SAP Security webcast
NIS2 with SAP

Public

Speakers

Michael Altmaier

Principal Security Architect

Agenda

- EU NIS2 — The Directive in a nutshell
- MCF — A Framework for Multi-Compliance
- Points of View — Start for Managing Cybersecurity Compliance
- In more detail — The Assessment Point of View
- Customer Success — SAP Services for Cybersecurity Compliance

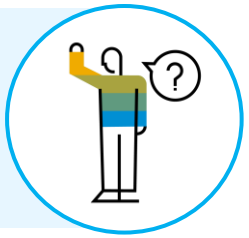
Drivers for Managing Cybersecurity Compliance

We aim to assist our customers in aligning their SAP security measures with regulations, widely-accepted norms, and established standards.

RISE or GROW with SAP and face new Cybersecurity challenges in the SAP landscape?

Impacted by new Cybersecurity regulations and must take appropriate action?

Unsure about the status of currently implemented SAP Cybersecurity measures?



Prepared for upcoming Cybersecurity compliance audits or working on existing findings?

Implementing Compliance – The chain: Why? What? How?

WHY?

Obligations

WHAT?

Requirements

HOW?

Controls

EU NIS2 requirements and affected industries

Effective as of 18th of October 2024:

- Registration with national authorities
- Reporting of security incidents
- Compliance with security requirements
- Regular proof of compliance (certification/ audit)

Cybersecurity Requirements:

- Policies/guidelines
- Incident management
- Business continuity
- Supply chain security
- Training
- Asset management
- Obligation to reporting

Strict reporting obligations:

- Up to 24hours: Reporting of incidents
- Up to 72hours: Reporting of indicators of compromise
- Up to 1 month: Final report

Fines:

- Personal liability of the management board
- high fines for breaches of security measures: up to 10 Mio. Euro or 2% of global turnover

Affected Industries since NIS1

Energy
Financial market infrastructures
Drinking water
Digital infra-structure/networks
Digital service providers
Healthcare
Transportation
Nutrition

Additional sectors since NIS2

Research
Banking
Space
Chemistry
Waste
Post & courier services
Waste water
Public administration
Industry / production
ICT service providers

Company	# of Employees		Revenue		Balance sheet
Medium-sized	50-249	&	< 50 Mio. Euros	& / or	< 43 Mio. Euros
large	>250	&	>= 50 Mio. Euros	& / or	>= 43 Mio. Euros

*furthermore: Companies with critical operations and public policy implications, systemic risks or cross-border impacts

EU NIS2 minimum requirements for Cybersecurity

Facilities within the EU must implement at least the following cybersecurity measures (risk management) to protect the IT and networks of their critical services:

- Policies on risk analysis and information system security
- Prevention, detection, and handling of cyber incidents
- **Policies and procedures regarding cryptography and encryption**
- Human Resources Security
- **Access control**
- Asset management
- **Use of multi-factor authentication or continuous authentication solutions**
- Policies and procedures to assess risk management measures
- Basic cyber hygiene practices and cybersecurity training
- Use of secure voice, video, and text communication
- Use of secured emergency communication systems
- Business continuity management with backup and disaster recovery, crisis management
- Security in the supply chain, up to secure development at suppliers
- Security in the acquisition, development and maintenance of IT and network systems, incl. vulnerability management and disclosure

In the selection and implementation of measures, institutions shall use an all-hazards approach.

MCF – A Framework for Multi-Compliance

What is the relationship between

NIS2 Directive article and ABAP profile parameter?

EU NIS2 ART. 21.2 (h) AND SNC/ENABLE = 1

EU NIS2 Art 21.2. (h) – Direct mapping

descriptive, process-oriented, risk-focused

detailed, specific, technical, implementation-related

EU NIS2 Directive / DE NIS2UmsuCG

N:M

SAP Security Baseline

N:M

Secure SAP ABAP Stack Configuration

EU NIS2 Art. 21.2. (h)

Policies and procedures regarding the use of cryptography and, where appropriate, encryption

DE NIS2UmsuCG §30 (2) Nr. 8
Kryptografie und Verschlüsselung

NETENC-A

Encryption of ABAP Network Connections

snc/enable = 1

snc/data_protection/min = 3
snc/data_protection/max = 3
snc/data_protection/use = 3

snc/accept_insecure_gui = U
snc/accept_insecure_rfc = U

…

- **Direct mapping** of one regulation

Multi Compliance Framework: Compliance & Cybersecurity Management

Multiple Compliance Regulations

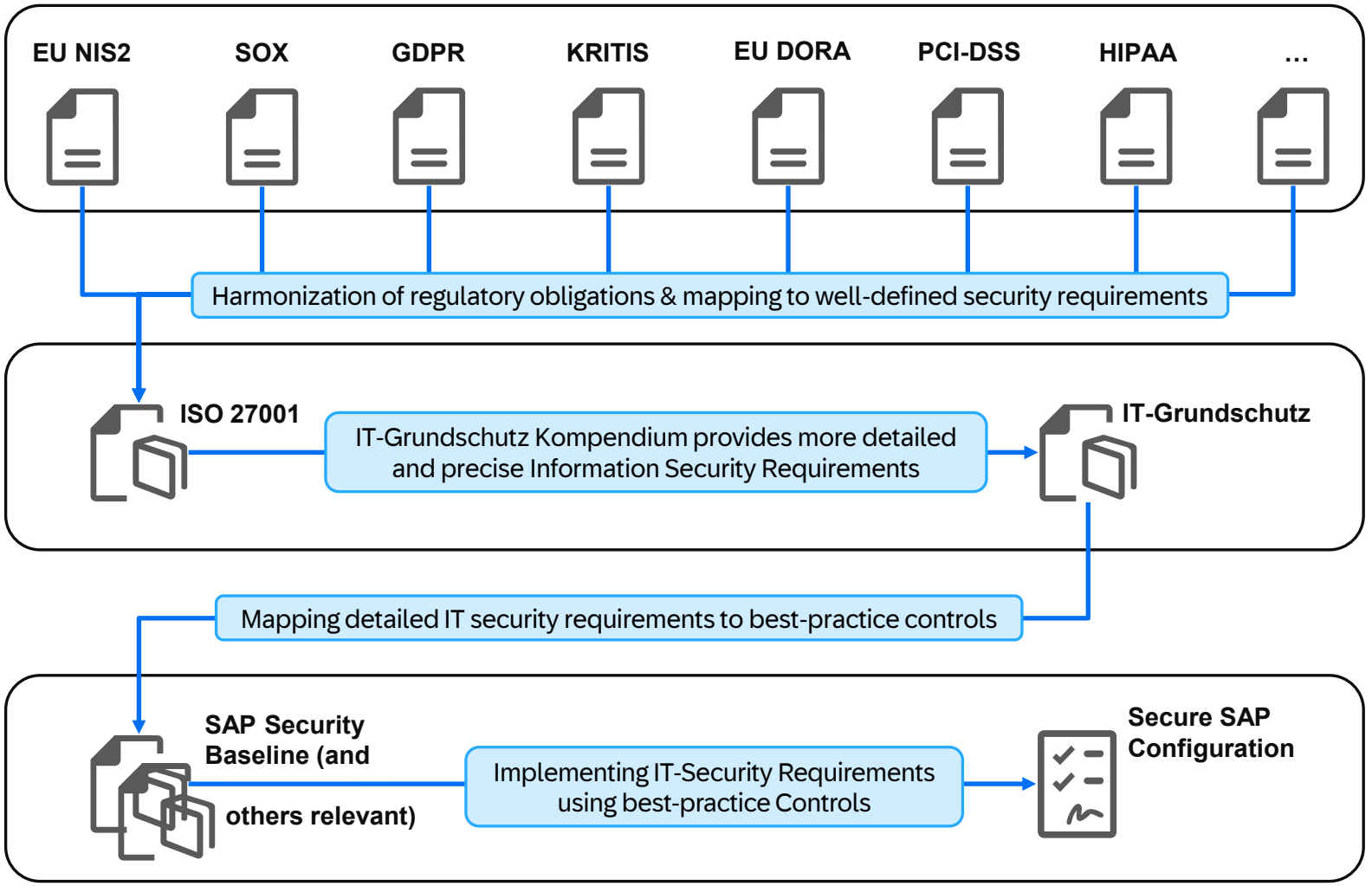
Nearly all Regulations comprise Information Security obligations

Management of Cybersecurity Compliance

Manage Cybersecurity Compliance using well-known standards

Operational IT Security

"Compliance View" enabled operational IT Security



- **Requirements Unification and Compliance Lifecycle Management**

The chain – from obligation to control

descriptive, process-oriented, risk-focused

detailed, specific, technical, implementation-related

Harmonization Layer

EU NIS2 Directive / DE NIS2UmsuCG

N:M

ISO 27001

N:M

IT-Grundschutz

N:M

SAP Security Baseline

N:M

ABAP Stack Secure Configuration

EU NIS2 Art. 21.2. (h)

Policies and procedures regarding the use of cryptography and, where appropriate, encryption

Annex-A.8.24

Use of cryptography

APP.4.2.A1

Secure SAP ABAP stack configuration

NETENC-A

Encryption of ABAP Network Connections

snc/enable = 1

snc/data_protection/min = 3
snc/data_protection/max = 3
snc/data_protection/use = 3

snc/accept_insecure_gui = U
snc/accept_insecure_rfc = U

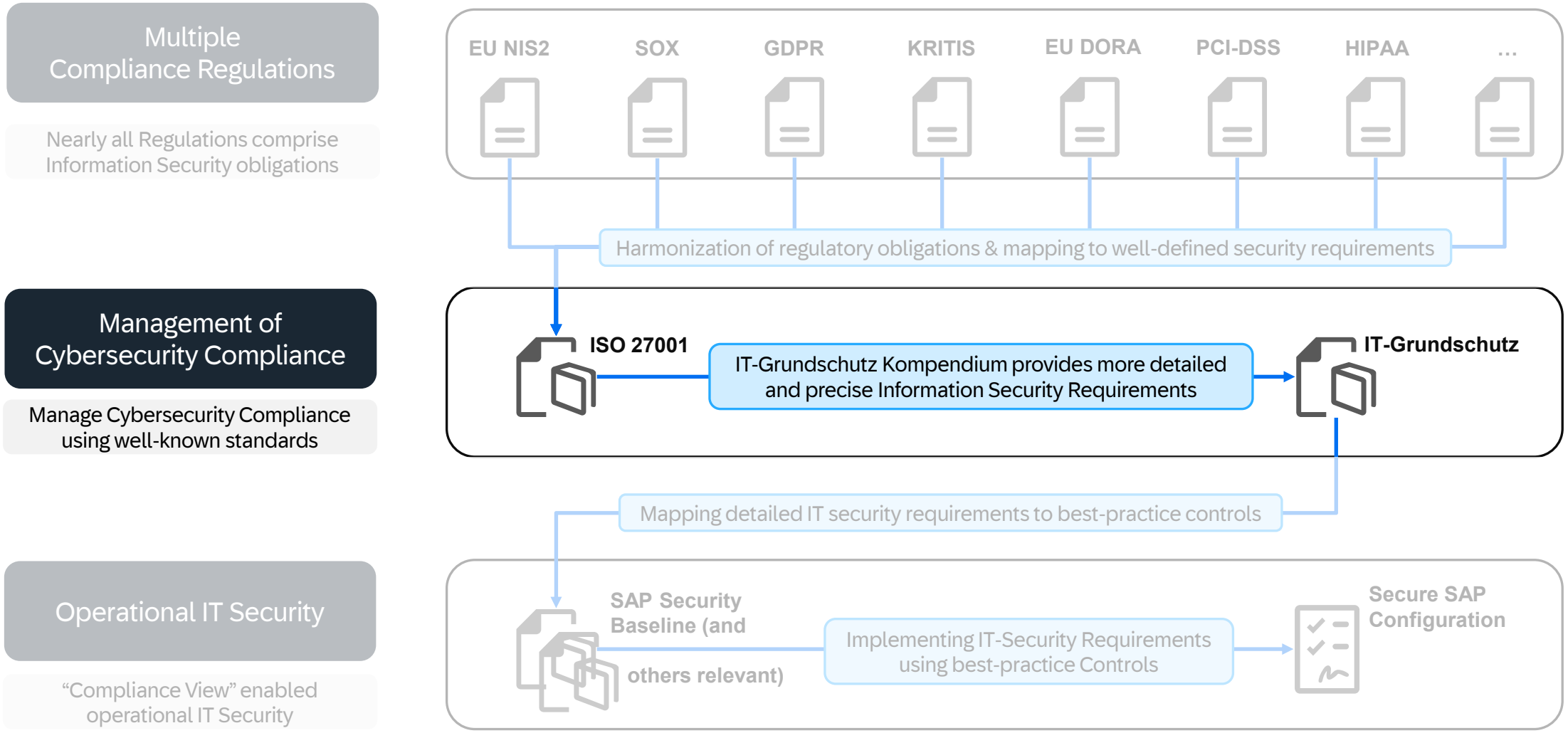
…

DE NIS2UmsuCG §30 (2) Nr. 8
Kryptografie und Verschlüsselung

SOX, GDPR, …

- **Standards based MC mapping**
- **Including Management layer (ISMS)**

Multi Compliance Framework: Compliance & Cybersecurity Management



- **Cybersecurity** is **no State, but** a continuous Management **Process**

DIME - Cybersecurity Compliance & Assurance point of view

Cybersecurity Compliance Management for SAP Landscapes

Cybersecurity Architecture, Planning and Implementation Services

Services for a comprehensive approach on Cybersecurity Compliance

- **Cybersecurity Architecture**
- **Cs Compliance and Assurance**
- **Cybersecurity Assessment**

Cybersecurity Compliance Adaption

Tailoring the Cybersecurity repository to customer landscape

ISO 27001 / IT-Grundschutz aligned repository for SAP Cybersecurity obligations, requirements, controls and measures

Cybersecurity Compliance Management and Reporting

- Laws, regulations, contracts, industry best-practices
- Cybersecurity standards and frameworks
- SAP reference architectures, SOM, security baseline

- Unified Cybersecurity Obligations
- Cybersec. Compliance Initiatives

DIME Cybersecurity Management

- Key goal indicator driven Cybersecurity Compliance Reporting

- Continuous Controls Monitoring
- Thread & Vulnerability Detection
- Configuration Validation
- Operational & Tactical Information Security Metrics

Monitoring and Reporting Infrastructure

SAP GRC and Cybersecurity products and services capabilities

SAP Cybersecurity Products and Services Capabilities

Capabilities	Services	Products
Patch Management	Cybersecurity Strategy	SAP Enterprise Thread Detection
System Hardening	Identity Access Management	SAP Focused Run
Compliant Access Management	AIRC / Infrastructure Security	SAP GRC Access Control / IAG
Identity Management	Data Protection and Privacy	SAP Cloud Identity Services
Security Incident Management	Cybersecurity Reference Architecture	SAP 3 Lines of Defense
Secure Development	Cybersecurity Implementation	SAP Code Vulnerability Analyzer

Viewpoints on Cybersecurity Compliance

Cybersecurity Architecture point of view

The objective to secure business processes in your SAP landscape end-to-end, leveraging all relevant capabilities of SAP's Cybersecurity and Compliance solutions and services.

Cybersecurity Compliance & Assurance point of view

The need to adhere to Cybersecurity regulations, hence to rely on standards-based security and control management as well as auditing and monitoring your SAP landscape.

Cybersecurity Assessment point of view

The desire for detailed insights into the Cybersecurity as-is situation, induced by uncertainty surrounding the current measures in the SAP landscape and the fear of "open flanks".

Implementing Compliance – The chain: Why? What? How?

WHY?

Obligations

EU NIS2 Art. 21.2. (h)

Policies and procedures regarding the use of cryptography and, where appropriate, encryption

WHAT?

Requirements

ISO 27001 Annex-A.8.24

Use of cryptography

IT Grundschutz APP.4.2.A1

Secure SAP ABAP stack configuration

HOW?

Controls

SAP Security Baseline NETENC-A

Encryption of ABAP Network Connections

Secure SAP ABAP Stack

snc/enable = 1
snc/data_protection/min = 3
snc/data_protection/max = 3
snc/data_protection/use = 3
…

Viewpoints on Cybersecurity Compliance

Cybersecurity Architecture point of view

The objective to secure business processes in your SAP landscape end-to-end, leveraging all relevant capabilities of SAP's Cybersecurity and Compliance solutions and services.

Cybersecurity Compliance & Assurance point of view

The need to adhere to Cybersecurity regulations, hence to rely on standards-based security and control management as well as auditing and monitoring your SAP landscape.

Cybersecurity Assessment point of view

The desire for detailed insights into the Cybersecurity as-is situation, induced by uncertainty surrounding the current measures in the SAP landscape and the fear of "open flanks".

Security Architecture: Example

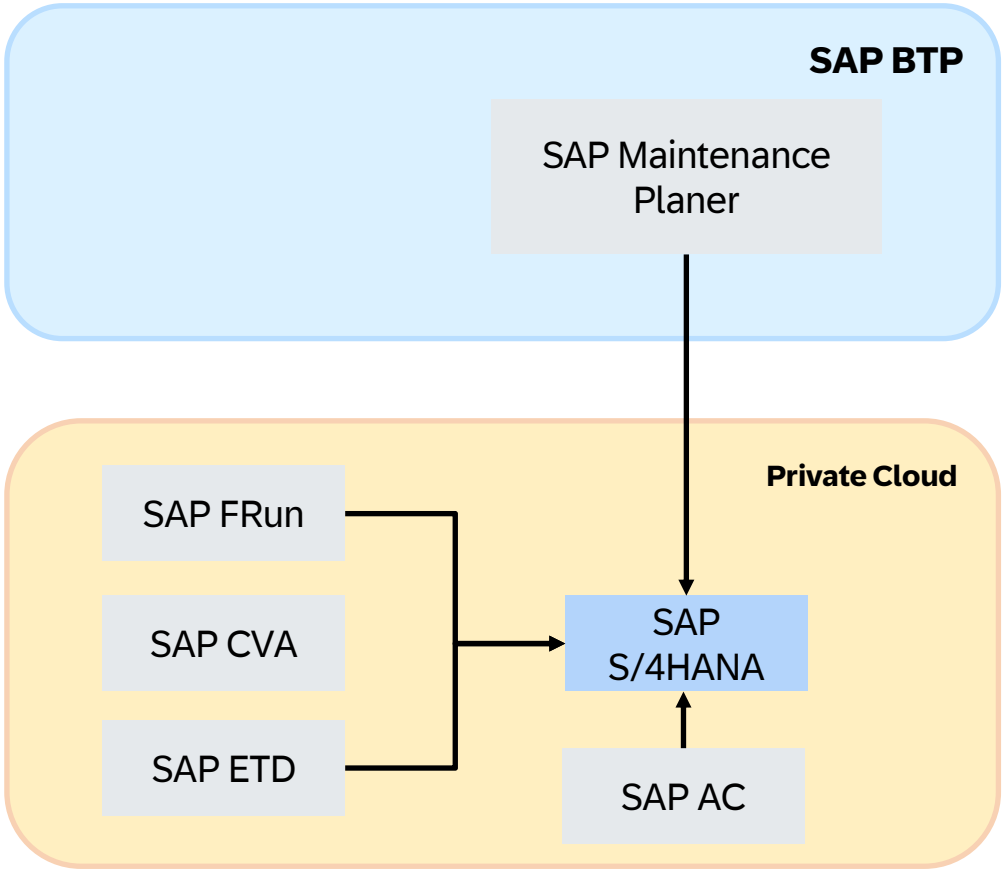
SAP Access Control
- Identity Management
- Authorization Management

SAP FocusedRun
- Configuration Management

SAP Maintenance Planer
- Patch Management

SAP Code Vulnerabilty Analyzer
- Secure Development

SAP Enterprise Thread Detection
- Security information & event management



https://discovery-center.cloud.sap/index.html#/refArchCatalog/

Customer Individual Architecture Discussions:

- Cloud ALM vs. FRUN?
- SAP IAG vs. Access Controls?
- Move to ETD Cloud Edition?
- CVA OnPrem or via ABAP Cloud Platform?
- How to cover non-ABAP code?
- How to integrate all security telemetry?
- Central Reporting of findings into incident management
- How to report identified risks?

Viewpoints on Cybersecurity Compliance

Cybersecurity Architecture point of view

The objective to secure business processes in your SAP landscape end-to-end, leveraging all relevant capabilities of SAP's Cybersecurity and Compliance solutions and services.

Cybersecurity Compliance & Assurance point of view

The need to adhere to Cybersecurity regulations, hence to rely on standards-based security and control management as well as auditing and monitoring your SAP landscape.

Cybersecurity Assessment point of view

The desire for detailed insights into the Cybersecurity as-is situation, induced by uncertainty surrounding the current measures in the SAP landscape and the fear of "open flanks".

In more detail – The Assessment Point of View

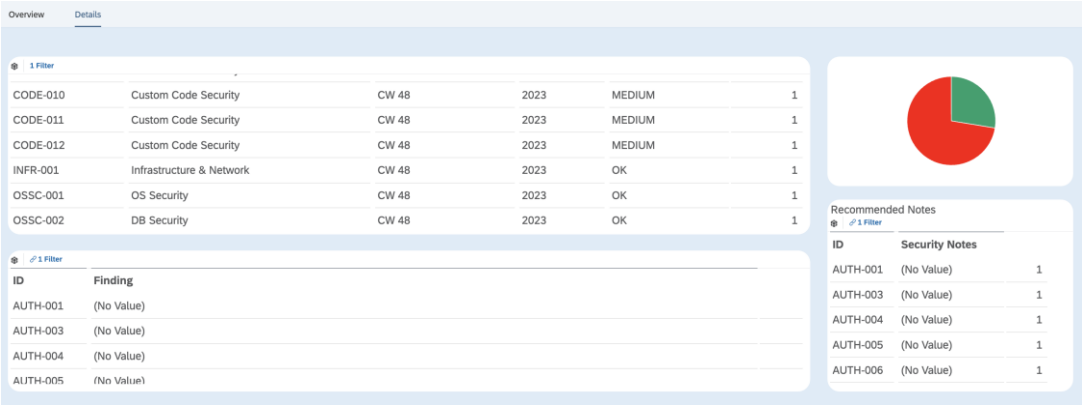
What does “Assessment Point of View” mean?

- The security assessment is an essential **comprehensive evaluation** of the security of an organization’s SAP system or landscape to identify vulnerabilities, misconfigurations, and risks.

- It is a service delivery which will be executed within 12-15 service days.

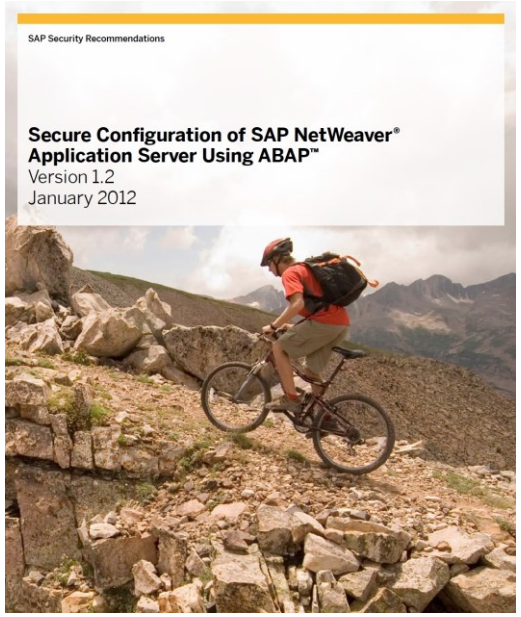
- The target is to cover all security aspects in a way, that an organization gets the transparency of its SAP systems, security strengths and weaknesses.

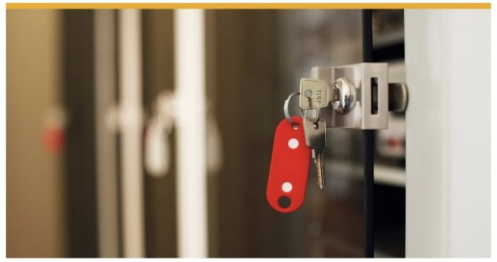
- It will enable the organization to implement effective measures to protect its assets and ensure the continuity of its business operations.



What is the Foundation of the Security Assessment?

- The assessment´s understanding is to consider all security recommendations which are available by SAP or external security resources.
- The target is to have an agile approach where content is permanently extended and improved.





SAP Security Baseline Template
Version 1.9

The structure of the template is based on the SAP Secure Operations Map:

Security Compliance	Security Governance	Audit	Cloud Security	Emergency Concept
Secure Operation	Users and Authorizations	Authentication and Single Sign-On	Support Security	Security Review and Monitoring
Secure Setup	Secure Configuration	Communication Security	Data Security	
Secure Code	Security Maintenance of SAP Code	Custom Code Security		
Infrastructure Security	Network Security	Operating System and Database Security	Frontend Security	

Security Recommendations

Hide/Show Columns ▼ Download Data ▼

Component	Priority	Secure Operations Map	Title	Default Setting or Behavior	Recommendation
Filter: [No Selection] ▼	Filter: [No Selection] ▼	Filter: [No Selection] ▼			
SAP Destination service	Recommended	Authentication & Single Sign-On	Strong Authentication	HTTP Destinations: OAuth SAML Bearer Assertion Authentication is used to implement identity propagation for interactive user sessions.	If the `SystemUser` was maintained for test purposes and transported to the production system, make sure that the attribute isn't maintained. This setting has been deprecated and will be removed. Use `ClientCertificateAuthentication` instead.

What are the Scope Elements of the Security Assessment?

This overview shows from each scope element examples of the relevant deliverables.

Secure Configuration
Parameter Evaluation
Key and certificate Management
Attack Surface Reduction
RFC Protection

Infrastructure
Design & Architecture
Network Segmentation
Encryption Strategies
Web Dispatcher Setup

Code Security
Custom Code Vulnerabilities
Custom Code Quality Management
3rd Party Code Security
ABAP Code Principles

Web Security
Attack Surface Reduction
Trusted Network Zones & Clickjacking
Encryption Enforcements
Secure Web Integration

Patch Management
HotNews & Prio High Security Notes
Patch Management Strategy
Service Pack Strategy
DB, OS, Host Agent Validation

Cyber Security Strategy
Logging & Monitoring Strategy
Detection and Recovery Processes
Forensic Strategy
Business Process Threat Detection

Authorization Principles
Design & Concepts
Critical Authorizations & Combinations
Creation and Maintenance Process
Special Access & Recertification

Authentication & Single Sign-On
Password Security
Single Sign-On Strategy
Hash Protection
Multi-Factor Authentication

Integration Security
Secure Integration Strategy
RFC and Web Service Communication
Zero Trust Strategy
External Access Strategy

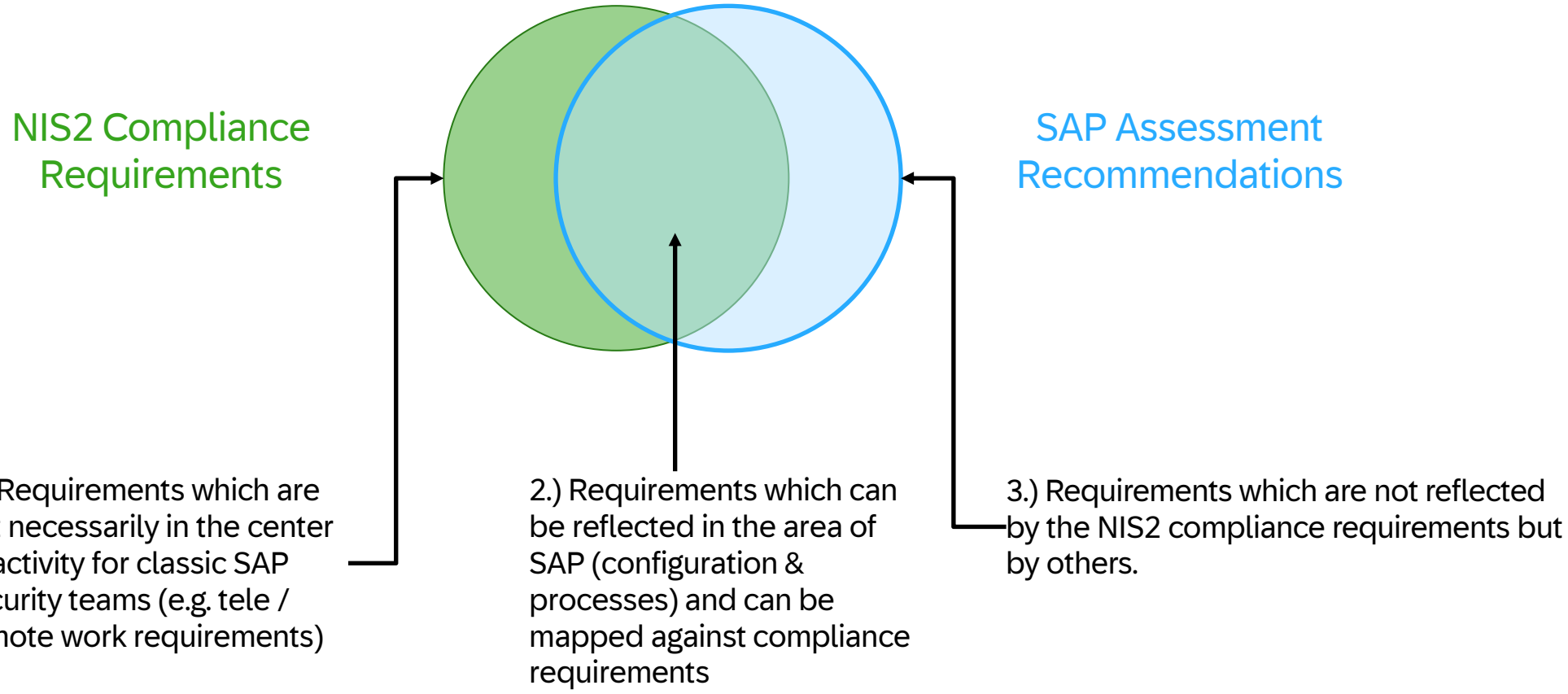
Cloud Strategy
Cloud Integration
Baseline configuration
Cloud configuration validation
Cloud Application Lifecycle

Security Processes
Threat Management Processes
Identity and Access Management
Vulnerability Management Process
Central Monitoring & Configuration validation

Identity & Access Management
Provisioning Strategy
Compliant User Management
Administration Concepts

Customer´s Security Requirements

- **TARGET:** With the Cybersecurity and Compliance Management Service we are bringing together SAP´s recommendations with the compliance requirements and additional customer requirements.



SAP Security Review Service Extract

Overview Secure Environment & System

Versioning at Import
TRAN-001

Business Process Threat Detection Advanced SLOG-005

Table Logging RECCLIENT
TRAN-003

Cross-Origin Resource Sharing
SWEB-004

Encryption Enforcement
SCFG-014

Trusted RFC Attack with Changed User
SRFC-010

Authorization Groups for Custom Coding
CODE-001 | CODE-012

Certificate Revocation
CERT-002

Gateway SECINFO & REGINFO
SRFC-001 | SRFC-002

Custom Code Vulnerabilities
CODE-002 - CODE-010

Certificate Management
CERT-001

HANA Database Patches
PTCH-008

Security Audit Log Configuration
SLOG-001

Clickjacking for BSP
SWEB-006

Single Sign-On Utilization
SSOA-003

Password Policies High Authorized User
SSOA-002

Security Profile Parameter Hardening
SCFG-001

RFC Attack Surface (UCON)
SRFC-004

HIGH Priority Patch Notes
PTCH-007

Host Agent Vulnerability
PTCH-005

Patch Management Process
PTCH-002

Trusted RFC Attack Capture & Replay
SRFC-011

RFC-Gateway PRXY_INFO
SRFC-003

Baseline Log Analysis
SLOG-004

Destination Encryption
SCFG-013

SAP Standard User
SCFG-005

Message Server Security
SCFG-006

Security Hot News Patching
PTCH-001

Secure RFC Interconnectivity - Authorizations
SRFC-008

Secure RFC Interconnectivity - Destinations
SRFC-007

* grey boxes are without link details

SCFG-001 | Profile Parameter Hardening

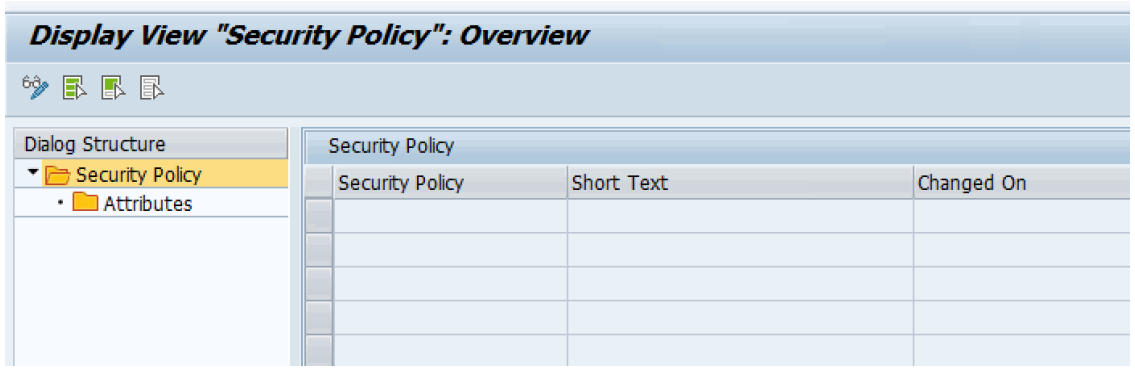
	Baseline	Parameter	Value As-Is	Value To-Be	Compliance
0	ICM05	icm/security_log	LOGFILE=/usr/sap/GE0/D01/log/dev_icm_sec-%y-%m-...	LOGFILE=access_sec_%y_%m,LEVEL=3,MAXSIZEKB=5000...	Not Compliant
1	ICM08	is/HTTP/show_detailed_errors	FALSE	FALSE	Compliant
2	ICM10	icm/trace_secured_data	FALSE	FALSE	Compliant
3	ICM11	icm/accept_remote_trace_level	0	FALSE	Compliant
4	ICM13	ssl/ciphersuites	135:PFS:HIGH::EC_P256:EC_HIGH	550:PFS:HIGH:TLS_FALLBACK_SCSV::EC_HIGH:+EC_OPT	Not Compliant
5	ICM14	ssl/client_ciphersuites	150:PFS:HIGH::EC_P256:EC_HIGH	550:PFS:HIGH:TLS_FALLBACK_SCSV::EC_HIGH:+EC_OPT	Not Compliant
6	ICM15	csi/enable	1	1	Compliant
7	ICM24	icm/HTTPS/client_sni_enabled	TRUE	TRUE	Compliant
8	RFCC6	auth/rfc_authority_check	6	6	Compliant
9	RFCC7	ucon/rfc/active	1	1	Compliant
10	RFCC8	rfc/selftrust	1	0	Not Compliant
11	RFCC10	rfc/reject_expired_passwd	1	1	Compliant
12	RFCC11	gw/accept_remote_trace_level	0	0	Compliant
13	RFCC12	sec/ral_enabled_for_rfc	0	1	Not Compliant
14	SSS05	service/protectedwebmethods	SDEFAULT	SDEFAULT	Compliant
15	SAPGUI01	sapgui/user_scripting	FALSE	FALSE	Compliant
16	SAPGUI02	sapgui/user_scripting_per_user	FALSE	TRUE	OK
17	SAPGUI03	sapgui/user_scripting_disable_recording	FALSE	FALSE	Compliant
18	ETD01	etd/event_sender/enable	off	on	OK
19	PPA1	login/min_password_diff	3	2	Compliant
20	PPA2	login/min_password_digits	1	1	Compliant
21	PPA3	login/min_password_lng	8	8	Compliant
22	PPA4	login/min_password_letters	1	1	Compliant
23	PPA5	login/min_password_lowercase	1	1	Compliant
24	PPA6	login/min_password_uppercase	1	1	Compliant
25	PPA7	login/min_password_specials	0	1	Not Compliant
26	PPA8	login/password_compliance_to_current_policy	0	1	Not Compliant
27	PPA10	login/password_downwards_compatibility	0	0	Compliant
28	PPA11	login/failed_user_auto_unlock	0	0	Compliant
29	PPA12	login/fails_to_user_lock	3	6	Compliant
30	PPA13	login/password_change_waittime	1	1	Compliant
31	PPA14	login/password_expiration_time	90	90	Compliant
32	PPA15	login/password_history_size	15	5	Compliant
33	PPA16	login/password_max_idle_initial	14	14	Compliant
34	PPA17	login/password_max_idle_productive	0	91	Not Compliant
35	PPA19	login/password_hash_algorithm	encoding=RFC2307, algorithm=iSSHA-1, iterations...	encoding=RFC2307,algorithm=iSSHA-512,iteration ...	Not Compliant
36	PPA20	login/show_detailed_errors	0	0	Compliant
37	PPA21	login/disable_cpic	0	1	Not Compliant
38	PPA22	login/fails_to_session_end	3	3	Compliant
39	SSOA1	login/ticket_expiration_time	08:00	8	Compliant
40	SSOA2	login/ticket_only_by_https	1	1	Compliant
41	SSOA3	login/ticket_only_to_host	1	1	Compliant
42	SSOA4	login/create_sso2_ticket	3	1	Not Compliant
43	SSOA5	login/accept_sso2_ticket	1	1	Compliant
44	OPPA1	rdisp/accept_remote_trace_level	0	0	Compliant
45	OPPA2	rec/client	OFF	ALL	Not Compliant
46	SAL1	rsau/enable	1	1	Compliant
47	SAL3	rsau/user_selection	1	1	Compliant
48	SAL4	rsau/integrity	1	1	Compliant
49	SAL14	rsau/log_peer_address	0	1	Not Compliant
50	SSC1	system/secure_communication	ON	ON	Compliant

	Baseline	Parameter	Value As-Is	Value To-Be	Compliance
51	RGS4	gw/reg_no_conn_info	255	255	Compliant
52	RGS5	gw/acl_mode	1	1	Compliant
53	RGS6	gw/monitor	0	1	Not Compliant
54	RGS7	gw/resolve_phys_addr	1	1	Compliant
55	RGS9	gw/sim_mode	0	0	Compliant
56	RGS10	gw/rem_start	SSH_SHELL	DISABLED	Not Compliant
57	SNC1	snc/enable	1	1	Compliant
58	SNC2	snc/data_protection/max	3	3	Compliant
59	SNC3	snc/data_protection/min	3	3	Compliant
60	SNC4	snc/data_protection/use	3	3	Compliant
61	SNC6	snc/accept_insecure_cpic	1	0	Not Compliant
62	SNC7	snc/accept_insecure_gui	1	U	Not Compliant
63	SNC9	snc/accept_insecure_rfc	1	0	Not Compliant
64	SNC10	snc/permit_insecure_start	1	0	Not Compliant
65	SNC11	snc/force_login_screen	0	0	Compliant
66	SNC14	snc/only_encrypted_gui	0	1	Not Compliant
67	SNC15	snc/only_encrypted_rfc	0	1	Not Compliant
68	RCB4	rfc/callback_security_method	3	3	Compliant
69	LWEC3	icf/set_HTTPonly_flag_on_cookies	0	0	Compliant
70	ICM06	icm/HTTP/logging_0	PREFIX=/,LOGFILE=/usr/sap/GE0/D01/log/http-%y-%...	PREFIX=/, LOGFILE=icmhttph.log, FILTER=SAPSMD, ...	Not Compliant
71	ICM28	icm/HTTP/logging_client_0	PREFIX=/,LOGFILE=/usr/sap/GE0/D01/log/http-clie...	PREFIX=/,LOGFILE=access-$(SAPSYSTEMNAME)-client...	Not Compliant
72	ICM29	icf/cors_enabled	0	1	Not Compliant
73	ICM31	icm/HTTP/trace_info	FALSE	FALSE	Compliant
74	ICM32	ict/allow_space_before_colon	FALSE	FALSE	Compliant
75	ICM33	icf/reject_expired_passwd	0	1	Not Compliant
76	MSS2	ms/monitor	0	0	Compliant
77	MSS3	ms/admin_port	0	0	Compliant
78	MSS4	ms/http_logging	1	1	Compliant
79	MSS5	ms/HTTP/logging_0	PREFIX=/,LOGFILE=/usr/sap/GE0/D01/log/ms-http-%...	SWITCHTF=day,LOGFORMAT=%t %a %u %r %s %b %{Host}i	Not Compliant
80	RGS11	gw/logging	ACTION=Ss LOGFILE=gw_log-%y-%m-%d SWITCHTF=day ...	ACTION=SPXMZ	Not Compliant
81	DYN01	dynp/checkskip1screen	OFF	ALL	Not Compliant
82	SAL15	rsau/selection_slots	10	10	Compliant
83	AUT01	auth/object_disabling_active	N	N	Compliant
84	AUT02	auth/check/calltransaction	2	3	Not Compliant
85	SAPGUI04	sapgui/nwbc_scripting	FALSE	FALSE	Compliant
86	SAPGUI05	sapgui/user_scripting_set_readonly	FALSE	FALSE	Compliant
87	SAPGUI06	sapgui/user_scripting_force_notification	FALSE	TRUE	Not Compliant
88	ABAP02	abap/ext_debugging_possible	0	2	Not Compliant
89	ICM26	is/HTTP/show_server_header	FALSE	FALSE	Compliant
90	ACL01	service/http/acl_file	NaN	needs to be manually checked - 1495075 - Access...	Not Compliant
91	ACL02	service/https/acl_file	NaN	needs to be manually checked - 1495075 - Access...	Not Compliant
92	XX01	abap/path_normalization	ext	EXT	Compliant
93	MISC01	rdisp/TRACE_HIDE_SEC_DATA	on	ON	Compliant
94	MISC02	rdisp/gui_auto_logout	1800	3600	Compliant
97	MISC07	ixml/dtd_restriction	prohibited	prohibited	Compliant

SSOA-002 | Password Policies & Technical User

Finding:

- There is currently no enhanced protection policy in place for critical users like SAP Standard User, High Authorized Technical User and Fire Fighters or SAP administrators. The possibility to overwrite and strengthen the system wide security policy with Security Policies is not in use.
- Several login profile parameter are currently not set to extend the complexity of end user passwords. E.g. could the password length of the current global default of 8 extended to the maximum for technical user.



Business Implication:

- Stronger security policies – especially for critical and high authorized users – are mitigating the risk of penetration and misuse of those user accounts.
- User impersonation could allow access to high critical and high authorized user accounts which could lead to an impact to system integrity and availability as well as data confidentiality and integrity.

Recommendation:

- Strengthen the login profile parameter to extend the password complexity with Transaction SECPOL. As of SAP_BASIS release 7.31 Security Policies can be used to configure user specific password rules. For example it is recommended that for technical or service accounts the password length is refined with: MIN_PASSWORD_LENGTH ≥ 30.
- Evaluate the risk and usage of high authorized user accounts and consider the usage of special security policies.
- Follow the Single Sign-On strategy and deactivate passwords if the SSO login is enabled.

SSOA-003 | Single Sign-On Utilization

Single Sign-On Strategy

Finding:

- Single Sign-On is generally considered in the current setup but dialog user logs are showing that there are still user accounts using passwords for logon.
- An extensive use of SAML2 for web applications is documented and in use whereas SAPGUI should be tunneled via the Business client. The usage of secure authentication mechanisms like with X.509 certificates or Kerberos for SAPGUI doesn't seem to-be in use at the moment.

Business Implication:

- An end-to-end Single Sign-On strategy avoids password challenges like:
  - Weak password hashes
  - Weak passwords
  - Password renewal and delivery actions
  - Protection of password hash tables
- Without a consistent Single Sign-On enablement a solution which operates onPrem and in the cloud is not ready for modern hybrid scenarios. Passwords are always a common target for common cyber attacks.

Recommendation:

- It is recommended to move on with the SSO rollout to enforce SSO for all users on all channels. Because there are always use cases where direct GUI access is required it is also recommended to use SSO for key users with SSO.
- Single Sign-On should be established for all Frontend-Channels as well as for administrative use.
- [320991 - Error codes during logon (list)]

Event	Event Status	Event Short Text	Category	Event Weighting	SAL Event Documentation
AU1		Logon successful (type=&A, method=&C)	Logon	Severe	The user has logged onto the system. <ZU>Possible Types (= Access types):</> A = Dialog logon (SAP GUI) B = Background job start H = HTTP logon U = User switch (internal call) ' ' = Password check (API, internal call) M = SMTP P = ABAP Push Channel (APC) E = Build of a shared object area (internal call) O = AutoABAP (internal call) T = Server startup procedure (internal call) V = SAP start service (internal call) J = JAVA virtual machine (internal call) W = BGRFC watchdog (internal call) <ZU>Possible methods (=authentication modes):</> P = Password T = Logon ticket t = Assertion ticket X = X.509 certificate S = SNC R = RFC ticket A = Authorized impersonation (background processing) E = External (EXTID) U = User switch s = HTTP security session 2 = SAML2 1 = SAML1 o = OAuth2 N = SPNego a = APC session If a user type or a method is not listed here, you might find more information in SAP Note 320991. A minimum kernel patch level is required to record the method. For more information, see SAP Note 1789518.

SAP System	AS Instance	Date	Time	Cl.	Message ID	User	Terminal	Peer	TCode	Program	Audit Log Msg. Text	Note	Variabl.	Variable 2	Variable 3
GE0	syge0s4aps01_GE0_01	13.02.2023	06:53:54	300	AU1	90020199	PC27A...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	07:09:31	300	AU2	90023529	PC27A...	19...	SESS...	SAPMSYST	Logon failed (reason=1, type=A, method=P)		A	1	P
GE0	syge0s4aps01_GE0_01	13.02.2023	07:09:38	300	AU2	90023529	PC27A...	19...	SESS...	SAPMSYST	Logon failed (reason=1, type=A, method=P)		A	1	P
GE0	syge0s4aps01_GE0_01	13.02.2023	07:10:16	300	AU1	91999977	PC27A...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	07:12:28	300	AU1	90023529	PC27A...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	08:04:03	300	AU1	ELIASA	5CG01...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	08:36:23	300	AU1	92000122	PC2AT...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	08:37:02	302	AU1	MALLAVARAMP	PC0UD...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:14:33	300	AU1	92000122	PC2AT...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:21:06	302	AU1	KANDPALK	PC27L...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:21:56	302	AU2	90018379	PC2AX...	19...	SESS...	SAPMSYST	Logon failed (reason=1, type=A, method=P)		A	1	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:22:15	300	AU1	KANDPALK	PC27L...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:22:38	302	AU2	90018379	PC2AX...	19...	SESS...	SAPMSYST	Logon failed (reason=1, type=A, method=P)		A	1	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:23:05	302	AU2	90018379	PC2AX...	19...	SESS...	SAPMSYST	Logon failed (reason=1, type=A, method=P)		A	1	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:39:18	800	AU1	AE_ZAIDIS	C11-S...	10...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:40:27	300	AU1	91999976	PC27L...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:44:17	300	AU1	CENTOFB	PC2AT...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	09:51:26	300	AU1	92000107	PC2AT...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	10:01:16	300	AU1	92000122	PC2AT...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	10:03:38	300	AU2	ELIASA	5CG01...	19...	SESS...	SAPMSYST	Logon failed (reason=1, type=A, method=P)		A	1	P
GE0	syge0s4aps01_GE0_01	13.02.2023	10:03:44	300	AU1	ELIASA	5CG01...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	10:06:48	302	AU1	OSS_USER	dewdf...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P
GE0	syge0s4aps01_GE0_01	13.02.2023	10:10:10	302	AU1	91999977	PC27A...	19...	S000	SAPMSYST	Logon successful (type=A, method=P)		A	0	P

SCFG-005 | SAP Standard User

Finding:

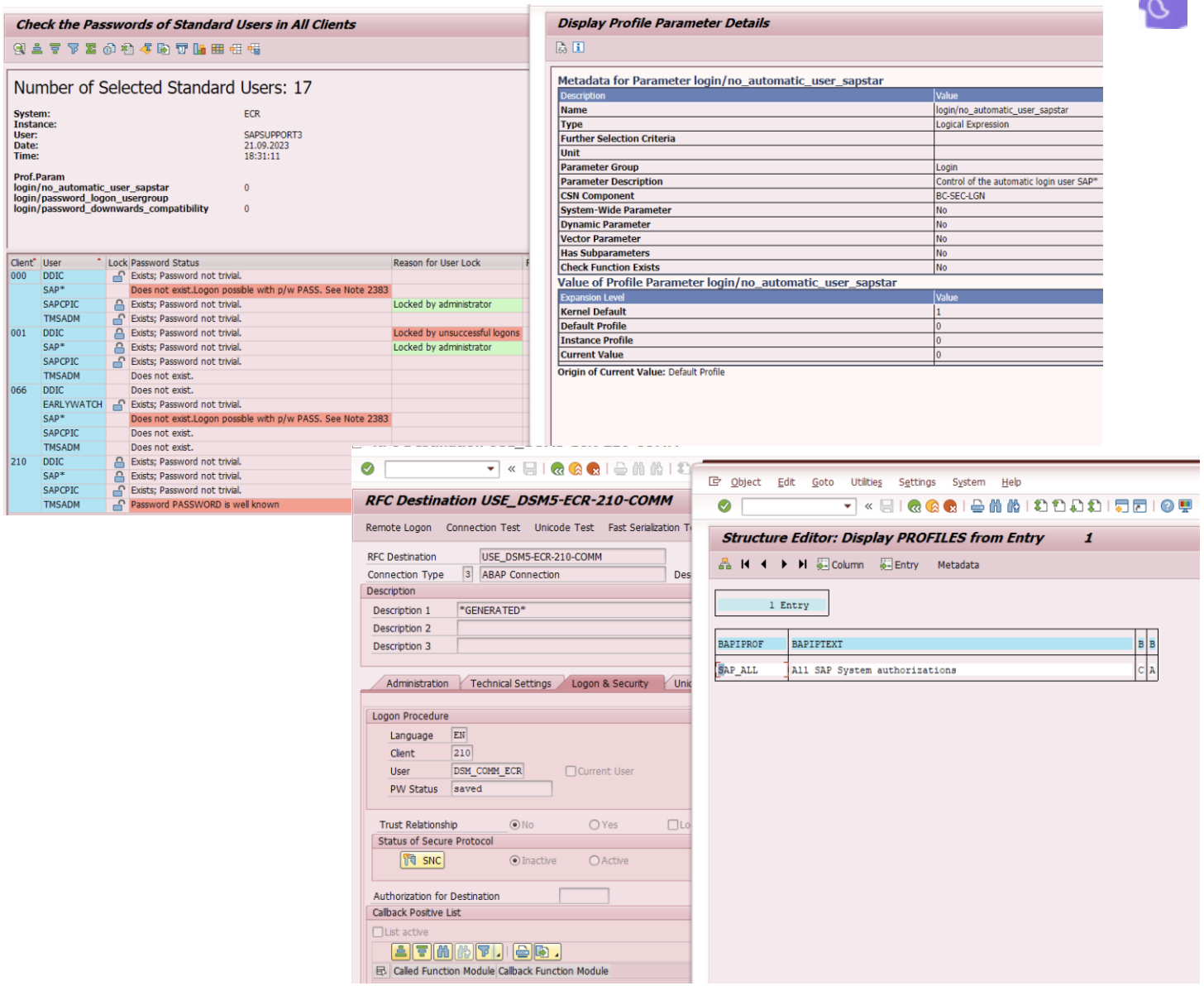
- The standard user setup was also reviewed in the ECR system. In this system was SAP* not protected and a login with the default password was possible.
- Additionally, are RFC connections in this system available which are pointing to central systems like the DSMS which is again connected to other production systems. These security misconfigurations are representing a serious attack chain.

Business Implication:

- The misuse of DDIC in batch jobs or interfaces is a target to misuse to elevate privileges within the system or remote systems. Due to the broad privileges of this user the system and its data could be fundamentally affected.

Recommendation:

- Setup SAP System recommendation to check the status of all SAP Standard Users permanently.
- Execute real-time alerting once standard users are getting unlocked and used.
- Replace DDIC within Batch job processing and RFC communication.



EXAMPLE: NIS2 to Security Baseline Mapping

WHY?

NIS2

Art. 21.2 (i)

NIS2UmsuCG

NIS2UCG-30.2.9b

Konzepte für Zugriffskontrolle

SOX

GDPR

...

WHAT?

Harmonization Layer

Selected Compliance Framework

ISO27001

ISC-A.5.15

ISC-A.5.18

BSI IT-Grundschutz

APP.4.2.A13

APP.4.2.A6

Control 1: Secure authentication *technologies and procedures shall be implemented based on information access restrictions and the topic-specific policy on access control.*

SAP-Passwortsicherheit

Um eine sichere Anmeldung am SAP-ERP-System zu gewährleisten, SOLLTEN Profilparameter, Customizing-Schalter oder Sicherheitsrichtlinien geeignet eingestellt werden.

Die eingesetzten Hash-Algorithmen für die gespeicherten Hashwerte der Passwörter in einem SAP-ERP-System SOLLTEN den aktuellen Sicherheitsstandards entsprechen. Zugriffe auf Tabellen mit Hashwerten SOLLTEN eingeschränkt werden.

HOW?

SAP Baseline Template

PWDPOL-A

NETCF-A

...

Password Policy ABAP

- `login/min_password_lng` ≥ 8
- `login/password_hash_algorithm = encoding=RFC2307, algorithm=iSSHA-512, iterations=15000, saltsize=256`
- `rfc/selftrust` = 0

Assurance!

SAP Security Review

SCFG-001

SSOA-002

SCFG-005 ...

Security Profile Parameter Hardening
SCFG-001

Password Policies High Authorized User
SSOA-002

Single Sign-On Utilization
SSOA-003

SAP Standard User
SCFG-005

Cybersecurity Compliance Management service offerings

SAP Store Service

- Enablement service for NIS2 Cybersecurity and Compliance Management
- SAP Store URL: https://store.sap.com/dcp/en/

Architecture and planning service for cybersecurity and compliance

- Service Scope : Cybersecurity Compliance Management (NIS2 enablement)
- Service URL: Architecture and planning service for cybersecurity and compliance

Related publications

- SAP Community blog: https://community.sap.com/t5/technology-blogs-by-sap/sap-enablement-service-for-nis2-cybersecurity/ba-p/13637332
- LinkedIn blog: <n/a yet>

Information

Service ID: 50112354

Related Services

- SO #1 Security Baseline Discovery & Cybersecurity Strategy
- SO #5 Cybersecurity Reference Architecture

Thank you!

Michael Altmaier

Principal Security Architect
Michael.Altmaier@SAP.com

Links

SAP Process Control:

https://www.sap.com/products/financial-management/internal-control.html

SAST Solution:

https://help.sap.com/docs/SAP_FORTIFY_BY_MICRO_FOCUS?locale=en-US