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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
¹ NIST SCAP
 , FISMA
 .
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 ,
API 가 SCAP OpenSCAP
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 info⁵
oscap xccdf generate report ARF/XML HTML¹²
(CLI) oscap (verbose) oscap¹²
GUI OpenSCAP⁵, CLI, 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
 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

가¹⁵ OpenSCAP XCCDF 1.1 SCAP

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() CIS
1 OpenSCAP Ubuntu CIS
1 Level 2) 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),
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 FSO 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

가 . 6.1. : OpenSCAP

가 .1

: SCAP

가 “ ” 6, SCAP

.6 가

. 6.3. (): OpenSCAP

6, OpenSCAP(SCC + OVAL)

.21 OpenSCAP

.4 SCAP

Nessus

.22

. 6.4. :

.7 가

.8 OpenSCAP

. 6.5. :

. OpenSCAP

. 6.6. : Jenkins, Ansible

.7

OpenSCAP

(6.1) (

(6.4). (6.2) , 6.3)

(6.6)

가

가

7.

OpenSCAP 가 , OpenSCAP : OpenSCAP

가 가 . 7.1. OpenSCAP : OpenSCAP

가 (: 2GB)

.24 “Out of memory: Killed process (oscap)” “Memory allocation failed”

가 .24 /

.24 OSCAP_PROBE_MEMORY_USAGE_RATIO ,

OSCAP_PROBE_IGNORE_PATHS (: /home) ,

remediation , , oscap .24

. 7.2. SCAP 가 / 가

.8 SCAP (XCCDF, OVAL) ,

가 (24 “ 가 ”

). OpenSCAP , SCAP

. 7.3. (Coverage Gaps):

SSG RHEL 8 CIS remediation 98%

CIS .18 100% 가

SSG 100% 가 .18

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, 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

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