WSL Linux on Windows

CONCEPTS

Commands are shown for PowerShell or CMD. From inside Linux, call the same tool as wsl.exe.

Windows host wsl.exe, .wslconfig
- **WSL 2 utility VM** one Linux kernel
  - **Distribution** own rootfs, /etc/wsl.conf
    - **Linux processes** bash, apt, systemd

WSL 2: all distros share one lightweight VM

WSL 1 or WSL 2?

	WSL 1	WSL 2
Linux FS speed	slower	fast
/mnt/c speed	fast	slower
systemd, Docker	no	yes
LAN access	like Windows	NAT by default

INSTALL AND UPDATE

`wsl --install`
Install WSL and Ubuntu

`wsl --list --online`
Distros available to install

`wsl --install -d <distro>`
Install a specific distro

`wsl --update`
Update WSL to the latest release

`wsl --version`
Show WSL, kernel and WSLg versions

`wsl --status`
Show default distro and version

DISTRIBUTIONS

`wsl --list --verbose`
List distros with state and version

`wsl --list --running`
List running distros only

`wsl --set-default <distro>`
Make a distro the default

`wsl --terminate <distro>`
Stop one distro

`wsl --shutdown`
Stop all distros and the VM

DISTRIBUTIONS (cont.)

`wsl --set-version <distro> 2`
Convert a distro to WSL 2

`wsl --set-default-version 2`
Use WSL 2 for new installs

`wsl --unregister <distro>`
Remove a distro and ALL its data

`wsl --manage <distro> --set-default-user <user>`
Change the login user

RUN LINUX FROM WINDOWS

`wsl`
Shell in the default distro

`wsl ~`
Shell in your Linux home

`wsl -d <distro>`
Shell in a specific distro

`wsl -u root`
Shell as root

`wsl <command>`
Run one Linux command

RUN WINDOWS FROM LINUX

`explorer.exe .`
Open this folder in Explorer

`notepad.exe <file>`
Run any Windows program

`cmd.exe /C <command>`
Run a CMD built-in like dir

FILES AND PATHS

`/mnt/c`
C: drive seen from Linux

`\\wsl.localhost\<distro>`
Distro's files seen from Windows

`wslpath -w <path>`
Linux path to Windows path

`wslpath -u '<C:\path>'`
Windows path to Linux path

Speed
Keep projects in the Linux filesystem (~/project) when you work from Linux: /mnt/c is much slower under WSL 2.

BACKUP AND DISKS

`wsl --export <distro> <file.tar>`
Back up a distro to a tar file

`wsl --import <name> <dir> <file.tar>`
Restore or clone as a new distro

CONFIGURATION

Two config files

	.wslconfig	/etc/wsl.conf
Where	%UserProfile%	inside each distro
Scope	global, WSL 2 VM	one distro
Sets	memory, CPUs, network	systemd, mounts, user

`[boot] systemd=true`
Run systemd in a distro (wsl.conf)

`[user] default=<user>`
Default login user (wsl.conf)

`[wsl2] memory=<size>`
Cap VM memory (.wslconfig)

`[wsl2] processors=<n>`
Cap VM CPUs (.wslconfig)

Changes apply only after the VM stops: run wsl --shutdown, or wait about 8 seconds after closing every shell.

NETWORKING

`localhost:<port>`
Reach a Linux server from Windows

`wsl hostname -I`
IP address of the WSL 2 VM

RECIPES

Back up and restore a distro

```
wsl --shutdown
wsl --export Ubuntu ubuntu.tar
# later, or on another PC:
wsl --import Ubuntu D:\wsl
ubuntu.tar
```

Enable systemd (/etc/wsl.conf)

```
[boot]
systemd=true

[user]
default=<user>
# then run: wsl --shutdown
```