TEST REPORT SEAPATH YOCTO

Receiver: SEAPATH

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Table of Contents

Chapter 1. List of supported equipment

- SFL
  - [SEAPATH CI](#)

Chapter 2. Introduction

The purpose of this document is to certify the correct operation of the open source real-time operating system for virtualizing IEDs: SEAPATH, a project under the governance of the Linux Foundation Energy.

A series of tests has been carried out on a range of equipment from several vendors, in order to certify SEAPATH on them. Certified in virtualization functions, security, real-time functionality and network latency of IEC61850 Sampled Values.

Chapter 3. Testing Setup

3.1. Setup Information

- Retrieve system information:
    - Kernel version and configuration
    - Boot options
    - CPU information
    - Memory information
    - Network interfaces

3.2. System Capabilities

- Virtualization:
    - Check processor support for hardware virtualization technologies (Intel VT-x or AMD-V)
    - Ensure hardware virtualization is enabled in UEFI settings
    - Verify KVM kernel module is enabled
- Network:
    - Ensure network drivers are operational
    - Verify SEAPATH's network infrastructure tools, such as OpenVSwitch, are operational
- Real-time:
    - Employ Cyclictest to measure real-time system latency:
        - Run on isolated CPUs
        - Determine worst-case latencies
- Clustering:
    - If the machine is part of a cluster
- Update:
    - Ensure that the system is upgradable using SWUpdate

3.3. Hardening & ANSSI-BP28 Compliance

- Launch SEAPATH cybersecurity tests
- Verify compliance with ANSSI-BP28 requirements
- Complete lists of requirements on SEAPATH on the wiki.

3.4. Virtual Machine Deployment

- Deploy and test two VMs:
  - One real-time and isolated
  - One non-real-time and non-isolated
- Use VMs for:
  - Real-time (cyclic test)
  - SV IEC61850 packet network latency tests

3.5. IEC61850 Sampled Value Latency Testing

- Perform SV IEC61850 packet network latency tests
- Compute latency between publisher and VM userspace.

Chapter 4. SFL

4.1. SEAPATH CI

4.1.1. Setup Information

- **kernel version**: Linux-6.1.80-rt26-mainline-rt-x86_64-with-glibc2.35 #1 SMP PREEMPT_RT Fri Mar 1 20:27:44 UTC 2024

- **boot options**: BOOT_IMAGE=/bzImage root=PARTUUID=387b3639-104b-440c-a934-a77c36a384c6 efi=runtime rootwait console=ttyS0,115200 console=tty0 systemd.unified_cgroup_hierarchy=0 audit=0 slab_nomerge slub_debug=ZF rootfstype=ext4 init=/sbin/init.sh default_hugepagesz=1G hugepagesz=1G skew_tick=1 rcutree.kthread_prio=10 kvm.halt_poll_ns=0 isolcpus=4-N nohz_full=4-N rcu_nocbs=4-N

- **CPU architecture**: x86_64

- **Number of physical CPUs**: 8

- **RAM**: 65588872 kB

- **Network interfaces**:

  - **Interface Name**: lo

  - **Capabilities**:

    - *Speed*: Unknown

    - *Duplex*: Unknown

    - *Auto-negotiation*: Unknown

    - *Hardware PTP*: Not supported

  - **Interface Name**: enp5s0

  - **Capabilities**:

    - *Speed*: Unknown!

    - *Duplex*: Unknown! (255)

    - *Auto-negotiation*: on

    - *Hardware PTP*: Supported

  - **Interface Name**: enp6s0

  - **Capabilities**:

    - *Speed*: Unknown!

    - *Duplex*: Unknown! (255)

    - *Auto-negotiation*: on

    - *Hardware PTP*: Supported

  - **Interface Name**: enp7s0

  - **Capabilities**:

- *Speed*: Unknown!
    - *Duplex*: Unknown! (255)
    - *Auto-negotiation*: on
    - *Hardware PTP*: Supported
- **Interface Name**: enp8s0
- **Capabilities**:
    - *Speed*: Unknown!
    - *Duplex*: Unknown! (255)
    - *Auto-negotiation*: on
    - *Hardware PTP*: Supported
- **Interface Name**: enp1s0
- **Capabilities**:
    - *Speed*: 1000Mb/s
    - *Duplex*: Full
    - *Auto-negotiation*: on
    - *Hardware PTP*: Supported
- **Interface Name**: enp2s0
- **Capabilities**:
    - *Speed*: 1000Mb/s
    - *Duplex*: Full
    - *Auto-negotiation*: on
    - *Hardware PTP*: Supported
- **Interface Name**: enp3s0
- **Capabilities**:
    - *Speed*: 1000Mb/s
    - *Duplex*: Full
    - *Auto-negotiation*: on
    - *Hardware PTP*: Supported
- **Interface Name**: enp4s0
- **Capabilities**:
    - *Speed*: Unknown!
    - *Duplex*: Unknown! (255)
    - *Auto-negotiation*: on
    - *Hardware PTP*: Supported
- **Interface Name**: gre0

- **Capabilities**:
  - *Speed*: Unknown
  - *Duplex*: Unknown
  - *Auto-negotiation*: Unknown
  - *Hardware PTP*: Not supported
- **Interface Name**: gretap0
- **Capabilities**:
  - *Speed*: Unknown
  - *Duplex*: Unknown
  - *Auto-negotiation*: Unknown
  - *Hardware PTP*: Not supported
- **Interface Name**: erspan0
- **Capabilities**:
  - *Speed*: Unknown
  - *Duplex*: Unknown
  - *Auto-negotiation*: Unknown
  - *Hardware PTP*: Not supported
- **Interface Name**: sit0
- **Capabilities**:
  - *Speed*: Unknown
  - *Duplex*: Unknown
  - *Auto-negotiation*: Unknown
  - *Hardware PTP*: Not supported
- **Interface Name**: ovs-system
- **Capabilities**:
  - *Speed*: Unknown
  - *Duplex*: Unknown
  - *Auto-negotiation*: Unknown
  - *Hardware PTP*: Not supported
- **Interface Name**: obr0
- **Capabilities**:
  - *Speed*: Unknown
  - *Duplex*: Unknown
  - *Auto-negotiation*: Unknown
  - *Hardware PTP*: Not supported

- **Interface Name**: obr0P0
- **Capabilities**:
  - *Speed*: 10Mb/s
  - *Duplex*: Full
  - *Auto-negotiation*: off
  - *Hardware PTP*: Not supported
- **Interface Name**: obr0P1
- **Capabilities**:
  - *Speed*: 10Mb/s
  - *Duplex*: Full
  - *Auto-negotiation*: off
  - *Hardware PTP*: Not supported
- **Interface Name**: obr0P2
- **Capabilities**:
  - *Speed*: 10Mb/s
  - *Duplex*: Full
  - *Auto-negotiation*: off
  - *Hardware PTP*: Not supported
- **Interface Name**: obr0P3
- **Capabilities**:
  - *Speed*: 10Mb/s
  - *Duplex*: Full
  - *Auto-negotiation*: off
  - *Hardware PTP*: Not supported
- **Interface Name**: obr0P4
- **Capabilities**:
  - *Speed*: 10Mb/s
  - *Duplex*: Full
  - *Auto-negotiation*: off
  - *Hardware PTP*: Not supported
- **Interface Name**: br0
- **Capabilities**:
  - *Speed*: 1000Mb/s
  - *Duplex*: Unknown! (255)
  - *Auto-negotiation*: off

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- *Hardware PTP*: Not supported
- **Interface Name**: enp1s0.33
- **Capabilities**:
  - *Speed*: 1000Mb/s
  - *Duplex*: Full
  - *Auto-negotiation*: on
  - *Hardware PTP*: Supported

4.1.2. System Capabilities and Hardening

Tests common security for yoctoCI

Test ID	Tests	Results
SEAPATH-00106	Check /etc/passwd permissions	PASS
SEAPATH-00107	Check /etc/shadow permissions	PASS
SEAPATH-00108	Check /etc/syslog-ng/ca.d/cacert.pem permissions	PASS
SEAPATH-00049	Check /etc/ssh/ssh_host_ed25519_key permissions	PASS
SEAPATH-00090	Check /etc/ssh/ssh_host_rsa_key permissions	PASS
SEAPATH-00193	All directories writable by all users have the sticky bit	PASS
SEAPATH-00194	All directories writable by all users are owned by root	PASS
SEAPATH-00195	Ceph OSD are owned by ceph	PASS
SEAPATH-00088	root password was randomized at boot	PASS
SEAPATH-00089	root password is randomized at each boot	PASS
SEAPATH-00091	root password is encrypted as sha512	PASS
SEAPATH-00092	bash timeout is set read-only to 300s	PASS
SEAPATH-00093	sshd forbids setting environment variables	PASS
SEAPATH-00094	sshd server time-out is set to 300s of client inactivity	PASS
SEAPATH-00095	shadow encrypts passwords with SHA512 by default	PASS
SEAPATH-00096	shadow encryption uses at least 65536 rounds	PASS
SEAPATH-00097	pam password authentication uses sha512 with 65536 rounds	PASS
SEAPATH-00098	password set to expire after 90 days	PASS
SEAPATH-00099	'su' is denied	PASS
SEAPATH-00100	/etc/securetty is empty	PASS
SEAPATH-00101	PAM securetty module is active in 'login' policy	PASS
SEAPATH-00157	PATH env. variable is correctly set	PASS
SEAPATH-00050	Linux kernel 'hardening' : SECURITY_YAMA is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : DEBUG_WX is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SECURITY_DMESG_RESTRICT is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : PAGE_TABLE_ISOLATION is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : RETPOLINE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : LEGACY_VSYSCALL_NONE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : STATIC_USERMODEHELPER is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : USERFAULTFD is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : X86_VSYSCALL_EMULATION is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : MODIFY_LDT_SYSCALL is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : DEVMEM is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : USELIB is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : KEXEC is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : BINFMT_MISC is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : ALLOW_DEV_COREDUMP is disabled	PASS

Test ID	Tests	Results
SEAPATH-00050	Linux kernel 'hardening' : PROC_KCORE is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : KALLSYMS is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLUB_DEBUG_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLAB_FREELIST_RANDOM is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLAB_FREELIST_HARDENED is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLUB_DEBUG_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : HARDENED_USERCOPY is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : FORTIFY_SOURCE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : PAGE_POISONING is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : RANDOMIZE_KSTACK_OFFSET_DEFAULT is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : INIT_ON_ALLOC_DEFAULT_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : INIT_ON_FREE_DEFAULT_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_LATENT_ENTROPY is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_RANDSTRUCT is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_STRUCTLEAK_BYREF_ALL is enabled	PASS
SEAPATH-00158	sudo policy is installed for group operator (operator)	PASS
SEAPATH-00159	sudo policy is installed for group maintenance-N1 (maint-n1)	PASS
SEAPATH-00160	sudo policy is installed for group maintenance-N3 (maint-n3)	PASS
SEAPATH-00161	sudo policy is installed for group cluster administrator (admincluster)	PASS
SEAPATH-00162	sudo policy is installed for group system administrator (adminsys)	PASS
SEAPATH-00163	sudo policy is installed for group ansible (ansible)	PASS
SEAPATH-00164	sudo requires password for group operator (operator)	PASS
SEAPATH-00165	sudo requires password for group maintenance-N1 (maint-n1)	PASS
SEAPATH-00166	sudo requires password for group maintenance-N3 (maint-n3)	PASS
SEAPATH-00167	sudo requires password for group administrator (admincluster)	PASS
SEAPATH-00168	sudo requires password for group super-administrator (adminsys)	PASS
SEAPATH-00169	sudo requires password for group ansible (ansible)	PASS
SEAPATH-00103	/usr/bin/sudo exists	PASS
SEAPATH-00104	/usr/bin/sudo belongs to group privileged	PASS
SEAPATH-00105	/usr/bin/sudo has permissions 4750	PASS
SEAPATH-00143	/etc/sudoers include noexec directive	PASS
SEAPATH-00144	/etc/sudoers include requiretty directive	PASS
SEAPATH-00145	/etc/sudoers include use_pty directive	PASS
SEAPATH-00146	/etc/sudoers include umask=0027 directive	PASS
SEAPATH-00147	/etc/sudoers include ignore_dot directive	PASS
SEAPATH-00148	/etc/sudoers include env_reset directive	PASS
SEAPATH-00149	/etc/sudoers include passwd_timeout=1 directive	PASS
SEAPATH-00150	/etc/sudoers - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers - EXEC option is not used	PASS

Test ID	Tests	Results
SEAPATH-00153	/etc/sudoers - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers - /etc/sudoers is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/privileged - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/privileged - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/privileged - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/privileged - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/privileged - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/privileged - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/privileged - /etc/sudoers.d/privileged is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/maint-n3 - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/maint-n3 - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/maint-n3 - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/maint-n3 - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/maint-n3 - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/maint-n3 - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/maint-n3 - /etc/sudoers.d/maint-n3 is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/maint-n1 - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/maint-n1 - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/maint-n1 - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/maint-n1 - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/maint-n1 - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/maint-n1 - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/maint-n1 - /etc/sudoers.d/maint-n1 is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/admin - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/admin - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/admin - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/admin - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/admin - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/admin - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/admin - /etc/sudoers.d/admin is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/operator - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/operator - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/operator - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/operator - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/operator - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/operator - no command is specified with wildcard argument	PASS

Test ID	Tests	Results
SEAPATH-00156	/etc/sudoers.d/operator - /etc/sudoers.d/operator is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/cockpit - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/cockpit - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/cockpit - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/cockpit - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/cockpit - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/cockpit - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/cockpit - /etc/sudoers.d/cockpit is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/emergadmin - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/emergadmin - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/emergadmin - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/emergadmin - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/emergadmin - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/emergadmin - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/emergadmin - /etc/sudoers.d/emergadmin is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/adminsys - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/adminsys - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/adminsys - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/adminsys - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/adminsys - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/adminsys - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/adminsys - /etc/sudoers.d/adminsys is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/admincluster - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/admincluster - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/admincluster - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/admincluster - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/admincluster - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/admincluster - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/admincluster - /etc/sudoers.d/admincluster is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/ansible - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/ansible - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/ansible - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/ansible - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/ansible - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/ansible - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/ansible - /etc/sudoers.d/ansible is owned by root:root with 0440 permissions	PASS

Test ID	Tests	Results
SEAPATH-00150	/etc/sudoers.d/snmp - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/snmp - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/snmp - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/snmp - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/snmp - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/snmp - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/snmp - /etc/sudoers.d/snmp is owned by root:root with 0440 permissions	PASS
SEAPATH-00109	sysctl-hardening - kernel.modules_disabled is set properly	PASS
SEAPATH-00109	sysctl-hardening - dev.tty.ldisc_autoload is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_fifos is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_regular is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_hardlinks is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_symlinks is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.suid_dumpable is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.dmesg_restrict is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.kptr_restrict is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_event_paranoid is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.randomize_va_space is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.sysrq is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.unprivileged_bpf_disabled is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.yama.ptrace_scope is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_event_max_sample_rate is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_cpu_time_max_percent is set properly	PASS
SEAPATH-00109	sysctl-hardening - vm.mmap_min_addr is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.pid_max is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.panic_on_oops is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.log_martians is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.rp_filter is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.secure_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.send_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.shared_media is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.log_martians is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.rp_filter is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.secure_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.send_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.shared_media is set properly	PASS

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Test ID	Tests	Results
SEAPATH-00109	sysctl-network - net.ipv4.icmp_echo_ignore_broadcasts is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.icmp_ignore_bogus_error_responses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_invalid_ratelimit is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_max_syn_backlog is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_rfc1337 is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_syn_retries is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_synack_retries is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_syncookies is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_timestamps is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.ip_local_port_range is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_challenge_ack_limit is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra_defrtr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra_pinfo is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.autoconf is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.dad_transmits is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.forwarding is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.max_addresses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.router_solicitations is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.use_tempaddr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra_defrtr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra_pinfo is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.autoconf is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.dad_transmits is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.forwarding is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.max_addresses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.router_solicitations is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.use_tempaddr is set properly	PASS
SEAPATH-00109	sysctl-network - net.netfilter.nf_conntrack_max is set properly	PASS
SEAPATH-00109	sysctl-network - net.netfilter.nf_conntrack_tcp_loose is set properly	PASS
SEAPATH-00176	Check kptr_restrict is set to 2	PASS
SEAPATH-00177	Check dmesg_restrict is set to 1	PASS
SEAPATH-00178	Check pid_max is set to 4194304	PASS
SEAPATH-00179	Check perf_cpu_time_max_percent is set to 1	PASS
SEAPATH-00180	Check perf_event_max_sample_rate is set to 1	PASS

Test ID	Tests	Results
SEAPATH-00181	Check perf_event_paranoid is set to 3	PASS
SEAPATH-00182	Check randomize_va_space is set to 2	PASS
SEAPATH-00183	Check sysrq is set to 0	PASS
SEAPATH-00184	Check unprivileged_bpf_disabled is set to 1	PASS
SEAPATH-00185	Check panic_on_oops is set to 1	PASS
SEAPATH-00186	Check kernel.yama.ptrace_scope is set to 2	PASS
SEAPATH-00187	Check suid_dumpable is set to 0	PASS
SEAPATH-00188	Check protected_fifos is set to 2	PASS
SEAPATH-00189	Check protected_regular is set to 2	PASS
SEAPATH-00190	Check protected_symlinks is set to 1	PASS
SEAPATH-00191	Check protected_hardlinks is set to 1	PASS
SEAPATH-00192	Check modules_disabled is set to 1	PASS
SEAPATH-00082	/var/log is mounted on a separate partition	PASS
SEAPATH-00085	syslog-ng can not acquire new privileges	PASS
SEAPATH-00086	syslog-ng capabilities are bounded	PASS
SEAPATH-00087	syslog-ng system calls are filtered	PASS
SEAPATH-00050	Linux kernel 'misc' : EFI_PARTITION is enabled	PASS
SEAPATH-00050	Linux kernel 'reporting' : EDAC is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_OHCI_HCD is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_EHCI_HCD is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_XHCI_HCD is enabled	PASS
SEAPATH-00171	no RT throttling triggered	PASS
SEAPATH-00078	no paging error	PASS
SEAPATH-00079	no rcu stall	PASS
SEAPATH-00080	no backtraces	PASS
SEAPATH-00075	kernel is PREEMPT RT	PASS
SEAPATH-00076	kernel is realtime	PASS
SEAPATH-00081	kernel is >= 4.19.106	PASS
SEAPATH-00083	syslog-ng service is running	PASS
SEAPATH-00084	/var/log/syslog is used as log target	PASS
SEAPATH-00102	no systemd services have failed	PASS
SEAPATH-00170	no systemd syntax warning	PASS

- number of tests: 195

- number of failures: 0

Tests hypervisor functionality for yoctoCI

Test ID	Tests	Results
SEAPATH-00027	auditd is inactive	PASS
SEAPATH-00028	Current CPU supports 'no-execute'	PASS

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Test ID	Tests	Results
SEAPATH-00028	Current CPU supports 'Intel virtualization'	PASS
SEAPATH-00028	Current CPU supports 'hugepages'	PASS
SEAPATH-00028	Current CPU supports '64bit'	PASS
SEAPATH-00044	Check /etc/syslog-ng/cert.d/clientcert.pem permissions	PASS
SEAPATH-00045	Check /etc/syslog-ng/cert.d/clientkey.pem permissions	PASS
SEAPATH-00030	iommu enabled in passthrough mode	PASS
SEAPATH-00031	iommu is loaded	PASS
SEAPATH-00032	iommu is populated	PASS
SEAPATH-00050	Linux kernel 'iommu' : INTEL_IOMMU is enabled	PASS
SEAPATH-00050	Linux kernel 'iommu' : AMD_IOMMU is enabled	PASS
SEAPATH-00050	Linux kernel 'iommu' : AMD_IOMMU_V2 is enabled	PASS
SEAPATH-00050	Linux kernel 'iommu' : IOMMU_IOVA is enabled	PASS
SEAPATH-00050	Linux kernel 'iommu' : DMAR_TABLE is enabled	PASS
SEAPATH-00050	Linux kernel 'ovs' : OPENVSWITCH is enabled	PASS
SEAPATH-00050	Linux kernel 'ovs' : OPENVSWITCH_GRE is enabled	PASS
SEAPATH-00050	Linux kernel 'ovs' : OPENVSWITCH_VXLAN is enabled	PASS
SEAPATH-00050	Linux kernel 'ovs' : OPENVSWITCH_GENEVE is enabled	PASS
SEAPATH-00050	Linux kernel 'ovs' : TRIM_UNUSED_KSYMS is disabled	PASS
SEAPATH-00050	Linux kernel 'ovs' : NET_IPGRE is enabled	PASS
SEAPATH-00050	Linux kernel 'dpdk' : UIO is enabled	PASS
SEAPATH-00050	Linux kernel 'dpdk' : VFIO_PCI is enabled	PASS
SEAPATH-00050	Linux kernel 'hardware' : IGB is enabled	PASS
SEAPATH-00050	Linux kernel 'hardware' : TIGON3 is enabled	PASS
SEAPATH-00050	Linux kernel 'hardware' : R8169 is enabled	PASS
SEAPATH-00050	Linux kernel 'hardware' : E1000 is enabled	PASS
SEAPATH-00050	Linux kernel 'hardware' : E1000E is enabled	PASS
SEAPATH-00050	Linux kernel 'hardware' : X86_PKG_TEMP_THERMAL is enabled	PASS
SEAPATH-00050	Linux kernel 'ceph' : AIO is enabled	PASS
SEAPATH-00050	Linux kernel 'ceph' : TMPFS is enabled	PASS
SEAPATH-00050	Linux kernel 'ceph' : MD is enabled	PASS
SEAPATH-00050	Linux kernel 'kvm' : KVM is enabled	PASS
SEAPATH-00050	Linux kernel 'kvm' : KVM_INTEL is enabled	PASS
SEAPATH-00050	Linux kernel 'kvm' : KVM_VFIO is enabled	PASS
SEAPATH-00003	libvirtd service is running	PASS
SEAPATH-00035	openvswitch service is running	PASS
SEAPATH-00038	lspci 3.6.2+ is available	PASS
SEAPATH-00140	rootfs is readonly mounted	PASS
SEAPATH-00141	/etc is mounted as overlayfs	PASS
SEAPATH-00141	/home is mounted as overlayfs	PASS
SEAPATH-00141	/usr/lib/python3.10/site-packages/*pycache* is mounted as overlayfs	PASS

Test ID	Tests	Results
SEAPATH-00141	/var/cache is mounted as overlayfs	PASS
SEAPATH-00141	/var/lib is mounted as overlayfs	PASS
SEAPATH-00141	/var/spool is mounted as overlayfs	PASS
SEAPATH-00142	Kernel OVERLAY_FS is set	PASS
SEAPATH-00018	KVM device available	PASS
SEAPATH-00019	Qemu for x86-64 available	PASS
SEAPATH-00020	Libvirtd service is running	PASS
SEAPATH-00021	IPv4 NAT is available	PASS
SEAPATH-00022	IPv6 NAT is available	PASS

- number of tests: 51

- number of failures: 0

Tests hypervisor security for yoctoCI

Test ID	Tests	Results
SEAPATH-00033	/etc/group is consistent	PASS
SEAPATH-00034	/etc/group does not include extra group	PASS
SEAPATH-00006	Audit subsystem is disabled on cmdline	PASS
SEAPATH-00008	Slab merging is disabled on cmdline	PASS
SEAPATH-00009	Kernel Page Table Isolation is enabled on kernel configuration	PASS
SEAPATH-00010	SLUB redzoning and sanity checking enabled on cmdline	PASS
SEAPATH-00004	libvirtd can not acquire new privileges	PASS
SEAPATH-00005	libvirtd capabilities are bounded	PASS
SEAPATH-00125	libvirtd system calls are filtered	PASS
SEAPATH-00039	openvswitch user is created and locked	PASS
SEAPATH-00040	openvswitch user is part of hugepages group	PASS
SEAPATH-00041	openvswitch user is part of vfio-net group	PASS
SEAPATH-00042	ovs-vswitchd is running as user openvswitch	PASS
SEAPATH-00043	ovsdb-server is running as user openvswitch	PASS
SEAPATH-00126	ovs-vswitchd system calls are filtered	PASS
SEAPATH-00127	ovsdb-server system calls are filtered	PASS
SEAPATH-00047	/etc/passwd is consistent	PASS
SEAPATH-00048	/etc/passwd does not include extra user	PASS
SEAPATH-00046	/etc/shadow is consistent	PASS
SEAPATH-00015	Vulnerabilities sysfs entry exist	PASS
SEAPATH-00017	System is not vulnerable to : meltdown	PASS
SEAPATH-00017	System is not vulnerable to : l1tf	PASS
SEAPATH-00017	System is not vulnerable to : spectre_v1	PASS
SEAPATH-00017	System is not vulnerable to : spectre_v2	PASS
SEAPATH-00012	admin user exists	PASS

Test ID	Tests	Results
SEAPATH-00013	admin has a password	PASS
SEAPATH-00014	admin is sudoers	PASS
SEAPATH-00023	SPICE protocol is not installed	PASS

- number of tests: 27

- number of failures: 0

Tests update for yoctoCI

Test ID	Tests	Results
SEAPATH-00115	/dev/upgradable_bootloader exists	PASS
SEAPATH-00116	/dev/upgradable_rootfs exists	PASS
SEAPATH-00117	/dev/upgradable_bootloader points to inactive bank	PASS
SEAPATH-00118	/dev/upgradable_rootfs points to inactive bank	PASS

- number of tests: 4

- number of failures: 0

4.1.3. ANSSI-BP28 Compliance

Matrix include/ANSSI-BP28-M-Recommendations.csv for yoctoCI

Requirement	Test id	Status
ANSSI-BP28-R30	SEAPATH-00033	PASS
	SEAPATH-00034	PASS
	SEAPATH-00046	PASS
	SEAPATH-00047	PASS
	SEAPATH-00048	PASS
ANSSI-BP28-R31	SEAPATH-00088	PASS
	SEAPATH-00089	PASS
	SEAPATH-00091	PASS
ANSSI-BP28-R54	SEAPATH-00193	PASS
	SEAPATH-00194	PASS
	SEAPATH-00195	PASS
ANSSI-BP28-R68	SEAPATH-00091	PASS
	SEAPATH-00095	PASS
	SEAPATH-00096	PASS
	SEAPATH-00097	PASS
ANSSI-BP28-R80	SEAPATH-00003	PASS
	SEAPATH-00020	PASS
	SEAPATH-00035	PASS
	SEAPATH-00083	PASS
	SEAPATH-00125	PASS
	SEAPATH-00126	PASS
	SEAPATH-00127	PASS

Matrix include/ANSSI-BP28-MI-Recommendations.csv for yoctoCI

Requirement	Test id	Status
ANSSI-BP28-R1	SEAPATH-00015	PASS
	SEAPATH-00017	PASS
	SEAPATH-00028	PASS
	SEAPATH-00030	PASS
	SEAPATH-00031	PASS
	SEAPATH-00032	PASS
	SEAPATH-00050	PASS
ANSSI-BP28-R11	SEAPATH-00050	PASS
	SEAPATH-00109	PASS
	SEAPATH-00186	PASS
ANSSI-BP28-R12	SEAPATH-00109	PASS
ANSSI-BP28-R13	SEAPATH-00109	PASS

Requirement	Test id	Status
ANSSI-BP28-R14	SEAPATH-00109	PASS
	SEAPATH-00187	PASS
	SEAPATH-00188	PASS
	SEAPATH-00189	PASS
	SEAPATH-00190	PASS
	SEAPATH-00191	PASS
ANSSI-BP28-R28	SEAPATH-00082	PASS
	SEAPATH-00140	PASS
	SEAPATH-00141	PASS
ANSSI-BP28-R32	SEAPATH-00092	PASS
	SEAPATH-00094	PASS
ANSSI-BP28-R34	SEAPATH-00033	PASS
	SEAPATH-00034	PASS
	SEAPATH-00046	PASS
	SEAPATH-00047	PASS
	SEAPATH-00048	PASS
ANSSI-BP28-R35	SEAPATH-00033	PASS
	SEAPATH-00034	PASS
	SEAPATH-00039	PASS
	SEAPATH-00046	PASS
	SEAPATH-00047	PASS
	SEAPATH-00048	PASS
ANSSI-BP28-R39	SEAPATH-00143	PASS
	SEAPATH-00144	PASS
	SEAPATH-00145	PASS
	SEAPATH-00146	PASS
	SEAPATH-00147	PASS
	SEAPATH-00148	PASS
ANSSI-BP28-R40	SEAPATH-00151	PASS
ANSSI-BP28-R42	SEAPATH-00153	PASS
ANSSI-BP28-R43	SEAPATH-00154	PASS
	SEAPATH-00155	PASS
ANSSI-BP28-R44	SEAPATH-00156	PASS

Requirement	Test id	Status
ANSSI-BP28-R50	SEAPATH-00044	PASS
	SEAPATH-00045	PASS
	SEAPATH-00049	PASS
	SEAPATH-00090	PASS
	SEAPATH-00106	PASS
	SEAPATH-00107	PASS
	SEAPATH-00108	PASS
	SEAPATH-00156	PASS
ANSSI-BP28-R52	SEAPATH-00040	PASS
	SEAPATH-00041	PASS
ANSSI-BP28-R79	SEAPATH-00004	PASS
	SEAPATH-00005	PASS
	SEAPATH-00023	PASS
	SEAPATH-00085	PASS
	SEAPATH-00086	PASS
ANSSI-BP28-R9	SEAPATH-00109	PASS
	SEAPATH-00176	PASS
	SEAPATH-00177	PASS
	SEAPATH-00178	PASS
	SEAPATH-00179	PASS
	SEAPATH-00180	PASS
	SEAPATH-00181	PASS
	SEAPATH-00182	PASS
	SEAPATH-00183	PASS
	SEAPATH-00184	PASS
	SEAPATH-00185	PASS

Matrix include/ANSSI-BP28-MIE-Recommendations.csv for yoctoCI

Requirement	Test id	Status
ANSSI-BP28-R10	SEAPATH-00109	PASS
	SEAPATH-00192	PASS
ANSSI-BP28-R36	SEAPATH-00146	PASS
ANSSI-BP28-R37	SEAPATH-00005	PASS
	SEAPATH-00084	PASS
	SEAPATH-00085	PASS
	SEAPATH-00086	PASS
	SEAPATH-00125	PASS
	SEAPATH-00126	PASS
	SEAPATH-00127	PASS
ANSSI-BP28-R38	SEAPATH-00104	PASS

Requirement	Test id	Status
ANSSI-BP28-R41	SEAPATH-00152	PASS
ANSSI-BP28-R64	SEAPATH-00004	PASS
	SEAPATH-00005	PASS
	SEAPATH-00085	PASS
	SEAPATH-00086	PASS
ANSSI-BP28-R7	SEAPATH-00030	PASS
	SEAPATH-00031	PASS
	SEAPATH-00032	PASS
	SEAPATH-00050	PASS
ANSSI-BP28-R71	SEAPATH-00082	PASS
	SEAPATH-00083	PASS
	SEAPATH-00084	PASS
	SEAPATH-00102	PASS
ANSSI-BP28-R78	SEAPATH-00039	PASS
	SEAPATH-00040	PASS
	SEAPATH-00041	PASS
	SEAPATH-00042	PASS
	SEAPATH-00043	PASS
	SEAPATH-00085	PASS
	SEAPATH-00086	PASS

4.1.4. Virtual Machine Deployment

Tests common security for guest0

Test ID	Tests	Results
SEAPATH-00106	Check /etc/passwd permissions	PASS
SEAPATH-00107	Check /etc/shadow permissions	PASS
SEAPATH-00108	Check /etc/syslog-ng/ca.d/cacert.pem permissions	PASS
SEAPATH-00049	Check /etc/ssh/ssh_host_ed25519_key permissions	PASS
SEAPATH-00090	Check /etc/ssh/ssh_host_rsa_key permissions	PASS
SEAPATH-00193	All directories writable by all users have the sticky bit	PASS
SEAPATH-00194	All directories writable by all users are owned by root	PASS
SEAPATH-00195	Ceph OSD are owned by ceph	PASS
SEAPATH-00088	root password was randomized at boot	PASS
SEAPATH-00089	root password is randomized at each boot	PASS
SEAPATH-00091	root password is encrypted as sha512	PASS
SEAPATH-00092	bash timeout is set read-only to 300s	PASS
SEAPATH-00093	sshd forbids setting environment variables	PASS
SEAPATH-00094	sshd server time-out is set to 300s of client inactivity	PASS
SEAPATH-00095	shadow encrypts passwords with SHA512 by default	PASS
SEAPATH-00096	shadow encryption uses at least 65536 rounds	PASS
SEAPATH-00097	pam password authentication uses sha512 with 65536 rounds	PASS
SEAPATH-00098	password set to expire after 90 days	PASS
SEAPATH-00099	'su' is denied	PASS
SEAPATH-00100	/etc/securetty is empty	PASS
SEAPATH-00101	PAM securetty module is active in 'login' policy	PASS
SEAPATH-00157	PATH env. variable is correctly set	PASS
SEAPATH-00050	Linux kernel 'hardening' : SECURITY_YAMA is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : DEBUG_WX is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SECURITY_DMESG_RESTRICT is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : PAGE_TABLE_ISOLATION is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : RETPOLINE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : LEGACY_VSYSCALL_NONE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : STATIC_USERMODEHELPER is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : USERFAULTFD is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : X86_VSYSCALL_EMULATION is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : MODIFY_LDT_SYSCALL is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : DEVMEM is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : USELIB is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : KEXEC is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : BINFMT_MISC is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : ALLOW_DEV_COREDUMP is disabled	PASS

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Test ID	Tests	Results
SEAPATH-00050	Linux kernel 'hardening' : PROC_KCORE is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : KALLSYMS is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLUB_DEBUG_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLAB_FREELIST_RANDOM is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLAB_FREELIST_HARDENED is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLUB_DEBUG_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : HARDENED_USERCOPY is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : FORTIFY_SOURCE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : PAGE_POISONING is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : RANDOMIZE_KSTACK_OFFSET_DEFAULT is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : INIT_ON_ALLOC_DEFAULT_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : INIT_ON_FREE_DEFAULT_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_LATENT_ENTROPY is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_RANDSTRUCT is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_STRUCTLEAK_BYREF_ALL is enabled	PASS
SEAPATH-00158	sudo policy is installed for group operator (operator)	PASS
SEAPATH-00159	sudo policy is installed for group maintenance-N1 (maint-n1)	PASS
SEAPATH-00160	sudo policy is installed for group maintenance-N3 (maint-n3)	PASS
SEAPATH-00161	sudo policy is installed for group cluster administrator (admincluster)	PASS
SEAPATH-00162	sudo policy is installed for group system administrator (adminsys)	PASS
SEAPATH-00163	sudo policy is installed for group ansible (ansible)	PASS
SEAPATH-00164	sudo requires password for group operator (operator)	PASS
SEAPATH-00165	sudo requires password for group maintenance-N1 (maint-n1)	PASS
SEAPATH-00166	sudo requires password for group maintenance-N3 (maint-n3)	PASS
SEAPATH-00167	sudo requires password for group administrator (admincluster)	PASS
SEAPATH-00168	sudo requires password for group super-administrator (adminsys)	PASS
SEAPATH-00169	sudo requires password for group ansible (ansible)	PASS
SEAPATH-00103	/usr/bin/sudo exists	PASS
SEAPATH-00104	/usr/bin/sudo belongs to group privileged	PASS
SEAPATH-00105	/usr/bin/sudo has permissions 4750	PASS
SEAPATH-00143	/etc/sudoers include noexec directive	PASS
SEAPATH-00144	/etc/sudoers include requiretty directive	PASS
SEAPATH-00145	/etc/sudoers include use_pty directive	PASS
SEAPATH-00146	/etc/sudoers include umask=0027 directive	PASS
SEAPATH-00147	/etc/sudoers include ignore_dot directive	PASS
SEAPATH-00148	/etc/sudoers include env_reset directive	PASS
SEAPATH-00149	/etc/sudoers include passwd_timeout=1 directive	PASS
SEAPATH-00150	/etc/sudoers - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers - EXEC option is not used	PASS

Test ID	Tests	Results
SEAPATH-00153	/etc/sudoers - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers - /etc/sudoers is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/emergadmin - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/emergadmin - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/emergadmin - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/emergadmin - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/emergadmin - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/emergadmin - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/emergadmin - /etc/sudoers.d/emergadmin is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/operator - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/operator - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/operator - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/operator - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/operator - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/operator - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/operator - /etc/sudoers.d/operator is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/privileged - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/privileged - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/privileged - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/privileged - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/privileged - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/privileged - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/privileged - /etc/sudoers.d/privileged is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/admincluster - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/admincluster - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/admincluster - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/admincluster - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/admincluster - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/admincluster - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/admincluster - /etc/sudoers.d/admincluster is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/maint-n1 - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/maint-n1 - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/maint-n1 - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/maint-n1 - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/maint-n1 - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/maint-n1 - no command is specified with wildcard argument	PASS

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Test ID	Tests	Results
SEAPATH-00156	/etc/sudoers.d/maint-n1 - /etc/sudoers.d/maint-n1 is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/ansible - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/ansible - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/ansible - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/ansible - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/ansible - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/ansible - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/ansible - /etc/sudoers.d/ansible is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/admin - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/admin - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/admin - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/admin - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/admin - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/admin - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/admin - /etc/sudoers.d/admin is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/adminsys - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/adminsys - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/adminsys - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/adminsys - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/adminsys - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/adminsys - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/adminsys - /etc/sudoers.d/adminsys is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/maint-n3 - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/maint-n3 - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/maint-n3 - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/maint-n3 - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/maint-n3 - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/maint-n3 - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/maint-n3 - /etc/sudoers.d/maint-n3 is owned by root:root with 0440 permissions	PASS
SEAPATH-00109	sysctl-hardening - kernel.modules_disabled is set properly	PASS
SEAPATH-00109	sysctl-hardening - dev.tty.ldisc_autoload is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_fifos is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_regular is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_hardlinks is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_symlinks is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.suid_dumpable is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.dmesg_restrict is set properly	PASS

Test ID	Tests	Results
SEAPATH-00109	sysctl-hardening - kernel.kptr_restrict is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_event_paranoid is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.randomize_va_space is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.sysrq is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.unprivileged_bpf_disabled is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.yama.ptrace_scope is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_event_max_sample_rate is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_cpu_time_max_percent is set properly	PASS
SEAPATH-00109	sysctl-hardening - vm.mmap_min_addr is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.pid_max is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.panic_on_oops is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.log_martians is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.rp_filter is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.secure_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.send_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.shared_media is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.log_martians is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.rp_filter is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.secure_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.send_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.shared_media is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.icmp_echo_ignore_broadcasts is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.icmp_ignore_bogus_error_responses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_invalid_ratelimit is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_max_syn_backlog is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_rfc1337 is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_syn_retries is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_synack_retries is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_syncookies is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_timestamps is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.ip_local_port_range is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_challenge_ack_limit is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra_defrtr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra_pinfo is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_redirects is set properly	PASS

Test ID	Tests	Results
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.autoconf is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.dad_transmits is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.forwarding is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.max_addresses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.router_solicitations is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.use_tempaddr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra_defrtr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra_pinfo is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.autoconf is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.dad_transmits is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.forwarding is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.max_addresses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.router_solicitations is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.use_tempaddr is set properly	PASS
SEAPATH-00109	sysctl-network - net.netfilter.nf_conntrack_max is set properly	PASS
SEAPATH-00109	sysctl-network - net.netfilter.nf_conntrack_tcp_loose is set properly	PASS
SEAPATH-00176	Check kptr_restrict is set to 2	PASS
SEAPATH-00177	Check dmesg_restrict is set to 1	PASS
SEAPATH-00178	Check pid_max is set to 4194304	PASS
SEAPATH-00179	Check perf_cpu_time_max_percent is set to 1	PASS
SEAPATH-00180	Check perf_event_max_sample_rate is set to 1	PASS
SEAPATH-00181	Check perf_event_paranoid is set to 3	PASS
SEAPATH-00182	Check randomize_va_space is set to 2	PASS
SEAPATH-00183	Check sysrq is set to 0	PASS
SEAPATH-00184	Check unprivileged_bpf_disabled is set to 1	PASS
SEAPATH-00185	Check panic_on_oops is set to 1	PASS
SEAPATH-00186	Check kernel.yama.ptrace_scope is set to 2	PASS
SEAPATH-00187	Check suid_dumpable is set to 0	PASS
SEAPATH-00188	Check protected_fifos is set to 2	PASS
SEAPATH-00189	Check protected_regular is set to 2	PASS
SEAPATH-00190	Check protected_symlinks is set to 1	PASS
SEAPATH-00191	Check protected_hardlinks is set to 1	PASS
SEAPATH-00192	Check modules_disabled is set to 1	PASS
SEAPATH-00082	/var/log is mounted on a separate partition	PASS
SEAPATH-00085	syslog-ng can not acquire new privileges	PASS
SEAPATH-00086	syslog-ng capabilities are bounded	PASS

Test ID	Tests	Results
SEAPATH-00087	syslog-ng system calls are filtered	PASS
SEAPATH-00050	Linux kernel 'misc' : EFI_PARTITION is enabled	PASS
SEAPATH-00050	Linux kernel 'reporting' : EDAC is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_OHCI_HCD is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_EHCI_HCD is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_XHCI_HCD is enabled	PASS
SEAPATH-00171	no RT throttling triggered	PASS
SEAPATH-00078	no paging error	PASS
SEAPATH-00079	no rcu stall	PASS
SEAPATH-00080	no backtraces	PASS
SEAPATH-00075	kernel is PREEMPT RT	PASS
SEAPATH-00076	kernel is realtime	PASS
SEAPATH-00081	kernel is >= 4.19.106	PASS
SEAPATH-00083	syslog-ng service is running	PASS
SEAPATH-00084	/var/log/syslog is used as log target	PASS
SEAPATH-00102	no systemd services have failed	PASS
SEAPATH-00170	no systemd syntax warning	PASS

- number of tests: 181

- number of failures: 0

Tests common security for guest1

Test ID	Tests	Results
SEAPATH-00106	Check /etc/passwd permissions	PASS
SEAPATH-00107	Check /etc/shadow permissions	PASS
SEAPATH-00108	Check /etc/syslog-ng/ca.d/cacert.pem permissions	PASS
SEAPATH-00049	Check /etc/ssh/ssh_host_ed25519_key permissions	PASS
SEAPATH-00090	Check /etc/ssh/ssh_host_rsa_key permissions	PASS
SEAPATH-00193	All directories writable by all users have the sticky bit	PASS
SEAPATH-00194	All directories writable by all users are owned by root	PASS
SEAPATH-00195	Ceph OSD are owned by ceph	PASS
SEAPATH-00088	root password was randomized at boot	PASS
SEAPATH-00089	root password is randomized at each boot	PASS
SEAPATH-00091	root password is encrypted as sha512	PASS
SEAPATH-00092	bash timeout is set read-only to 300s	PASS
SEAPATH-00093	sshd forbids setting environment variables	PASS
SEAPATH-00094	sshd server time-out is set to 300s of client inactivity	PASS
SEAPATH-00095	shadow encrypts passwords with SHA512 by default	PASS
SEAPATH-00096	shadow encryption uses at least 65536 rounds	PASS
SEAPATH-00097	pam password authentication uses sha512 with 65536 rounds	PASS

Test ID	Tests	Results
SEAPATH-00098	password set to expire after 90 days	PASS
SEAPATH-00099	'su' is denied	PASS
SEAPATH-00100	/etc/securetty is empty	PASS
SEAPATH-00101	PAM securetty module is active in 'login' policy	PASS
SEAPATH-00157	PATH env. variable is correctly set	PASS
SEAPATH-00050	Linux kernel 'hardening' : SECURITY_YAMA is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : DEBUG_WX is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SECURITY_DMESG_RESTRICT is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : PAGE_TABLE_ISOLATION is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : RETPOLINE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : LEGACY_VSYSCALL_NONE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : STATIC_USERMODEHELPER is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : USERFAULTFD is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : X86_VSYSCALL_EMULATION is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : MODIFY_LDT_SYSCALL is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : DEVMEM is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : USELIB is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : KEXEC is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : BINFMT_MISC is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : ALLOW_DEV_COREDUMP is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : PROC_KCORE is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : KALLSYMS is disabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLUB_DEBUG_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLAB_FREELIST_RANDOM is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLAB_FREELIST_HARDENED is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : SLUB_DEBUG_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : HARDENED_USERCOPY is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : FORTIFY_SOURCE is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : PAGE_POISONING is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : RANDOMIZE_KSTACK_OFFSET_DEFAULT is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : INIT_ON_ALLOC_DEFAULT_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'hardening' : INIT_ON_FREE_DEFAULT_ON is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_LATENT_ENTROPY is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_RANDSTRUCT is enabled	PASS
SEAPATH-00050	Linux kernel 'gcc_plugins' : GCC_PLUGIN_STRUCTLEAK_BYREF_ALL is enabled	PASS
SEAPATH-00158	sudo policy is installed for group operator (operator)	PASS
SEAPATH-00159	sudo policy is installed for group maintenance-N1 (maint-n1)	PASS
SEAPATH-00160	sudo policy is installed for group maintenance-N3 (maint-n3)	PASS
SEAPATH-00161	sudo policy is installed for group cluster administrator (admincluster)	PASS
SEAPATH-00162	sudo policy is installed for group system administrator (adminsys)	PASS

Test ID	Tests	Results
SEAPATH-00163	sudo policy is installed for group ansible (ansible)	PASS
SEAPATH-00164	sudo requires password for group operator (operator)	PASS
SEAPATH-00165	sudo requires password for group maintenance-N1 (maint-n1)	PASS
SEAPATH-00166	sudo requires password for group maintenance-N3 (maint-n3)	PASS
SEAPATH-00167	sudo requires password for group administrator (admincluster)	PASS
SEAPATH-00168	sudo requires password for group super-administrator (adminsys)	PASS
SEAPATH-00169	sudo requires password for group ansible (ansible)	PASS
SEAPATH-00103	/usr/bin/sudo exists	PASS
SEAPATH-00104	/usr/bin/sudo belongs to group privileged	PASS
SEAPATH-00105	/usr/bin/sudo has permissions 4750	PASS
SEAPATH-00143	/etc/sudoers include noexec directive	PASS
SEAPATH-00144	/etc/sudoers include requiretty directive	PASS
SEAPATH-00145	/etc/sudoers include use_pty directive	PASS
SEAPATH-00146	/etc/sudoers include umask=0027 directive	PASS
SEAPATH-00147	/etc/sudoers include ignore_dot directive	PASS
SEAPATH-00148	/etc/sudoers include env_reset directive	PASS
SEAPATH-00149	/etc/sudoers include passwd_timeout=1 directive	PASS
SEAPATH-00150	/etc/sudoers - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers - /etc/sudoers is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/emergadmin - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/emergadmin - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/emergadmin - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/emergadmin - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/emergadmin - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/emergadmin - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/emergadmin - /etc/sudoers.d/emergadmin is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/operator - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/operator - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/operator - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/operator - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/operator - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/operator - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/operator - /etc/sudoers.d/operator is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/privileged - all commands require authentication	PASS

Test ID	Tests	Results
SEAPATH-00151	/etc/sudoers.d/privileged - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/privileged - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/privileged - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/privileged - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/privileged - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/privileged - /etc/sudoers.d/privileged is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/admincluster - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/admincluster - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/admincluster - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/admincluster - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/admincluster - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/admincluster - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/admincluster - /etc/sudoers.d/admincluster is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/maint-n1 - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/maint-n1 - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/maint-n1 - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/maint-n1 - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/maint-n1 - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/maint-n1 - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/maint-n1 - /etc/sudoers.d/maint-n1 is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/ansible - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/ansible - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/ansible - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/ansible - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/ansible - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/ansible - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/ansible - /etc/sudoers.d/ansible is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/admin - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/admin - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/admin - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/admin - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/admin - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/admin - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/admin - /etc/sudoers.d/admin is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/adminsys - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/adminsys - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/adminsys - EXEC option is not used	PASS

Test ID	Tests	Results
SEAPATH-00153	/etc/sudoers.d/adminsys - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/adminsys - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/adminsys - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/adminsys - /etc/sudoers.d/adminsys is owned by root:root with 0440 permissions	PASS
SEAPATH-00150	/etc/sudoers.d/maint-n3 - all commands require authentication	PASS
SEAPATH-00151	/etc/sudoers.d/maint-n3 - no rule target root user	PASS
SEAPATH-00152	/etc/sudoers.d/maint-n3 - EXEC option is not used	PASS
SEAPATH-00153	/etc/sudoers.d/maint-n3 - rules are not defined by negation	PASS
SEAPATH-00154	/etc/sudoers.d/maint-n3 - commands are not specified without arguments	PASS
SEAPATH-00155	/etc/sudoers.d/maint-n3 - no command is specified with wildcard argument	PASS
SEAPATH-00156	/etc/sudoers.d/maint-n3 - /etc/sudoers.d/maint-n3 is owned by root:root with 0440 permissions	PASS
SEAPATH-00109	sysctl-hardening - kernel.modules_disabled is set properly	PASS
SEAPATH-00109	sysctl-hardening - dev.tty.ldisc_autoload is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_fifos is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_regular is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_hardlinks is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.protected_symlinks is set properly	PASS
SEAPATH-00109	sysctl-hardening - fs.suid_dumpable is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.dmesg_restrict is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.kptr_restrict is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_event_paranoid is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.randomize_va_space is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.sysrq is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.unprivileged_bpf_disabled is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.yama.ptrace_scope is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_event_max_sample_rate is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.perf_cpu_time_max_percent is set properly	PASS
SEAPATH-00109	sysctl-hardening - vm.mmap_min_addr is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.pid_max is set properly	PASS
SEAPATH-00109	sysctl-hardening - kernel.panic_on_oops is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.log_martians is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.rp_filter is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.secure_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.send_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.all.shared_media is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.accept_source_route is set properly	PASS

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Test ID	Tests	Results
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.log_martians is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.rp_filter is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.secure_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.send_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.conf.default.shared_media is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.icmp_echo_ignore_broadcasts is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.icmp_ignore_bogus_error_responses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_invalid_ratelimit is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_max_syn_backlog is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_rfc1337 is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_syn_retries is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_synack_retries is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_syncookies is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_timestamps is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.ip_local_port_range is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv4.tcp_challenge_ack_limit is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra_defrtr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_ra_pinfo is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.autoconf is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.dad_transmits is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.forwarding is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.max_addresses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.router_solicitations is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.all.use_tempaddr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra_defrtr is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_ra_pinfo is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_redirects is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.accept_source_route is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.autoconf is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.dad_transmits is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.forwarding is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.max_addresses is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.router_solicitations is set properly	PASS
SEAPATH-00109	sysctl-network - net.ipv6.conf.default.use_tempaddr is set properly	PASS
SEAPATH-00109	sysctl-network - net.netfilter.nf_conntrack_max is set properly	PASS
SEAPATH-00109	sysctl-network - net.netfilter.nf_conntrack_tcp_loose is set properly	PASS

| Test ID	Tests	Results
SEAPATH-00176	Check kptr_restrict is set to 2	PASS
SEAPATH-00177	Check dmesg_restrict is set to 1	PASS
SEAPATH-00178	Check pid_max is set to 4194304	PASS
SEAPATH-00179	Check perf_cpu_time_max_percent is set to 1	PASS
SEAPATH-00180	Check perf_event_max_sample_rate is set to 1	PASS
SEAPATH-00181	Check perf_event_paranoid is set to 3	PASS
SEAPATH-00182	Check randomize_va_space is set to 2	PASS
SEAPATH-00183	Check sysrq is set to 0	PASS
SEAPATH-00184	Check unprivileged_bpf_disabled is set to 1	PASS
SEAPATH-00185	Check panic_on_oops is set to 1	PASS
SEAPATH-00186	Check kernel.yama.ptrace_scope is set to 2	PASS
SEAPATH-00187	Check suid_dumpable is set to 0	PASS
SEAPATH-00188	Check protected_fifos is set to 2	PASS
SEAPATH-00189	Check protected_regular is set to 2	PASS
SEAPATH-00190	Check protected_symlinks is set to 1	PASS
SEAPATH-00191	Check protected_hardlinks is set to 1	PASS
SEAPATH-00192	Check modules_disabled is set to 1	PASS
SEAPATH-00082	/var/log is mounted on a separate partition	PASS
SEAPATH-00085	syslog-ng can not acquire new privileges	PASS
SEAPATH-00086	syslog-ng capabilities are bounded	PASS
SEAPATH-00087	syslog-ng system calls are filtered	PASS
SEAPATH-00050	Linux kernel 'misc' : EFI_PARTITION is enabled	PASS
SEAPATH-00050	Linux kernel 'reporting' : EDAC is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_OHCI_HCD is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_EHCI_HCD is enabled	PASS
SEAPATH-00050	Linux kernel 'usb' : USB_XHCI_HCD is enabled	PASS
SEAPATH-00171	no RT throttling triggered	PASS
SEAPATH-00078	no paging error	PASS
SEAPATH-00079	no rcu stall	PASS
SEAPATH-00080	no backtraces	PASS
SEAPATH-00075	kernel is PREEMPT RT	PASS
SEAPATH-00076	kernel is realtime	PASS
SEAPATH-00081	kernel is >= 4.19.106	PASS
SEAPATH-00083	syslog-ng service is running	PASS
SEAPATH-00084	/var/log/syslog is used as log target	PASS
SEAPATH-00102	no systemd services have failed	PASS
SEAPATH-00170	no systemd syntax warning	PASS

- number of tests: 181

- number of failures: 0

4.1.5. Real-time testing (Cyclictest)

The following command is launched:

```
cyclictest -l10000 -m -Sp90 -i200 -h400 -q
```
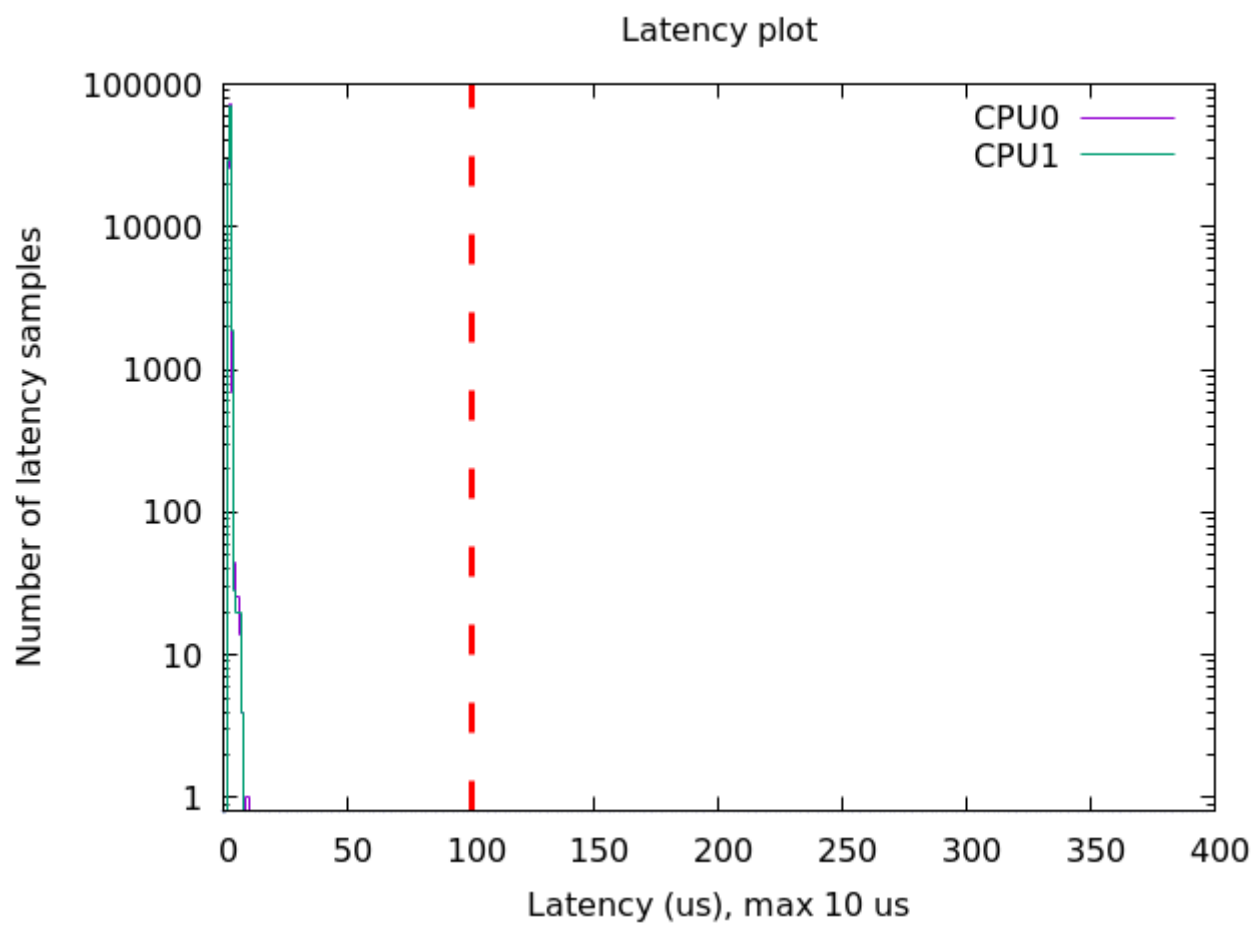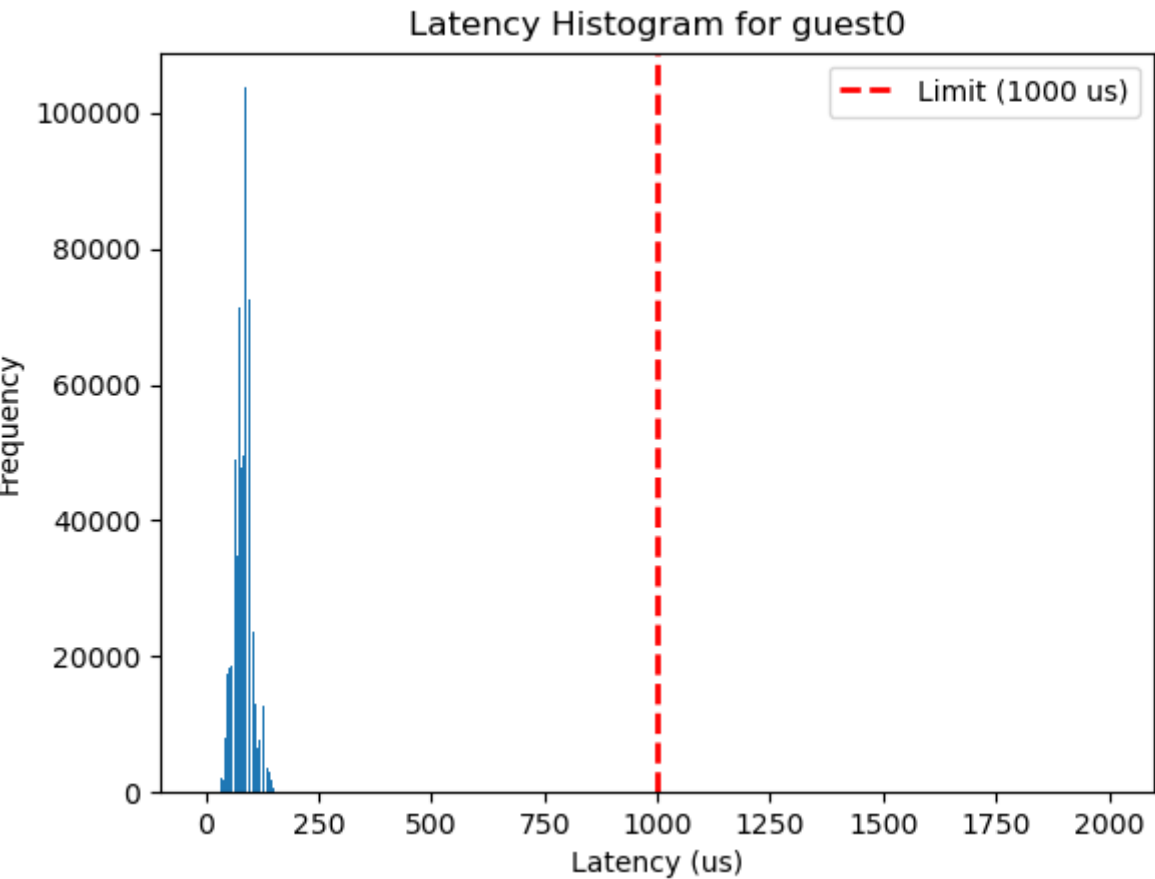
Hypervisor
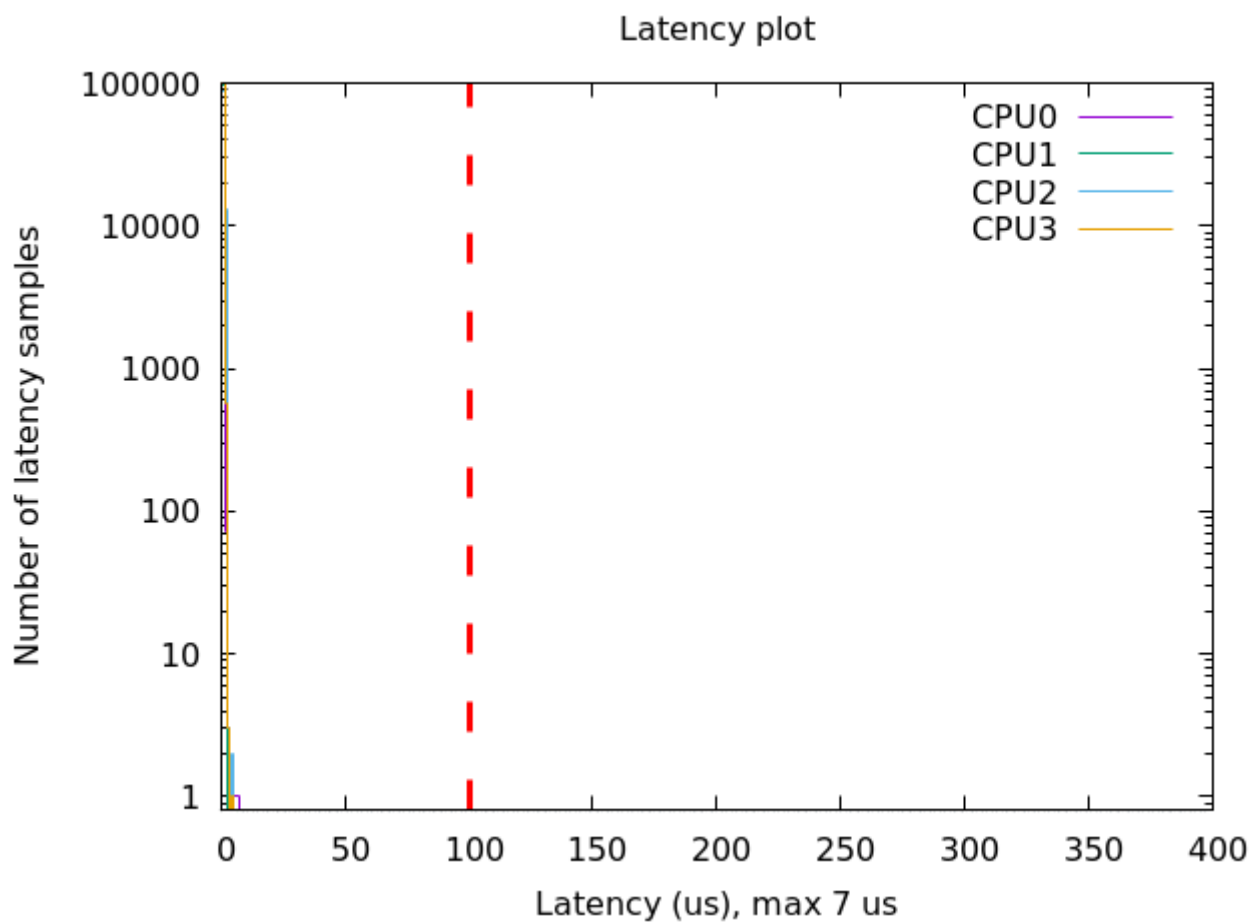
Max latency < 100 us	PASS

Virtual Machines

Guest 0

Max latency < 100 us	PASS

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4.1.6. IEC61850 Sampled Value Latency Testing

VM guest0

Number of IEC61850 Sampled Value	Minimum latency	Maximum latency	Average latency
8	28 us	179 us	85.0 us

Latency Histogram for guest0

Max latency < 1000 us	PASS

Chapter 5. About this documentation

This documentation uses the AsciiDoc documentation generator. It is a convenient format that allows using plain-text formatted writing that can later be converted to various output formats such as HTML and PDF.

In order to generate an HTML version of this documentation, use the following command (the asciidoc package will need to be installed in your Linux distribution):

```
$ asciidoc test-report.adoc
```

This will result in a README.html file being generated in the current directory.

If you prefer a PDF version of the documentation instead, use the following command (the dblatex package will need to be installed on your Linux distribution):

```
$ asciidoctor-pdf test-report.adoc
```