



# TEST REPORT

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# Test reports

## Tests common for virtu-ci1

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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 | syslog-ng is configured to send log on network | PASS    |

- number of tests: 8
- number of failures: 0

## Tests common\_security for virtu-ci1

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00197 | Only wanted apt repositories configured: only use sources.list   | PASS    |
| SEAPATH-00197 | Only wanted apt repositories configured: do not add other repositories   | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="http://ftp.fr.debian.org/debian">http://ftp.fr.debian.org/debian</a> bullseye main contrib non-free                                | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="http://security.debian.org/debian-security">http://security.debian.org/debian-security</a> bullseye-security main contrib non-free | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="https://download.docker.com/linux/debian">https://download.docker.com/linux/debian</a> bullseye stable                             | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="https://artifacts.elastic.co/packages/8.x/apt">https://artifacts.elastic.co/packages/8.x/apt</a> stable main                       | PASS    |
| SEAPATH-00198 | No unrecognized packages installed   | PASS    |
| SEAPATH-00215 | auditd service is active   | PASS    |
| SEAPATH-00216 | auditd is configured to output in syslog   | PASS    |
| SEAPATH-00217 | insmod call is logged  | PASS    |
| SEAPATH-00217 | kmod call is logged  | PASS    |
| SEAPATH-00217 | modprobe call is logged  | PASS    |
| SEAPATH-00217 | rmmod call is logged   | PASS    |
| SEAPATH-00218 | modification in /etc/ is logged  | PASS    |
| SEAPATH-00219 | mount/umount call is logged  | PASS    |
| SEAPATH-00220 | ioperm call is logged  | PASS    |
| SEAPATH-00220 | prctl call is logged   | PASS    |
| SEAPATH-00220 | ptrace call is logged  | PASS    |

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00221 | file deletion is logged  | PASS    |
| SEAPATH-00222 | open monitoring is logged  | PASS    |
| SEAPATH-00222 | openat monitoring is logged  | PASS    |
| SEAPATH-00222 | unlink monitoring is logged  | PASS    |
| SEAPATH-00106 | Check /etc/shadow permissions  | PASS    |
| SEAPATH-00107 | Check /etc/passwd permissions  | PASS    |
| SEAPATH-00108 | Check /etc/syslog-ng/cert.d/clientkey.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-00192 | All files have a known owner and group                                 | 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-00196 | No unexpected file has setuid/setgid enabled                           | 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 with a crypto at least equivalent 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 or yescrypt  | 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-00202 | grub root superuser is set in /boot/grub/grub.cfg                      | PASS    |
| SEAPATH-00203 | grub root superuser is password protected                              | PASS    |
| SEAPATH-00204 | main menuentry is unrestricted in /boot/grub/grub.cfg                  | PASS    |
| SEAPATH-00205 | TMPDIR env var is defined and readonly                                 | PASS    |
| SEAPATH-00206 | TMPDIR is set with 700 mode and root as owner and group                | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SECURITY_YAMA is enabled               | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : DEBUG_WX is enabled                    | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SECURITY_DMESG_RESTRICT is enabled     | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PAGE_TABLE_ISOLATION is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : RETPOLINE is enabled                   | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : LEGACY_VSYSCALL_NONE is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SLAB_FREELIST_RANDOM is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SLAB_FREELIST_HARDENED is enabled      | PASS    |

| Test ID       | Tests   | Results |
|---------------|---|---------|
| SEAPATH-00050 | Linux kernel <i>hardening</i> : HARDENED_USERCOPY is enabled  | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : FORTIFY_SOURCE is enabled   | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PAGE_POISONING is enabled   | PASS    |
| SEAPATH-00170 | Wipe slab and page allocations enabled on cmdline   | PASS    |
| SEAPATH-00174 | Randomize kstack offset in on   | PASS    |
| SEAPATH-00175 | Disable slab usercopy fallback  | PASS    |
| SEAPATH-00201 | LSM Yama is enabled   | PASS    |
| SEAPATH-00210 | MCE is disabled   | PASS    |
| SEAPATH-00211 | rng_core.default_quality is set to 500  | PASS    |
| SEAPATH-00223 | All sockets are bound to an interface   | 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 (adminsyz)   | 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-00148 | sudoers files include directive noexec  | PASS    |
| SEAPATH-00148 | sudoers files include directive requiretty  | PASS    |
| SEAPATH-00148 | sudoers files include directive use_pty   | PASS    |
| SEAPATH-00148 | sudoers files include directive umask=0027  | PASS    |
| SEAPATH-00148 | sudoers files include directive ignore_dot  | PASS    |
| SEAPATH-00148 | sudoers files include directive env_reset   | PASS    |
| SEAPATH-00149 | sudo commands don't target privileged user  | PASS    |
| SEAPATH-00150 | all commands require authentication   | PASS    |
| SEAPATH-00152 | EXEC option is not used   | PASS    |
| SEAPATH-00153 | rules are not defined by negation   | PASS    |
| SEAPATH-00154 | sudo commands always specify arguments  | PASS    |
| SEAPATH-00155 | sudo commands don't use wildcard * argument   | PASS    |
| SEAPATH-00156 | /etc/sudoers /etc/sudoers is owned by root:root with 0440 permissions   | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/00-security /etc/sudoers.d/00-security is owned by root:root with 0440 permissions             | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/virtu /etc/sudoers.d/virtu is owned by root:root with 0440 permissions                         | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/Debian-snmpp /etc/sudoers.d/Debian-snmpp is owned by root:root with 0440 permissions           | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/ceph-osd-smartctl /etc/sudoers.d/ceph-osd-smartctl is owned by root:root with 0440 permissions | PASS    |
| SEAPATH-00171 | Check coredumps are disabled  | PASS    |
| SEAPATH-00172 | Check kexec is disabled   | PASS    |
| SEAPATH-00173 | Check binfmt_misc is disabled   | 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 2        | 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-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-00199 | No systemd service failed                    | PASS    |
| SEAPATH-00200 | No unrecognized service enabled              | PASS    |

- number of tests: 118
- number of failures: 0

## Tests hypervisor for virtu-ci1

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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-00035 | ovs-vswitchd service is running                        | PASS    |
| SEAPATH-00035 | ovsdb-server service is running                        | PASS    |
| SEAPATH-00038 | lspci 3.6.2+ is available                              | 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    |

- number of tests: 9

- number of failures: 0

## Tests hypervisoriommu for virtu-ci1

| Test ID       | Tests   | Results |
|---------------|---|---------|
| SEAPATH-00030 | iommu enabled in passthrough mode                   | PASS    |
| SEAPATH-00031 | iommu is loaded                                     | PASS    |
| SEAPATH-00032 | iommu is populated                                  | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : INTEL_IOMMU is enabled  | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : AMD_IOMMU is enabled    | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : AMD_IOMMU_V2 is enabled | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : IOMMU_IOVA is enabled   | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : DMAR_TABLE is enabled   | PASS    |

- number of tests: 8
- number of failures: 0

## Tests hypervisorsecurity for virtu-ci1

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00033 | /etc/group is consistent                                 | PASS    |
| SEAPATH-00033 | /etc/gshadow is consistent                               | PASS    |
| SEAPATH-00034 | /etc/group does not include extra group                  | PASS    |
| SEAPATH-00034 | /etc/gshadow does not include extra group                | PASS    |
| SEAPATH-00008 | Slab merging is disabled on cmdline                      | PASS    |
| SEAPATH-00009 | Kernel Page Table Isolation is always enabled on cmdline | PASS    |
| SEAPATH-00010 | SLUB redzoning and sanity checking enabled on cmdline    | PASS    |
| SEAPATH-00207 | CPU has no known vulnerabilities                         | 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    |

- number of tests: 16
- number of failures: 0

## Tests common for virtu-ci3

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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 | syslog-ng is configured to send log on network | PASS    |

- number of tests: 8
- number of failures: 0

## Tests common\_security for virtu-ci3

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00197 | Only wanted apt repositories configured: only use sources.list   | PASS    |
| SEAPATH-00197 | Only wanted apt repositories configured: do not add other repositories   | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="http://ftp.fr.debian.org/debian">http://ftp.fr.debian.org/debian</a> bullseye main contrib non-free                                | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="http://security.debian.org/debian-security">http://security.debian.org/debian-security</a> bullseye-security main contrib non-free | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="https://download.docker.com/linux/debian">https://download.docker.com/linux/debian</a> bullseye stable                             | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="https://artifacts.elastic.co/packages/8.x/apt">https://artifacts.elastic.co/packages/8.x/apt</a> stable main                       | PASS    |
| SEAPATH-00198 | No unrecognized packages installed   | PASS    |
| SEAPATH-00215 | auditd service is active   | PASS    |
| SEAPATH-00216 | auditd is configured to output in syslog   | PASS    |
| SEAPATH-00217 | insmod call is logged  | PASS    |
| SEAPATH-00217 | kmod call is logged  | PASS    |
| SEAPATH-00217 | modprobe call is logged  | PASS    |
| SEAPATH-00217 | rmmod call is logged   | PASS    |
| SEAPATH-00218 | modification in /etc/ is logged  | PASS    |
| SEAPATH-00219 | mount/umount call is logged  | PASS    |
| SEAPATH-00220 | ioperm call is logged  | PASS    |
| SEAPATH-00220 | prctl call is logged   | PASS    |
| SEAPATH-00220 | ptrace call is logged  | PASS    |
| SEAPATH-00221 | file deletion is logged  | PASS    |
| SEAPATH-00222 | open monitoring is logged  | PASS    |



| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00222 | openat monitoring is logged  | PASS    |
| SEAPATH-00222 | unlink monitoring is logged  | PASS    |
| SEAPATH-00106 | Check /etc/shadow permissions  | PASS    |
| SEAPATH-00107 | Check /etc/passwd permissions  | PASS    |
| SEAPATH-00108 | Check /etc/syslog-ng/cert.d/clientkey.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-00192 | All files have a known owner and group                                 | 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-00196 | No unexpected file has setuid/setgid enabled                           | 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 with a crypto at least equivalent 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 or yescrypt  | 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-00202 | grub root superuser is set in /boot/grub/grub.cfg                      | PASS    |
| SEAPATH-00203 | grub root superuser is password protected                              | PASS    |
| SEAPATH-00204 | main menuentry is unrestricted in /boot/grub/grub.cfg                  | PASS    |
| SEAPATH-00205 | TMPDIR env var is defined and readonly                                 | PASS    |
| SEAPATH-00206 | TMPDIR is set with 700 mode and root as owner and group                | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SECURITY_YAMA is enabled               | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : DEBUG_WX is enabled                    | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SECURITY_DMESG_RESTRICT is enabled     | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PAGE_TABLE_ISOLATION is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : RETPOLINE is enabled                   | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : LEGACY_VSYSCALL_NONE is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SLAB_FREELIST_RANDOM is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SLAB_FREELIST_HARDENED is enabled      | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : HARDENED_USERCOPY is enabled           | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : FORTIFY_SOURCE is enabled              | PASS    |

| Test ID       | Tests   | Results |
|---------------|---|---------|
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PAGE_POISONING is enabled   | PASS    |
| SEAPATH-00170 | Wipe slab and page allocations enabled on cmdline   | PASS    |
| SEAPATH-00174 | Randomize kstack offset in on   | PASS    |
| SEAPATH-00175 | Disable slab usercopy fallback  | PASS    |
| SEAPATH-00201 | LSM Yama is enabled   | PASS    |
| SEAPATH-00210 | MCE is disabled   | PASS    |
| SEAPATH-00211 | rng_core.default_quality is set to 500  | PASS    |
| SEAPATH-00223 | All sockets are bound to an interface   | 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 (adminsyz)   | 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-00148 | sudoers files include directive noexec  | PASS    |
| SEAPATH-00148 | sudoers files include directive requiretty  | PASS    |
| SEAPATH-00148 | sudoers files include directive use_pty   | PASS    |
| SEAPATH-00148 | sudoers files include directive umask=0027  | PASS    |
| SEAPATH-00148 | sudoers files include directive ignore_dot  | PASS    |
| SEAPATH-00148 | sudoers files include directive env_reset   | PASS    |
| SEAPATH-00149 | sudo commands don't target privileged user  | PASS    |
| SEAPATH-00150 | all commands require authentication   | PASS    |
| SEAPATH-00152 | EXEC option is not used   | PASS    |
| SEAPATH-00153 | rules are not defined by negation   | PASS    |
| SEAPATH-00154 | sudo commands always specify arguments  | PASS    |
| SEAPATH-00155 | sudo commands don't use wildcard * argument   | PASS    |
| SEAPATH-00156 | /etc/sudoers /etc/sudoers is owned by root:root with 0440 permissions   | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/ceph-osd-smartctl /etc/sudoers.d/ceph-osd-smartctl is owned by root:root with 0440 permissions | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/virtu /etc/sudoers.d/virtu is owned by root:root with 0440 permissions                         | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/00-security /etc/sudoers.d/00-security is owned by root:root with 0440 permissions             | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/Debian-snmp /etc/sudoers.d/Debian-snmp is owned by root:root with 0440 permissions             | PASS    |
| SEAPATH-00171 | Check coredumps are disabled  | PASS    |
| SEAPATH-00172 | Check kexec is disabled   | PASS    |
| SEAPATH-00173 | Check binfmt_misc is disabled   | PASS    |
| SEAPATH-00176 | Check kptr_restrict is set to 2   | PASS    |
| SEAPATH-00177 | Check dmesg_restrict is set to 1  | PASS    |

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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 2        | 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-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-00199 | No systemd service failed                    | PASS    |
| SEAPATH-00200 | No unrecognized service enabled              | PASS    |

- number of tests: 118
- number of failures: 0

## Tests hypervisor for virtu-ci3

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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-00035 | ovs-vswitchd service is running                        | PASS    |
| SEAPATH-00035 | ovsdb-server service is running                        | PASS    |
| SEAPATH-00038 | lspci 3.6.2+ is available                              | 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    |

- number of tests: 9
- number of failures: 0

## Tests hypervisoriommu for virtu-ci3

| Test ID       | Tests   | Results |
|---------------|---|---------|
| SEAPATH-00030 | iommu enabled in passthrough mode                   | PASS    |
| SEAPATH-00031 | iommu is loaded                                     | PASS    |
| SEAPATH-00032 | iommu is populated                                  | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : INTEL_IOMMU is enabled  | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : AMD_IOMMU is enabled    | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : AMD_IOMMU_V2 is enabled | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : IOMMU_IOVA is enabled   | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : DMAR_TABLE is enabled   | PASS    |

- number of tests: 8
- number of failures: 0

## Tests hypervisorsecurity for virtu-ci3

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00033 | /etc/group is consistent                                 | PASS    |
| SEAPATH-00033 | /etc/gshadow is consistent                               | PASS    |
| SEAPATH-00034 | /etc/group does not include extra group                  | PASS    |
| SEAPATH-00034 | /etc/gshadow does not include extra group                | PASS    |
| SEAPATH-00008 | Slab merging is disabled on cmdline                      | PASS    |
| SEAPATH-00009 | Kernel Page Table Isolation is always enabled on cmdline | PASS    |
| SEAPATH-00010 | SLUB redzoning and sanity checking enabled on cmdline    | PASS    |
| SEAPATH-00207 | CPU has no known vulnerabilities                         | 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    |

- number of tests: 16
- number of failures: 0

## Tests common for virtu-ci2

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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 | syslog-ng is configured to send log on network | PASS    |

- number of tests: 8
- number of failures: 0

## Tests common\_security for virtu-ci2

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00197 | Only wanted apt repositories configured: only use sources.list   | PASS    |
| SEAPATH-00197 | Only wanted apt repositories configured: do not add other repositories   | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="http://ftp.fr.debian.org/debian">http://ftp.fr.debian.org/debian</a> bullseye main contrib non-free                                | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="http://security.debian.org/debian-security">http://security.debian.org/debian-security</a> bullseye-security main contrib non-free | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="https://download.docker.com/linux/debian">https://download.docker.com/linux/debian</a> bullseye stable                             | PASS    |
| SEAPATH-00197 | Only official apt repositories configured: <a href="https://artifacts.elastic.co/packages/8.x/apt">https://artifacts.elastic.co/packages/8.x/apt</a> stable main                       | PASS    |
| SEAPATH-00198 | No unrecognized packages installed   | PASS    |
| SEAPATH-00215 | auditd service is active   | PASS    |
| SEAPATH-00216 | auditd is configured to output in syslog   | PASS    |
| SEAPATH-00217 | insmod call is logged  | PASS    |
| SEAPATH-00217 | kmod call is logged  | PASS    |
| SEAPATH-00217 | modprobe call is logged  | PASS    |
| SEAPATH-00217 | rmmod call is logged   | PASS    |
| SEAPATH-00218 | modification in /etc/ is logged  | PASS    |
| SEAPATH-00219 | mount/umount call is logged  | PASS    |
| SEAPATH-00220 | ioperm call is logged  | PASS    |
| SEAPATH-00220 | prctl call is logged   | PASS    |
| SEAPATH-00220 | ptrace call is logged  | PASS    |
| SEAPATH-00221 | file deletion is logged  | PASS    |
| SEAPATH-00222 | open monitoring is logged  | PASS    |

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00222 | openat monitoring is logged  | PASS    |
| SEAPATH-00222 | unlink monitoring is logged  | PASS    |
| SEAPATH-00106 | Check /etc/shadow permissions  | PASS    |
| SEAPATH-00107 | Check /etc/passwd permissions  | PASS    |
| SEAPATH-00108 | Check /etc/syslog-ng/cert.d/clientkey.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-00192 | All files have a known owner and group                                 | 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-00196 | No unexpected file has setuid/setgid enabled                           | 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 with a crypto at least equivalent 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 or yescrypt  | 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-00202 | grub root superuser is set in /boot/grub/grub.cfg                      | PASS    |
| SEAPATH-00203 | grub root superuser is password protected                              | PASS    |
| SEAPATH-00204 | main menuentry is unrestricted in /boot/grub/grub.cfg                  | PASS    |
| SEAPATH-00205 | TMPDIR env var is defined and readonly                                 | PASS    |
| SEAPATH-00206 | TMPDIR is set with 700 mode and root as owner and group                | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SECURITY_YAMA is enabled               | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : DEBUG_WX is enabled                    | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SECURITY_DMESG_RESTRICT is enabled     | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PAGE_TABLE_ISOLATION is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : RETPOLINE is enabled                   | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : LEGACY_VSYSCALL_NONE is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SLAB_FREELIST_RANDOM is enabled        | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SLAB_FREELIST_HARDENED is enabled      | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : HARDENED_USERCOPY is enabled           | PASS    |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : FORTIFY_SOURCE is enabled              | PASS    |

| Test ID       | Tests   | Results |
|---------------|---|---------|
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PAGE_POISONING is enabled   | PASS    |
| SEAPATH-00170 | Wipe slab and page allocations enabled on cmdline   | PASS    |
| SEAPATH-00174 | Randomize kstack offset in on   | PASS    |
| SEAPATH-00175 | Disable slab usercopy fallback  | PASS    |
| SEAPATH-00201 | LSM Yama is enabled   | PASS    |
| SEAPATH-00210 | MCE is disabled   | PASS    |
| SEAPATH-00211 | rng_core.default_quality is set to 500  | PASS    |
| SEAPATH-00223 | All sockets are bound to an interface   | 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 (adminsyz)   | 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-00148 | sudoers files include directive noexec  | PASS    |
| SEAPATH-00148 | sudoers files include directive requiretty  | PASS    |
| SEAPATH-00148 | sudoers files include directive use_pty   | PASS    |
| SEAPATH-00148 | sudoers files include directive umask=0027  | PASS    |
| SEAPATH-00148 | sudoers files include directive ignore_dot  | PASS    |
| SEAPATH-00148 | sudoers files include directive env_reset   | PASS    |
| SEAPATH-00149 | sudo commands don't target privileged user  | PASS    |
| SEAPATH-00150 | all commands require authentication   | PASS    |
| SEAPATH-00152 | EXEC option is not used   | PASS    |
| SEAPATH-00153 | rules are not defined by negation   | PASS    |
| SEAPATH-00154 | sudo commands always specify arguments  | PASS    |
| SEAPATH-00155 | sudo commands don't use wildcard * argument   | PASS    |
| SEAPATH-00156 | /etc/sudoers /etc/sudoers is owned by root:root with 0440 permissions   | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/00-security /etc/sudoers.d/00-security is owned by root:root with 0440 permissions             | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/Debian-snmp /etc/sudoers.d/Debian-snmp is owned by root:root with 0440 permissions             | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/ceph-osd-smartctl /etc/sudoers.d/ceph-osd-smartctl is owned by root:root with 0440 permissions | PASS    |
| SEAPATH-00156 | /etc/sudoers.d/virtu /etc/sudoers.d/virtu is owned by root:root with 0440 permissions                         | PASS    |
| SEAPATH-00171 | Check coredumps are disabled  | PASS    |
| SEAPATH-00172 | Check kexec is disabled   | PASS    |
| SEAPATH-00173 | Check binfmt_misc is disabled   | PASS    |
| SEAPATH-00176 | Check kptr_restrict is set to 2   | PASS    |
| SEAPATH-00177 | Check dmesg_restrict is set to 1  | PASS    |

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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 2        | 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-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-00199 | No systemd service failed                    | PASS    |
| SEAPATH-00200 | No unrecognized service enabled              | PASS    |

- number of tests: 118
- number of failures: 0

## Tests hypervisor for virtu-ci2

| Test ID       | Tests  | Results |
|---------------|--|---------|
| 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-00035 | ovs-vswitchd service is running                        | PASS    |
| SEAPATH-00035 | ovsdb-server service is running                        | PASS    |
| SEAPATH-00038 | lspci 3.6.2+ is available                              | 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    |

- number of tests: 9
- number of failures: 0



## Tests hypervisoriommu for virtu-ci2

| Test ID       | Tests   | Results |
|---------------|---|---------|
| SEAPATH-00030 | iommu enabled in passthrough mode                   | PASS    |
| SEAPATH-00031 | iommu is loaded                                     | PASS    |
| SEAPATH-00032 | iommu is populated                                  | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : INTEL_IOMMU is enabled  | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : AMD_IOMMU is enabled    | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : AMD_IOMMU_V2 is enabled | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : IOMMU_IOVA is enabled   | PASS    |
| SEAPATH-00050 | Linux kernel <i>iommu</i> : DMAR_TABLE is enabled   | PASS    |

- number of tests: 8
- number of failures: 0

## Tests hypervisorsecurity for virtu-ci2

| Test ID       | Tests  | Results |
|---------------|--|---------|
| SEAPATH-00033 | /etc/group is consistent                                 | PASS    |
| SEAPATH-00033 | /etc/gshadow is consistent                               | PASS    |
| SEAPATH-00034 | /etc/group does not include extra group                  | PASS    |
| SEAPATH-00034 | /etc/gshadow does not include extra group                | PASS    |
| SEAPATH-00008 | Slab merging is disabled on cmdline                      | PASS    |
| SEAPATH-00009 | Kernel Page Table Isolation is always enabled on cmdline | PASS    |
| SEAPATH-00010 | SLUB redzoning and sanity checking enabled on cmdline    | PASS    |
| SEAPATH-00207 | CPU has no known vulnerabilities                         | 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    |

- number of tests: 16
- number of failures: 0

# Compliance Matrices

## ANSII-BP28-Recommandations-MI.csv

| Requirement    | Test id       | Status |
|----------------|---------------|--------|
| ANSII-BP28-R11 | SEAPATH-00186 | PASS   |
|                | SEAPATH-00201 | PASS   |
| ANSII-BP28-R14 | SEAPATH-00187 | PASS   |
|                | SEAPATH-00188 | PASS   |
|                | SEAPATH-00189 | PASS   |
|                | SEAPATH-00190 | PASS   |
|                | SEAPATH-00191 | PASS   |
| ANSII-BP28-R39 | SEAPATH-00148 | PASS   |
| ANSII-BP28-R40 | SEAPATH-00149 | PASS   |
| ANSII-BP28-R42 | SEAPATH-00153 | PASS   |
| ANSII-BP28-R43 | SEAPATH-00154 | PASS   |
|                | SEAPATH-00155 | PASS   |
| ANSII-BP28-R55 | SEAPATH-00205 | PASS   |
|                | SEAPATH-00206 | PASS   |
| ANSII-BP28-R5  | SEAPATH-00203 | PASS   |
| ANSII-BP28-R8  | SEAPATH-00207 | PASS   |
| ANSII-BP28-R9  | 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   |

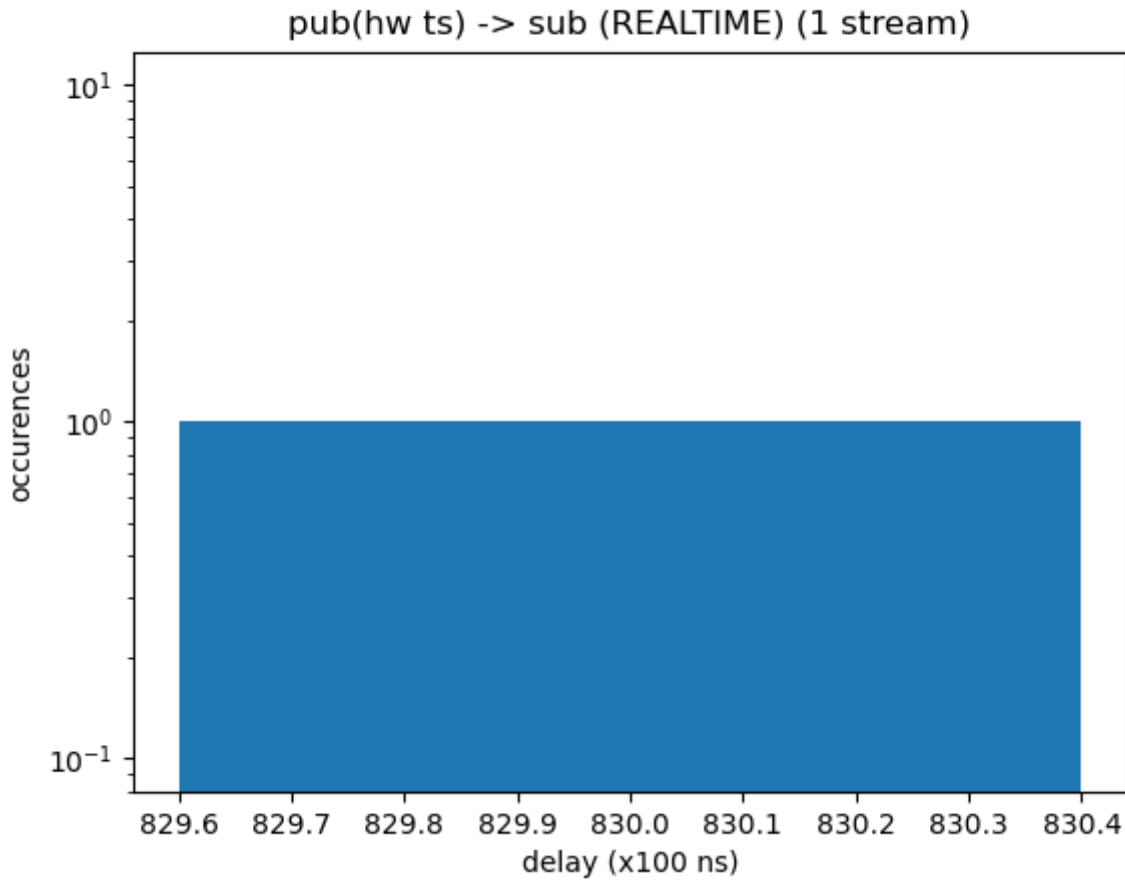
## ANSII-BP28-Recommandations-M.csv

| Requirement    | Test id       | Status |
|----------------|---------------|--------|
| ANSII-BP28-R30 | SEAPATH-00048 | PASS   |
| ANSII-BP28-R53 | SEAPATH-00192 | PASS   |
| ANSII-BP28-R54 | SEAPATH-00193 | PASS   |
|                | SEAPATH-00194 | PASS   |
|                | SEAPATH-00195 | PASS   |
| ANSII-BP28-R56 | SEAPATH-00196 | PASS   |

| Requirement    | Test id       | Status |
|----------------|---------------|--------|
| ANSII-BP28-R58 | SEAPATH-00198 | PASS   |
| ANSII-BP28-R59 | SEAPATH-00197 | PASS   |
| ANSII-BP28-R62 | SEAPATH-00199 | PASS   |
|                | SEAPATH-00200 | PASS   |
| ANSII-BP28-R80 | SEAPATH-00223 | PASS   |

# Latency tests results

## virtu-ci1



[pub standalone interval between] | *./include/pub\_standalone\_interval\_between.png*

Data: 1 frames

std dev pub-sub time: 0.0 ns

median: 83009 ns

mean: 83009 ns

min: 83009 ns

max: 83009 ns

Data: 99994 frame pairs

std dev of frame-to-frame time: 2.501838886280337  $\mu$ s

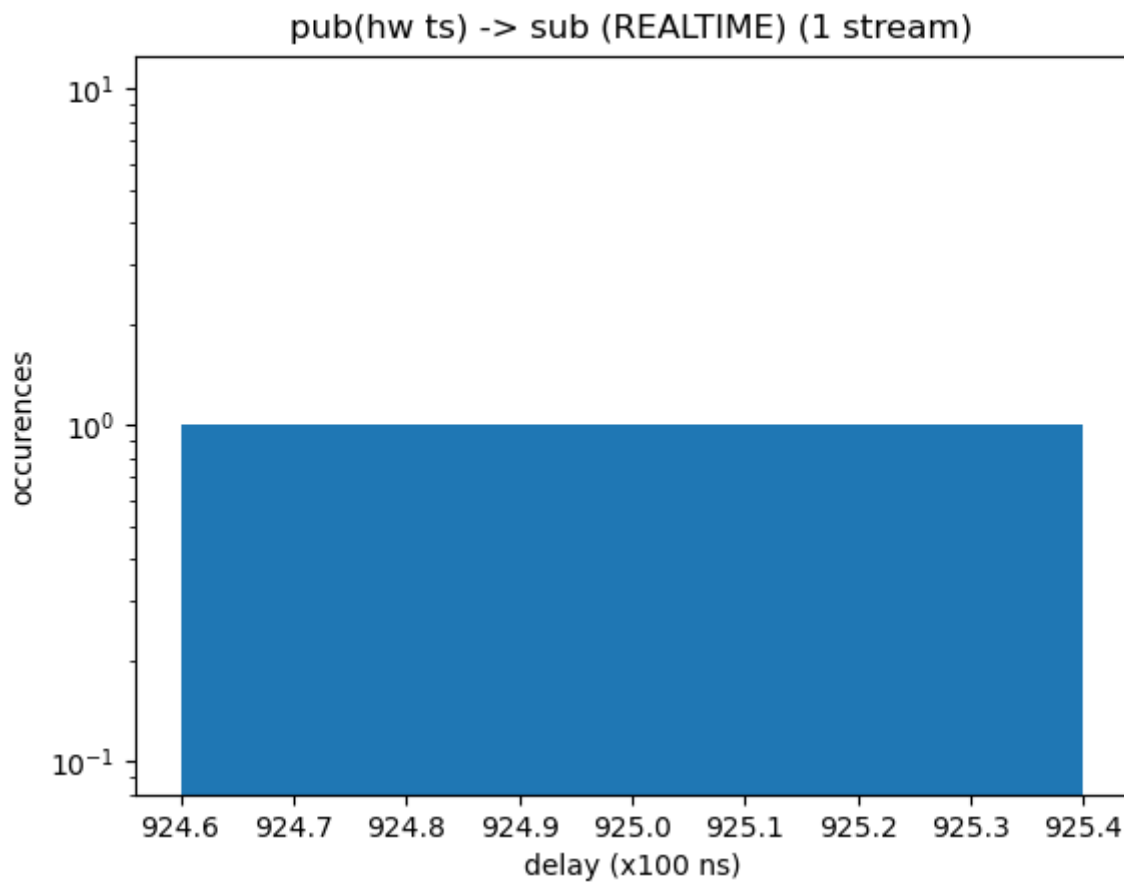
median: 17.0  $\mu$ s

mean: 17.52056123367402  $\mu$ s

min: 1  $\mu$ s

max: 110  $\mu$ s

## virtu-ci2

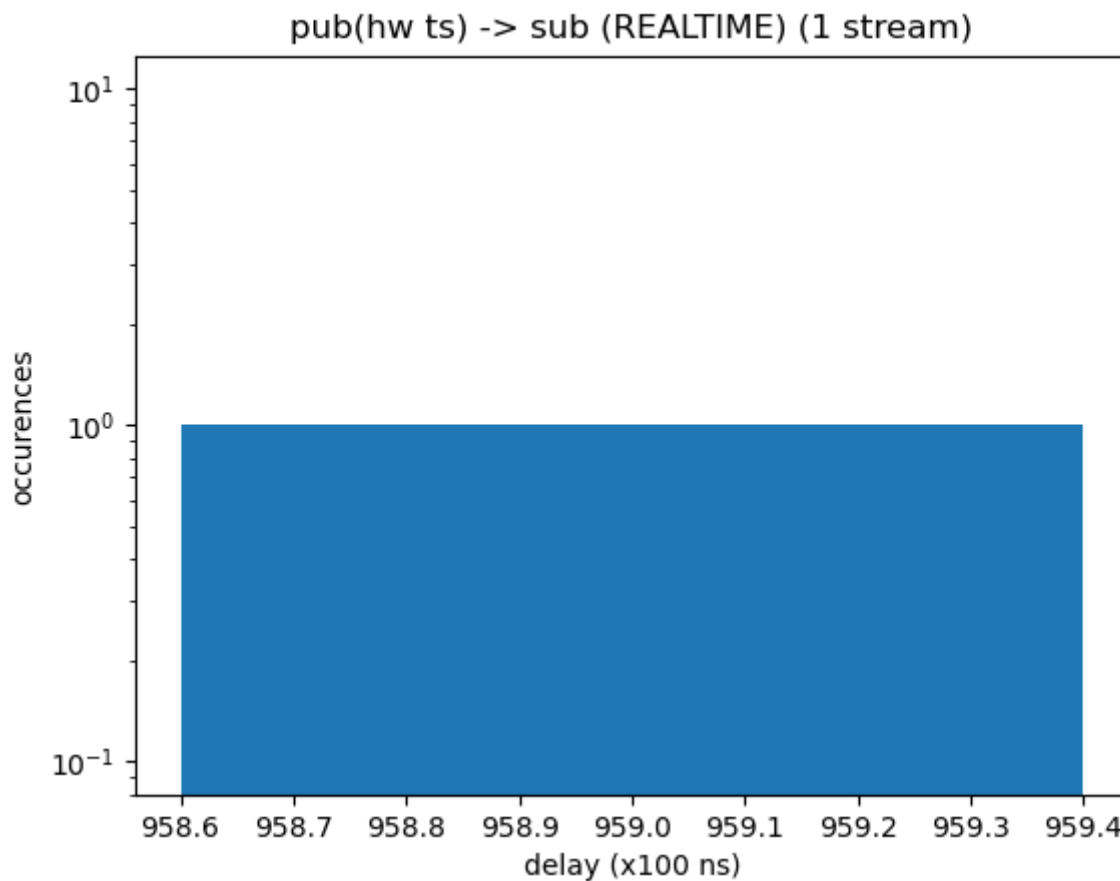


[pub standalone interval between] | *[./include/pub\\_standalone\\_interval\\_between.png](#)*

Data: 1 frames  
std dev pub-sub time: 0.0 ns  
median: 92470 ns  
mean: 92470 ns  
min: 92470 ns  
max: 92470 ns

Data: 99994 frame pairs  
std dev of frame-to-frame time: 2.501838886280337  $\mu$ s  
median: 17.0  $\mu$ s  
mean: 17.52056123367402  $\mu$ s  
min: 1  $\mu$ s  
max: 110  $\mu$ s

## virtu-ci3



[pub standalone interval between] | *./include/pub\_standalone\_interval\_between.png*

Data: 1 frames  
std dev pub-sub time: 0.0 ns  
median: 95908 ns  
mean: 95908 ns  
min: 95908 ns  
max: 95908 ns

Data: 99994 frame pairs  
std dev of frame-to-frame time: 2.501838886280337  $\mu$ s  
median: 17.0  $\mu$ s  
mean: 17.52056123367402  $\mu$ s  
min: 1  $\mu$ s  
max: 110  $\mu$ s

# 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 main.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 main.adoc
```