

uBOX

The background features a stylized world map in light blue. Overlaid on the map are several glowing white nodes, some with radiating lines, suggesting a global network or cloud computing architecture. In the foreground, three dark-colored laptops are arranged in a triangular formation, each with a bright white glow emanating from its screen, further emphasizing the theme of connectivity and data exchange.

Yuval Alfassi

Ilan Godik

Nowadays Cloud Services



Google Drive



Dropbox

- Size Limitations
- Server failures and DDoS vulnerability



The Solution - uBox



- Server failures
- Size limitation

U

- Peer to peer
- No central server
- Torrent like protocol



Technique



Windows
Explorer

User

Peer to
peer

User Experience



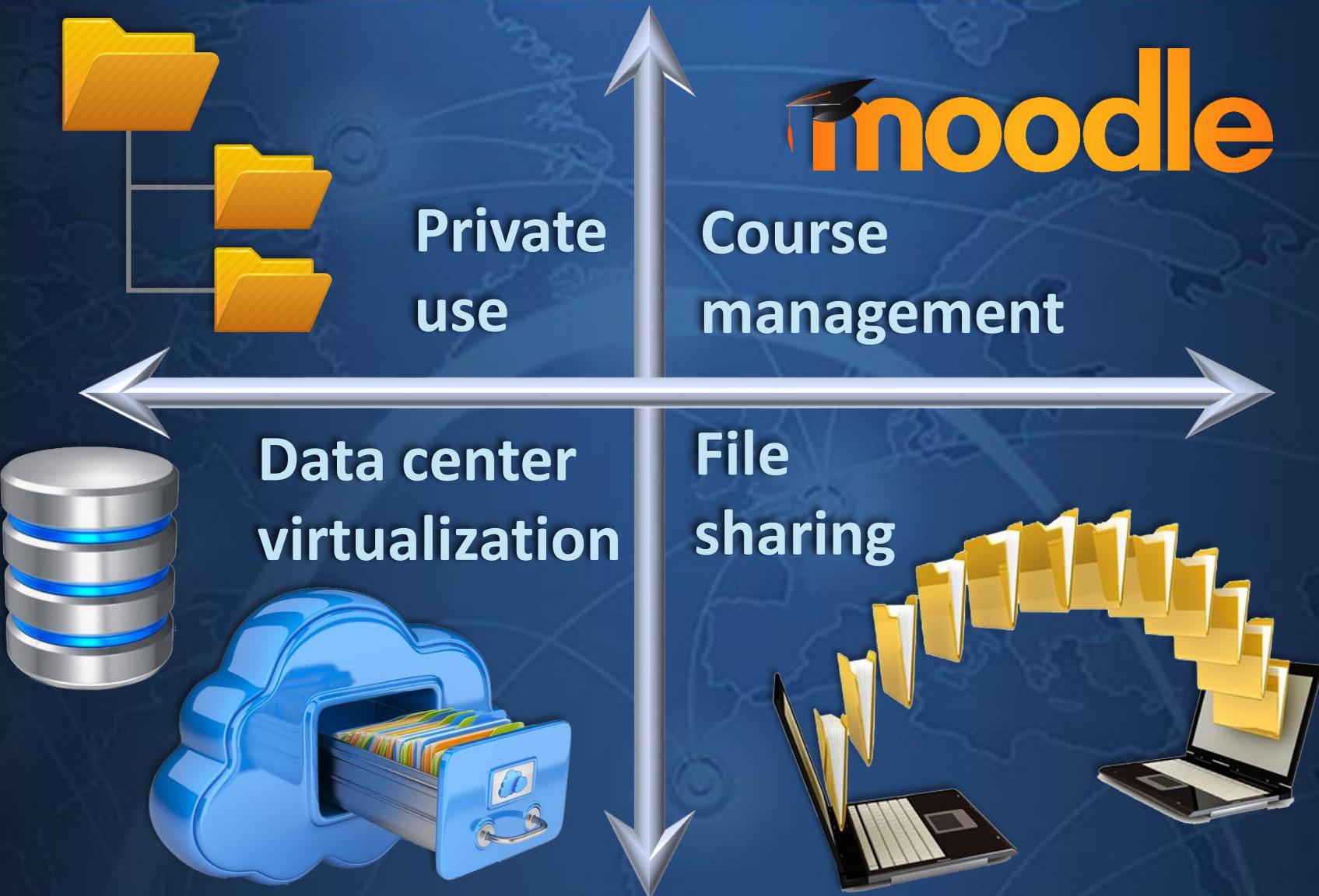
Windows
explorer drive



Taskbar icon

Can follow or
clone other drives

Possible Usages



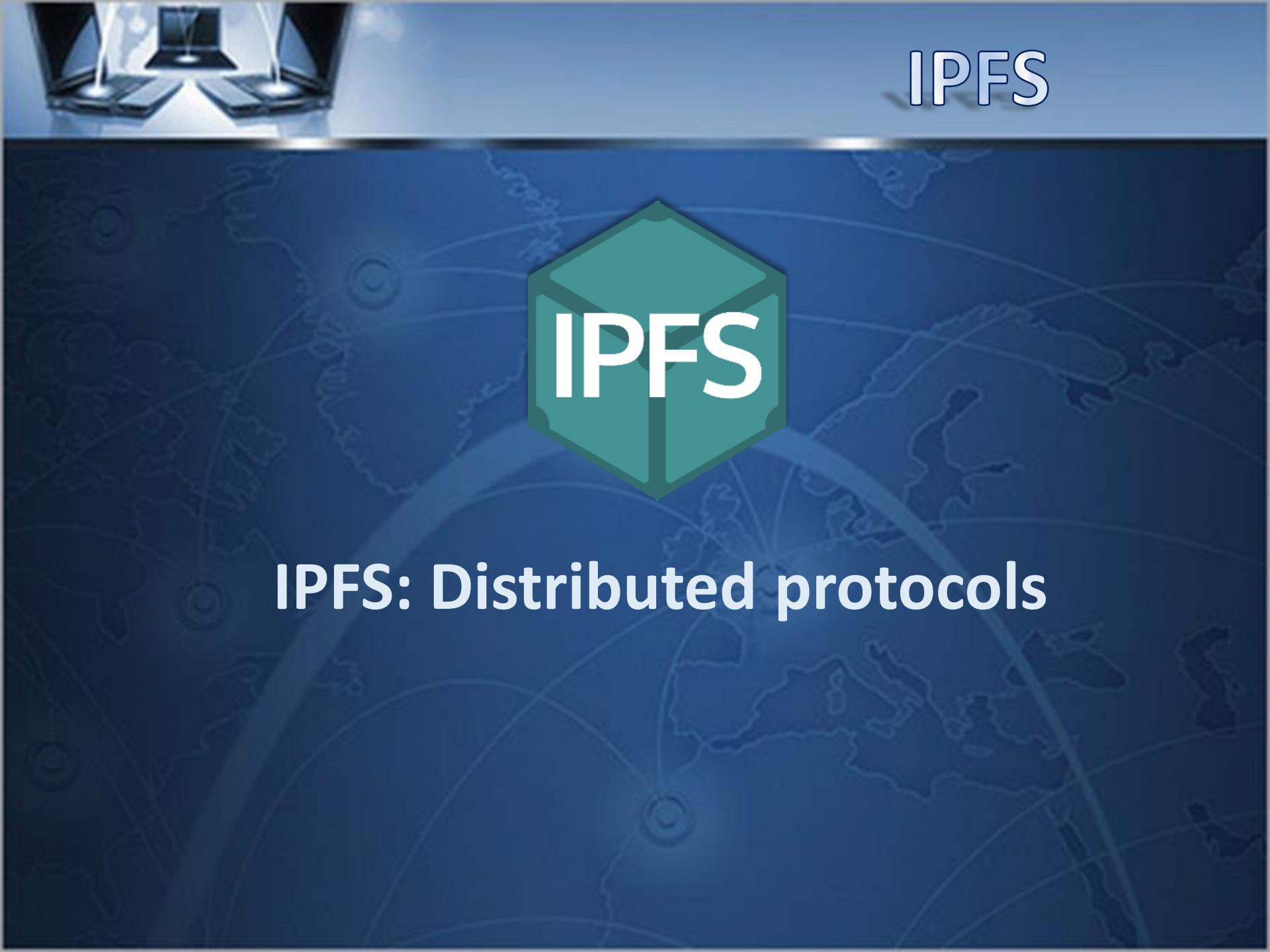
Challenges

Concurrency
Race Conditions

Undebuggable
code

Registry
Manipulations



The background of the slide features a blue gradient at the top transitioning into a dark blue globe. On the globe, faint white lines represent latitude and longitude, and a network of small circles indicates global connectivity. In the top left corner, there is a photograph of three laptops (two silver and one black) standing upright on a light-colored desk.

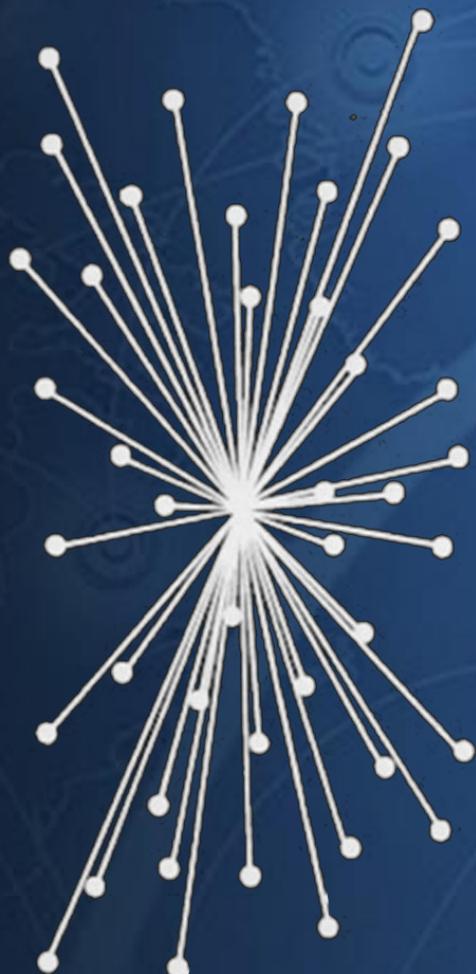
IPFS



IPFS: Distributed protocols

Peer To Peer

Centralized



Decentralized

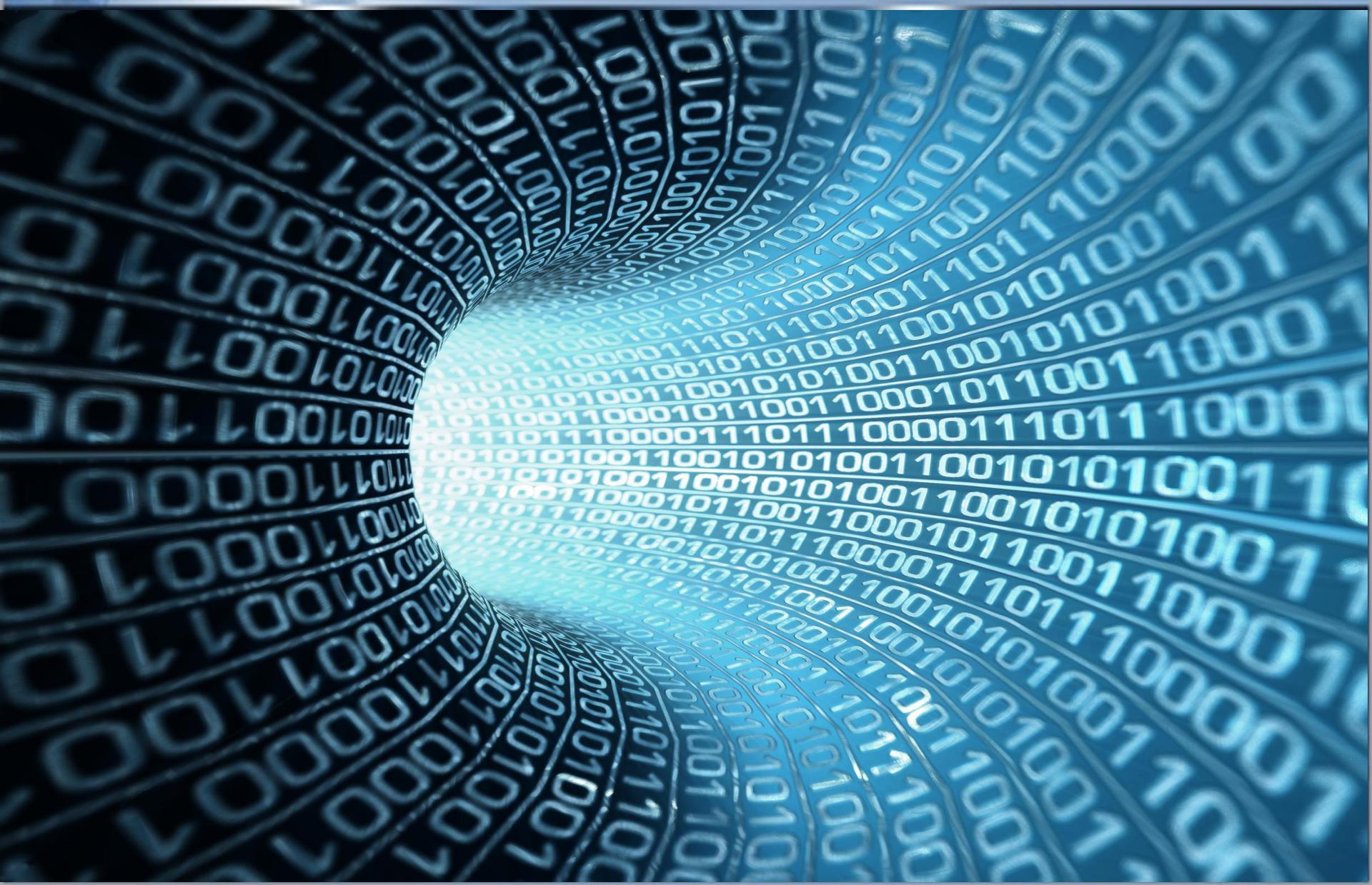


Distributed





Content Addressing





Local Fetching





Deduplication

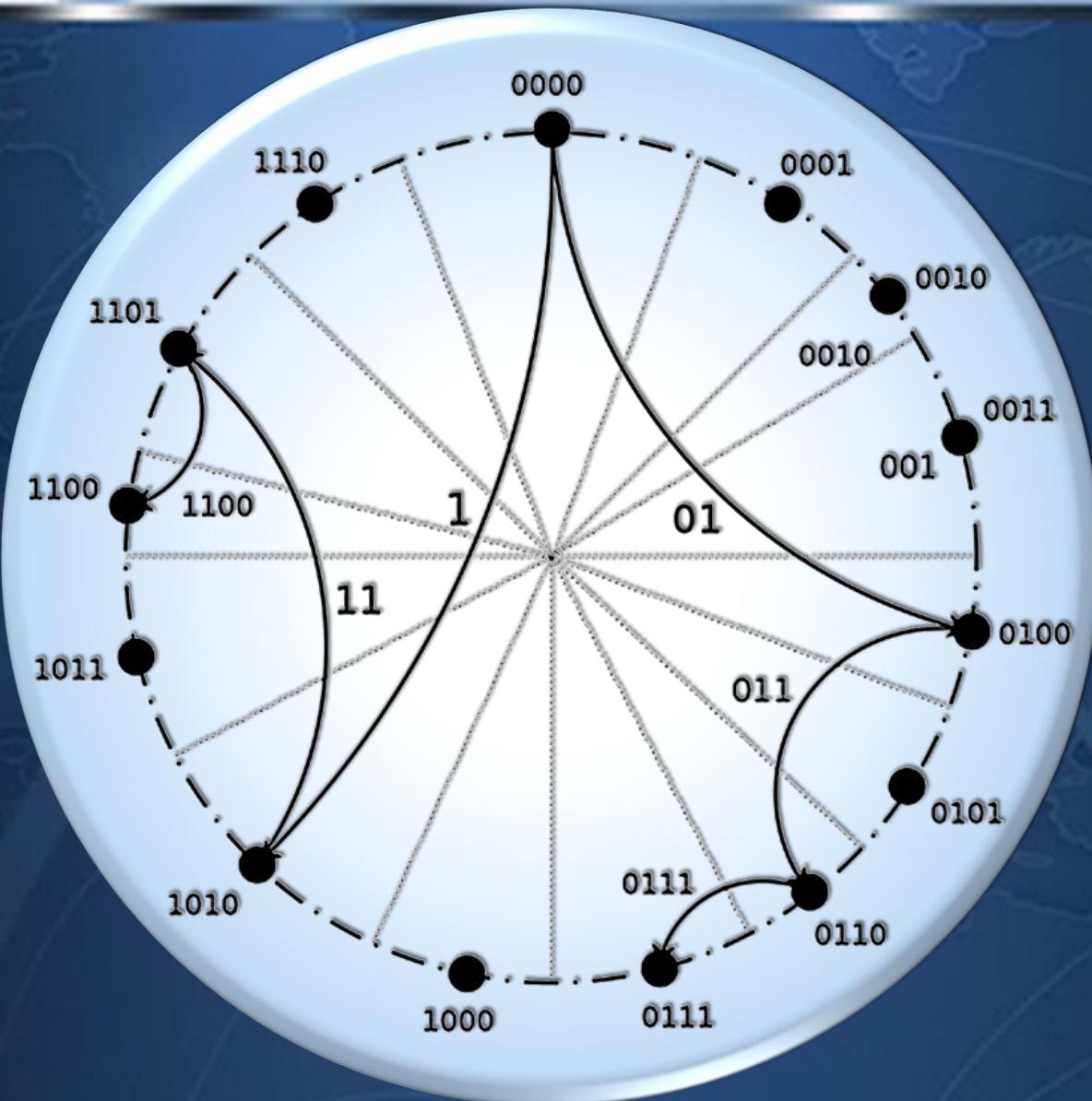


Mutable links

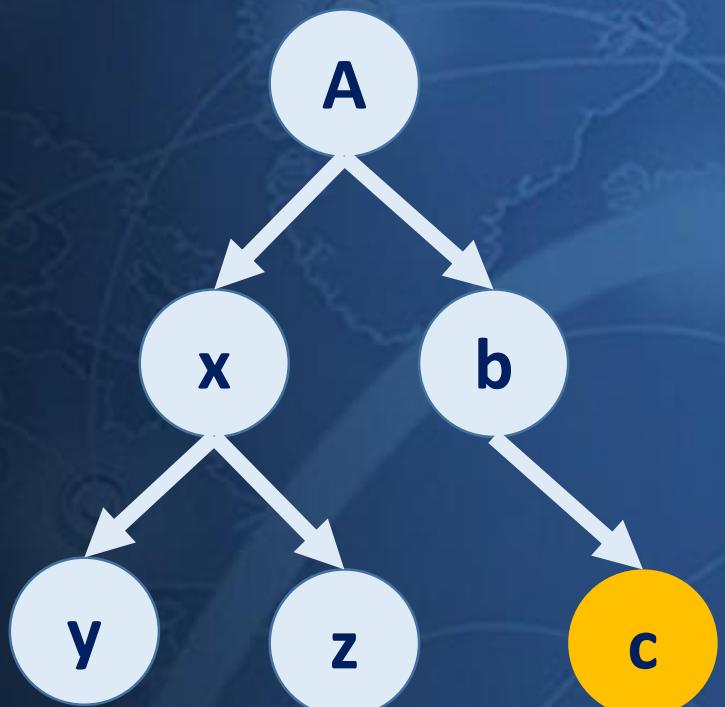
Identity



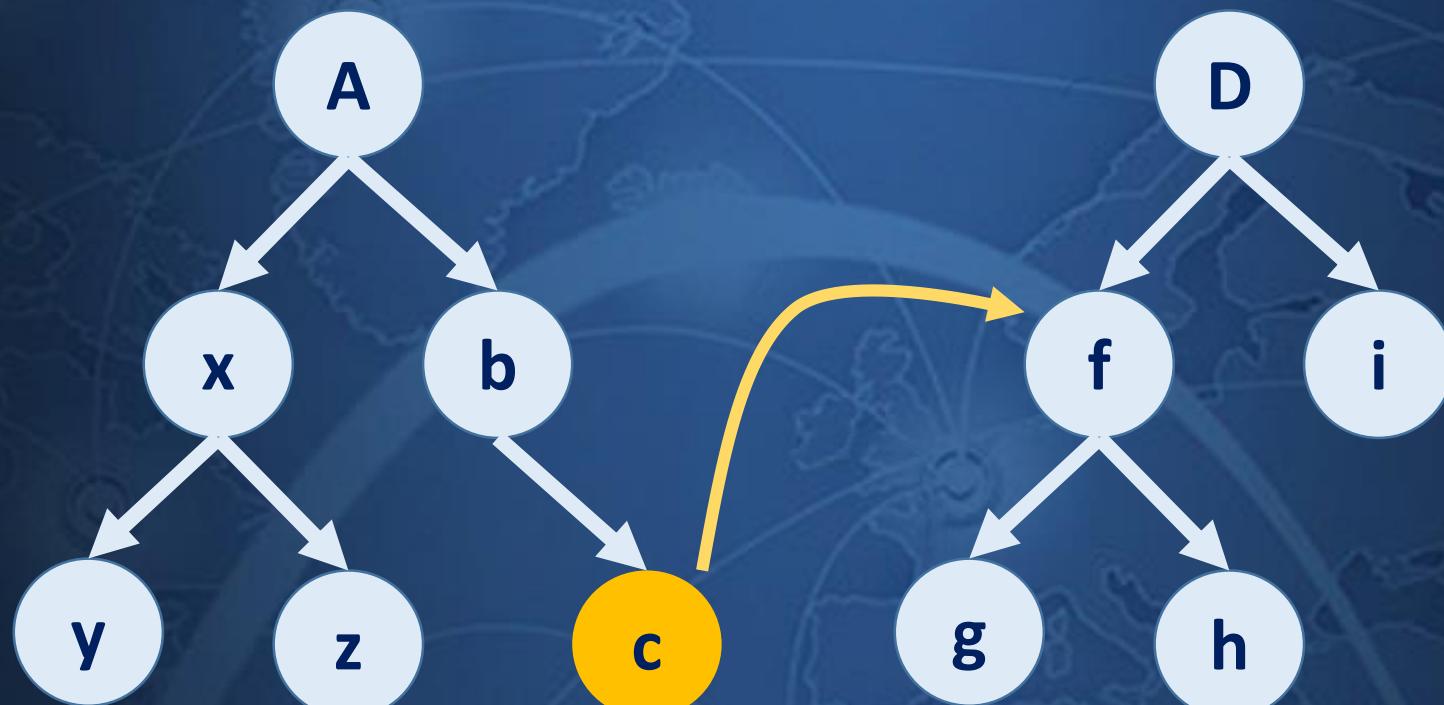
Distributed Hash Table



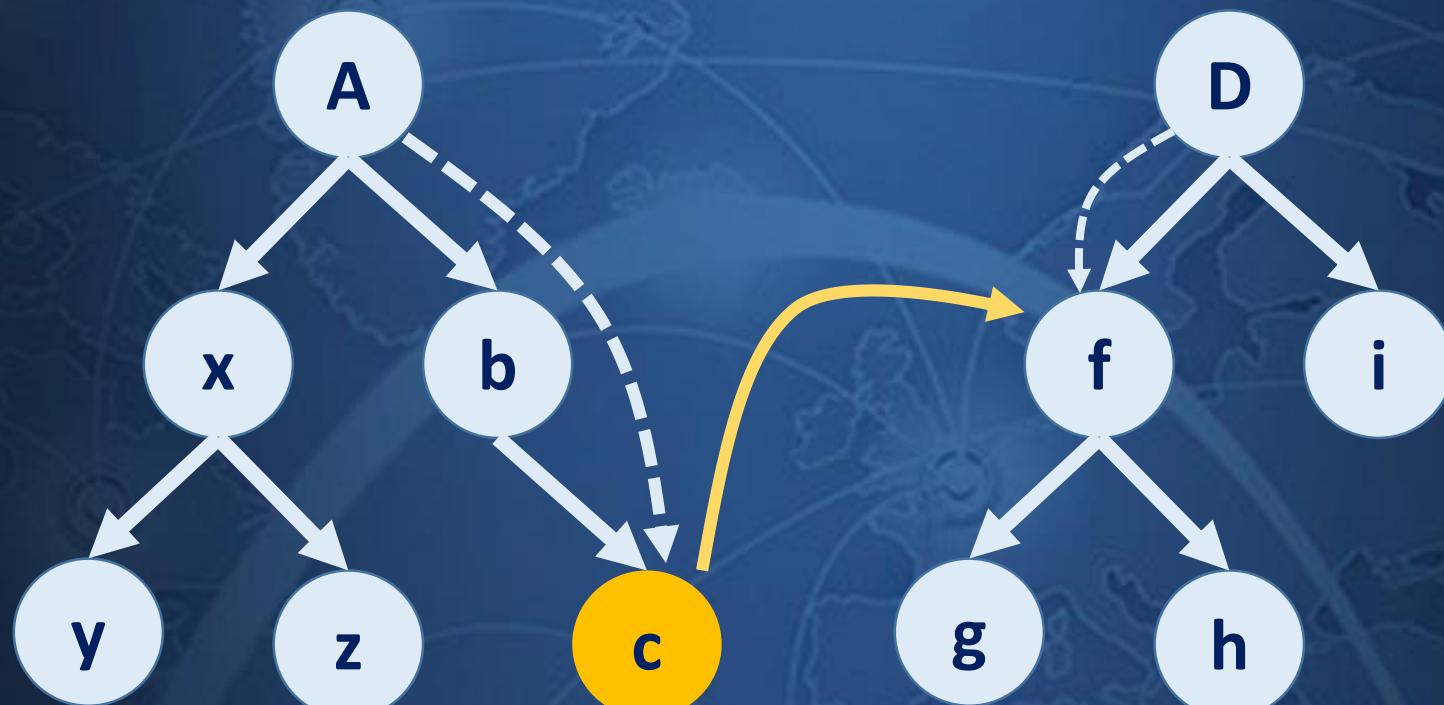
Prefix Substitution Languages



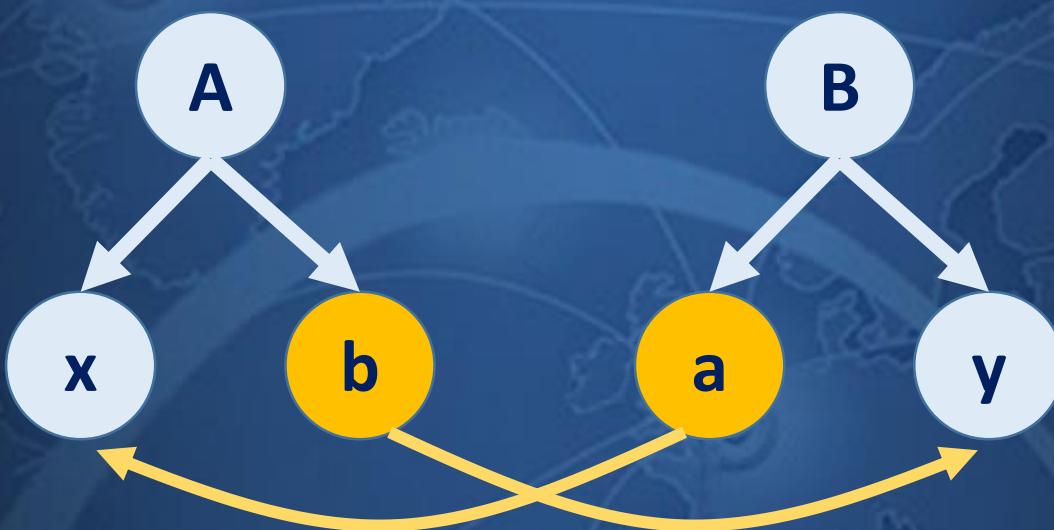
Prefix Substitution Languages



Prefix Substitution Languages



Sharing



Bad Loops


$$\begin{aligned} A/b &\rightarrow B/a/a \rightarrow A/b/b/a \\ &\rightarrow B/a/a/b/a \rightarrow A/b/b/a/b/a \end{aligned}$$

Prefix Substitution Languages

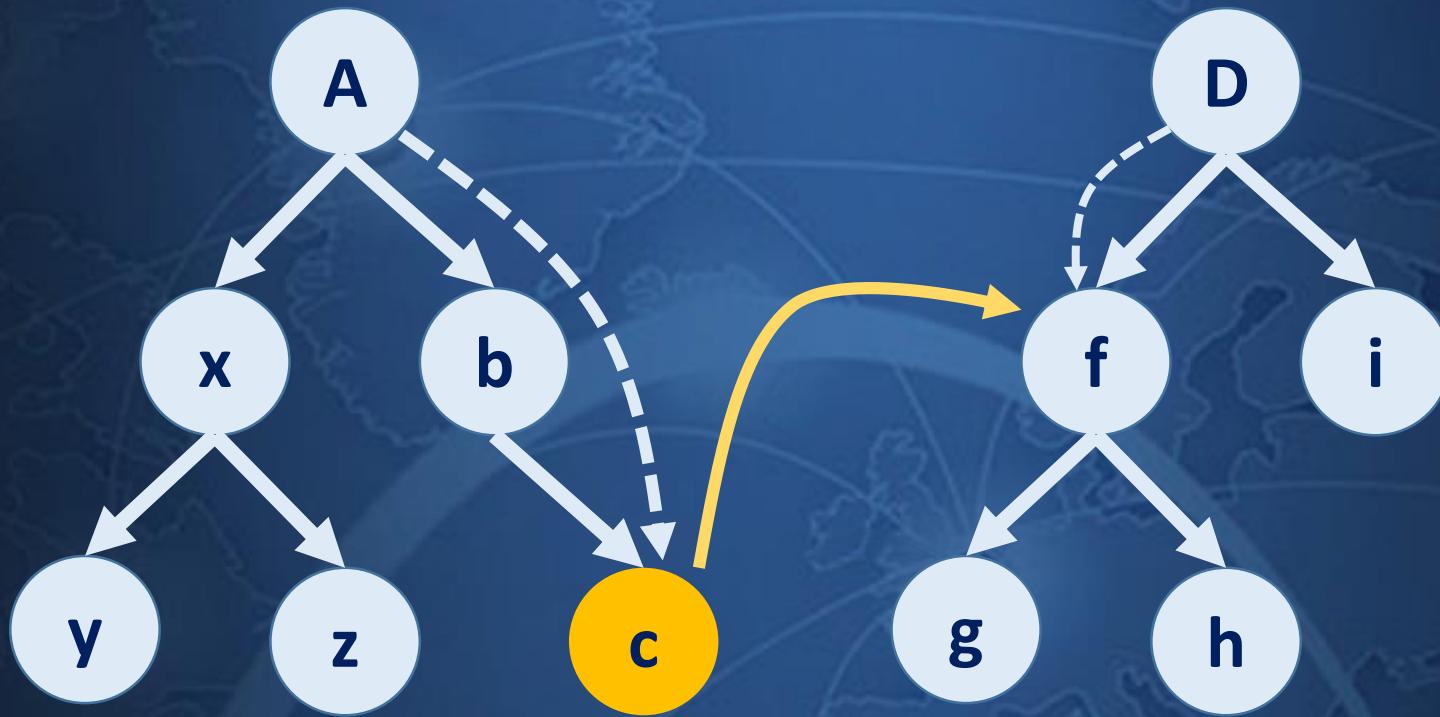


Prefix Substitution Languages

Prefix Substitution Languages

$$\left\{ \begin{array}{l} x_1 \rightarrow y_1 \\ x_2 \rightarrow y_2 \\ \vdots \\ x_n \rightarrow y_n \end{array} \right.$$

Prefix Substitution Languages



Rules:

$\{ \text{Abc} \rightarrow \text{Df} \}$

input \rightarrow output

$\text{Abcg} \rightarrow \text{Dfg}$



Prefix Substitution Languages

Question:

How do we know a system
stops for all inputs?



**Halting
Problem!**

Prefix Substitution Languages

Theorem:
Internal Consistency implies
Consistency





Prefix Substitution Languages

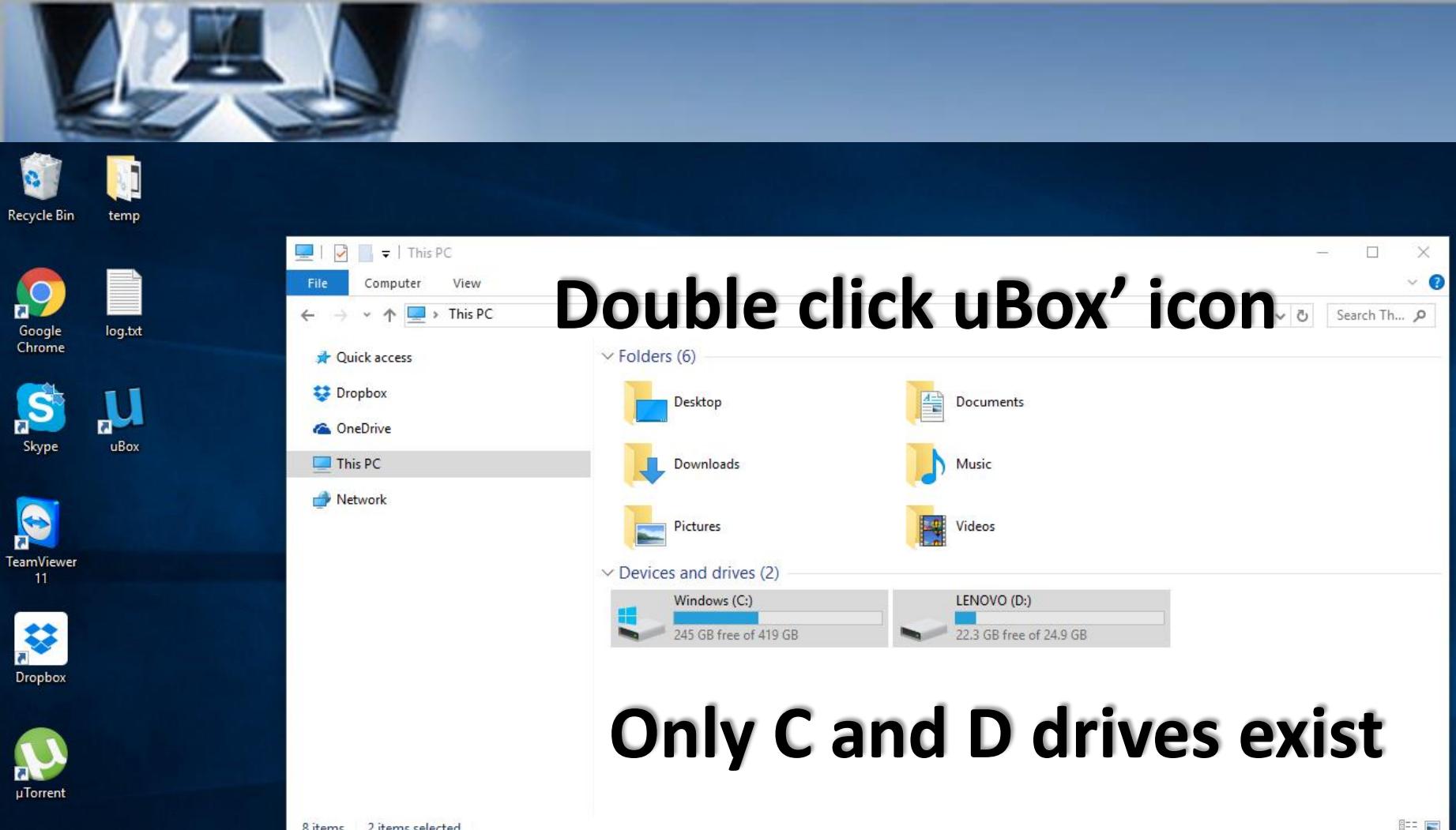
Normalization:
All rules are not reducible



uBox sample Screenshots

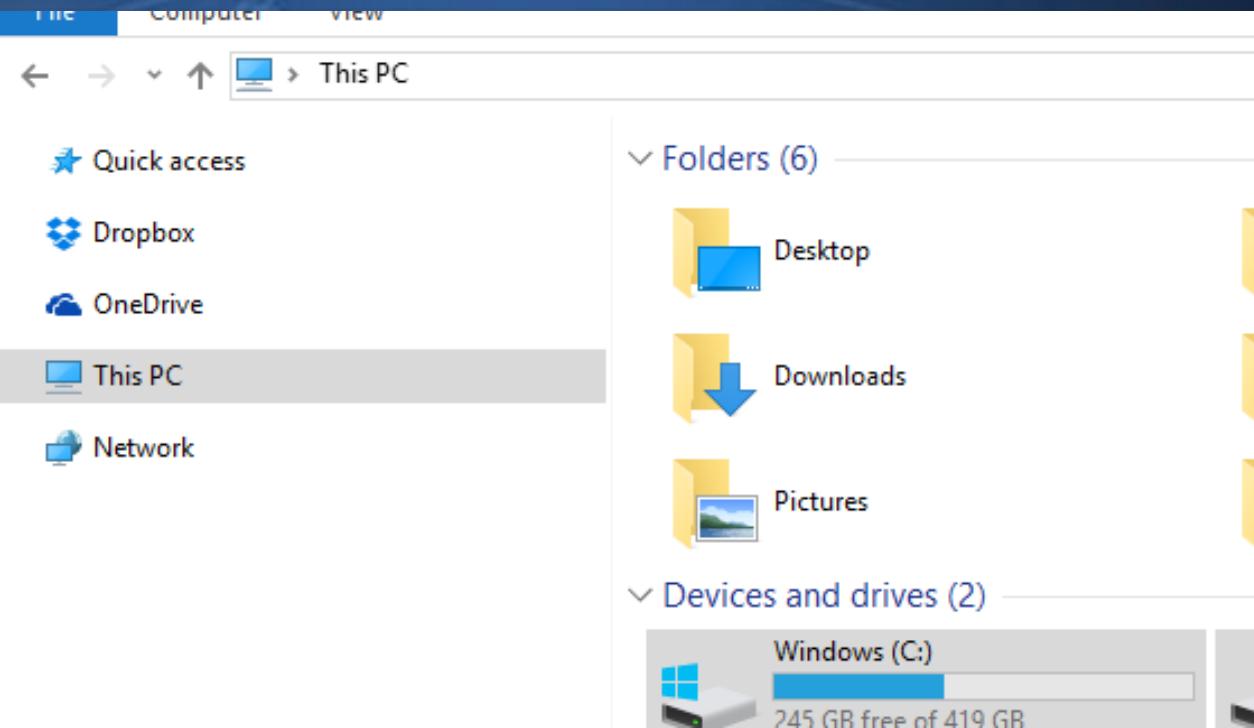
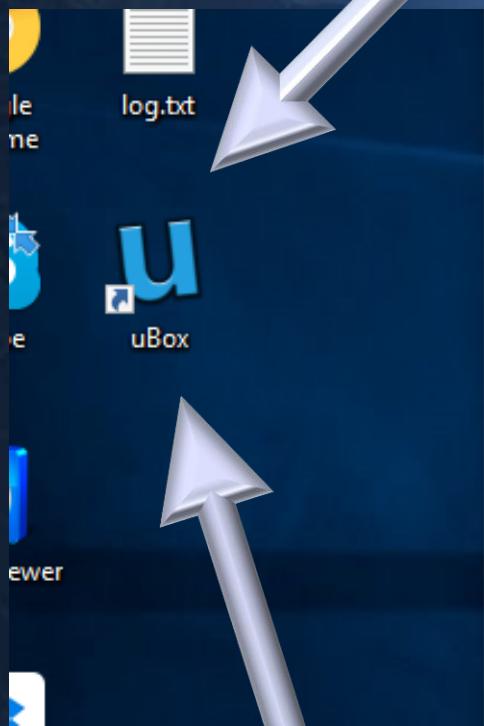
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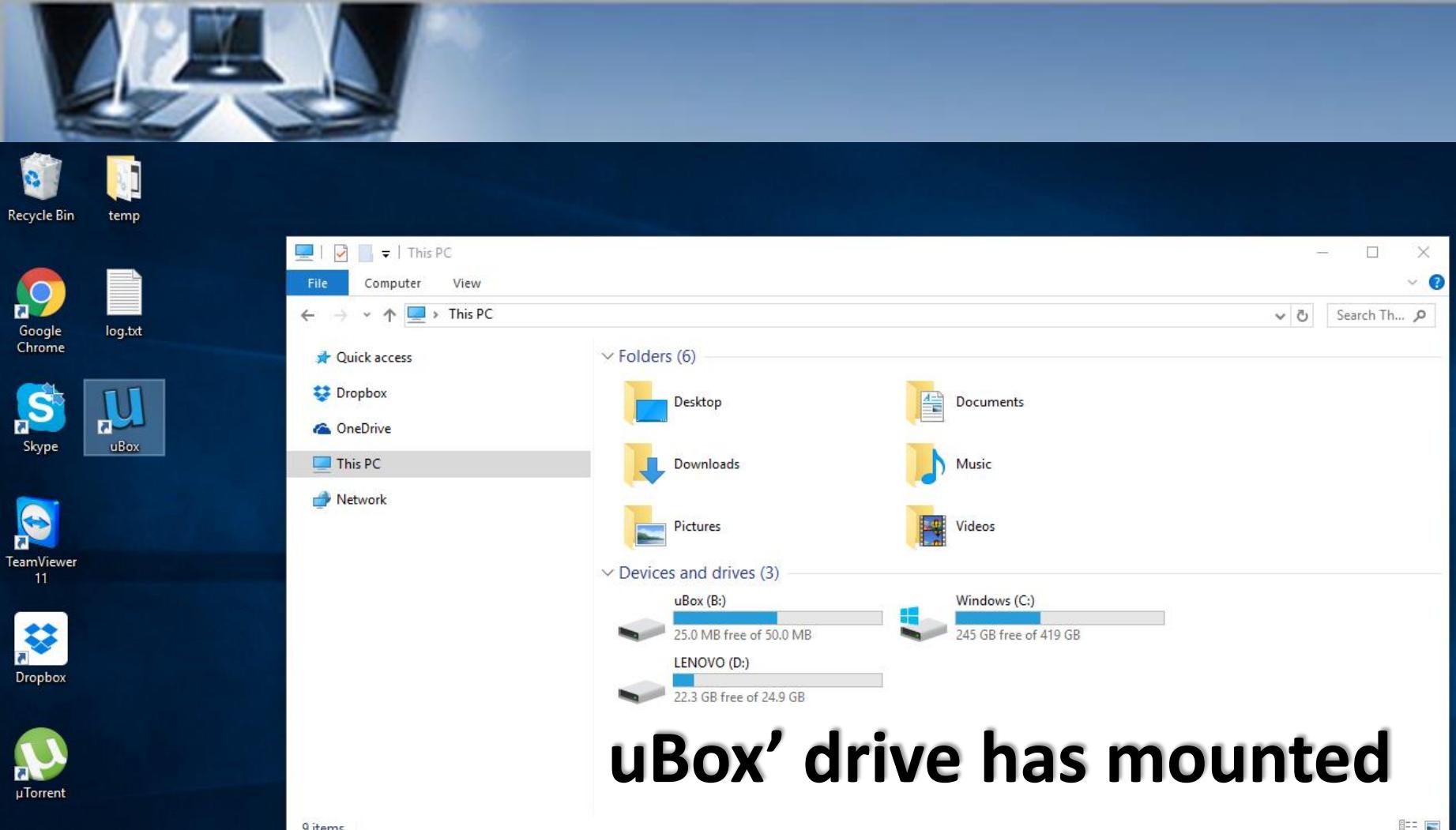




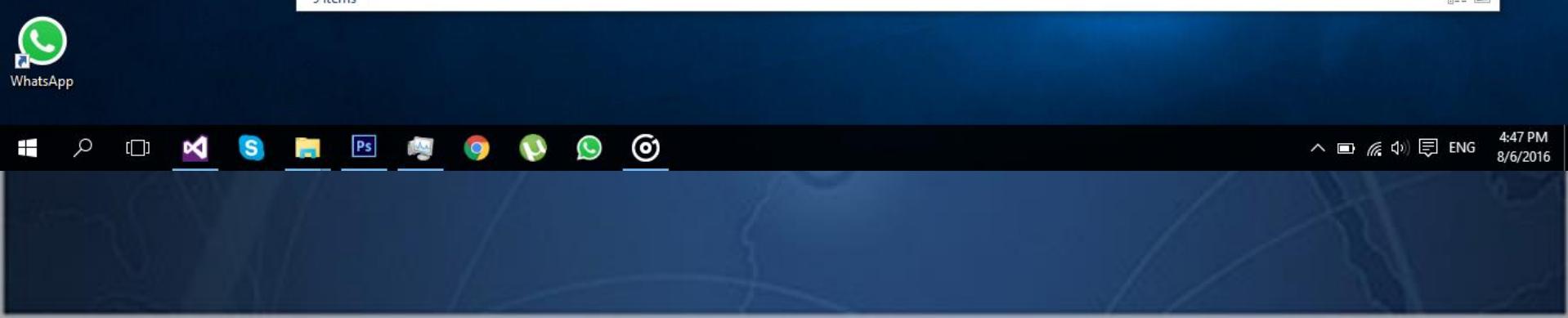
Double click uBox' icon

Only C and D drives exist





uBox' drive has mounted



▼ Devices and drives (3)



uBox (B:)

25.0 MB free of 50.0 MB



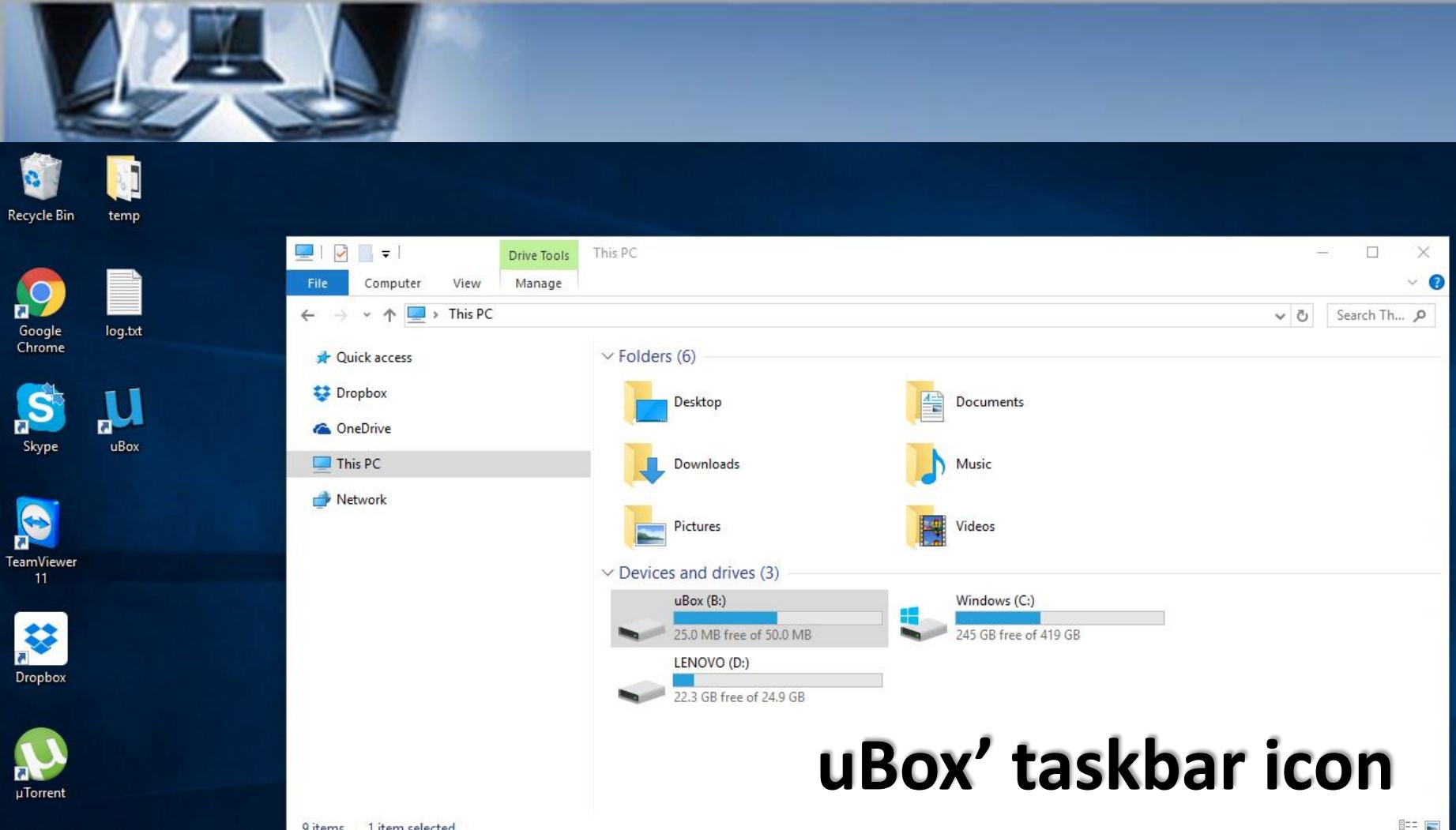
Windows (C:)

245 GB free of 411 GB

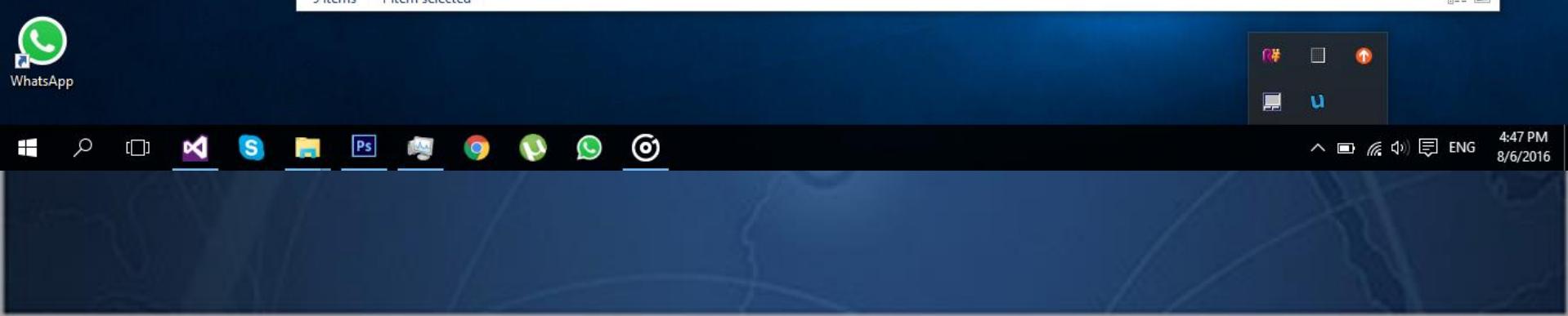


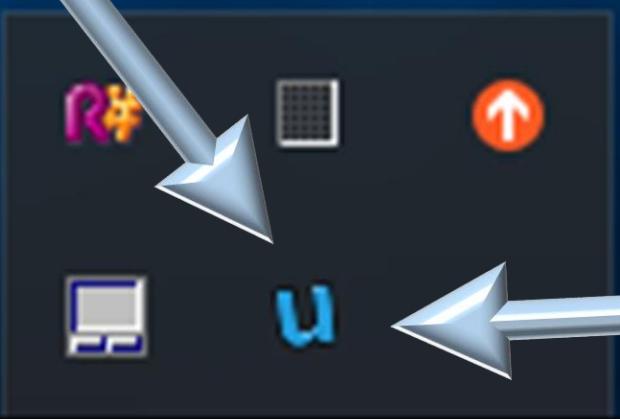
LENOVO (D:)

22.3 GB free of 24.9 GB



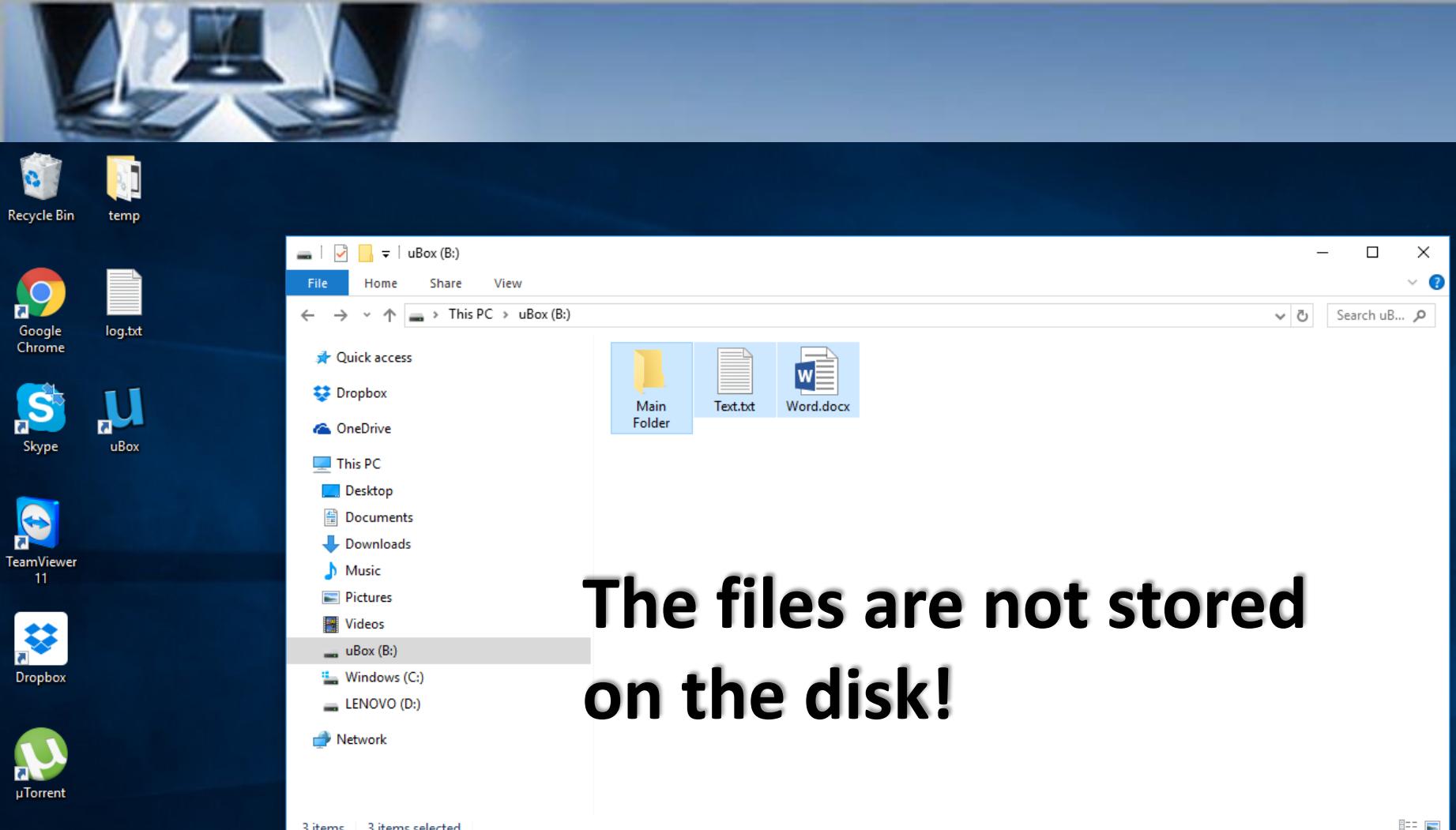
uBox' taskbar icon



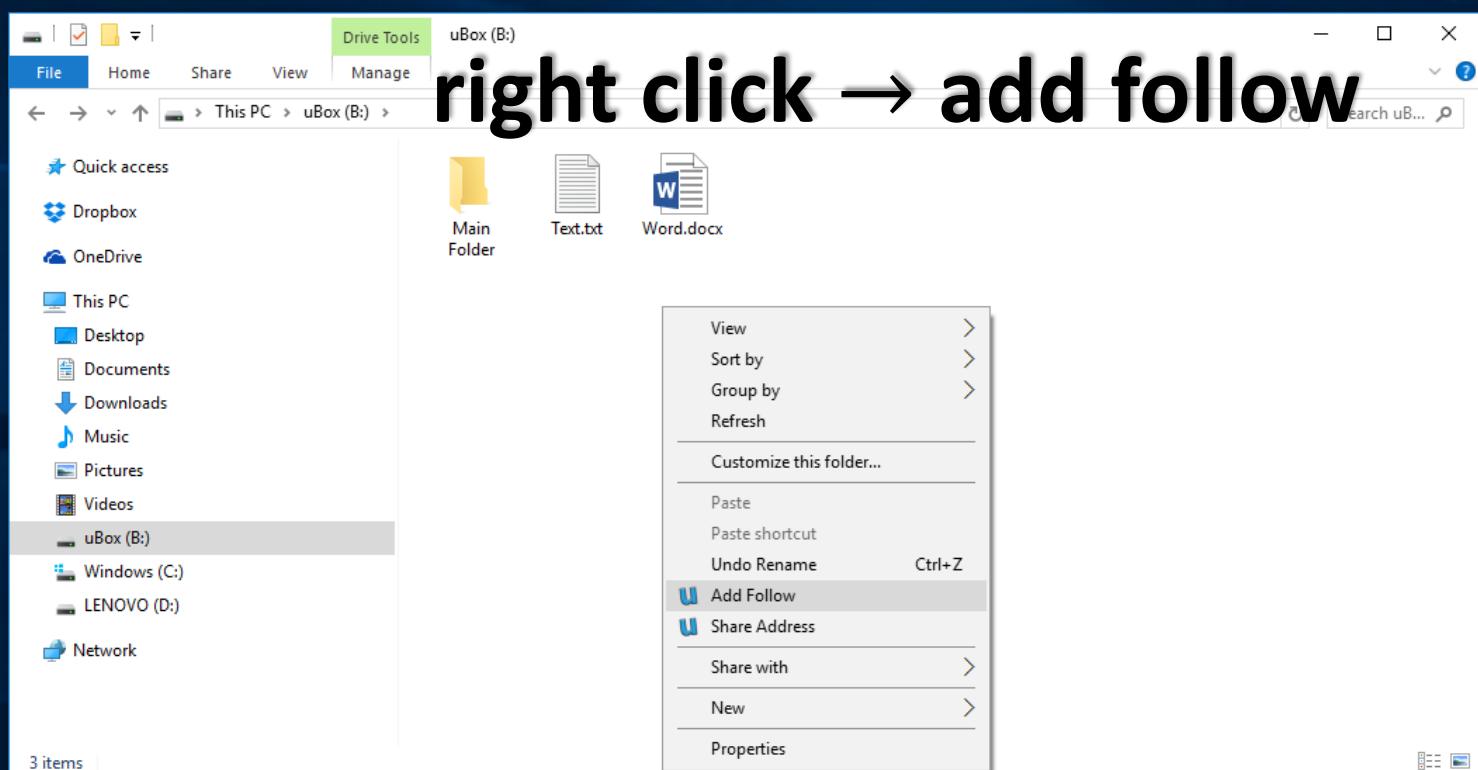


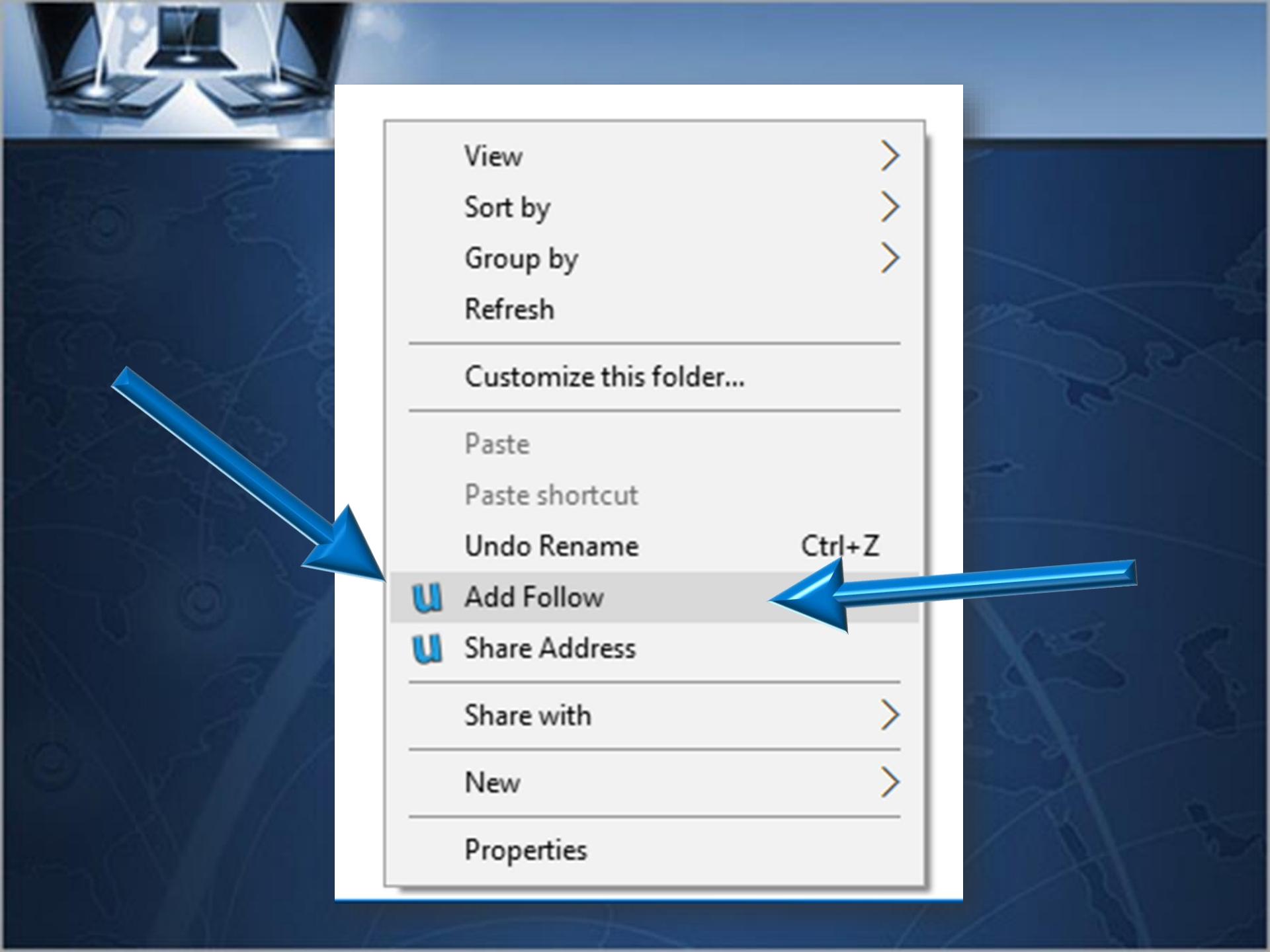
^ 🔋 ⚡ 💬 ENG

4:47 PM
8/6/2016



The files are not stored
on the disk!





View >

Sort by >

Group by >

Refresh

Customize this folder...

Paste

Paste shortcut

Undo Rename

Ctrl+Z

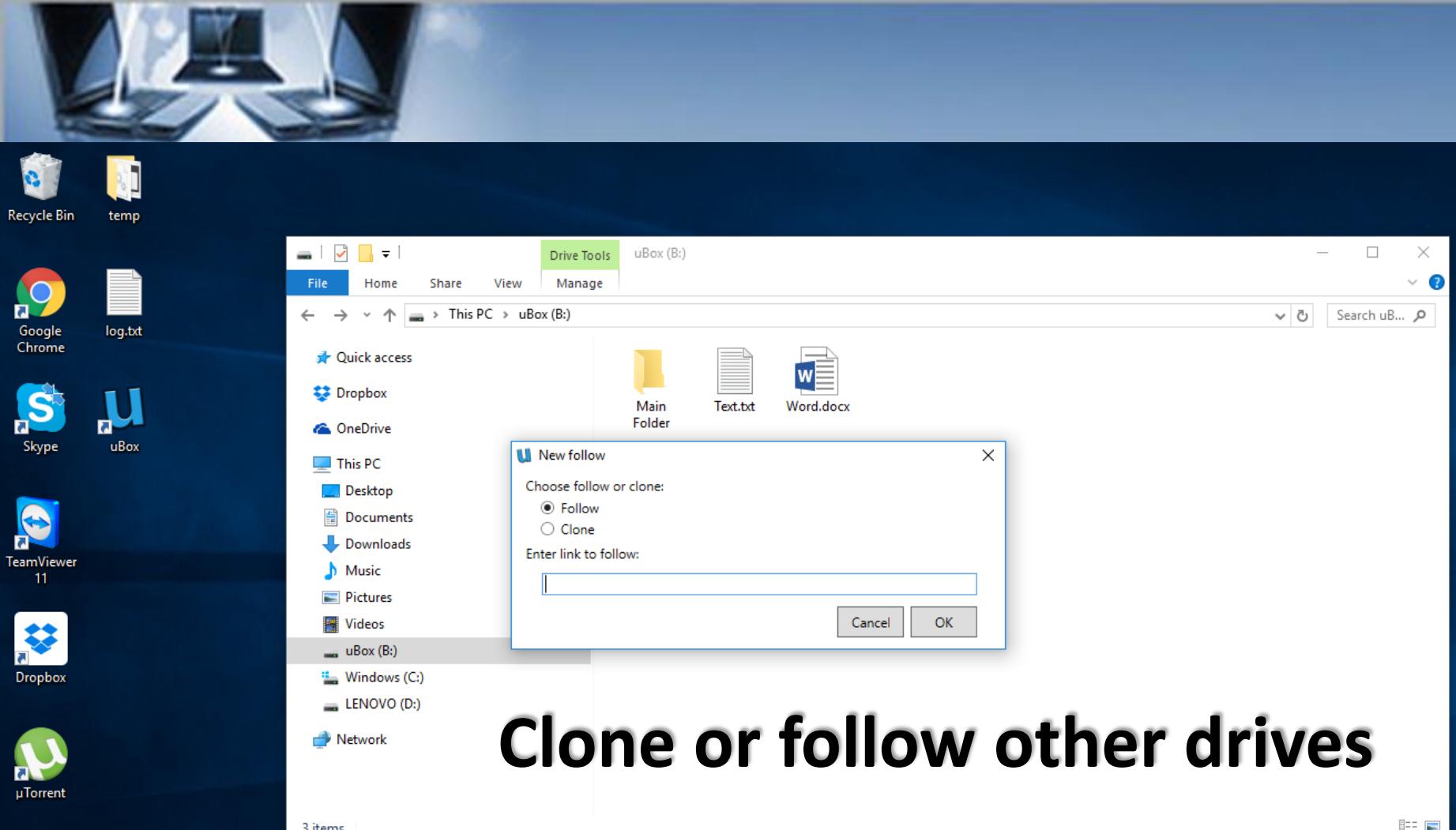
 Add Follow

 Share Address

Share with >

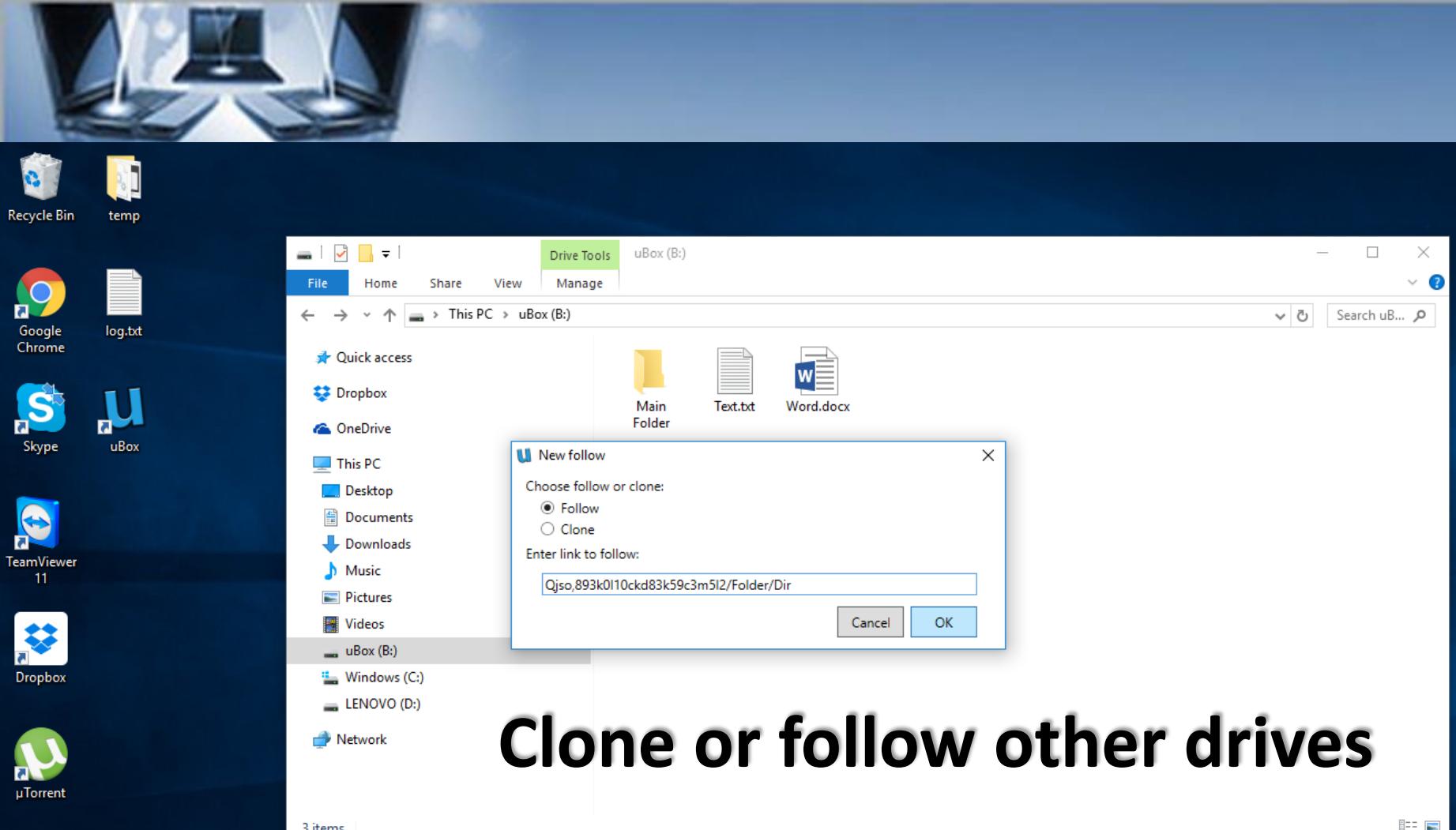
New >

Properties



Clone or follow other drives





Clone or follow other drives





New follow

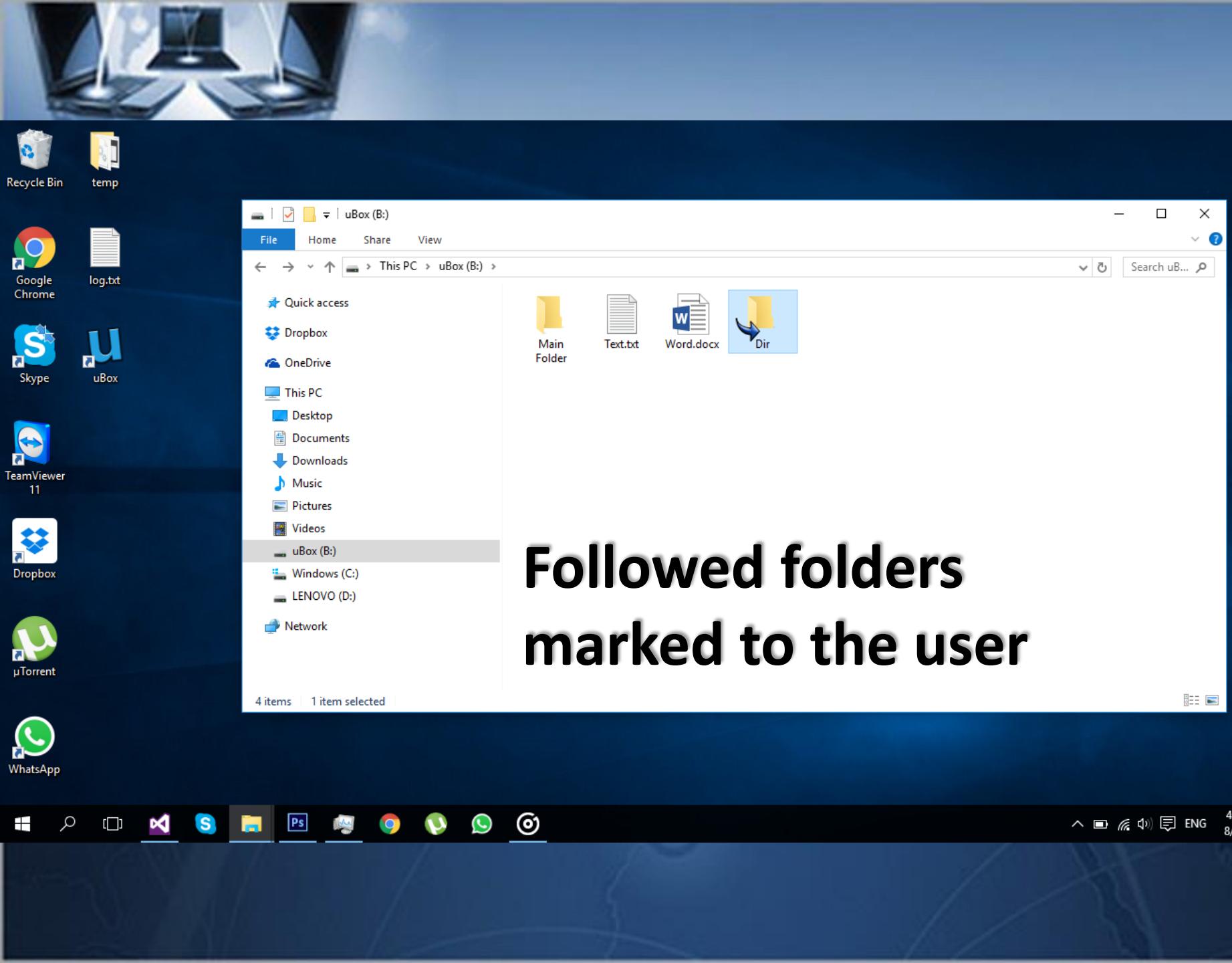


Choose follow or clone:

- Follow
- Clone

Enter link to follow:

CancelOK



**Followed folders
marked to the user**



uBox (B:) >



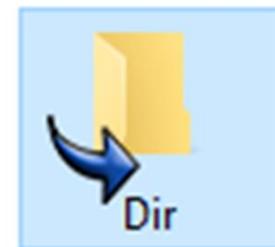
Main
Folder



Text.txt

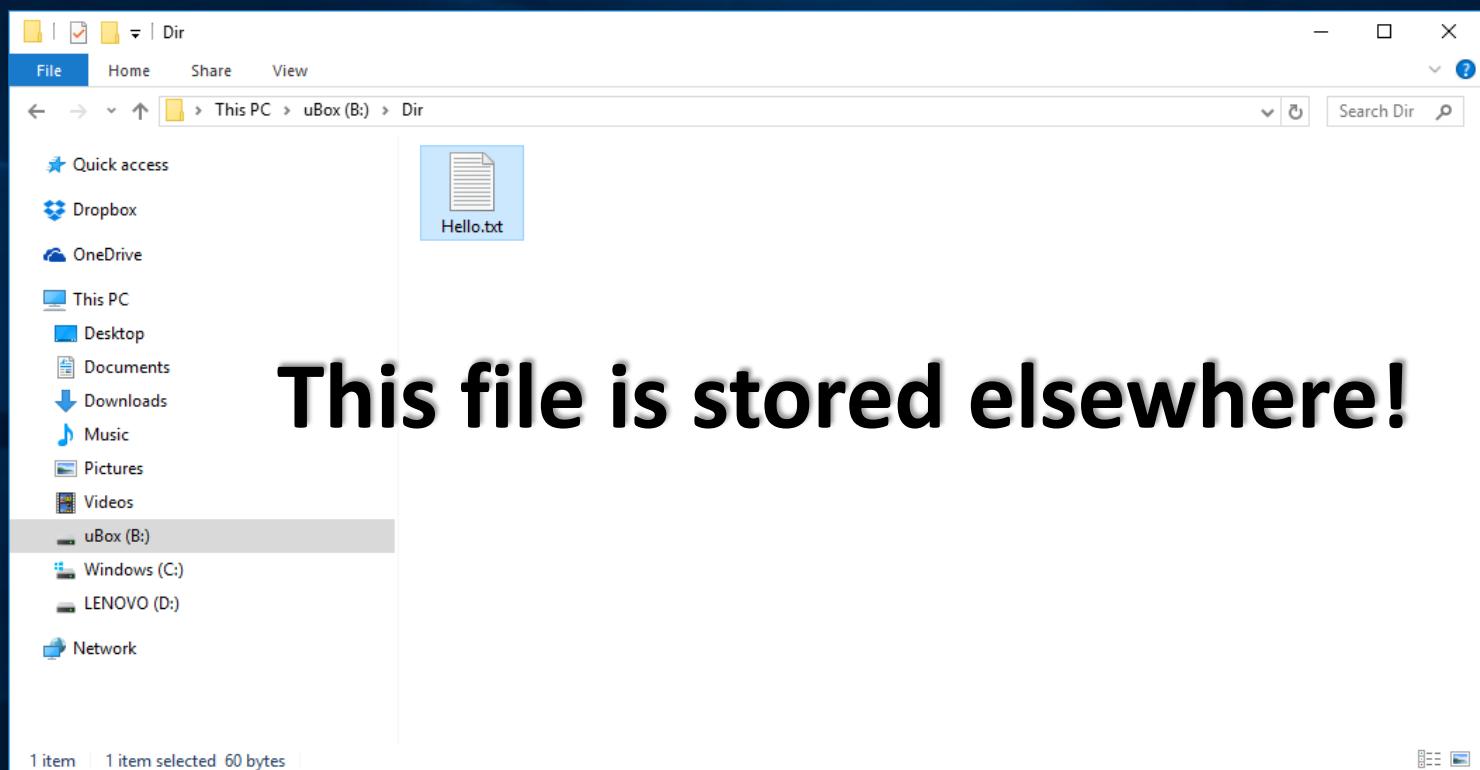


Word.docx



Dir







Recycle Bin

temp



Google
Chrome

log.txt



Skype

uBox



TeamViewer
11



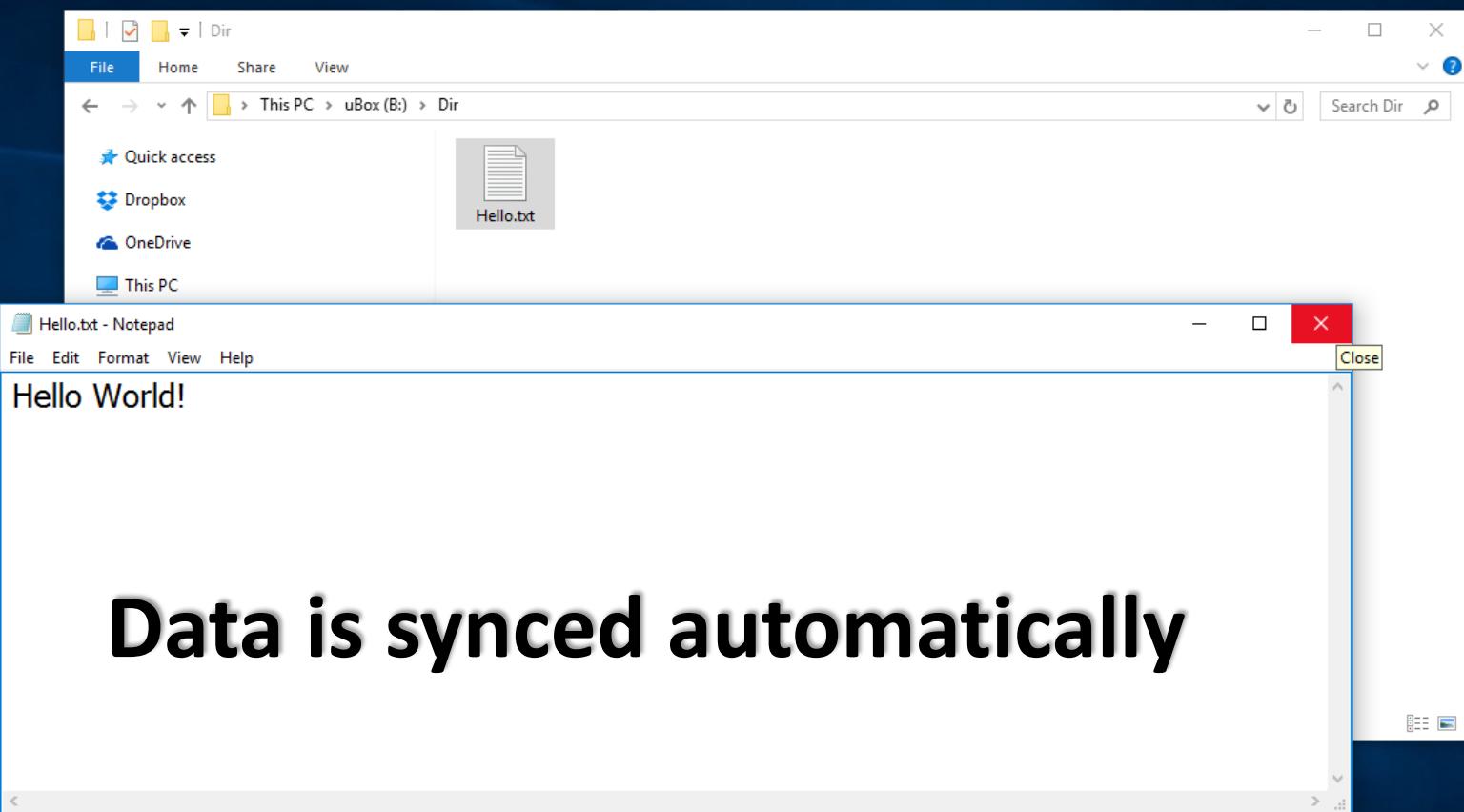
Dropbox



uTorrent

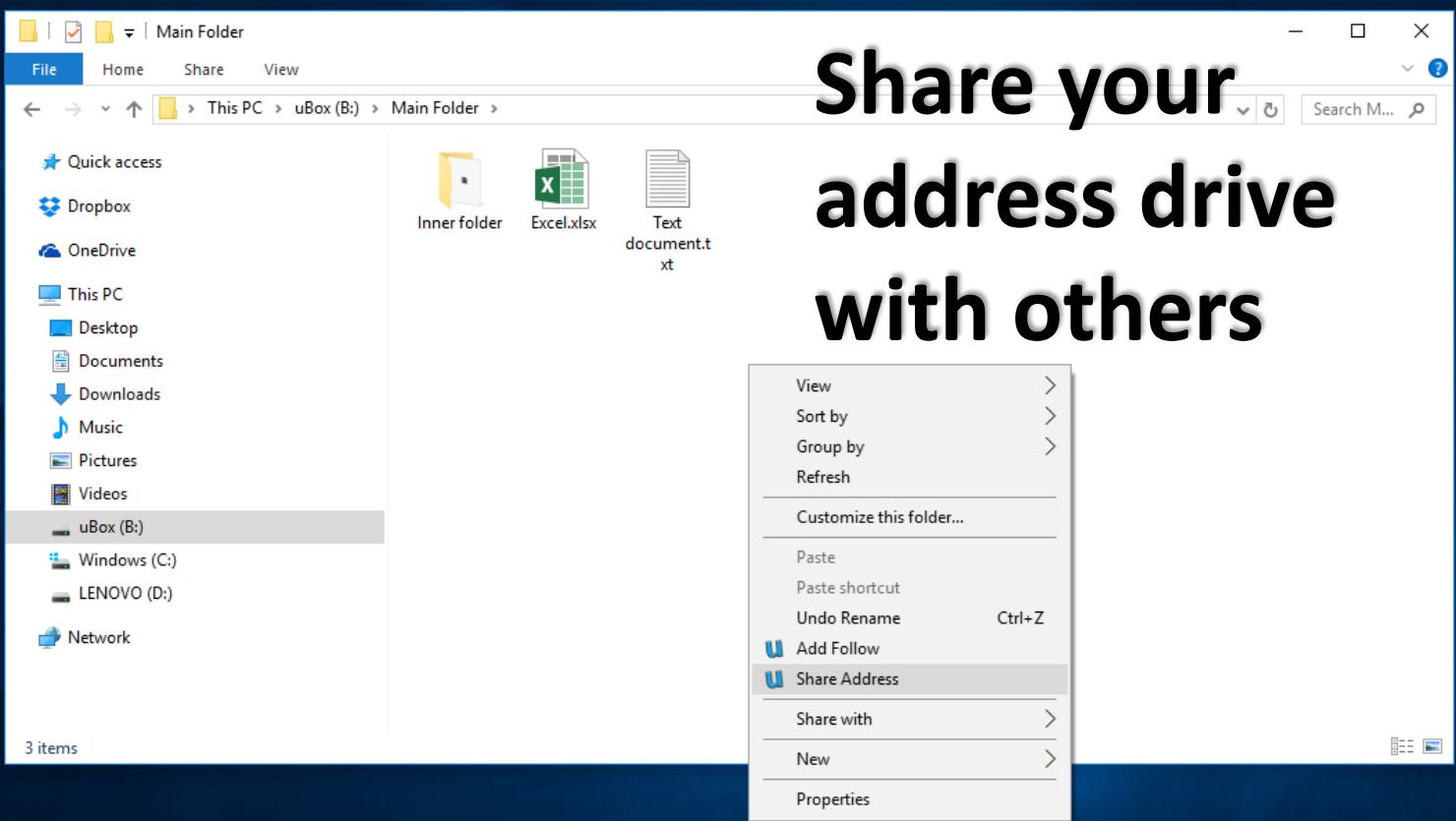


WhatsApp



4:54 PM
8/6/2016

Share your address drive with others



View



Sort by



Group by



Refresh

Customize this folder...

Paste

Paste shortcut

Undo Rename

Ctrl+Z

Add Follow

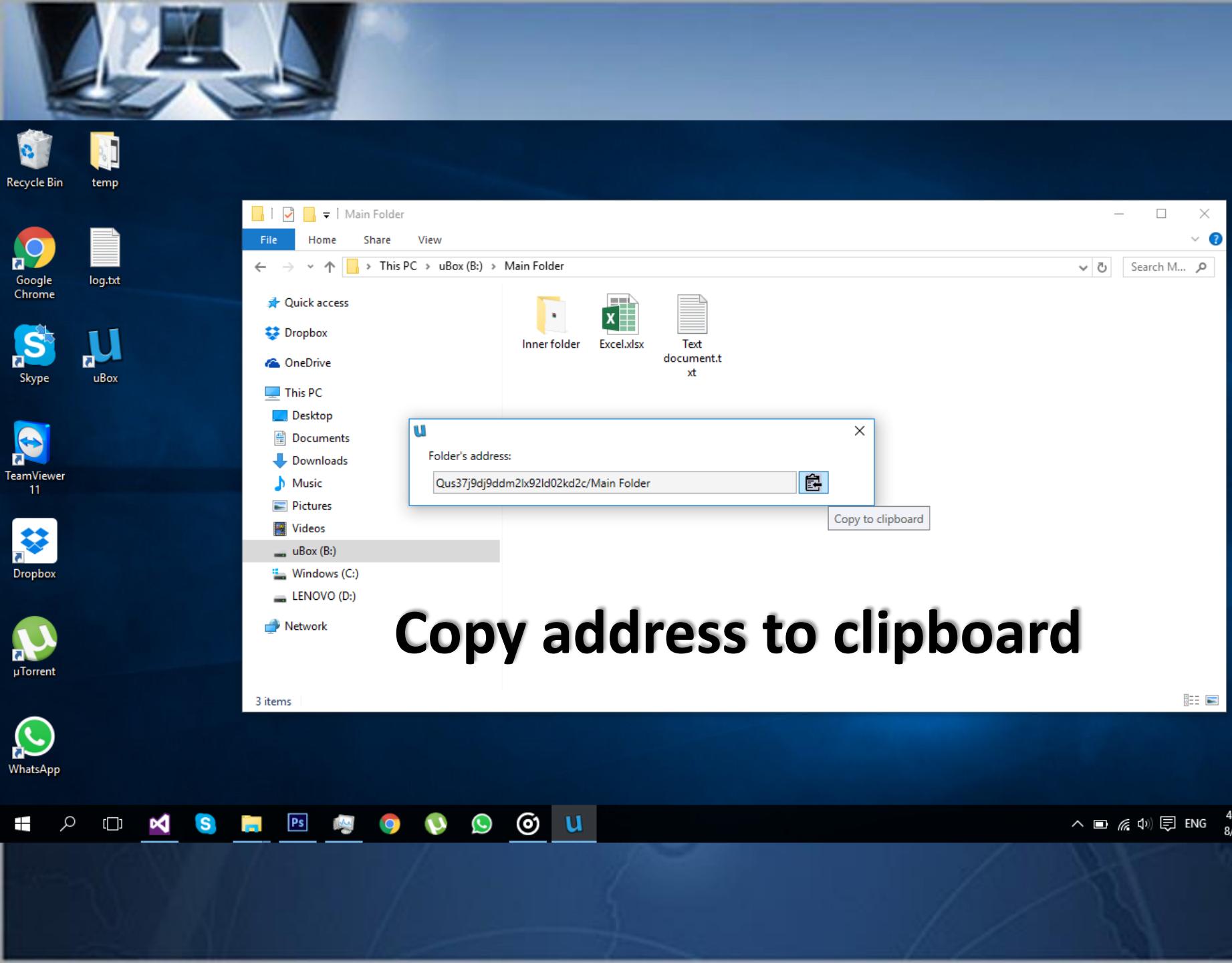
Share Address

Share with

New

Properties





Copy address to clipboard



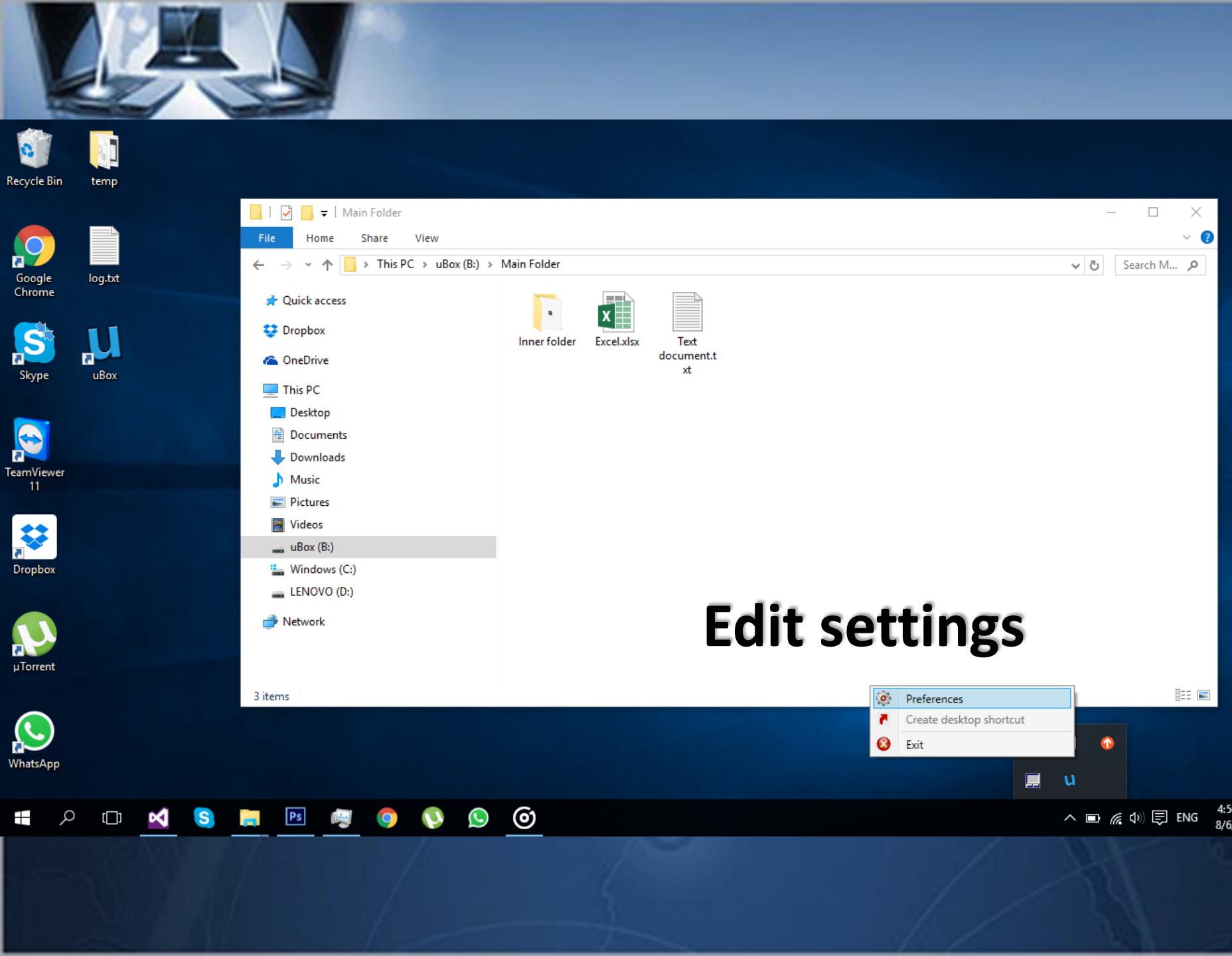
Folder's address:

Qus37j9dj9ddm2lx92ld02kd2c/Main Folder

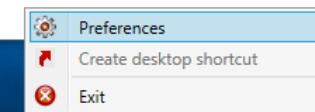


Copy to clipboard





Edit settings





Preferences



Create desktop shortcut

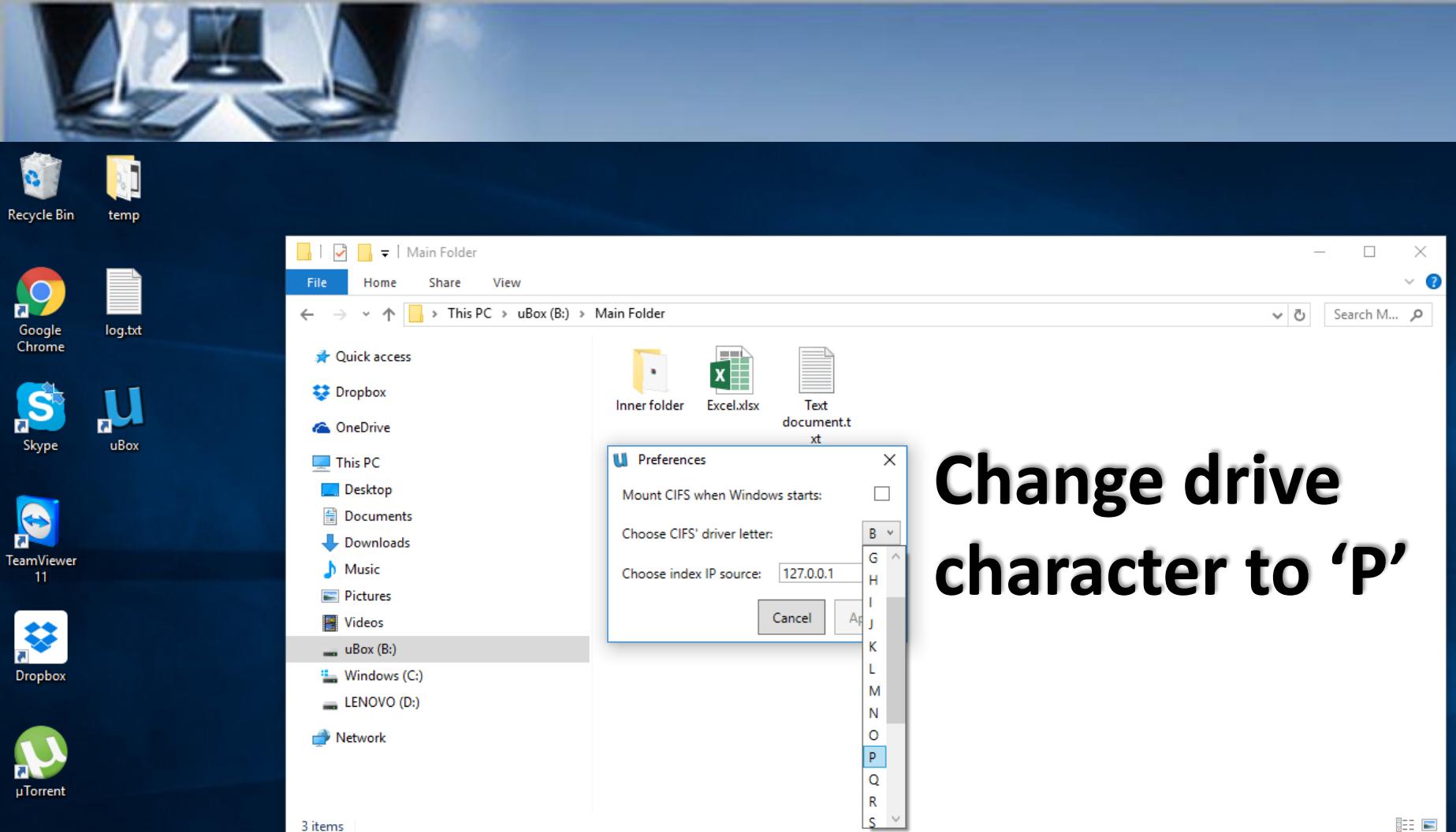


Exit



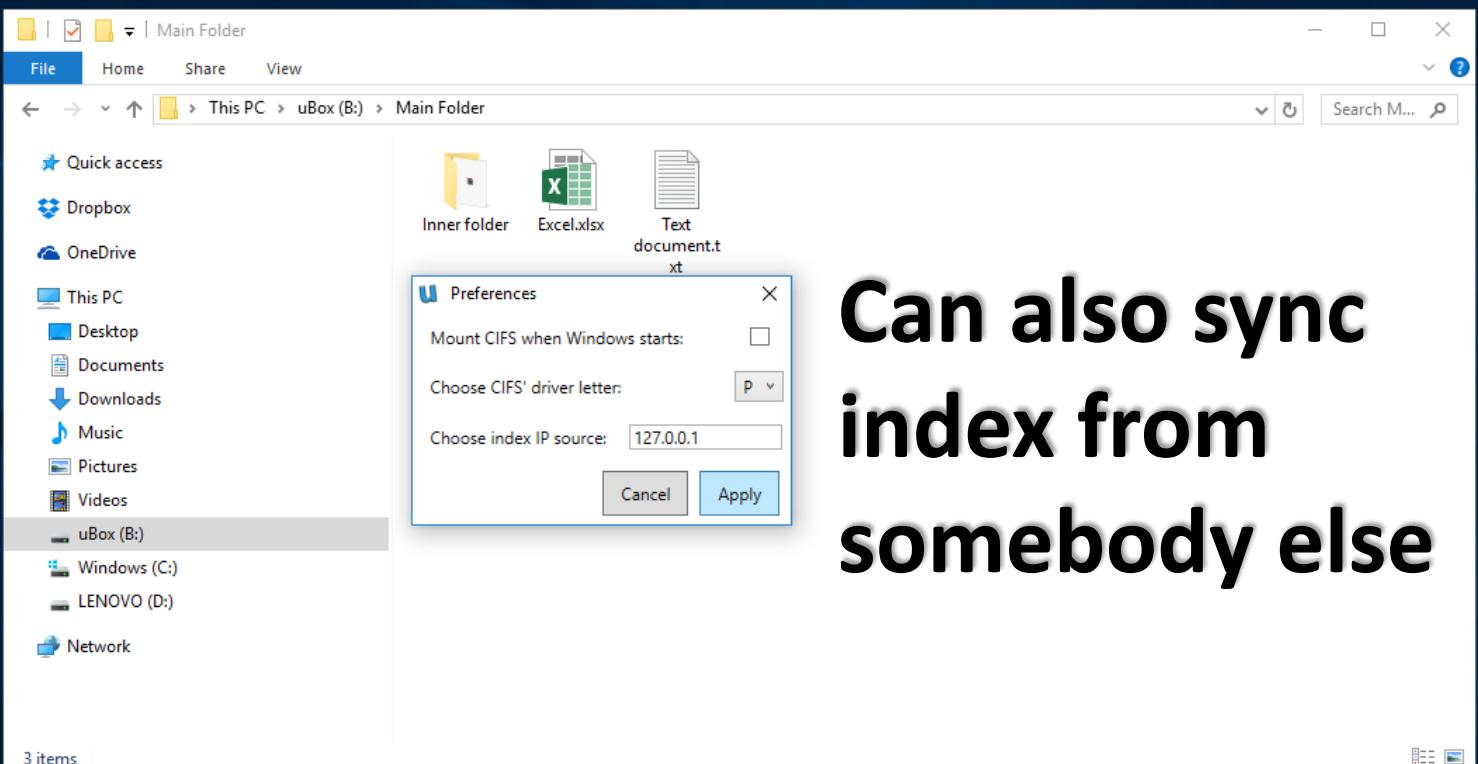
u





Change drive character to ‘P’

**Can also sync
index from
somebody else**



u Preferences



Mount uBox when Windows starts:

Choose uBox driver letter:

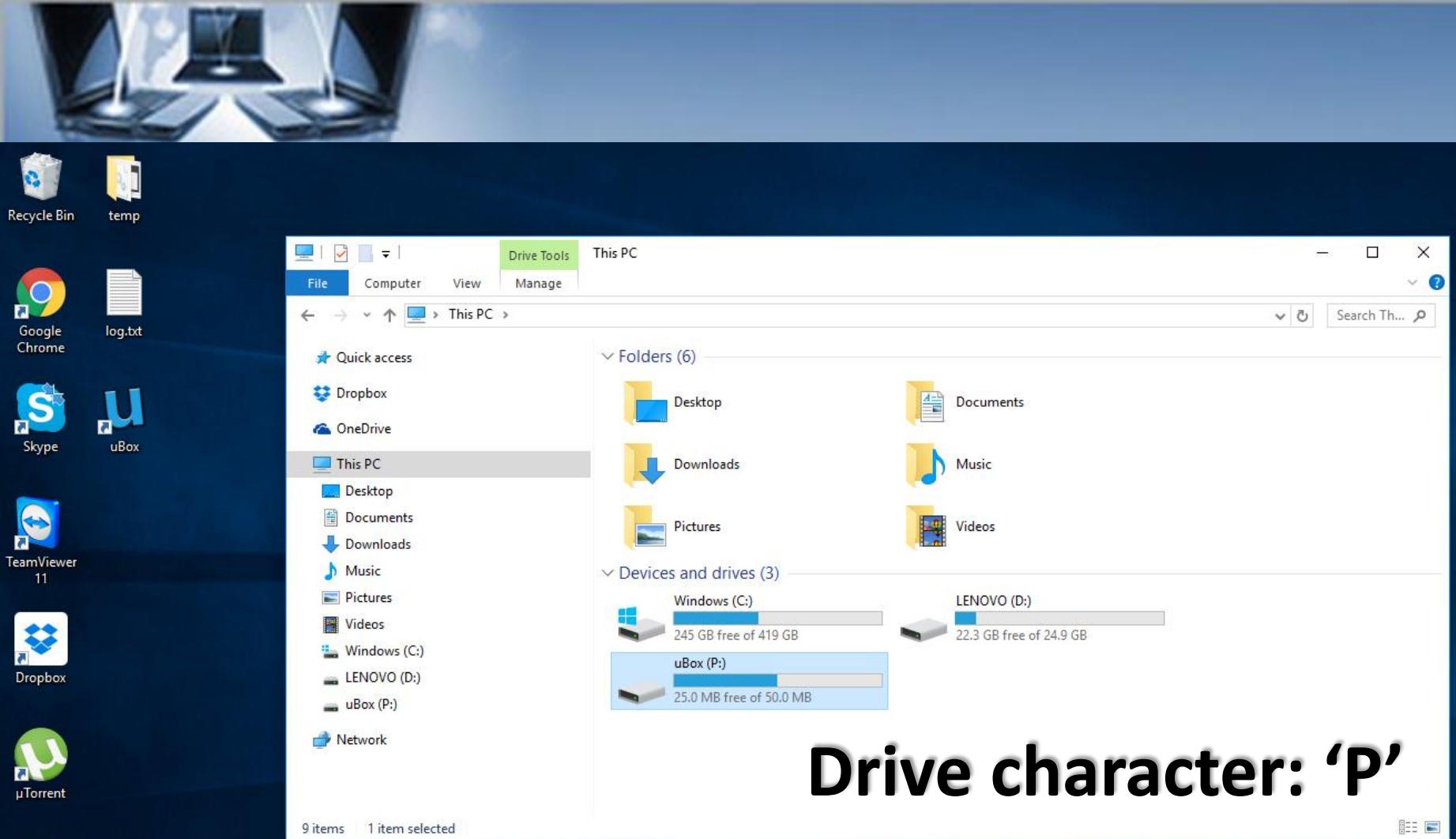
P ▾

Choose index IP source:

127.0.0.1

Cancel

Apply



Drive character: 'P'

Windows (C:)



245 GB free of 419 GB

LENOVO (D:)



22.3 GB free of 24.9 GB

uBox (P:)



25.0 MB free of 50.0 MB



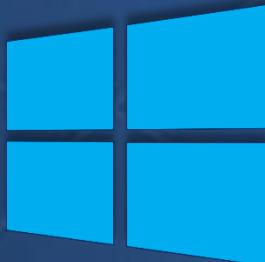
Technologies



IPFS

WPF

Dokan



Windows

Future Work

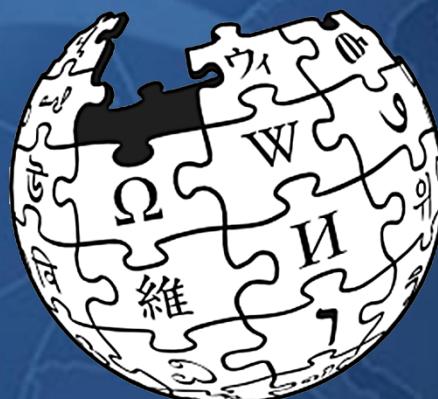


Keybase

Keybase



Suggest Changes



W





Questions?

