Overview of selected KPN Security Policies

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Selected by: Ruud Leurs

Requirement	Defining and documenting authorizations
Description	Authorizations within a system must be defined and documented.
Supplement	To allow consistent assignment of authorizations in the system and to enable periodic review the correctness. Authorizations can be documented in Function Authorization Matrix (FAM), which can vary from a 1 to 1 matrix (there is only 1 function for all users) to matrix with many functions in different segments to many system resources.
ID	KSP-RE-372
Version	1.0
Date	December 11, 2017
Rationale	Central identity and access management

Requirement	Perform an (information) security risk assessment
Description	Prior to purchasing or using cloud services an (information) security risk assessment must be performed, which takes into account: the type, classification and importance of information that may be handled in the cloud (e.g., commercial information, financial information, intellectual property (IP), legal, regulatory and privileged information (LRP), logistical information, management information or personally identifiable information (PII)).
Supplement	This is part of the cloud governance process.
ID	KSP-RE-98
Version	1.1
Date	May 3, 2019
Rationale	Information classification
Rationale	Cloud Computing
Rationale	Public Cloud
Rationale	SaaS provider
Rationale	Private Cloud

Requirement	Portal Authority
Description	The following KPN products and services must be tested by the KPN Portal Authority:
	new or upgraded products and services that are accessible via the internet;
	products and services where we connect one of our brand names to;
	new products and services using new (IT/TI) technologies;
	security products and services that we use internally.
	None of these products and/or services may go live without the permission of the Portal Authority.
Related info	Portal Authority info page on TEAMKPN
ID	KSP-RE-12
Version	1.1
Date	February 1, 2019
Rationale	Security testing to innovation and development
Rationale	Web-based and other application software

Requirement	Use of biometrics for authentication on mobile devices (phones, tablets and laptops)
Description	Biometrics are not allowed as part of a multi factor authentication process, but only as a means to unlock credentials stored in a hardware secure vault solution. E.g. Apple TouchID, Apple FaceID, and fingerprint sensors on Samsung S5 devices or later are acceptable solutions as they all use a secure hardware vault solution to store the fingerprint details. Also Windows Hello is allowed as a biometric solution, assuming the credentials are protected on the device using a TPM 2.0 chip.
Supplement	Biometrics on mobile devices and/or PCs have, at this time, vulnerabilities allowing them to be spoofed by a malicious attacker. Therefore they may never be used as a means of authenticating a user. See KSP-RE-247 for the requirement and list of technically accepted authentication solutions.
ID	KSP-RE-242
Version	1.1
Date	August 16, 2018
Rationale	Authentication

Requirement	Authentication methods
Description	Systems must authenticate users based on username and password and, if required, a second factor. The authentication method must comply to the level defined in KSP-GL-713 and the technical and procedural requirements set in KSP-GL-712. The authentication method must be traceable to a natural person unique user and shall not be copied or expire within a short period of time frame (e.g. 5 minutes).
Supplement	Some applications and/or systems have a higher value for KPN and therefore have stricter security requirements. To make sure that the authentication procedure only lets in the correct users certain technical and procedural measures must be in place to support these security requirements. Technically strong authentication methods must be accompanied by an equally strong identity verification procedure in the enrolment of an account.
Related info	
ID	KSP-RE-247
Version	2.0
Date	August 16, 2018
Rationale	Authentication
Rationale	BYOD (Bring Your Own Device)
Rationale	Cryptography generic

Requirement	User authentication
Description	End-users must logon to the KPN End User Device using their personal user account and credentials, whereby two-factor authentication is necessary for remote access and signed/encrypted mail.
Supplement	If a KPN user access a KPN device, including Bring-Your-Own devices, then he/she must authenticate with his/her KPN credentials.
ID	KSP-RE-249
Version	1.1
Date	August 16, 2018
Rationale	Authentication

Requirement	Inventory of authorization decisions
Description	Each application, system and network element must have an up to date administration registering the current granted accounts and authorizations and who authorised these (manager and additional authorisers) and at what time.
Supplement	For all existing accounts and authorizations must be traceable who authorised whom and at what time. Therefore an account/authorization request must be registered including who authorised whom and when. Excel list with agree of managers and second authorizers.
ID	KSP-RE-373
Version	1.0
Date	December 11, 2017
Rationale	Central identity and access management

Requirement	Integrity and reliability of logging
Description	Logging must be carried out in such way, that the log data can be used as evidence in possible court cases. This means that the integrity and availability of this data must be guaranteed and manipulation of log data is not possible.
Supplement	The implementation of this requirement is assigned to the administrator of the central log platform.
ID	KSP-RE-496
Version	1.1
Date	June 18, 2018
Rationale	Logging
Rationale	Law and regulation

Requirement	Acting upon log events
Description	Log data must be analyzed structurally, at least daily. If suspicious events are detected from log file analysis, this should be treated as a security incident.
ID	KSP-RE-500
Version	1.1
Date	November 2, 2018
Rationale	Logging

Requirement	Retention period central logs
Description	The period for storing centralized logs must be set to 180 days. Unless the type of logs does not allow it. In this case, the owner determines the retention time. When the log data is needed after 180 days, the logs must be aggregated in such way that they can no longer be traced back to individuals.
ID	KSP-RE-503
Version	2.0
Date	June 18, 2018
Rationale	Logging

Requirement	Vulnerability scanning
Description	All KPN assets connected to a network, must be scanned for vulnerabilities on a minimum monthly basis. All interfaces, including the logical and external interfaces, must be scanned. The asset owner of the system on which the vulnerabilities have been found must take measures in response to the findings.
Supplement	Customers' assets that are part of the KPN network are not in scope for vulnerability scanning. Vulnerability management on KPN assets with an interface in a black zone, not being Internet or KOEN, may deviate from this rule if other, by CISO approved ways, regular management of vulnerabilities are met.
ID	KSP-RE-253
Version	1.1
Date	November 2, 2018
Rationale	Vulnerability scanning- and management

Requirement	Centrally managed vulnerability scanning
Description	Vulnerability scanning must be managed centrally and managed for the entire KPN organization.
ID	KSP-RE-254
Version	1.1
Date	November 2, 2018
Rationale	Vulnerability scanning- and management

Requirement	Vulnerability mitigation
Description	Identified vulnerabilities (whether found based on the monthly vulnerability scanning, or found through other means) must be fixed according to the following timelines:
	Priority and solution time \rightarrow ONE TWO THREE FOUR FIVE SIX
	immediately 2 weeks 1 month 2 months 6 months best effort Scanner ✓ Zone ✓
	external black, red critical high medium low CVSS Score
	internal black, red, blue critical high medium low critical 9 - 10 high 7 - 8.9
	internal orange critical high medium low medium 4 - 6.9 internal green critical high med-low low 0 - 3.9
	If a vulnerability cannot be fixed, mitigating measures must be implemented according to the timeframe.
Supplement	Categories of vulnerabilities
	# External: Internet facing
	Vulnerabilities detected from an external scanner / the Internet.
	# Internal: not-Internet facing
	Vulnerabilities detected on the inside.
	Scoring on
	# CVSS version 3: critical, high, medium and low*
	# Zones: black, red, orange, green and blue
	* Common Vulnerability Scoring System (CVSS) Score. Several vendors have their own definition of Low/Medium/High/Critical. To not be tied to a specific product or vendor, the priorities are based on CVSS v3 Base scores.
ID	KSP-RE-255
Version	2.0
Date	February 20, 2019
Rationale	Vulnerability scanning- and management

Requirement	Updates
Description	Security updates must be installed per the timelines set in KSP-RE-255 (Vulnerability mitigation) on all KPN assets. This must be verified regularly. Deviations must be resolved as quickly as possible.
ID	KSP-RE-256
Version	1.0
Date	December 11, 2017
Rationale	Vulnerability scanning- and management

Requirement	Vulnerability management process
Description	A vulnerability management process must be implemented and followed.
ID	KSP-RE-257
Version	1.2
Date	May 3, 2019
Rationale	Vulnerability scanning- and management

Requirement	Vulnerability Management
Description	Every system is to be scanned for vulnerabilities on a regular basis. The resulting findings need to be resolved within a pre-defined timeframe depending on the severity.
Supplement	Vulnerabilities can arise over time and must be solved timely to keep the system sufficient safe for attacks. i.e. Schedule of vulnerability tests for systems Isolated systems (without network link and no mobile storage applicable) have no need for vulnerability management.
ID	KSP-RE-258
Version	1.0
Date	December 11, 2017
Rationale	Vulnerability scanning- and management

Requirement	Logical network separation and services
Description	Services must be separated from each other by usage of logical network separation. If a service spans multiple zones, it must have a separate logical network for every zone.
	If a service is composed out of multiple (smaller) sub-services, the services must be separated from each other.
	For infrastructures identified as vital infrastructure the network separation must not be performed nor dependent upon a hypervisor or container.
	Example technology:
	VLAN's, Q-in-Q, VXLAN, Private VLAN, VRF, Oracle Solaris Zones.
ID	KSP-RE-280
Version	1.0
Date	December 11, 2017
Rationale	Separating environments

Requirement	Communication between logical networks
Description	When a system has multiple logical network connections in a zone, routing between them must be disabled by default. Where routing between logical networks is necessary, traffic that passes the boundary between these networks must be filtered.
	boundary bottoon those notworks must be interest.
ID	KSP-RE-281
Version	1.0
Date	December 11, 2017
Rationale	Separating environments

Requirement	Communication between services
Description	Communication between services must be done through a common production zone (i.e. red, orange or green).
	An alternative is possible when communicating to central services, e.g. Microsoft Active Directory for authentication and account synchronisation. The communication must be configured with a stateful firewall in such a way that the establishment of the connection's initiative is exclusively from the relying service to the central service.
ID	KSP-RE-282
Version	2.0
Date	February 1, 2019
Rationale	Separating environments
Rationale	Documenting network infrastructure
Rationale	Encrypting network traffic
Rationale	Designing to availability level

Requirement	Requirements for non-production platforms
Description	Platforms for development or testing, and platforms for acceptation of operational software must be separated in sufficient degree of each other and of the live environment. The acceptance environment need to resemble the live platform in architecture and setup. Tests must be conducted on a test platform. The use of sensitive information (e.g. privacy, business obligations) in a development and test environment is explicitly forbidden. In an acceptance environment that meets the KSP, and that has the same security level as the production environment, use is allowed.
Supplement	Testing the change in the production environment poses extra risks because of possible unexpected behaviour due to the change. The use of real customer and user date exposes this data to loss, disclosure and access to this by not authorised people. When test data will not reveal enough assurance (e.g. compare test results with operational results) so real data must be used; then all security measures for production data must be taken for the test platform and permission from the Operational Security Manager or, depending on the datatype, Senior Security Officer or Privacy officer must be obtained prior to the start of the test activities.
ID	KSP-RE-286
Version	1.5
Date	December 7, 2018
Rationale	Separating environments

Requirement	Network segmentation and security zoning
Description	Segments must be defined and implemented for a network environment to support a layered security model.
	This can be achieved by building services in accordance to a security zoning model. The following is a high-level description of the KPN standard zoning model:
	Black (External)
	Red (DMZ)
	Orange (Internal)
	Green (Protected)
	A typical service would have the systems users (who are in the Black zone) need to interact with in the Red zone, systems that are purely for service internal use in the Orange zone and servers containing confidential data in the Green zone. All systems also need a connection into the Blue zone in order to be managed. Communication between services is prescribed in KSP-RE-282.
	The internal network KOEN is classified as a black zone.
Supplement	Just as in physical security, not everything happens in one room. Network segments should have a specific purpose and should be separated from other segments with their specific purpose. Segmentation must be done on function and classification of network data.
	Direct communication to generic services, e.g. Active Directory, is conditional to KSP-RE-282.
	A webserver that is used for serving webpages to internet should not be in the same segment as the backup system for this server.
ID	KSP-RE-287
Version	1.1
Date	February 1, 2019

Rationale	Separating environments
Rationale	Encrypting network traffic
Rationale	WLAN security

Requirement	Network filtering
Description	Between network segments a network filter must be in place through which only necessary traffic can pass.
Supplement	Network segments are defined because of their different uses, security wise and functionality wise. To keep these separated, filtering of networking traffic is necessary. A webserver may need a database server backend to be able to serve content to clients. This communication must be limited to only the necessary database communication to prevent misuse. This communication is registered in a communication matrix.
ID	KSP-RE-288
Version	1.0
Date	December 11, 2017
Rationale	Separating environments

Requirement	Applications sharing a platform
Description	Applications must not share the same platform when they do not have the same data-classification. When more than one application is hosted on a platform, the highest security demanding application will determine the minimal security requirements.
Related info	
ID	KSP-RE-289
Version	1.1
Date	February 1, 2019
Rationale	Separating environments

Requirement	Filtering traffic
Description	Traffic that passes a zone boundary inbound or outbound must be filtered with firewalls. Any traffic that isn't explicitly allowed and registered in a communication matrix must be denied and logged. Cloud resources must be segmented and zoned using stateful firewalls.
ID	KSP-RE-279
Version	1.1
Date	May 3, 2019
Rationale	Separating environments

Requirement	Container segmentation and zoning
Description	Containers must not be consolidated on the same system (i.e. (virtual) machine) when they differ on zone, DTAP purpose (development, testing, acceptance and production), customer or risk-level. The administrator must classify the risk per group of containers in one particular zone and for one customer on the effects of:
	- kernel panics, i.e. focus on the business continuity aspects.
	- container break-out and information security, i.e. ensure that a container break-out does not escalate into data extraction from shared volume devices.
	- network segmentation between containers on the network bridge devices.
	Exception: When the container serves an Network Function Virtualization role for OSI layer-2, layer-3 or layer-4 function, also regarded as part of data transport network, than this is allowed.
ID	KSP-RE-270
Version	1.0
Date	December 11, 2017
Rationale	System hardening

Requirement	CIS benchmarks
Description	Network and server equipment, for which Center for Internet Security (CIS) benchmarks are available, must be hardened as described in these benchmarks, including default configuration values, default account and password blocking. In case of a conflict between the CIS benchmark results and the KSP, the KSP is leading.
Supplement	The CIS Benchmarks are available free of charge in PDF format to anyone via: https://benchmarks.cisecurity.org/downloads/multiform/index.cfm As part of KPN's CIS SecureSuite® Membership, all colleagues can register for an account (using their corporate e-mail address) and get access to CIS-CAT Pro configuration assessment tool, remediation content and full-format CIS Benchmarks at: https://workbench.cisecurity.org/
ID	KSP-RE-260
Version	1.1
Date	May 3, 2019
Rationale	System hardening

Requirement	No CIS benchmarks available
Description	Network or server equipment, for which Center for Internet Security (CIS) benchmarks are not available (such as applications), must be configured according to the security guidelines from the supplier of the equipment, or if available, application specific guidelines developed by KPN.
ID	KSP-RE-261
Version	1.0
Date	December 11, 2017
Rationale	System hardening

Requirement	System log-on with an administrator or root account is prohibited
Description	Users with administrator rights must not be able to log on to a system directly to the root, administrator or domain administrator account. The users must log on to the system with their personal and unpriviledged account and elevate their effective rights after initial entry on the system. In effect this means that all entry possible protocols to directly log on to a system, like SSH, RDP, SMB, etc, must be hardened to disallow network log on to these privileged system accounts and allow elevation of effective rights when the user is explicitly privileged to do so on the target system. This must be enforced by configuration deployment, e.g. ansible, puppet or group policies.
ID	KSP-RE-273
Version	1.1
Date	November 2, 2018
Rationale	System hardening

Requirement	Host based protection
Description	Systems connected to the Internet must be equipped with host based protection mechanisms, such as ACLs, firewalls, IDSs, antivirus software and antimalware software.
ID	KSP-RE-265
Version	1.0
Date	December 11, 2017
Rationale	System hardening

Requirement	Stripping
Description	All systems and applications must be stripped of non-essential functionality. If removal is not possible then the non-essential functions must be disabled.
ID	KSP-RE-266
Version	1.0
Date	December 11, 2017
Rationale	System hardening

Requirement	Mitigation of non-hardened residual risk
Description	When certain aspects of a system can't be hardened, the requirements in the related documents must be consulted to see how to handle mitigation, if possible based on the CVSS score of a non-hardened topic.
ID	KSP-RE-267
Version	1.0
Date	December 11, 2017
Rationale	System hardening

Requirement	System hardening
Description	Systems must be subjected to a hardening process conform KSP-RA-259 System hardening to minimize risk of an attack.
Supplement	Not necessary features must be closed and protection mechanisms must be used to make the attack surface as little as possible. Close unnecessary features and ports of operating systems.
ID	KSP-RE-268
Version	1.0
Date	December 11, 2017
Rationale	System hardening
Rationale	Vulnerability scanning- and management
Rationale	Separating environments

Requirement	Encryption of data at rest
Description	Encryption of all data at rest is obligatory in cloud resources. For data in KPN data centers it is obligatory to encrypt information classified as Secret. Confidential data is advices to be stored in encrypted form.
Supplement	For cloud resources the following solutions are accepted: AWS KMS AWS CloudHSM Azure Key Vault Hashicorp KeyVault Bring-Your-Own-Key methods are also allowed, assuming they key custodianship with backup policy for the key material is on-par with the solution. It is recommended to ask advice at CISO before using BYOK for business continuity reasons. For other solutions advices is required.
ID	KSP-RE-318
Version	2.0
Date	May 3, 2019
Rationale	Web-based and other application software
Rationale	Information classification
Rationale	Cryptography generic

Requirement	Elevated rights
Description	Applications or programs may exclusively be started with elevated rights when there is a technical need, but must not execute tasks with elevated rights.
Supplement	For example: a web-service or database. It is allowed to execute tasks with elevated rights when these tasks service a system administrative role. For example: Puppet, Ansible or GPO-deployment.
ID	KSP-RE-694
Version	1.2
Date	November 2, 2018
Rationale	System hardening

Requirement	Logging of security events
Description	Networks and systems need to log security events. KPN-CERT may require additional logging due to security incident response and / or investigations.
Supplement	We distinguish the following types of log sources: application, daemon, OS, network element and hardware. Guideline KSP-GL-508 refers to detailed instruction regarding the type of security events that should be logged.
ID	KSP-RE-699
Version	1.1
Date	November 2, 2018

Requirement	Secure connectivity between a cloud and KPN data centers
Description	Backhaul connectivity from the cloud services to KPN data centers must use a AWS Direct Connect or Microsoft Express Route.
	An alternative is by using a VPN, e.g. an IPSec tunnel.
	Traffic to and from SaaS solution is excluded from this rule. For example, SaaS solutions from external suppliers and KPN's use of Office365.
ID	KSP-RE-740
Version	2.0
Date	May 3, 2019

Requirement	Presence of an exit strategy on cloud services
Description	A data and service exit strategy must be in place before operating with a Cloud Service Provider (CSP).
ID	KSP-RE-742
Version	1.0
Date	November 2, 2018

Requirement	Avoidance of (temporary) cloud service destruction
Description	Financial control must be in place to avoid the (temporary) destruction of a cloud service, due to not paying in time. Reinstating the service as-is must not be assumed.
ID	KSP-RE-741
Version	1.0
Date	November 2, 2018

Requirement	Use of a credential vault solution
Description	The Cloud Service Provider (CSP) must use a credential vault solution that is controlled by KPN.
Supplement	Some options are: Azure Key Vault Hashicorp Vault
ID	KSP-RE-743
Version	1.1
Date	May 3, 2019

Requirement	Cloud supplier choice
Description	To serve laaS and PaaS resources it is mandatory to use KPN's own Microsoft Azure and Amazon AWS environments. All other cloud solutions are prohibited.
	SaaS solutions provided by suppliers are served by the KSP and part of supplier management processes.
	For KPN subsidiaries alternatieve arrangements can be made to allow for their own cloud tenants.
Supplement	All the security measures are created and served from KPN's main environments in Microsoft Azure and Amazon AWS.
ID	KSP-RE-764
Version	1.0
Date	May 3, 2019

Requirement	Cloud controls
Description	The responsible DevOps teams have the obligation to set up the cloud service in the environment which has been set up according to specific agreements with KPN (so called KPN 'Landing Zone'). There is one Landing Zone on AWS and one on Azure. It's not allowed to store and/or process KPN data outside these Landing Zones. By making use of the resources made available in this environment some necessary cloud controls will be implemented. These cloud controls are configured and maintained by the Cloud Platform Team, not by the DevOps teams (segregation of duty). The DevOps teams have the obligation to act upon the alarms triggered by the cloud controls on the compliance dashboard.
ID	KSP-RE-765
Version	1.0
Date	May 3, 2019

Requirement	Cloud resources
Description	Cloud resources of all technical types must show a positive result from the technical compliance report in the cloud before letting the resources work as production resources.
Supplement	Elements that have to be in technical compliant are, but not limited to: Encryption of data at rest; Encryption of data in transit; Use of stateful firewalls for segmentation and zoning in te cloud; IAM to the assets, with appropriate account structures, roles, and privilege separation; Asset management; BCM process; System hardening; Security information, event management and logging.
ID	KSP-RE-762
Version	1.0
Date	May 3, 2019

Requirement	Vulnerability management in the cloud
Description	Vulnerability management in the cloud is mandatory on laaS and PaaS resource types.
	Resources which are build and maintained by the cloud provider are excluded.
	SaaS solutions from suppliers are excluded, unless specific agreements have been made.
ID	KSP-RE-763
Version	1.0
Date	May 3, 2019

Requirement	Special high privileged accounts
Description	Privileges assigned to accounts or groups which have the power to damage the infrastructure directly must be protected with:
	4-eyes principle: at least two people must be present during activities and this must be auditable.
	The workstations from which the activities are conducted must be able to be logged via the central log management facilities.
	The activities must be conducted from KPN building and the internal network, i.e. KOEN_Wlan.
Supplement	For Amazon AWS additional attention is required to the Master Biller Account and subsequent high privileged accounts.
	For Microsoft Azure additional attention is required to all users in the Global Administrator and Security Administrator groups.
	As the account privileges and account management is founded in KPN's Microsoft Active Directory and IAM Portal systems, special attention must be given to all users part of the Domain Administrators group and all systems with similar privileges.
ID	KSP-RE-761
Version	1.0
Date	May 3, 2019