



EXFAT ON LINUX LAB

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Abstract

This lab demonstrates how to use the Tuxera exFAT driver for Linux to access and use the extended File Allocation Table (exFAT) file systems on Linux machines.

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Introduction

This lab explores various scenarios on how to install the Tuxera exFAT driver on a Linux machine and access exFAT file systems.

Business Scenario

The maximum file size that is supported on a FAT32 formatted drive is around 4 GB. The availability of cheap memory combined with DVD and high resolution DVD formats has necessitated in a demand for a next generation file system which can handle large files.

The exFAT file system is a new file system format that addresses these needs. The exFAT file system handles large files, such as those used for media storage, and it enables seamless interoperability between desktop computers and devices such as portable media devices. In this lab scenario, the Tuxera exFAT driver for Linux enables you to access and perform exFAT file system operations on a Linux machine.

Overview of exFAT

The exFAT file system is the successor to FAT32 in the FAT family of file systems. The exFAT file system addresses the growing needs of mobile personal storage on different operating systems. The exFAT file system handles large files and enables interoperability between desktop computers and devices such as portable media devices. This functionality allows you to easily copy files between the desktop and external devices or between the desktop and other operating systems.

The exFAT file system uses 64 bits to describe the file size. This feature enables applications to handle very large file sizes. The exFAT file system also allows for clusters as large as 32 MB, effectively enabling very large storage devices.

Some of the advantages of the exFAT system are:

- Enables the file system to handle volumes larger than 32 GB.
- Supports file sizes that are larger than 4 GB.
- Handles more than 1000 files in a single directory.
- Speeds up storage allocation processes.
- Provides an extensible format, including OEM-definable parameters to customize the file system for specific device characteristics.

Overview of Tuxera exFAT Driver

Tuxera, with headquarters in the United States and Finland, specializes in developing file system drivers. Microsoft has provided a license to Tuxera for the exFAT file system and has given access to the exFAT source code, verification tools, and specifications. Tuxera has already developed an exFAT driver for embedded systems, flash drives, and memory cards. The Tuxera exFAT driver for Linux enables applications to access and perform operations on exFAT file systems. Linux users will be able to access, transfer and process files saved on the exFAT file system.

Lab Scenarios

This IVA Lab consists of various scenarios that demonstrate how to use the exFAT file system driver for Linux to access exFAT file systems.

This lab scenario assumes the following system requirements:

- Linux 2.6.22 or higher version
- Intel 32-bit processor
- 1 MB disk space
- 16 MB of memory

Note: Tuxera exFAT can work as a pure kernel driver or in pure user space as the customer request. This lab is based on the user space solution

End User Experiences

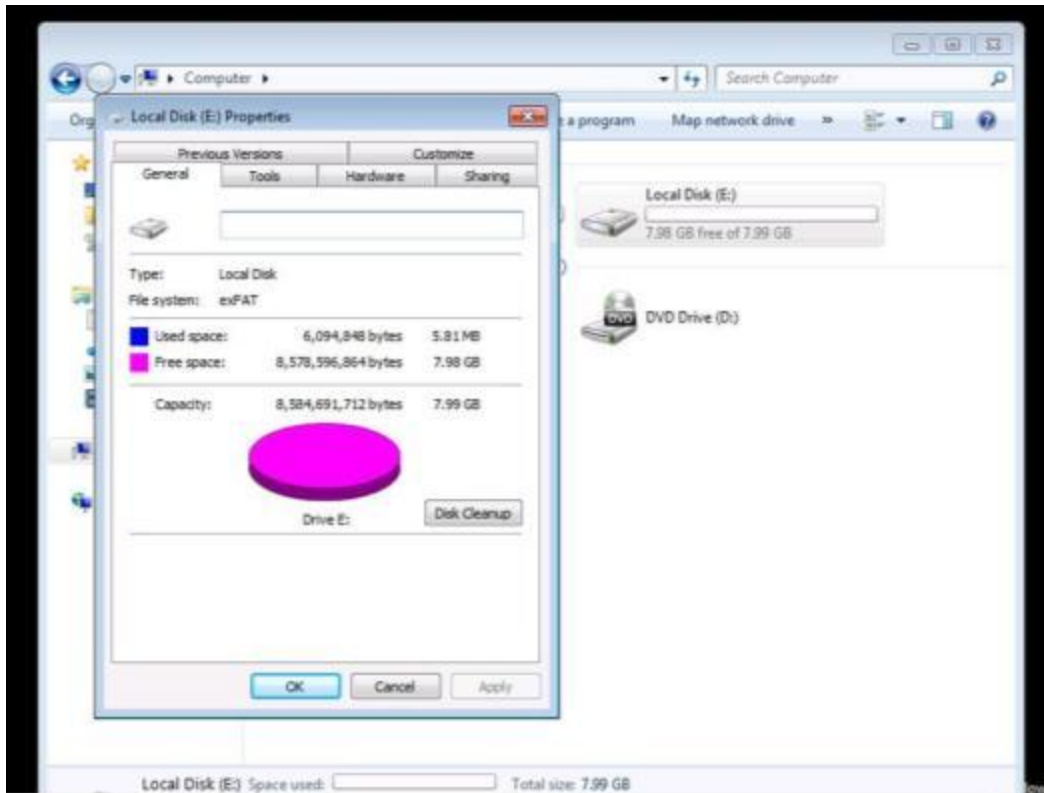
The Tuxera exFAT system driver for Linux allows you to share any type of file including large files of memory sizes greater than 4 GB, and any number of files between a Windows machine and a Linux machine. The exFAT file system allows you to handle file sizes greater than 4 GB and also handle directories containing more than 1000 files. This driver is useful if you want to copy a video file having a file size greater than 4 GB since the existing FAT 32 file system does not support large file sizes greater than 4 GB.

You can also use this driver if you need to copy a directory containing more than 1000 files. The exFAT file system also allows you to handle volume sizes of greater than 32 GB. You can now use USB drives having memory sizes greater 32 GB to transfer data between a Windows machine and a Linux machine.

Once the Tuxera exFAT system driver is installed in any Linux machine, you have to mount the exFAT file system formatted USB drive in the Linux machine. You can now access the USB drive and perform any operation.

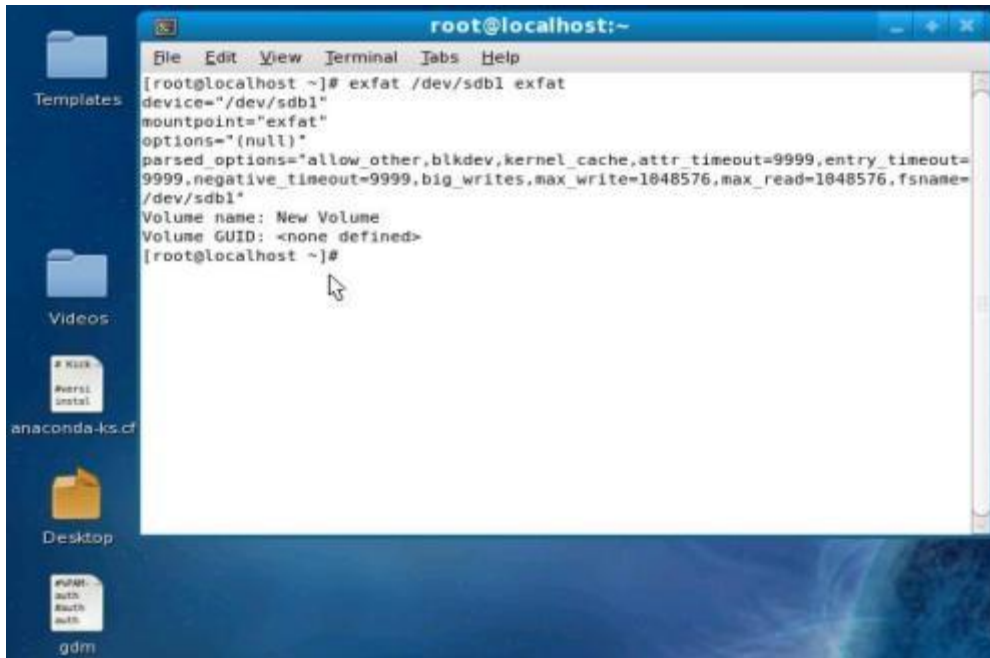
This lab scenario shows how to copy a collection of photos from a Windows 7 machine to a Linux machine using the exFAT file system. In this lab scenario, we show how a USB drive having a memory size of 8 GB and formatted with exFAT file system in Windows 7 is used to transfer data between a Windows 7 and a Linux machine. The prerequisite step in this lab scenario is to format the 8 GB USB drive using the exFAT file system in Windows 7 and copy a few photos into the USB drive. Then the USB drive is connected to the Linux machine so that we can perform operations on it.

This lab scenario assumes that the Tuxera exFAT system driver is already installed in the Linux machine as shown in Scenario 1.



To view the files in the USB drive with exFAT file system on a Linux machine, perform the following steps:

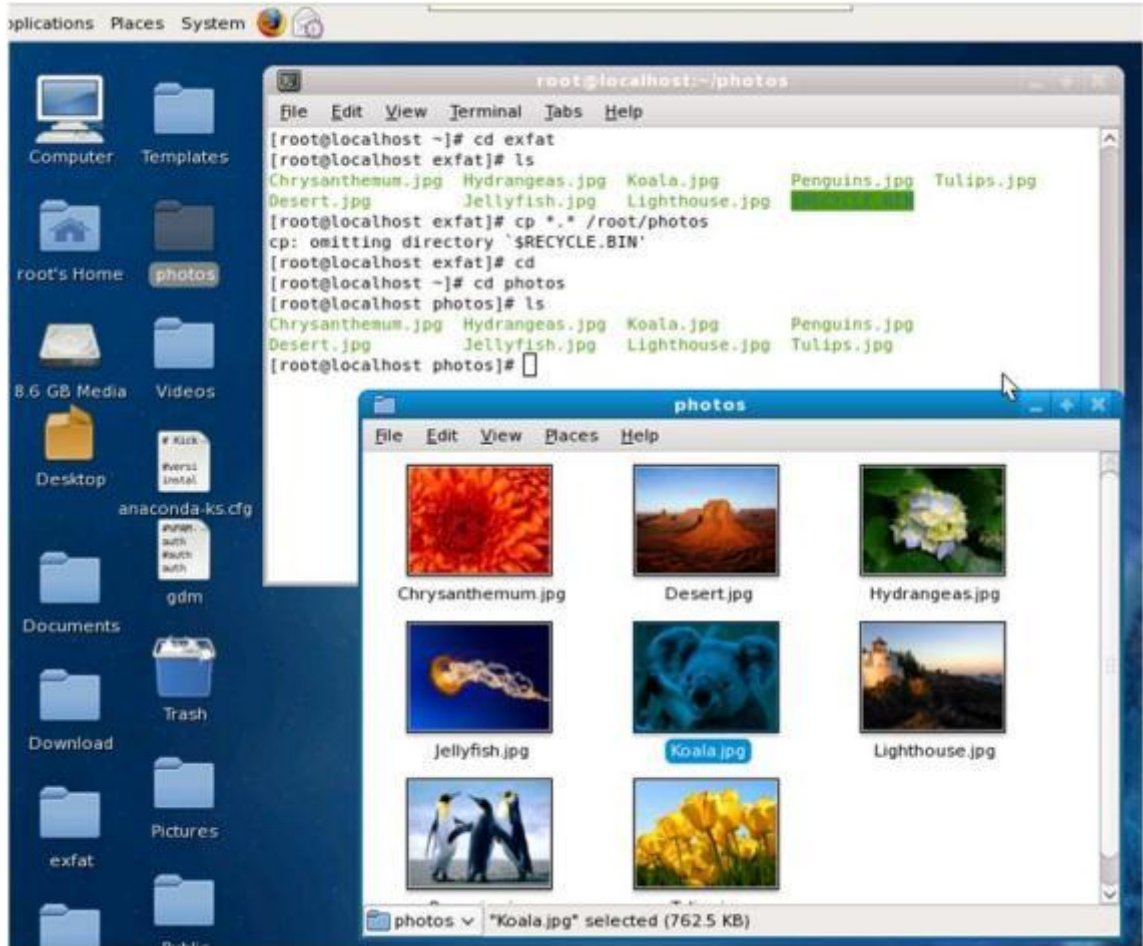
1. Connect the USB drive to the Linux machine.
2. Logon to the Linux system as a root user.
3. Start the command console window and go to the root directory.
4. Mount the USB drive using the *exfat device mountpoint* command.



5. Change the directory to that of the USB drive using the `cd` command.
6. Type `ls` command to view the list of files in the USB drive. The Linux operating system displays a list of file names of photos in the USB drive.
7. Use the `cp` command to transfer files from the USB drive to a folder in the Linux operating system. The Linux operating system copies the files from the USB drive to the specified folder.



8. Once the files are copied, the folder opens showing the files.



Installing Tuxera Driver for exFAT

This lab scenario shows how to install the Tuxera driver for exFAT on a Linux machine.

To install the Tuxera driver for exFAT on a Linux machine, perform the following steps:

1. Logon to the Linux system as a root user.
2. Start the command console window and go to the root directory.
3. Copy the Tuxera exFAT driver file into a directory which is included in the \$PATH environment variable.

For example:

```
tar czvf tuxera-exfat-version.tgz  
cd tuxera-exfat-version  
make install
```

The operating system can now use the Tuxera exFAT/U file system driver.

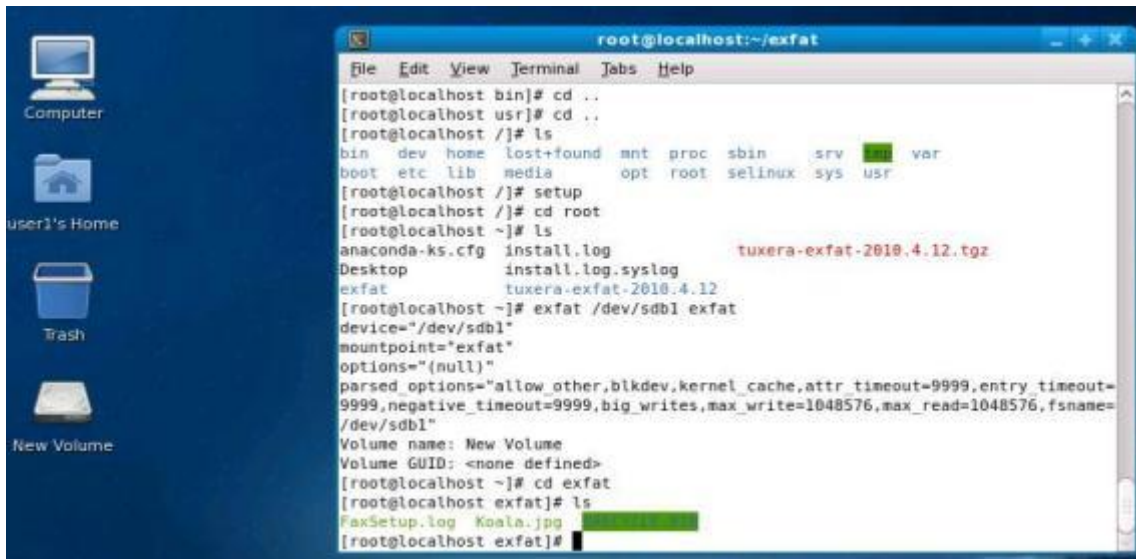
Mounting the exFAT Volume

This lab scenario shows how to mount an exFAT partition.

To mount an exFAT partition, perform the following steps:

1. Logon to the Linux system as a root user.
2. Start the command console window and go to the root directory.
3. Mount the exFAT partition using the following command:

```
mount -t exfat device mountpoint
```

A screenshot of a Linux desktop environment with a terminal window open. The terminal shows the following commands and output:

```
root@localhost:~/exfat
File Edit View Terminal Jobs Help
[root@localhost bin]# cd ..
[root@localhost usr]# cd ..
[root@localhost /]# ls
bin  dev  home  lost+found  mnt  proc  sbin  srv  var
boot  etc  lib  media  opt  root  selinux  sys  usr
[root@localhost /]# setup
[root@localhost /]# cd root
[root@localhost ~]# ls
anaconda-ks.cfg  install.log  tuxera-exfat-2018.4.12.tgz
Desktop          install.log.syslog
exfat            tuxera-exfat-2018.4.12
[root@localhost ~]# exfat /dev/sdb1 exfat
device="/dev/sdb1"
mountpoint="exfat"
options="(null)"
parsed options="allow_other,blkdev,kernel_cache,attr timeout=9999,entry timeout=
9999,negative_timeout=9999,big_writes,max_write=1048576,max_read=1048576,fsname=
/dev/sdb1"
Volume name: New Volume
Volume GUID: <none defined>
[root@localhost ~]# cd exfat
[root@localhost exfat]# ls
FaxSetup.log  Koala.jpg
[root@localhost exfat]#
```

Related Links

For more information on Interop Vendor Alliance, visit:

<http://www.interoperabilitybridges.com/>

For more information on, visit:

<http://interopvendoralliance.org/Labs.aspx>

For more information on exFAT format, visit:

<http://www.microsoft.com/about/legal/en/us/IntellectualProperty/PLicensing/Programs/exFATFileSystem.aspx>

For more information on Tuxera, visit:

<http://www.tuxera.com/>

The Interop Vendor Alliance

The Interop Vendor Alliance is an industry group working to identify and share opportunities to better connect people, data, and diverse systems through better interoperability with Microsoft systems and to jointly market the interoperability solutions of its members.

The organization serves as a collaborative forum for developing and sharing common technology models, facilitating scenario-based testing of multivendor solutions, and communicating additional best practices to customers and partners.

Since its formation in 2006, alliance membership has more than doubled as the IVA has developed multiple interoperability labs, including System Management, Centralized Directory, Federated Identity, Content Management, and Open XML.

You can learn more by visiting <http://interopvendoralliance.com/>.

A screenshot of the Interop Vendor Alliance website. The header features the logo on the left, a search bar and RSS 2.0 icon on the right, and a navigation menu with links for HOME, ABOUT, EVENTS, INTEROP LABS, and MEMBER DIRECTORY. The main content area has a large banner with the text "Working Together Toward Interoperable Solutions" and a sub-headline "The Interop Vendor Alliance is a community of software and hardware vendors working together to enhance interoperability with Microsoft Systems." Below this is a "News" section with a link to "Weston Software, Inc. announces support for Microsoft Windows 7" dated 7/30/07/2009. At the bottom, there are three columns: "Interop Labs" with a link to "Federated Identity Lab" dated 10/01/2007, "Member Solutions" with a link to "Centrify Joins Microsoft..." dated 31/03/2009, and "Upcoming Events" with the text "New events are coming, covering various topics. Stay tuned." and a link to "More Events".

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