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OpenSCAP

Google Gemini

.

: 2025-06-09

1. (SCAP) OpenSCAP

(IT) 가 , , 가, (SCAP) OpenSCAP . ,

1.1. SCAP 가?

SCAP(Security Content Automation Protocol) ,
가 가 .¹ SCAP
(NIST) 800-53(SP 800-53)
¹ (FISMA)
¹ SCAP
NIST가 (NVD) .¹ SCAP ,
 ,
 ,
¹ SCAP
가 ,
¹ SCAP NIST , 가 , NIST FISMA
 , FISMA
¹ NIST SCAP
SCAP
가 , SCAP “ ”
“ ”¹
 ,
 .

1.2. OpenSCAP :

OpenSCAP(OSCAP) SCAP .³ SCAP
, SCAP
¹ OpenSCAP SCAP 가 (SSG) (oscap)
³ OpenSCAP SCAP
 ,
 SCAP . OpenSCAP
가
 . 가

1.3.

가 SCAP
, SCAP
가
DSS, NIST, FedRAMP, FISMA
IT
가
가
OpenSCAP
가

2. SCAP

SCAP
SCAP

2.1. SCAP

- SCAP
- XCCDF (Extensible Configuration Checklist Description Format):
XML
SCAP 가 (SSG) XCCDF
 - OVAL (Open Vulnerability and Assessment Language):
가
OVAL (:
 - CVE (Common Vulnerabilities and Exposures):
 - CPE (Common Platform Enumeration):
 - CVSS (Common Vulnerability Scoring System):
remediation
 - CCE (Common Configuration Enumeration):

- ARF (Asset Reporting Format):
 - . oscap ARF
- TMSAD (Trust Model for Security Automation Data):
- AID (Asset Identification):
- CCSS (Common Configuration Scoring System):

SCAP
SCAP(OpenSCAP) 가
(XCCDF, OVAL) (CPE),
(CVE), 가(CVSS) “ (suite)”¹ . SCAP
SCAP
가 “ 1” SCAP
가

2.2. SCAP

SCAP
SCAP , SCAP

	(Full Name)		SCAP
XCCDF	Extensible Configuration Checklist Description Format ()	, XML “ ”	가
OVAL	Open Vulnerability and Assessment Language (가)	(: , 가) XML ()	XCCDF “ ”
CVE	Common Vulnerabilities and Exposures ()		가
CPE	Common Platform Enumeration ()	IT (, OS,)	
CVSS	Common Vulnerability Scoring System (가)	가	remediation
CCE	Common Configuration Enumeration ()	()	
ARF	Asset Reporting Format ()	가	가 가

SCAP

SCAP
가
SCAP
OpenSCAP

3. OpenSCAP :

OpenSCAP SCAP
OpenSCAP 가 ,
(oscap) (SCAP Workbench)

3.1. OpenSCAP :

OpenSCAP⁵
SCAP Workbench, Red Hat Satellite SCAPTimony, OpenSCAP⁵
Daemon
SCAP⁵ OpenSCAP Base C API
SCAP¹¹ 가
, API
, OpenSCAP SCAP
가 , 가
. API
SCAP SCAP
SCAP

3.2. oscap:

oscap OpenSCAP⁵
XCCDF OVAL 가
⁵ SCAP 1.2 SCAP 1.1 1.0⁵
DISA STIG, NIST USGCB, PCI-DSS Red Hat 가⁵
oscap xccdf eval 가⁹, oscap info
⁹ oscap xccdf generate report ARF/XML HTML
oscap (verbose)¹² oscap
(CLI)
. GUI
. oscap⁵, CLI OpenSCAP, CI/CD
(: cron , Ansible, CI/CD) , OpenSCAP

3.3. SCAP Workbench:

SCAP Workbench OpenSCAP⁹

XCCDF SDS(Source Data Stream) 가

¹³ , HTML, ARF XCCDF

⁹ SCAP 가 (SSG) SCAP Workbench Workbench

⁹ (tailoring) ¹³ SCAP Workbench

가 . oscap CLI SCAP Workbench GUI⁵

OpenSCAP CLI

가

OpenSCAP

3.4.

OpenSCAP Red Hat Satellite SCAPTimony OpenSCAP Daemon

⁵ OpenShift Compliance Operator oscap xccdf eval

OpenShift 가 ¹⁰ SCAPinoculars OpenSCAP ARF

Prometheus ¹⁰ OpenSCAP Jenkins

Ansible ⁷ OSCAP (XCCDF) EM CLI Enterprise

Manager 가 ¹⁶ OpenSCAP

Compliance Operator, Jenkins, Ansible⁷ OpenSCAP OpenShift

DevOps DevSecOps

OpenSCAP

DevSecOps

4. 가 : OpenSCAP 가

OpenSCAP

OpenSCAP 가

4.1.

OpenSCAP

SCAP 가 (SSG)

- Fedora: dnf install openscap-scanner⁵ oscap SCAP Workbench yum install scap-workbench⁹ , openscap-scanner 가 .
가 ¹²
- RHEL 6/7, CentOS 6/7: yum install openscap-scanner⁵ yum install scap-workbench⁹
- RHEL 8+/CentOS 8+: Fedora dnf ,
¹²
- Debian/Ubuntu: oscap libopenscap8 apt-get install libopenscap8⁵ . Ubuntu SCAP Workbench SSG

가 DISA FSO, NSA, Red Hat

14

가

SSG

가

가

4.3.

4.3.1.

가

, SSG

⁹

⁹ 가

```
<datastream_file.xml> oscap info <datastream_file.xml>
( : oscap info /usr/share/xml/scap/ssg/content/ssg-rhel6-ds.xml).9 SCAP
Workbench9 ( : RHEL 8 )
( : CIS Benchmark Level 1)
```

4.3.2. 가 **oscap**

```
oscap 가 : oscap xccdf eval --profile <profile_id>
--results <results_file.xml> --report <report_file.html>
<datastream_file.xml>.9 DISA STIG oscap xccdf eval --profile
selected_profile --results result_file --cpe cpe_dictionary disa_stig_content
.5 가9, oscap OVAL
가 : oscap oval eval....19 OpenSCAP
```

4.3.3. (HTML, ARF, XCCDF)

```
. --results-arf arf.xml
(ARF)9, --report report.html HTML
.9 XCCDF9 HTML
9, SCAPinoculars ARF HTML
10 가 (ARF,
XCCDF) 가 (HTML)
OpenSCAP
```

4.4. (Tailoring)

(Tailoring)

SCAP Workbench¹³, (fork)

ID /¹⁵

“ ” “ ”¹⁵

가 SCAP

¹⁵ OpenSCAP XCCDF 1.1

openscap13

(: SSG)14,
(15)
15,
15
가 ,

5. OpenSCAP

OpenSCAP
가 CIS(Center for Internet Security) DISA STIG(Security
Technical Implementation Guides)
가

5.1. CIS(Center for Internet Security)

CIS
. OpenSCAP CIS PCI DSS, NIST, FedRAMP,
FISMA 6 Red Hat RHEL(Red Hat Enterprise
Linux) CIS scap-security-guide
18
oscap SSG
18 가, oscap
remediation()
1 Level 2)
CIS
Ansible
18 OpenSCAP Ubuntu CIS
17, CIS (Level
--remediate
17
OpenSCAP remediation 18, remediation
. , SSG RHEL 8 CIS remediation CIS 100%
98% 18 SSG
remediation 가 100%
remediation 가 ,

5.2. DISA STIGs(Security Technical Implementation Guides)

DISA STIG (DoD)
.20 OpenSCAP DISA STIG 가
.5 SCAP 가 (SSG) STIG , RHEL 6 DISA STIG SSG
.14 SSG DoD STIG Red Hat .14 STIG
oscap xccdf eval --profile <STIG_profile>... 5, STIG
OpenSCAP/SSG /usr/share/xml/scap/ssg/content .20 STIG

remediation Content) Ansible DISA 가 (Supplemental Automation STIG 14 , DoD

STIG . STIG 가 가 (SSG)

5.3. (: FISMA, HIPAA, PCI-DSS, NIST SP 800-53)

OpenSCAP CIS STIG . SCAP
NIST SP 800-53 1, FISMA .1 PCI-DSS
가 (5, SSG가 PCI DSS 14), Oracle Linux
SSG HIPAA “ ” .16 SCAP NIST
.1 OpenSCAP FISMA, HIPAA, PCI-DSS, NIST SP 800-53
1 SCAP 가 가 (OVAL)
SSG가
OpenSCAP 가 SSG 가

6. OpenSCAP

OpenSCAP .

. 6.1. : OpenSCAP .7
가 가 .1 가 . 6.2.
: SCAP .1 , SCAP
“ ” 6, SCAP
.6 가 가
. 6.3. (): OpenSCAP .4 SCAP
6, OpenSCAP(SCC + OVAL) Nessus
.21
OpenSCAP .22
. 6.4. :
.7 가
.8 OpenSCAP
. 6.5. :
. OpenSCAP
. 6.6. : Jenkins, Ansible
.7
OpenSCAP
(6.1) ((, 6.3) 가
(6.4). (6.2) (6.6)
, ,
, 가 .

7.

OpenSCAP 가 , OpenSCAP : OpenSCAP . 7.1. 가 (: 2GB) .24 “Out of memory: Killed process (oscap)” “Memory allocation failed” 가 .24 / , / OSCAP_PROBE_MEMORY_USAGE_RATIO , OSCAP_PROBE_IGNORE_PATHS (: /home) , .24 remediation , , oscap . 7.2. SCAP 가 / 가 : .8 SCAP (XCCDF, OVAL) 가 (24 “ 가 ”) . OpenSCAP , SCAP . 7.3. (Coverage Gaps): SSG RHEL 8 CIS remediation 98% 100% 가 .18 “ ” .18 SSG 100% 가 OpenSCAP 24 . 가 . 가 18 , 8 SCAP 가 SSG SSG .

8. OpenSCAP :

OpenSCAP 가 Nessus Qualys VMDR OpenSCAP .

8.1. OpenSCAP Nessus

OpenSCAP Nessus 가 , , 가 . / : Nessus (Nessus Attack Scripting Language) remediation .21 OpenSCAP SCAP . SCAP DoD , Nessus SCAP (: RHEL 8 SCAP) .21 Tenable(Nessus) Nessus SCAP .21 : OpenSCAP 96%

Nessus 72% 25, 가
. SCAP .21 Remediation:
OpenSCAP remediation (: CIS Ansible) .18 Nessus remediation
.21 UI: OpenSCAP , Nessus GUI
.21 Nessus OpenSCAP(SCC + OVAL) .21
: SCAP(OpenSCAP) DoD .21 Nessus
.26

8.2. OpenSCAP Qualys VMDR

OpenSCAP Qualys VMDR 가 , ,
. / : OpenSCAP SCAP
.22 Qualys VMDR IT, OT, IoT
(VMDR) .22 Qualys , , OS)
가 .22 : (, , OS)
22, Qualys 가 : OpenSCAP
SCAP / .22 Qualys IT, OT, IoT
가 가 .22
: OpenSCAP . Qualys VMDR (가)
) .22 : OpenSCAP () . Qualys
(가) . (27
, OpenSCAP , Qualys
).

8.3. : OpenSCAP, Nessus, Qualys VMDR

OpenSCAP, Nessus, Qualys VMDR .

	OpenSCAP	Nessus (Tenable)	Qualys VMDR
	SCAP 가 (OVAL) ,	,	(VMDR), ,
	SCAP (XCCDF, OVAL, CPE, CVE)	, NASL , Tenable	,
	()	(Nessus Pro, Tenable.io)	()
SCAP		가 ; SCAP	/ 가 , SCAP 가
	(SSG STIG, CIS) (oscap)	GUI, ,	, (IT/OT/IoT)
	HTML, ARF, XCCDF; / ,	, 가	,

	OpenSCAP	Nessus (Tenable)	Qualys VMDR
Remediation	remediation 가 (: SSG Ansible)	remediation	,
	/, ,	가, ,	,,
	CLI (oscap), GUI (SCAP Workbench)	GUI (Nessus Pro, Tenable.io)	
	SCAP 가 , ,	가, ,	가 VMDR , MSSP,

OpenSCAP SCAP STIG CIS
가
. Nessus Qualys
. OpenSCAP SCAP
가
OpenSCAP .21 SCAP
가
OpenSCAP , “ ” SCAP
.

9.

OpenSCAP ,
OpenSCAP

9.1. OpenSCAP: , , API

OpenSCAP , OpenSCAP
.12 OpenSCAP cmake make ,
Fedora, RHEL, Ubuntu/Debian
.12 (oscap -v), (LD_LIBRARY_PATH,
OSCAP_SCHEMA_PATH) .12 OpenSCAP Base C API 11,
OpenSCAP
lcov, genhtml 가 .12

9.2. OpenSCAP

OpenSCAP , GitHub .18 GitHub
.18
.12 12, API 11, 18
OpenSCAP 가

OpenSCAP, 가

10.

OpenSCAP OpenSCAP 가

10.1. OpenSCAP 가

OpenSCAP 가 SCAP 가 : CVE, CPE, XCCDF, OVAL OpenSCAP

10.2. OpenSCAP

DevSecOps, OpenSCAP OpenShift Compliance Operator 10 OpenSCAP IT OpenSCAP , SCAP “ (Shift Left)” “ (Security as Code)” OpenSCAP (XCCDF) OpenSCAP .1 OpenSCAP SCAP 가 (SSG) 가 가 OpenSCAP , IoT OpenSCAP 14 (SCAP OpenSCAP , OpenSCAP

- Security Content Automation Protocol - Wikipedia, 6 9, 2025 ,
https://en.wikipedia.org/wiki/Security_Content_Automation_Protocol
- en.wikipedia.org, 6 9, 2025 ,
[https://en.wikipedia.org/wiki/Security_Content_Automation_Protocol#:~:text=Security%20Content%20Automation%20Protocol%20\(SCAP\)%20checklists%20standardize%20and%20enable%20automation,800%2D53\)%20controls%20framework.](https://en.wikipedia.org/wiki/Security_Content_Automation_Protocol#:~:text=Security%20Content%20Automation%20Protocol%20(SCAP)%20checklists%20standardize%20and%20enable%20automation,800%2D53)%20controls%20framework.)
- About SCAP - Oracle Help Center, 6 9, 2025 ,
<https://docs.oracle.com/en/operating-systems/oracle-linux/8/oscaped/oscaped-WhatIsSCAP.html>
- docs.oracle.com, 6 9, 2025 ,
[https://docs.oracle.com/en/operating-systems/oracle-linux/8/oscaped/oscaped-WhatIsSCAP.html#:~:text=OpenSCAP%20\(OSCAP\)%20is%20an%20open,Linux%20to%20automate%20compliance%20testing.](https://docs.oracle.com/en/operating-systems/oracle-linux/8/oscaped/oscaped-WhatIsSCAP.html#:~:text=OpenSCAP%20(OSCAP)%20is%20an%20open,Linux%20to%20automate%20compliance%20testing.)
- OpenSCAP Base | OpenSCAP portal, 6 9, 2025 ,
<https://www.open-scap.org/tools/openscap-base/>
- Secure Configurations and the Power of SCAP, 6 9, 2025 ,
<https://www.cisecurity.org/insights/blog/secure-configurations-and-the-power-of-scap>
- OpenSCAP: An effective Security and Compliance Audit ... - mivocloud, 6 9, 2025 ,
<https://mivocloud.com/blog/OpenSCAP-An-effective-Security-and-Compliance-Audit-solution>
- Vulnerability Assessment | OpenSCAP portal, 6 9, 2025 ,
<https://www.open-scap.org/features/vulnerability-assessment/>
- Getting Started | OpenSCAP portal, 6 9, 2025 ,
<https://www.open-scap.org/getting-started/>
- How to visualize your OpenSCAP compliance reports - Red Hat Developer, 6 9, 2025 ,
<https://developers.redhat.com/articles/2024/02/08/how-visualize-your-openscap-compliance-reports>
- Documentation | OpenSCAP portal, 6 9, 2025 ,
<https://www.open-scap.org/resources/documentation/>
- openscap/docs/developer/developer.adoc at main - GitHub, 6 9, 2025 ,
<https://github.com/OpenSCAP/openscap/blob/main/docs/developer/developer.adoc>
- SCAP Workbench User Manual, 6 9, 2025 ,
<https://static.open-scap.org/scap-workbench-1.1/>
- SCAP Security Guide | OpenSCAP portal, 6 9, 2025 ,
<https://www.open-scap.org/security-policies/scap-security-guide/>
- Customizing SCAP Security Guide for your use-case | OpenSCAP portal, 6 9, 2025 ,
<https://www.open-scap.org/resources/documentation/customizing-scap-security-guide-for-your-use-case/>
- 24 SCAP Supported Standards - Oracle Help Center, 6 9, 2025 ,
<https://docs.oracle.com/en/enterprise-manager/cloud-control/enterprise-manager-cloud-control/13.5/emdbc/scap-supported-standards.html>
- Automating CIS Compliance With OpenScap on Ubuntu Server - Eric Morrish, 6 9, 2025 ,
<https://ericmorrish.com/blog/automating-cis-compliance-with-openscap-on-ubuntu-server/>
- Center for Internet Security (CIS) compliance in Red Hat Enterprise ..., 6 9, 2025 ,
<https://www.redhat.com/en/blog/center-internet-security-cis-compliance-red-hat-enterprise-linux-using-openscap>
- Module : OpenSCAP: Using the oscaped Command-Line Interface - Learn Oracle, 6 9, 2025 ,
<https://learn.oracle.com/ols/module/openscap-using-the-oscaped-command-line-interface/37001/37155>

- Efficiently automating DISA STIGS: a guide to automated STIG hardening with RKE2, 6 9, 2025 ,
<https://www.glasswall.com/blog/efficiently-automating-disa-stigs-a-guide-to-automated-stig-hardening-with-rke2>
- Vulnerability management and SCAP : r/cybersecurity - Reddit, 6 9, 2025 ,
https://www.reddit.com/r/cybersecurity/comments/1bm8pop/vulnerability_management_and_scap/
- Compare OpenSCAP vs. Qualys VMDR in 2025 - Slashdot, 6 9, 2025 ,
<https://slashdot.org/software/comparison/OpenSCAP-vs-Qualys-VM/>
- OpenSCAP vs. Qualys VMDR Comparison - SourceForge, 6 9, 2025 ,
<https://sourceforge.net/software/compare/OpenSCAP-vs-Qualys-VM/>
- OpenSCAP memory-consumption problems - Red Hat Customer Portal, 6 9, 2025 ,
<https://access.redhat.com/articles/6999111>
- Openscap gives better score than the nessus - Login, 6 9, 2025 ,
https://tenable.my.site.com/s/question/0D5WP00000WK0I0A5/openscap-gives-better-score-than-the-nessus?language=en_US
- 10 Vulnerability Scanning Tools to Know in 2025 - Pynt, 6 9, 2025 ,
<https://www.pynt.io/learning-hub/application-security/10-vulnerability-scanning-tools-to-know-in-2025>
- Compliance Scan vs Vulnerability Scan: Key Differences - Invicti, 6 9, 2025 ,
<https://www.invicti.com/blog/web-security/compliance-scan-vs-vulnerability-scan/>

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