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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 (plumbing) PCI DSS, NIST, FedRAMP, FISMA IT 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): OVAL (: 가 ,)
 - 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 OpenSCAP Base C API
SCAP¹¹ , 가
, API , OpenSCAP SCAP . C API¹¹ OpenSCAP
API 가 , 가
SCAP SCAP

3.2. oscap:

oscap OpenSCAP⁵
XCCDF OVAL 가⁵
SCAP 1.2 SCAP 1.1 1.0⁵
DISA STIG, NIST USGCB, PCI-DSS Red Hat 가⁵
oscap xccdf eval 가⁹, oscap info⁹
oscap xccdf generate report ARF/XML HTML¹²
oscap (verbose)
(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
 . 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
 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

openscap ¹³

(: 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%
¹⁸ 98% SSG
remediation 가 100%
remediation 가 ,

5.2. DISA STIGs(Security Technical Implementation Guides)

DISA STIG (DoD)
⁵ SCAP 가 (SSG) STIG ²⁰ OpenSCAP DISA STIG 가
¹⁴ SSG DoD STIG Red Hat RHEL 6 DISA STIG SSG ¹⁴
STIG oscap xccdf eval --profile <STIG_profile>...

⁵, STIG OpenSCAP/SSG /usr/share/xml/scap/ssg/content
²⁰ STIG remediation Ansible DISA 가
(Supplemental Automation Content) ²⁰ .
SSG, Red Hat, DISA FS0 NSA STIG ¹⁴ .
가 DoD , DoD STIG .
가 가 (SSG) STIG

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 가 ⁶
가 .
 - 6.3. (): OpenSCAP ⁴ SCAP Nessus
⁶, OpenSCAP(SCC + OVAL) ²²
²¹ .
OpenSCAP .
 - 6.4. : ⁷, remediation ⁸
⁷ 가 OpenSCAP 가 .
 - 6.5. : ⁷ CLI oscap . OpenSCAP .
 - 6.6. : Jenkins, Ansible ⁷ .

OpenSCAP (6.1) (6.4). (6.2) (6.3) 가 (6.6) , , 가 , 가

7.

OpenSCAP 가 가 OpenSCAP

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

8. OpenSCAP :

OpenSCAP 가 Nessus Qualys

	OpenSCAP	Nessus (Tenable)	Qualys VMDR
SCAP		가 ; SCAP	/ 가 , SCAP 가
	(SSG STIG, CIS) (oscap)	GUI,	, (IT/OT/IoT)
	HTML, ARF, XCCDF; / ,	가 ,	, ,
Remediation	remediation 가 (: SSG Ansible)	remediation	, ,
	/ ,	가, ,	, , ,
	CLI (oscap), GUI (SCAP Workbench)	GUI (Nessus Pro, Tenable.io)	
	SCAP 가 , ,	가, ,	VMDR 가 , MSSP,

OpenSCAP SCAP STIG CIS
가
. Nessus Qualys
. OpenSCAP SCAP 가
가
OpenSCAP .21 SCAP 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, OpenSCAP 18
 가
 OpenSCAP, 가
 ,

10.

OpenSCAP
가

10.1. OpenSCAP 가

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

10.2. OpenSCAP

DevSecOps, OpenSCAP

OpenShift Compliance Operator 10

OpenSCAP IT OpenSCAP

, SCAP

가

“(Shift Left)” “(Security as Code)”

OpenSCAP (XCCDF)

OpenSCAP .1 OpenSCAP

가

OpenSCAP

SCAP 가 (SSG) 가 가

OpenSCAP , IoT

14 (

) , . OpenSCAP
SCAP .
 , OpenSCAP
 , .

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