Ubuntu Server Hardware Certification Coverage (18.04 LTS)

Contents

The Ubuntu Certification team is continuously revisiting the scope of the tests comprising the Ubuntu Certified programme and it is reviewed every six months, following the same cadence as the Ubuntu OS. This revision of new tests is performed during Ubuntu's development cycle and it never applies to already-released versions of Ubuntu.

This document lists the coverage for certification of Ubuntu Server 18.04 LTS. This coverage will remain as it is for Ubuntu Server 18.04 LTS through its life cycle.

The following test categories are specified:

Blocking

Features that are required for certification. If any of the tests in the whitelist fails, the certification will fail.

Non-Blocking

Features that are tested, but that don't block certification. If any of the tests under the greylist fail, a note will be added to the certificate to warn the potential customer or user.

Untested

Features that are not currently tested. The items in the Untested category are just reference items: **anything not explicitly called out in the Blocking or Non-Blocking categories can be considered part of the Untested category.** Canonical has the option to add and remove tests, provided they are preapproved between Canonical and the customer.

For Untested items, Canonical **may** introduce tests for those items at any point; however, those tests will be introduced as Non-Blocking items until the next major suite revision. For example:

MAAS compatibility testing was not required for 12.04 LTS. As of 12.04.3, MAAS was tested as a Non-Blocking item during certification. Thus, if a Non-Blocking item does not work, the certification is not blocked but the testing is performed and that data is recorded. As of 14.04, MAAS compatibility was required to pass certification, and thus the MAAS test moved from Non-Blocking to Blocking. Prior releases of Ubuntu Server LTS test relied on outside setup of PXE, FTP, TFTP, and Power (IPMI) testing. With Ubuntu Server 14.04 LTS testing all of that functionality is now provided via the testing tools and framework to ease setup, reduce variability between lab infrastructure, and align with scale out deployment processes.

Note: only categories of hardware are tested and not specific types of hardware. For example, tests are run to verify USB controllers work, but the type of peripheral(s) used during those tests are not specified.

Full test case descriptions can be found at the Canonical Certification portal for partners:

http://certification.canonical.com

18.04 LTS Coverage Changes

New for 18.04 LTS is the introduction of Comprehensive Server Certification. This change in policy means that all Vendor Approved Options for sale with a given model Server must be tested before the Server can be considered Certified.

Once an Option has been tested in one Model, it does not need to be retested for another Model. This increases the scope of testing but minimizes the amout of extra test work necessary. Thus, if Model A and Model B both feature Networkcard 1, Networkcard 1 must only be tested once in either Model A or Model B, and will be considered tested for both.

Additional changes to Server Certification Test Coverage are highlighted below.

Blocking

- Processors:
    - ia32 (x86) and x86_64 processors are tested to ensure proper functionality.
        - By default, 64-bit Ubuntu is used. 32-bit Ubuntu is used only on processors that are 32-bit. 32-bit Ubuntu is *not* tested on 64-bit processors.
    - A general stress test is performed to verify that the system can handle a sustained high load for a period of time. This utilizes the test tool "stress-ng" available in the Universe repositories.
- Memory:
    - Proper detection
    - General usage
    - A general stress test is performed to verify that the system can handle a sustained high load for a period of time. This utilizes the test tool "stress-ng" available in the Universe repository.

- Internal hard drives (RAID AND Non-RAID) [1]:
    - Performance
    - Storage devices (HDDs, RAID LUNs) are I/O load tested using Open Source tools
    - Basic RAID levels (0,1 or 5)
- Mezzanine or Daughter Cards
    - Any mezzanine or daughter card that enables ports on the motherboard must pass. (e.g. a mezz card that enables 10Gb on onboard SFP+ ports)
- Optical drives (CD/DVD):
    - Read
- Networking:
    - Ethernet devices are tested at their full speed and must show a minimum of 80% of advertised maximum speed.
    - High Speed network devices (40 Gb/s and faster must also meet this requirement, however additional configuration and testing steps may be required)
    - Testing is conducted for 1 hour per port.
- System management [2] [3]:
    - In-Band Management (IPMI)
    - Out-of-Band Management (IPMI, AMT, etc)
    - Chassis Management (Blade / Cartridge type systems)
    - Virtual Machine Management (for LPAR or VM systems like Power or z13)
    - MAAS Compatibility
- USB controllers. USB ports are tested to ensure operability.
    - USB 2.0/3.x
- Boot/Reboot
    - Includes PXE Booting
- Virtualization [4]:
    - Virtualization extensions
    - Running an Ubuntu image on KVM

- Containers
  - LXC must function
- System Identification
  - Ensure that the Make/Model being returned to the operating system and via OOB Management is the same as what is being submitted for certification. Firmware must accurately reflect the Make/Model being certified.

Non-Blocking

- NVMe Devices
  - Vendor Approved NVMe devices will be tested as storage. Passing devices will be listed as Certified, Failing devices will be listed as Unsupported.
- Firmware Updates
  - Firmware update tools packaged for Ubuntu
  - Firmware updates possible from within the Ubuntu OS
- Storage Management Tools
  - Storage management tools packaged and documented for Ubuntu
  - Storage management tools should be fully functional on Ubuntu (executable from Ubuntu)
- Advanced RAID levels (10, 15, 50, etc)
- Infiniband
- External Storage
  - iSCSI
  - FC, FCoE
- Input devices:
  - External keyboard (basic functionality)

Untested

- GPU Coprocessors (for Compute, not Graphics Display)
- Graphics Display Adapters
- Tape devices

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- Advanced network configuration (Bonding, Failover, etc)
- E-Star requirements

Q & A

What do you mean by MAAS Compatibility?

As of 14.04 LTS, any system that is listed as Certified has been tested with Ubuntu's deployment tools. This means the system can be deployed using Metal as a Service (MAAS) and workloads can be installed to it. This is determined by using MAAS to provision and deploy the OS onto the target systems to be tested. Additionally, there should be as little human intervention as necessary to perform this task, such as the user manually needing to power the machine on and off between during the provision process.

Does changing the speed of processors require a new certificate?

No. Only changing the CPU family would require retesting and issuing a new certificate.

What about non-x86 processors?

Any architecture supported by Ubuntu may be certified. At this time, this includes ia32, x86_64, ARM, ARM64, PPC64LE and s390x.

Why don't you certify GPUs?

At this time, there is no reliable, consistent way to test GPU Coprocessors.

Complete Test Plan

The Hardware Certification Testing Coverage aims to test as thoroughly as possible and ensure that systems and their components are compatible and function well with Ubuntu and Ubuntu Tools; however, it is not possible for this scope of testing to catch issues that are unique to a system or platform or may appear during the hardware development lifecycle. For example, tools to manage firmware, storage configurations, etc., and their usage vary by vendor and platform, but end users expect this functionality. This testing is not done by the Ubuntu Server testing tools and and should be tested by the Partner on a regular basis.

Because of this, please work with your Technical Partner Manager to outline and document those tests that are not covered by the standard tooling. Partners are strongly

encouraged to integrate the Ubuntu test tools and Ubuntu OS into their own processes for OS and Hardware Validation. Your Technical Partner Manager will gladly help assist you in any way to make this possible.

1	Only RAID hardware solutions.
2	Applicable to systems that ship with a BMC or similar management device.
3	Limited to Power Management and User/Password management for MAAS control.
4	Only applies to Bare Metal and Ubuntu as Guest on a KVM Hypervisor.