



TEST REPORT

Table of Contents

| | |
|---|---|
| Test reports..... | 1 |
| Tests common security for yoctoCI | 1 |
| Tests hypervisor for yoctoCI | 5 |
| Tests hypervisor iommu for yoctoCI | 6 |
| Tests hypervisor readonly for yoctoCI | 6 |
| Tests hypervisor security for yoctoCI | 7 |
| Tests update for yoctoCI | 7 |
| About this documentation | 9 |

Test reports

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-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 <i>login</i> policy | PASS |
| SEAPATH-00157 | PATH env. variable is correctly set | 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> : STATIC_USERMODEHELPER is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : USERFAULTFD is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : X86_VSYSCALL_EMULATION is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : MODIFY_LDT_SYSCALL is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : DEVMEM is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : USELIB is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : KEXEC is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : BINFORMAT_MISC is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : ALLOW_DEV_COREDUMP is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PROC_KCORE is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : KALLSYMS is disabled | PASS |

| Test ID | Tests | Results |
|---------------|--|---------|
| SEAPATH-00050 | Linux kernel <i>hardening</i> : SLUB_DEBUG_ON 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> : SLUB_DEBUG_ON 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 |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : PAGE_POISONING is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : RANDOMIZE_KSTACK_OFFSET_DEFAULT is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : INIT_ON_ALLOC_DEFAULT_ON is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardening</i> : INIT_ON_FREE_DEFAULT_ON is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>gcc_plugins</i> : GCC_PLUGIN_LATENT_ENTROPY is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>gcc_plugins</i> : GCC_PLUGIN_RANDSTRUCT is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>gcc_plugins</i> : 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 | PASS |
| SEAPATH-00151 | /etc/sudoers | PASS |
| SEAPATH-00152 | /etc/sudoers | PASS |
| SEAPATH-00153 | /etc/sudoers | PASS |
| SEAPATH-00154 | /etc/sudoers | PASS |

| Test ID | Tests | Results |
|---------------|---------------------------|---------|
| SEAPATH-00155 | /etc/sudoers | PASS |
| SEAPATH-00156 | /etc/sudoers | PASS |
| SEAPATH-00150 | /etc/sudoers.d/emergadmin | PASS |
| SEAPATH-00151 | /etc/sudoers.d/emergadmin | PASS |
| SEAPATH-00152 | /etc/sudoers.d/emergadmin | PASS |
| SEAPATH-00153 | /etc/sudoers.d/emergadmin | PASS |
| SEAPATH-00154 | /etc/sudoers.d/emergadmin | PASS |
| SEAPATH-00155 | /etc/sudoers.d/emergadmin | PASS |
| SEAPATH-00156 | /etc/sudoers.d/emergadmin | PASS |
| SEAPATH-00150 | /etc/sudoers.d/snmp | PASS |
| SEAPATH-00151 | /etc/sudoers.d/snmp | PASS |
| SEAPATH-00152 | /etc/sudoers.d/snmp | PASS |
| SEAPATH-00153 | /etc/sudoers.d/snmp | PASS |
| SEAPATH-00154 | /etc/sudoers.d/snmp | PASS |
| SEAPATH-00155 | /etc/sudoers.d/snmp | PASS |
| SEAPATH-00156 | /etc/sudoers.d/snmp | PASS |
| SEAPATH-00150 | /etc/sudoers.d/adminsys | PASS |
| SEAPATH-00151 | /etc/sudoers.d/adminsys | PASS |
| SEAPATH-00152 | /etc/sudoers.d/adminsys | PASS |
| SEAPATH-00153 | /etc/sudoers.d/adminsys | PASS |
| SEAPATH-00154 | /etc/sudoers.d/adminsys | PASS |
| SEAPATH-00155 | /etc/sudoers.d/adminsys | PASS |
| SEAPATH-00156 | /etc/sudoers.d/adminsys | PASS |
| SEAPATH-00150 | /etc/sudoers.d/maint-n3 | PASS |
| SEAPATH-00151 | /etc/sudoers.d/maint-n3 | PASS |
| SEAPATH-00152 | /etc/sudoers.d/maint-n3 | PASS |
| SEAPATH-00153 | /etc/sudoers.d/maint-n3 | PASS |
| SEAPATH-00154 | /etc/sudoers.d/maint-n3 | PASS |
| SEAPATH-00155 | /etc/sudoers.d/maint-n3 | PASS |
| SEAPATH-00156 | /etc/sudoers.d/maint-n3 | PASS |
| SEAPATH-00150 | /etc/sudoers.d/maint-n1 | PASS |
| SEAPATH-00151 | /etc/sudoers.d/maint-n1 | PASS |
| SEAPATH-00152 | /etc/sudoers.d/maint-n1 | PASS |
| SEAPATH-00153 | /etc/sudoers.d/maint-n1 | PASS |
| SEAPATH-00154 | /etc/sudoers.d/maint-n1 | PASS |
| SEAPATH-00155 | /etc/sudoers.d/maint-n1 | PASS |
| SEAPATH-00156 | /etc/sudoers.d/maint-n1 | PASS |
| SEAPATH-00150 | /etc/sudoers.d/admin | PASS |
| SEAPATH-00151 | /etc/sudoers.d/admin | PASS |
| SEAPATH-00152 | /etc/sudoers.d/admin | PASS |

| Test ID | Tests | Results |
|---------------|---|---------|
| SEAPATH-00153 | /etc/sudoers.d/admin | PASS |
| SEAPATH-00154 | /etc/sudoers.d/admin | PASS |
| SEAPATH-00155 | /etc/sudoers.d/admin | PASS |
| SEAPATH-00156 | /etc/sudoers.d/admin | PASS |
| SEAPATH-00150 | /etc/sudoers.d/privileged | PASS |
| SEAPATH-00151 | /etc/sudoers.d/privileged | PASS |
| SEAPATH-00152 | /etc/sudoers.d/privileged | PASS |
| SEAPATH-00153 | /etc/sudoers.d/privileged | PASS |
| SEAPATH-00154 | /etc/sudoers.d/privileged | PASS |
| SEAPATH-00155 | /etc/sudoers.d/privileged | PASS |
| SEAPATH-00156 | /etc/sudoers.d/privileged | PASS |
| SEAPATH-00150 | /etc/sudoers.d/admincluster | PASS |
| SEAPATH-00151 | /etc/sudoers.d/admincluster | PASS |
| SEAPATH-00152 | /etc/sudoers.d/admincluster | PASS |
| SEAPATH-00153 | /etc/sudoers.d/admincluster | PASS |
| SEAPATH-00154 | /etc/sudoers.d/admincluster | PASS |
| SEAPATH-00155 | /etc/sudoers.d/admincluster | PASS |
| SEAPATH-00156 | /etc/sudoers.d/admincluster | PASS |
| SEAPATH-00150 | /etc/sudoers.d/operator | PASS |
| SEAPATH-00151 | /etc/sudoers.d/operator | PASS |
| SEAPATH-00152 | /etc/sudoers.d/operator | PASS |
| SEAPATH-00153 | /etc/sudoers.d/operator | PASS |
| SEAPATH-00154 | /etc/sudoers.d/operator | PASS |
| SEAPATH-00155 | /etc/sudoers.d/operator | PASS |
| SEAPATH-00156 | /etc/sudoers.d/operator | PASS |
| SEAPATH-00150 | /etc/sudoers.d/ansible | PASS |
| SEAPATH-00151 | /etc/sudoers.d/ansible | PASS |
| SEAPATH-00152 | /etc/sudoers.d/ansible | PASS |
| SEAPATH-00153 | /etc/sudoers.d/ansible | PASS |
| SEAPATH-00154 | /etc/sudoers.d/ansible | PASS |
| SEAPATH-00155 | /etc/sudoers.d/ansible | PASS |
| SEAPATH-00156 | /etc/sudoers.d/ansible | 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 <i>misc</i> : EFI_PARTITION is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>reporting</i> : EDAC is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>usb</i> : USB_OHCI_HCD is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>usb</i> : USB_EHCI_HCD is enabled | PASS |

| Test ID | Tests | Results |
|---------------|---|---------|
| SEAPATH-00050 | Linux kernel <i>usb</i> : 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: 168
- number of failures: 0

Tests hypervisor for yoctoCI

| Test ID | Tests | Results |
|---------------|--|---------|
| SEAPATH-00027 | auditd is inactive | 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-00050 | Linux kernel <i>ovs</i> : OPENVSWITCH is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ovs</i> : OPENVSWITCH_GRE is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ovs</i> : OPENVSWITCH_VXLAN is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ovs</i> : OPENVSWITCH_GENEVE is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ovs</i> : TRIM_UNUSED_KSYMS is disabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ovs</i> : NET_IPGRE is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>dpdk</i> : UIO is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>dpdk</i> : VFIO_PCI is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardware</i> : IGB is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardware</i> : TIGON3 is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardware</i> : R8169 is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardware</i> : E1000 is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardware</i> : E1000E is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>hardware</i> : X86_PKG_TEMP_THERMAL is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ceph</i> : AIO is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ceph</i> : TMPFS is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>ceph</i> : MD is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>kvm</i> : KVM is enabled | PASS |
| SEAPATH-00050 | Linux kernel <i>kvm</i> : KVM_INTEL is enabled | PASS |

| Test ID | Tests | Results |
|---------------|---|---------|
| SEAPATH-00050 | Linux kernel <i>kvm</i> : KVM_VFIO is enabled | PASS |
| SEAPATH-00007 | SMT is activated | 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-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 |
| SEAPATH-00023 | SPICE protocol is not installed | PASS |

- number of tests: 33
- number of failures: 0

Tests hypervisor iommu for yoctoCI

| 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 hypervisor readonly for yoctoCI

| Test ID | Tests | Results |
|---------------|---|---------|
| 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 |
| 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 |

- number of tests: 8
- 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 |
| 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 |

| Test ID | Tests | Results |
|---------------|--|---------|
| 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

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 dlatex package will need to be installed on your Linux distribution):

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