How I use Syncthing to keep my files safe?
As ususal – your feedback / comments are key...

Syncthing Background

- Continuous file synchronization program
- Synchronizes files between two or more computers
- Data is your data alone and you deserve to choose where it is stored, if it is shared with some third party and how it's transmitted over the internet.

- **Private**. None of your data is ever stored anywhere else other than on your computers. There is no central server that might be compromised, legally or illegally.
- **Encrypted**. All communication is secured using TLS.
- **Authenticated**. Every node is identified by a strong cryptographic certificate. Only nodes you have explicitly allowed can connect to your cluster.

Source: Syncthing Home Page

Why I Chose Syncthing

- Open Source (maintained on volunteer basis, community involvement ~ including as a user you aren't just a consumer, you could view yourself as a contributor and approach problems/support with that mentality.
- Easy to install and configure (Complexity depends on you😎)
- Enabled me to set up my own NAS using a 'broken' laptop and JBOD
- Supportive and Active User Forum as well as Product Development

- **Web GUI.** Configure and monitor Syncthing via a responsive and powerful interface accessible via your browser.
- **Portable**. Works on Mac OS X, Windows, Linux, FreeBSD, Solaris OpenBSD and Android. Run it on your desktop computers and synchronize them with your server for backup.
- **Simple**. Syncthing doesn't need IP addresses or advanced configuration: it just works, over LAN and over the Internet. Every machine is identified by an ID.
- **Powerful**. Synchronize as many folders as you need with different people.

Source: Syncthing Home Page

Installing Syncthing

- I use Debian (Stable) ~ Syncthing V 1.0 is available
  in the Main Debian Repository

- If you prefer not to follow the Debian (Stable) release cycle
  Version 1.3 today vs Version 1.0 in Debian Repo

  You could add the Syncthing Repository to remain current
  [Link: Debian Packages]

- Refer to the 'Getting Started' Guide for details

  Link: Getting Started Guide
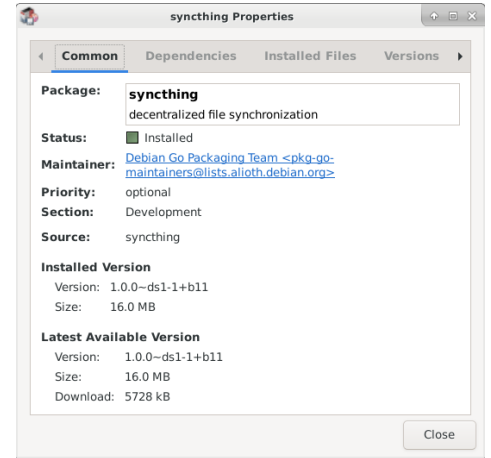
Syncthing – Types of Sync

- Send and Receive

  This is the standard folder type. Under this setting, a folder will both send changes to and receive changes from remote devices.

- Send Only

  The intention is for this to be used on devices where a "master copy" of files are kept - where the files are not expected to be changed on other devices or where such changes would be undesirable.

- Receive Only

  The receive only folder is the logical opposite of the send only folder. In this mode, all changes from the cluster are applied and redistributed to other devices, as they are in the default send-receive mode. Local changes are however not distributed to other devices. This mode is useful for replication mirrors, backup destinations, or other cases where no local modifications are expected or allowed.

  Source: Folder Types
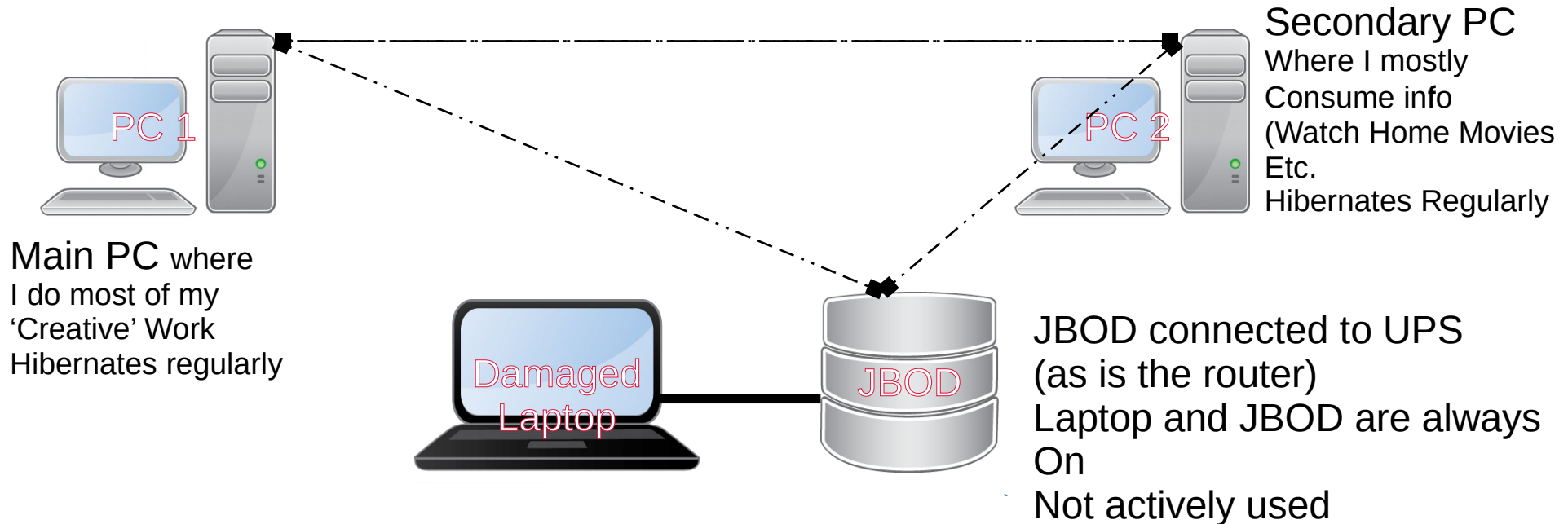
Syncthing – Security

- Based on Device ID / Folder ID

  - Devices are added to the shared network based on their respective Ids

  - The device ID is used for address resolution, authentication and authorization.The device ID is used for address resolution, authentication and authorization. [Understanding Device IDs]

  - Folders are assigned an ID which is used to uniquely identify them [Folder ID Usage]

  - Both Devices need to be willing to share ~ confirmation

- Uses Peer to Peer Protocol for Sharing (Clustering)

  - Devices connected via Syncthing (peers) are connected directly to each other (except in situations where direct connection isn't possible – *relay servers ~ if enabled*)
  - Files are divided into blocks (depending on file size – minimum size 128 KiB, except the last one which may be smaller)
  - Each file is sliced into a number of these blocks ~ SHA256 hash of each block is computed ~ block list containing the offset, size and hash of all blocks in the file.
  - Two methods how Syncthing detects changes: By regular full scans and by notifications received from the filesystem ("watcher"). By default the watcher is enabled and full scans are done once per hour. [Understanding Sync]

Syncthing – Security

- Encrypted Transmission
  - Files are encrypted during transmission [Security Principles]
  - Initial handshake between the Device and Discovery / Relay Servers is encrypted too

- Discovery Servers / Relay Servers
  - Discovery Servers help connect Devices that aren't on the same network
  - Transmission of Device ID / IP Address to the Discovery Servers is encrypted ~ Discovery Server knows your Device ID and IP Address [Discovery Servers]
  - Relay Servers are used to help transmit data if 2 Devices cannot be connected directly due to intricate NATs etc. Transimission using relays is slow.
  - Packets transferred via Relay Servers are encrypted ~ Relay Server know your Device ID and IP Address [Relay Servers]
  Can be disabled if sharing is done 'locally' only [Local Discovery] or you can set up your own relay server [Syncthing Relay Server]

- File / Folder Permissions
  - What is Synchronized {File Contents, File Modification Times}
- - What is not Synchronized {File or Directory Owners and Groups (not preserved) Directory Modification Times (not preserved)} [What is Sync'd]
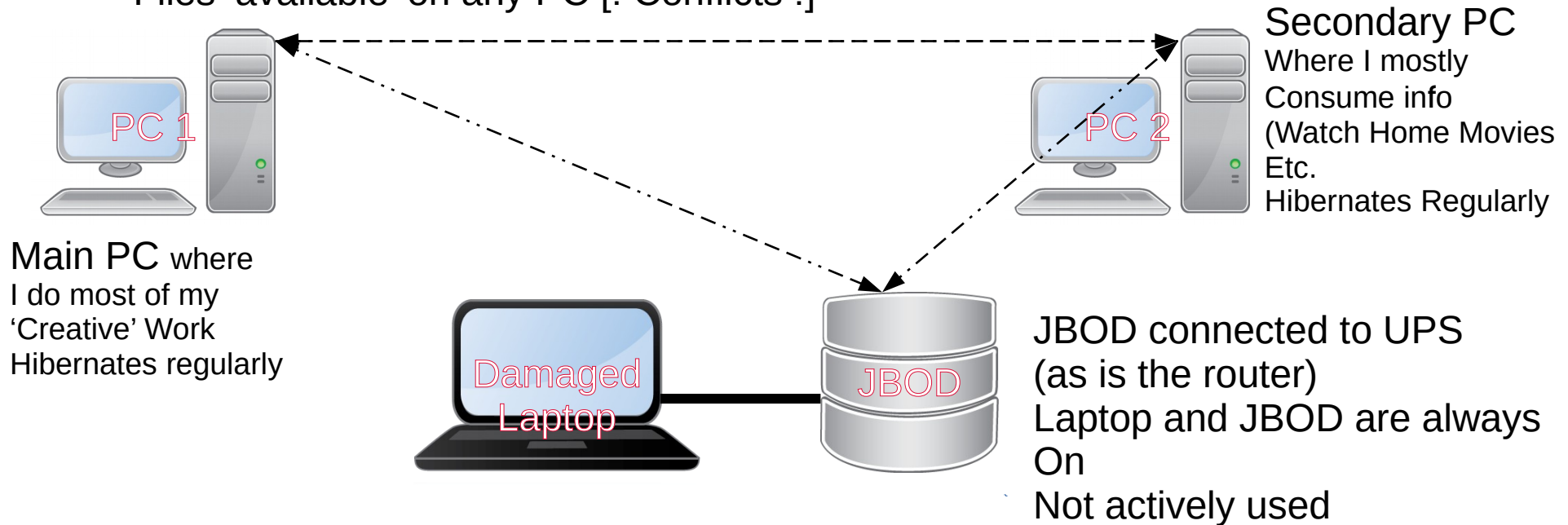
My Syncthing 'Universe'

- I use Syncthing to keep folders on 3 separate machines in Sync
- All Machines run Debian (Stable) and are on the same Subnet / LAN

PC 1

PC 2

Secondary PC
Where I mostly
Consume info
(Watch Home Movies
Etc.
Hibernates Regularly

Main PC where
I do most of my
'Creative' Work
Hibernates regularly

Damaged
Laptop

JBOD

JBOD connected to UPS
(as is the router)
Laptop and JBOD are always
On
Not actively used

Steve Gibson (Security Now) selected Syncthing as a preferred sync tool
[Based on User Story posted by Syncthing User] and [Steve Gibson's tweet]
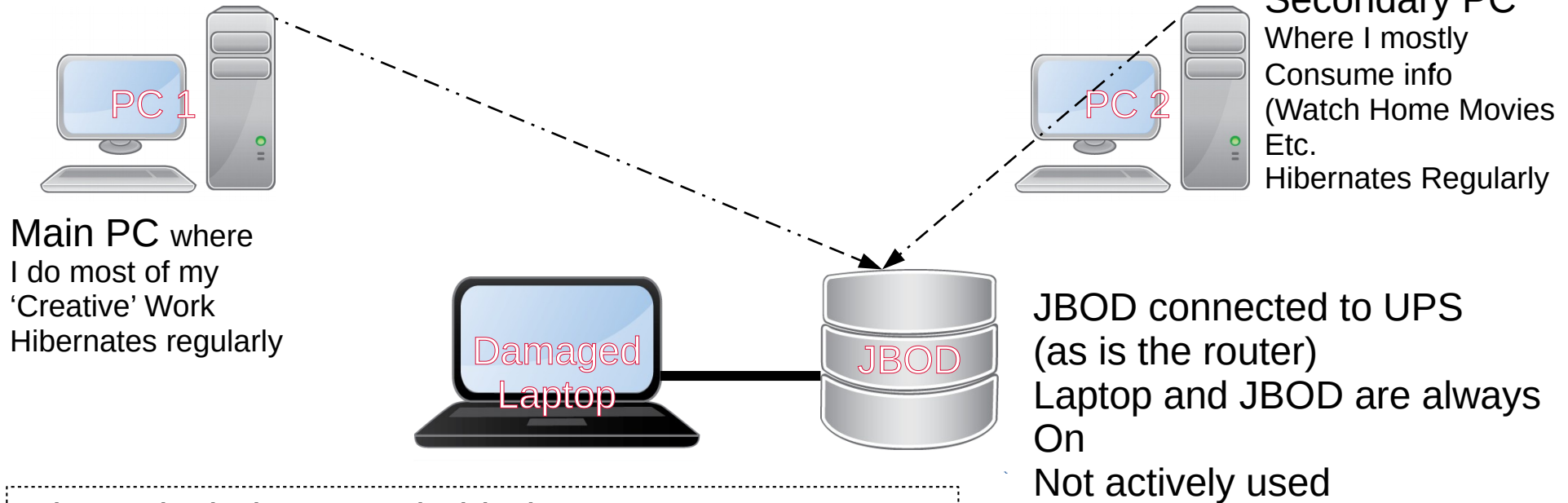
My Syncthing 'Universe'

- 2 Way Sync ~ Photograps / Home Video / Documents
  Files 'available' on any PC [! Conflicts !]

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Syncthing Manages conflicts by renaming the 'older' file
[What if there's a conflict]. The renamed file will be sync'd going forward untill 'dealt with'.

My Syncthing 'Universe'

- 1 Way Sync ~ Home Folder excluding Documents / Pictures
  Serves as a configuration backup ~ in case of disk failure

PC 1

PC 2

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*Plan to include my Android Phone soon
Back up Photographs etc. [Community Contributions]*

Recap - Why I like Syncthing

- Easy to Install
  I have Debian Installed and Syncthing is available in the native Debian
  Repositories (Version 1.0 in Debian 10 Stable)

- Intuitive Interface

  Syncthing configuration can be managed using a Web Interface
  Configuration Options are fairly intuitive

- Helpful Documentation
  The project has created fairly extensive documentation which the team and
  contributors keep updated

- Excellent Forum
  The success of any project is enhanced by an active and helpful forum.
  Syncthing forum has these qualities that makes troubleshooting a breeze