd file you want to use, and click **OK**. Click **OK** again to close the window.




12. Configure any other task settings as desired and then click **OK** in the Create Task window to save the task.
13. The newly created task should show up in the list of tasks.

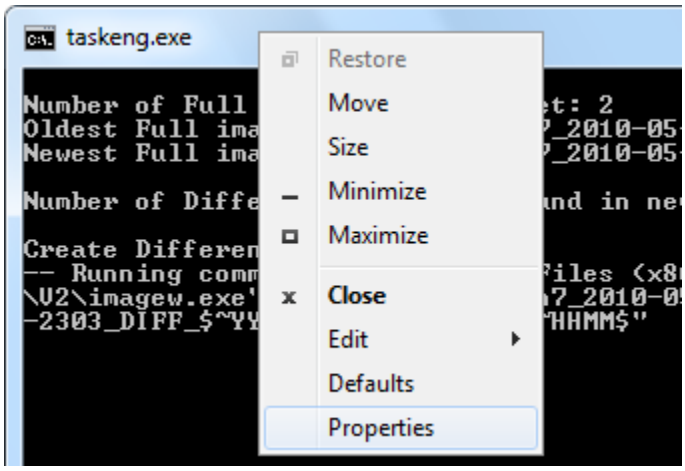



## Hiding the Command Prompt Window

When the task runs, depending on how the task is configured, you may see a **svchost.exe**, **taskeng.exe**, or **cmd.exe** window. If you don't want to see this window, you can move it almost completely off of the screen to hide it.

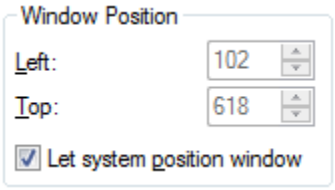
To do this:

1. Right-click on the title bar of the window when it's displayed and select **Properties** from the pop-up menu.

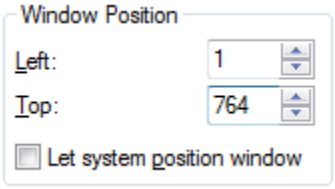



2. Click the **Layout** tab.

3. The **Window Position** box contains the settings you need to change.




4. Uncheck the **Let system position window** option.
5. Enter any valid horizontal value into the **Left:** box.
6. In the **Top:** box, enter the current vertical resolution minus four. This will place the window behind the taskbar and down as far as Windows will allow. For example, if your monitor is running at 1024x768, you would enter **1** for **Left** and **764** for **Top**. If you enter an invalid value, Windows won't move the window.




Windows won't let normally let you specify window position values that would place the window outside the currently set resolution values. However, in some cases, such as a dual monitor setup, Windows may allow you to position the window completely off the screen on one monitor as long as it's still within the resolution set for the monitor running the highest resolution. For example, if you have two monitors and one is running 1280x720 and the other is running 1024x768, Windows may allow you to set the position of **Left: 1** and **Top: 730** to completely move the window off the screen.

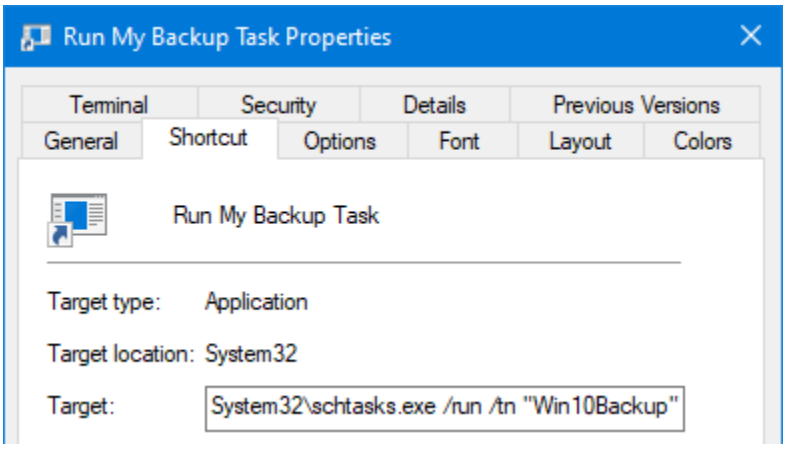
If you need to move the window back into a visible position, you can access its menu from the taskbar. Click on the window in the taskbar and press **Alt-Space**. You can also access the menu by right-clicking on the taskbar item or the thumbnail view.

## Creating a Shortcut to a Task

Though you can create a shortcut to a Windows XP task, there is little point if your task is to run the IFWRotate.cmd file since you could just as easily directly run the file or a shortcut to the file. However, in newer versions (Vista, Windows 7/8.x/10), creating a shortcut to the task is a way to avoid the UAC prompt from Image for Windows (appropriate privileges are saved in the task). Because of this, you may wish to create an unscheduled task just for this purpose. Note that you can run a scheduled task manually at any time so if you plan to schedule the task, there's most likely no reason to create two separate tasks.

1. Right-click where you want the shortcut (on the Desktop, for example).
2. Select **New >> Shortcut** from the pop-up menu.
3. Browse to **C:\Windows\System32\schtasks.exe**
4. Click **Next**.
5. Type in a name for the shortcut. For example: `Run My Backup Task`
6. Click **Finish**.
7. Right-click on the shortcut and select **Properties** from the pop-up menu.
8. In the **Target** box, add the following after a space at the end: `/run /tn "taskname"`
   **Note:** Replace "taskname" with the name you gave the task. Make sure to use the quotation marks if the name contains spaces.

   The entire line might look like this:
   `C:\Windows\System32\schtasks.exe /run /tn "Win10Backup"`



9. You may also want to select the **Run: Minimized** option. This will avoid the "flash" of the shortcut's Command Prompt window.

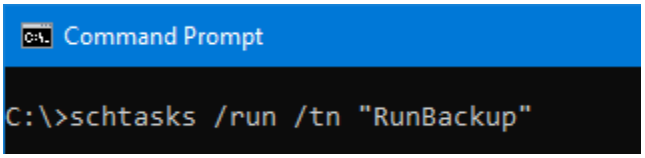

### Troubleshooting a Task

Current versions of Windows can be more problematic when it comes to task settings. Below are some tips on avoiding these problems:

- Make sure the task was created while logged into an Administrator account and setup to use an Administrator account. Don't use a standard user account to create the task.
- If you wish to see the Image for Windows GUI when IFWRotate runs it, make sure the task is setup using the **Run only when user is logged on** option. Selecting the **Run whether user is logged on or not** option will not display the GUI.
- Make sure the **Run with highest privileges** option is selected. If you don't select this option, the task will not be able to obtain the privileges necessary to run correctly.
- If launching the task from a shortcut or script file and you are unable to see if there are any errors being reported by Windows Task Scheduler, start a Command Prompt and run the task from the command line. This will allow you to see any reported errors.

  **Example:** `schtasks /run /tn "RunBackup"`

  In this example, RunBackup is the name of the backup task.




- If the task ends up "hung" in the background due to incorrect settings, you may see an error similar to the following:

```
INFO: scheduled task "RunBackup" is currently running.
SUCCESS: Attempted to run the scheduled task "RunBackup".
```

  If this happens, you will need to manually end the task (or kill the process) to reset it.

- After launching the task, if `imagew.exe` (or `imagew64.exe`) doesn't show up in the **Task Manager**, it didn't get started. Check the IFWRotate file and the task for any errors.

# Important Notes & Limitations

When using IFWRotate, please keep the following in mind:

## Split Images

IFWRotate can't handle split images (image backups that consist of multiple files). Don't use the Image for Windows "/max" option to split a backup into multiple files.

## Deletion of Backup Sets

The number of backups are counted before the new backup is created. If the new backup will make the count go over the maximum number specified, the oldest set of backup files will be deleted. This means that the oldest backup set will be deleted *before* the new backup is created.

For example, if `TBIMaxFullCnt` is set at `4` and there are four Full backups when you run IFWRotate, the oldest one will be deleted (leaving three). If the new Full backup fails due to an error, the next time IFWRotate is run, it will not delete another Full backup because the count is now less than four. IFWRotate will pick up where it left off and a new Full backup will be run.

**Note:** If the number of existing backup sets (Fulls or Fulls + Differentials) exceed the number specified, the older sets will be deleted when a new Full is created. This may result in multiple sets being deleted. For example, if you had a previous maximum of 7 and changed it to 3, the oldest backup sets will be deleted to bring the count down to the current maximum of 3 when a new Full is created.

## Multiple Backup Sets in One Folder

IFWRotate should not have problems with multiple backup sets being saved to the same folder as long as they each have a unique name (`TBIName` value). However, depending on the number of backup files being created for each set and the number of sets, you may find it easier if each set is saved to its own folder.

## Running Multiple IFWRotate Files

If you have configured multiple IFWRotate files (each with different names or in different folders) and want to run them one after another, you can create a batch file that calls each one.

For example, if you have created `BackupWin10.cmd` and `BackupData.cmd`, you would create a new CMD file using Windows Notepad (or other plain text editor) that contains the following (at a minimum):

```
call "e:\my backup scripts\backupwin10.cmd"
call "e:\my backup scripts\backupdata.cmd"
```

**Note:** Make sure to include the correct paths to the CMD files. If there are any spaces in either the path or the filename you must enclose it in quotation marks.

If all of your files are in one folder, you may find it easier to just "cd" into that folder:

```
@echo off
e:
cd "\my backup scripts"
```

```
call backupwin10.cmd
call backupdata.cmd
```

Name the new CMD file something relevant (like `RunAllBackups.cmd`) and save it. Now, when you want to run both backups, just run the `RunAllBackups.cmd` file.

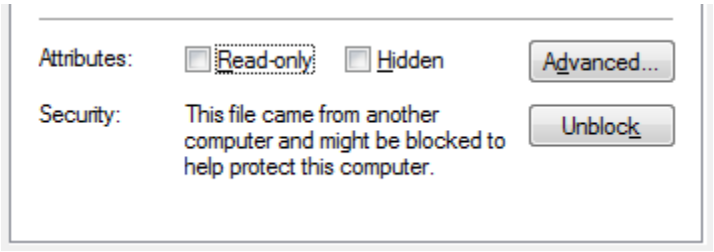
### Running IFWRotate Multiple Times in Quick Succession

Because IFWRotate uses the date and time filename options of Image for Windows, if you run IFWRotate in quick tests or to back up a small partition and then rerun it before a minute has passed, Image for Windows may prompt to delete the previous backup. This happens because the filename created by Image for Windows for the new backup is the same as the one created for the just previously run backup.

# Troubleshooting

### IFWRotate.cmd File Blocked

If IFWRotate.cmd (or any copy) is blocked by Windows security, it may not run correctly. This is especially true if being run from a task or other automatic method. To check if the file is blocked, browse to it in Explorer, right-click on it, and select **Properties** from the pop-up menu. On the **General** tab, look at the bottom of the window (just below the **Attributes** section) and see if there's a security message:




If the message is shown, there should also be an **Unblock** button. Click it to unblock the file.

### Backups not as Expected

- Verify that all the necessary variables in the IFWRotate file being used have been properly set.
- Make sure the paths specified don't end with a trailing backslash and don't contain quotation marks.
- If running the IFWRotate.cmd file (or a shortcut to it) directly from Explorer, try running a Command Prompt and running it from there. This will allow you to more easily view the output from the script (which may include an error message).
- Check the Image for Windows log file for any errors.

- If any of the unattended Image for Windows options are being used (/un, /uy, /ui, or /um), temporarily remove them so you can see the error message(s) presented by Image for Windows.