

prplOS Development Setup - Quick Reference Card

 **Recommended OS: Ubuntu 22.04 LTS**

Minimum System Requirements

- **CPU:** 64-bit, 2+ cores (4+ recommended)
- **RAM:** 4GB minimum (8GB+ recommended)
- **Storage:** 50GB free (100GB+ recommended)
- **Network:** Stable internet connection

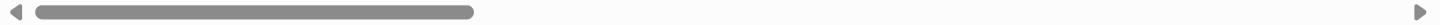
Quick Setup Commands

Ubuntu/Debian (Native or WSL2)

```
bash
```

```
# One-line setup (copy and run)
```

```
sudo apt update && sudo apt install -y build-essential git quilt python3 python3-pip bc wget curl
```



MSYS2 UCRT64 (Windows)

```
bash
```

```
# In MSYS2 UCRT64 terminal
```

```
pacman -Syu
```

```
pacman -S base-devel mingw-w64-ucrt-x86_64-toolchain git quilt patch python mingw-w64-ucrt-x86_64-pip install matplotlib pandas numpy seaborn
```



Essential Packages Checklist

Core Build Tools

- ☐ gcc/g++ (compiler)
- ☐ make (build automation)
- ☐ git (version control)
- ☐ quilt (patch management)
- ☐ patch (apply patches)
- ☐ python3 + pip3

Required Libraries

- ☐ ncurses-dev
- ☐ zlib-dev
- ☐ openssl-dev

Python Packages

- ☐ matplotlib
- ☐ pandas
- ☐ numpy
- ☐ seaborn

Utilities

- ☐ bc (calculator)
- ☐ wget/curl (download)
- ☐ time (benchmarking)
- ☐ diffutils

Platform-Specific Setup

Windows → WSL2 (Recommended)

```
powershell  
  
# PowerShell as Admin  
wsl --install -d Ubuntu-22.04  
wsl --set-default-version 2
```

Then follow Ubuntu setup inside WSL2

MSYS2 Setup (Windows Alternative)

1. Download: <https://www.msys2.org/>
2. Install to C:\msys64
3. Run **MSYS2 UCRT64** terminal (important!)
4. Update: `pacman -Syu`

Verification Commands

```
bash
```

```
# Quick verify
```

```
gcc --version && git --version && quilt --version && python3 --version
```

```
# Full verification
```

```
curl -s https://raw.githubusercontent.com/user/repo/verify_environment.sh | bash
```

First Run

```
bash
```

```
# 1. Setup environment
```

```
./prplos-patch-automation-suite.sh setup
```

```
# 2. Test patch application
```

```
./prplos-patch-automation-suite.sh apply quilt netifd patches/001-test.patch
```

```
# 3. Run benchmark
```

```
./prplos-patch-automation-suite.sh benchmark
```

```
# 4. View results
```

```
python3 prplos-monitoring-dashboard.py
```

Common Issues

Issue	Solution
Command not found	Check PATH, reinstall package
Permission denied	Use sudo (Linux) or run as admin
Python import error	<code>pip3 install --user <package></code>
WSL2 clock skew	<code>sudo hwclock -s</code>
MSYS2 path issues	Use UCRT64 terminal only
Quilt not configured	Create ~/.quiltrc file

Debugging

```
bash
```

```
# Check environment
```

```
echo $PATH
```

```
which gcc git quilt python3
```

```
# Test compilation
```

```
echo 'int main(){return 0;}' > test.c && gcc test.c && echo "✓ GCC works"
```

```
# Test Python packages
```

```
python3 -c "import matplotlib, pandas, numpy, seaborn; print('✓ Python packages OK')"
```

```
# Test quilt
```

```
mkdir -p test/patches && cd test && quilt new test.patch && echo "✓ Quilt works"
```

Platform Support Matrix

Feature	Ubuntu	WSL2	MSYS2	Windows
Build prpIOS	✓	✓	⚠	✗
Patch Management	✓	✓	✓	⚠
Performance	★ ★ ★	★ ★	★	-
Ease of Setup	★ ★ ★	★ ★	★	★ ★

Legend: ✓ Full support | ⚠ Limited | ✗ Not supported | ★ Rating

Pro Tips

1. **Use Ubuntu 22.04 LTS** for production work
2. **WSL2** is the best Windows option
3. **Work in Linux filesystem** on WSL2 (not /mnt/c/)
4. **Enable ccache** for faster rebuilds
5. **Use SSD** for build directory
6. **Allocate enough RAM** (8GB+ for WSL2)

Resources

- prpIOS: <https://gitlab.com/prpl-foundation/prplos/prplos>
- OpenWrt Wiki: <https://openwrt.org/docs/guide-developer/>
- Quilt Manual: <http://savannah.nongnu.org/projects/quilt>

- MSYS2: <https://www.msys2.org/>
- WSL2: <https://docs.microsoft.com/windows/wsl/>