How do I... Add storage to a PC or workgroup network?

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Takeaway

Follow the steps in this How Do I… to ensure the smooth introduction of an additional hard disk on a peer-to-peer workgroup.

Add storage

Hard disks are like closets. When you're shopping for a home or apartment, the empty closets look gargantuan. The same is true when shopping for a new business PC. That 80GB hard disk you bought two years ago was massive; you likely believed it possessed sufficient storage for the foreseeable future. But just like closets, hard disks soon begin busting at the seams, full to overflowing with items you or others can't bear to delete.

Adding storage to a PC or peer-to-peer workgroup system is one of the more basic IT tasks you can complete. Still, there are several important steps and it's easy to overlook one, particularly if you're distracted in the process. Follow these steps to ensure the smooth introduction of an additional hard disk on a peer-to-peer workgroup.

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Hard Disk Selection

The first step is considering whether you will add an external USB or internal hard disk to the system. An external hard disk's greatest benefit is likely its ease of installation. Internal disks, meanwhile, typically cost less and provide better performance.

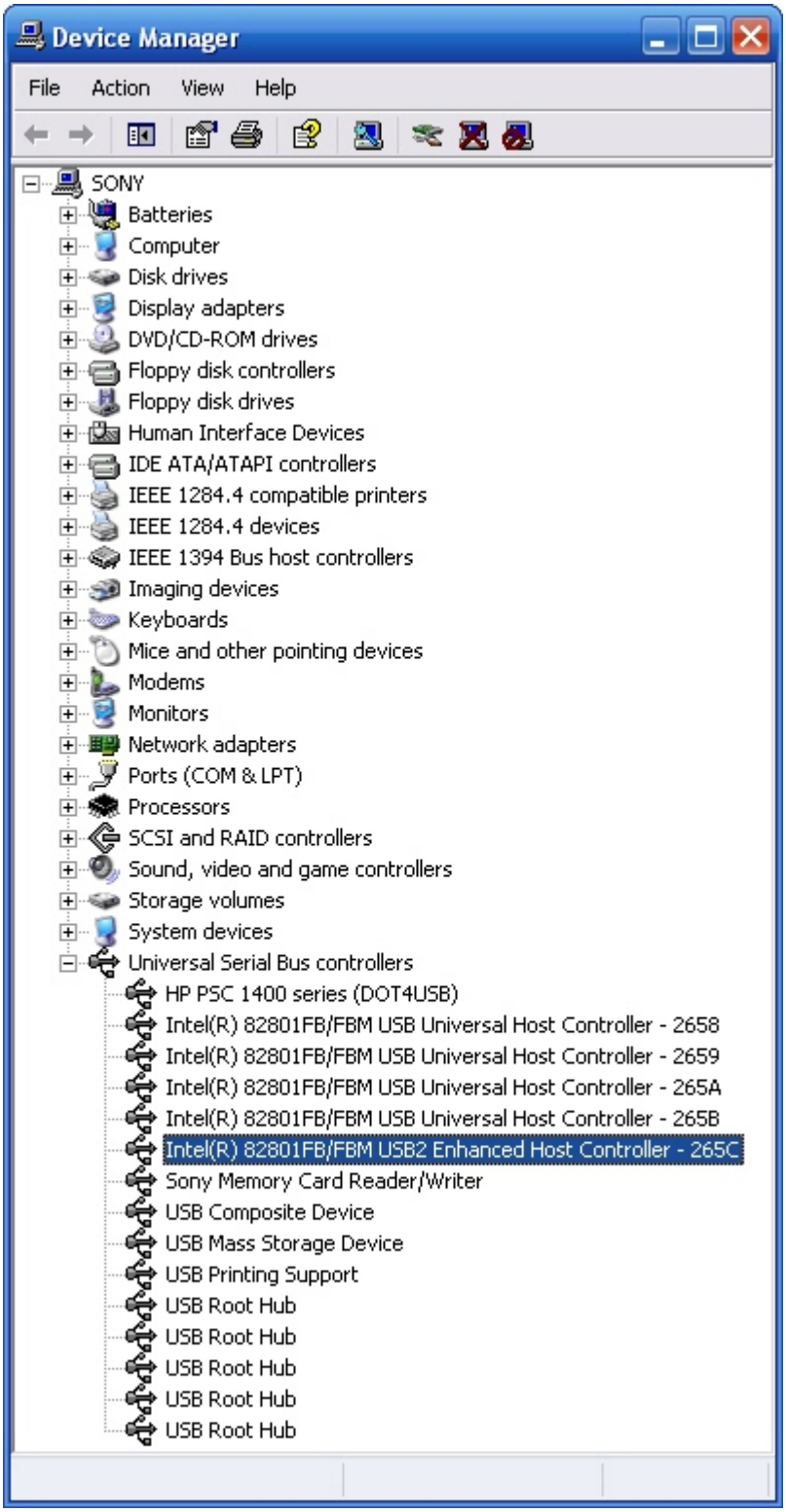
External

If you're leaning toward an external USB drive, verify the system supports USB 2.0. Trying to move large amounts of data between an external drive and a desktop (or laptop) will prove an exercise of frustration using a connection less than USB 2.0. To confirm a PC supports USB 2.0 data transfer rates:

- Click Start.
- Right-click My Computer.
- Select Properties.
- Click Device Manager.
- Expand the Universal Serial Bus entry.
- Look for an "enhanced" controller.

Systems boasting an enhanced controller entry likely support the USB 2.0 standard. If you do not see an enhanced controller present, the system likely doesn't support USB 2.0. Limit your hard disk expansion considerations to internal disks only on systems not supporting USB 2.0.

Figure A



Confirm a system supports the USB 2.0 standard before opting for an external hard disk installation. Here you can see this system possesses an enhanced Intel USB controller.

Internal

When you choose to add an internal disk, confirm the answer to these questions before purchasing an additional internal hard disk drive:

- Does the system use IDE, SCSI or SATA hard disks?
- Is an IDE/SCSI/SATA controller present?
- Is a HDD power supply cable available?
- Is a three-and-a-half inch bay available to physically hold the hard disk?

Once you've answered these questions, and purchased any required cables, you're ready to move forward with the actual installation.

External hard disk installation

Windows XP consistently identifies and installs USB-attached hard drives automatically. Typically the process is simple and straightforward:

- Plug the external hard disk's power supply into a functioning electrical outlet and ensure the other end is seated properly within the hard drive enclosure.
- Connect the external drive to the PC using a USB cable.
- Windows XP almost always auto detects the new drive and displays an informational balloon in the System Tray. Upon completing, the new disk will be ready for use by the local PC.
- If the system doesn't automatically detect the drive, disconnect and reconnect the USB cable; when Windows detects the disk, it will appear as an available resource within My Computer and Windows Explorer.

Figure B

Windows should automatically detect and install most every external USB hard disk sold by major manufacturers today.

Once Windows identifies the drive, all that remains is to share it out and begin using it. Proceed to the Configuring Network Use section if you're adding an external hard disk to a workgroup system.

However, if you're working with a new internal hard disk, additional work remains. The required steps are described in the next section.

Internal HDD installation

Installing an internal disk is more complicated:

- First you must crack open the case (typically all you need to do is firmly press quick access tabs found on Compaqs, HPs and many Dells, while other systems require that you remove thumb or Phillips screws from the machine's rear).
- Confirm the disk's jumper settings are set properly (typically jumper settings are displayed on the disk's label, although on occasion you may have to resort to reviewing a disk's documentation on its manufacturer's Web site). Disks meant to serve as additional storage space should be configured as slaves; disks meant to host a PC's default operating system should be configured as Masters.
- Identify an available bay and install the hard disk (being sure to secure it with at least a screw on each side and preferably two screws per side).
- Connect the power supply cable.
- Connect the data cable (SCSI disks commonly use connectors wider than IDE ribbon cables, while SATA disks use thin strap-like cables).
- Close and secure the case and power it up.
- Display the BIOS screen by depressing the appropriate key (often the Delete, ESC or a function key) while the system restarts to confirm the system's BIOS is set to automatically detect the drive (and confirm the BIOS recognizes the new disk), then reboot.

Figure C

The jumper settings for this Maxtor drive are displayed on the bottom right of its label.

Figure D

Jumpers are physically configured on the rear of an IDE hard disk, as shown here circled in red.

Figure E

IDE ribbon cables long dominated most Windows PC deployments, but they're rapidly being replaced by SATA drives that use equally flat but much less wide data cables.

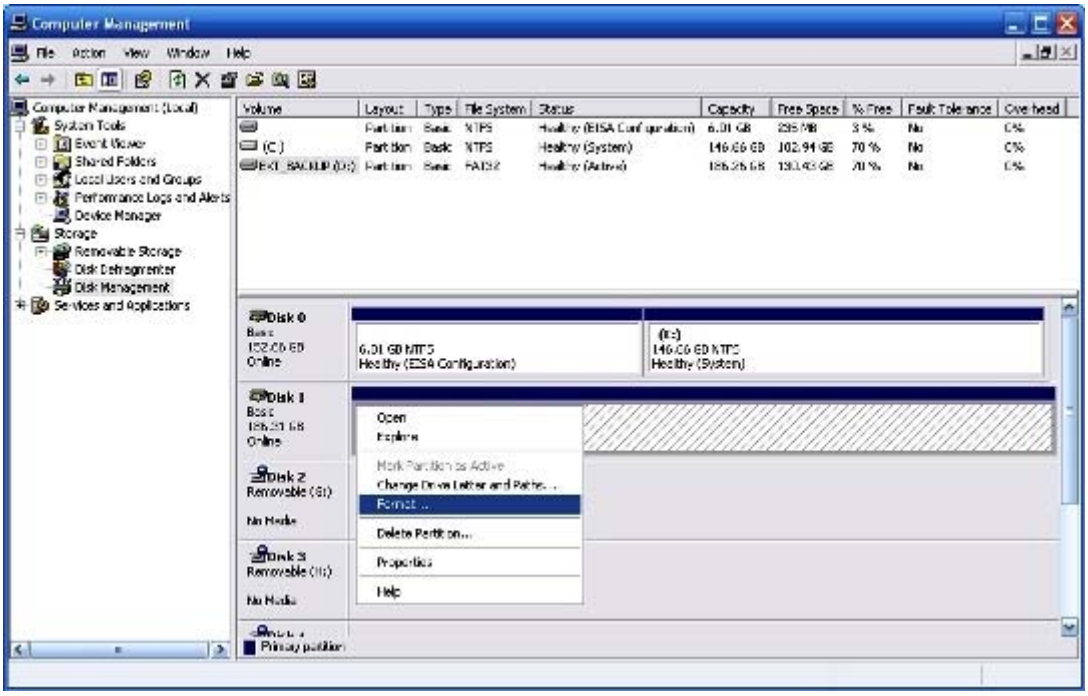
In most cases, Windows automatically recognizes IDE disks that possess properly configured jumpers. When using SATA disks, however, I've found I often must enter Windows' Computer Management console to complete the disk's addition to the system. To do so, ensure you log on using an account possessing administrative rights and:

- Click Start.
- Select All Programs.
- Click Administrative Tools (if Administrative Tools isn't present as an option, right-click the Windows Task Bar and select Properties, click the Start menu tab, click the Customize button, highlight the Advanced tab, and within the Start Menu Items window select the radio button beneath System Administrative Tools that reads Display On The All Programs Menu).
- Click Computer Management.
- Highlight Disk Management in the left pane.
- Right-click the new disk within the right pane and click Initialize Disk.

The next step is to format the disk. Windows usually presents a New Partition Wizard, which will walk you through completing the installation process (including formatting). If the wizard is canceled, or if you wish to change the partition formatting later, you can do so by:

- Opening Computer Management (as explained above).
- In the right pane, right-clicking the disk you wish to configure.
- Selecting Format from the pop-up menu.

Figure F



Windows' New Partition Wizard will walk you through the process of setting up a new, secondary hard drive. If the wizard doesn't complete or if you wish to change the disk's formatting, use the Computer Management console (shown here) to configure the new hard drive.

Once you've added the new hard disk drive, and the disk is enabled for use with Windows, it's almost ready to hold data.

Configuring Network Use

If you don't intend for other users to store or access data on the new hard drive, your work is essentially done. But if you enable the new hard disk for use on a peer-to-peer network, you must configure permissions for other users.

To share the new hard drive, I recommend first creating a data folder. Do so by:

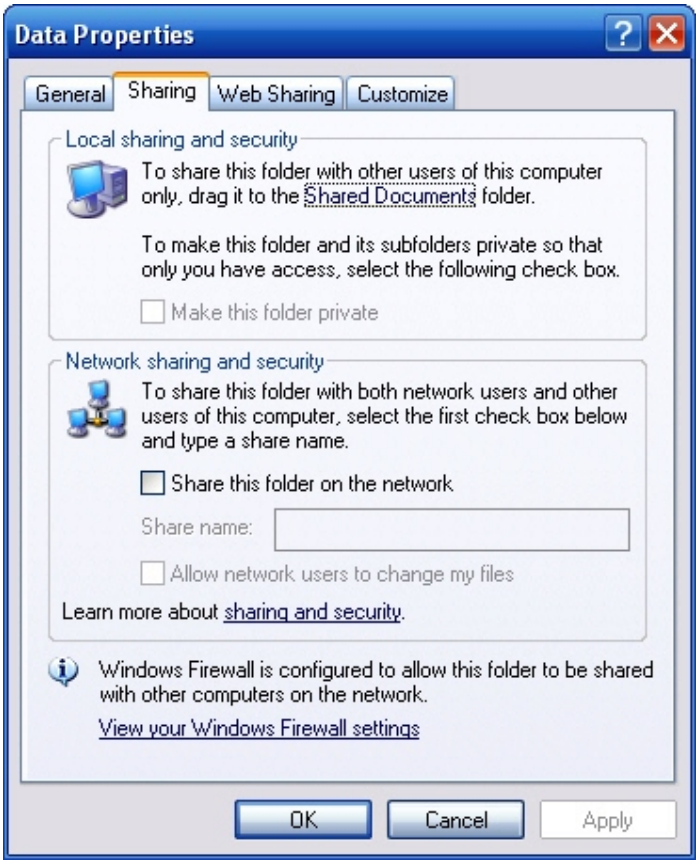
- Double-clicking the drive within My Computer.
- Right-clicking an empty space within the resulting window and clicking New.
- Selecting Folder and entering a name (such as Data) for the new file share.

Now that a parent folder's been configured, all that remains is to configure the folder for use on the network. To do so using Windows default Simple File Sharing configuration, simply:

- Right-click the new folder and select Sharing And Security.
- Highlight the Sharing tab.
- Check the Share This Folder On The Network box.
- Check the Allow Network Users To Change My Files box (if you wish to enable network users to create or edit new files within the file share).
- Click OK.

The operation will complete and the folder icon will update to include a hand holding it, indicating the folder is being shared.

Figure G



Sharing files within a workgroup is simple using Windows XP; just right-click a folder and select the appropriate options within the Network Sharing And Security section.

You can cancel sharing at any time by right-clicking the folder from within My Computer or Windows Explorer and unchecking the Share This Folder On The Network box and clicking OK.

To turn off Windows' Simple File Sharing – which enables providing more granular control of shared resources:

- Open My Computer (either from the Windows desktop or by clicking Start | My Computer.
- Click the Tools menu.
- Select Folder Options.
- Highlight the View tab.
- Scroll down to the Use Simple File Sharing (Recommended) setting within the Advanced Settings window and uncheck it.
- Click OK.

With Simple File Sharing turned off, administrators can supply more specific rights and permissions to resources, thereby gaining greater control over those resources. To configure more granular permissions with Simple File Sharing disabled:

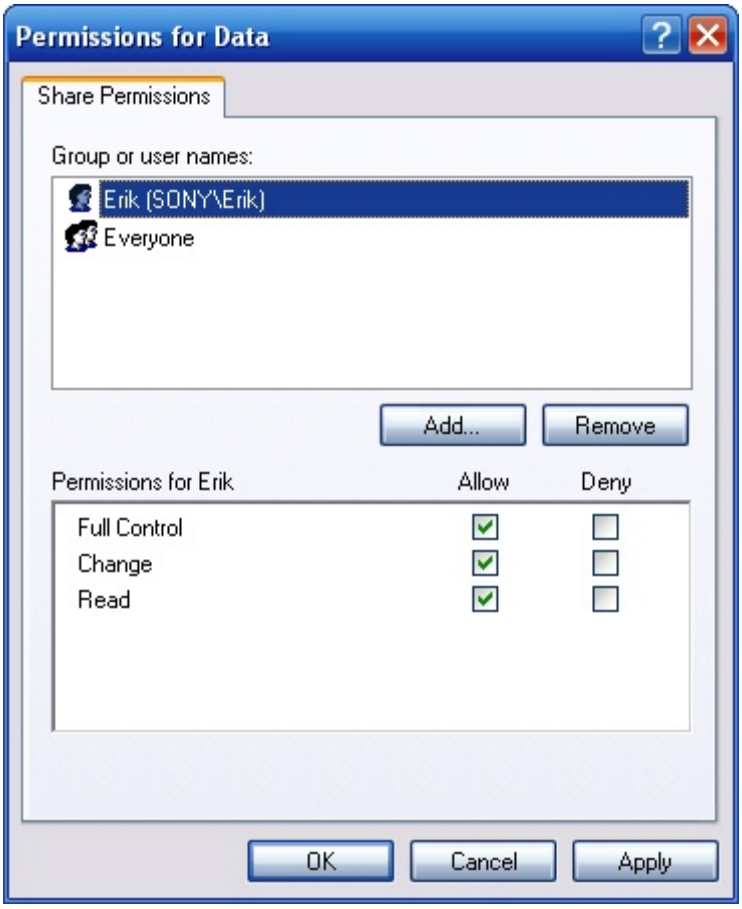
- Within My Computer, right-click the resource you wish to administer.
- Select Sharing And Security.
- The resource's Properties menu will appear; select the Share This Folder radio button.
- Edit the Share Name, if required.
- Enter any Comment you wish users to see when accessing the share.
- Specify a maximum number of users.
- Click the Permissions button to specify user rights; by default the Everyone group is given Read access.
- Add or Remove other users or groups using the Permissions' menu's Add and Remove buttons.
- Highlight users and groups within the Group Or User Names window and specify the corresponding permissions they should receive within the Permissions For window.
- Click OK to close the Permissions window.

1. Click OK to close the share's Properties window.

Figure H

Additional configuration options become available when Windows' Simple File Sharing feature is disabled.

Figure I



Administrators can enter specific permissions for users and groups using the Permissions window reached by right-clicking a resource within My Computer and selecting Sharing and Security.

Stop gap solutions

Ultimately, adding an external hard disk can bail you, users or an organization out of a temporary crisis. Once the dust settles, however, I always try circling back to determine if additional changes, upgrades or a new system are required. The chances are that, if a user, department or client has outgrown data storage capacities on a system, the system in question is likely being outgrown too.

Additional resources

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Version history

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