# Table 15: Test Environment Setup – Software and Tools

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| Category | Software/Tool | Description |
| Operating Systems | - Linux (Ubuntu, CentOS) - Windows - macOS | Base OS platforms for testing. Linux is widely used due to its flexibility and open-source tools availability. |
| Crypto Libraries | - OpenSSL - libsodium - Bouncy Castle - mbedTLS | Libraries that provide implementations of various cryptographic algorithms. |
| Benchmarking Tools | - openssl speed - cryptopp-bench - supercop | Tools to measure the performance of cryptographic operations. |
| Profiling Tools | - perf (Linux) - Intel VTune - gprof | Tools to profile software and identify bottlenecks, CPU cycles, and other performance metrics. |
| Memory Monitoring | - valgrind - massif | Tools to monitor memory usage and detect memory leaks. |
| Side-Channel Analysis Tools | - ChipWhisperer - Side-Channel Marvels | Tools and platforms for conducting and analyzing side-channel attacks. |
| Network Monitoring | - Wireshark - tcpdump | Tools to capture and analyze network traffic, useful for testing secure communication protocols. |
| Virtualization/Isolation | - Docker - VirtualBox - VMware | Platforms to create isolated environments for testing, ensuring repeatability and containment of the testing setup. |
| Version Control | - Git - SVN | For managing code, scripts, and configuration, ensuring repeatability and tracking changes. |
| Scripting & Automation | - Python - Bash - PowerShell | Languages and shells for scripting tests, automating tasks, and processing results. |
| Database | - SQLite - PostgreSQL - MySQL | Databases to store, retrieve, and analyze test results. |