



BSI Standards Publication

Information technology — Security techniques — Evaluation criteria for IT security

Part 2: Security functional components

National foreword

This British Standard is the UK implementation of EN ISO/IEC 15408-2:2020. It is identical to [ISO/IEC 15408-2:2008](#). It supersedes BS ISO/IEC 15408-2:2008, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/33, Information security, cybersecurity and privacy protection.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2020

ISBN 978 0 539 06484 1

ICS 35.030

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2020.

Amendments/corrigenda issued since publication

Date	Text affected
30 April 2020	This corrigendum renumbers BS ISO/IEC 15408-2:2008 as BS EN ISO/IEC 15408-2:2020

English version

Information technology - Security techniques - Evaluation criteria for IT security - Part 2: Security functional components (ISO/IEC 15408-2:2008)

Technologies de l'information - Techniques de sécurité
- Critères d'évaluation pour la sécurité TI - Partie 2:
Composants fonctionnels de sécurité (ISO/IEC 15408-
2:2008)

Informationstechnik - Sicherheitstechniken -
Bewertungskriterien für die IT-Sicherheit - Teil 2:
Sicherheitsfunktionskomponenten (ISO/IEC 15408-
2:2008)

This European Standard was approved by CEN on 2 March 2020.

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Contents	Page
European foreword.....	3

European foreword

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Contents

Page

Foreword	xviii
Introduction.....	xx
1 Scope	1
2 Normative references	1
3 Terms and definitions, symbols and abbreviated terms	1
4 Overview.....	1
4.1 Organisation of this part of ISO/IEC 15408	1
5 Functional requirements paradigm	2
6 Security functional components.....	5
6.1 Overview.....	5
6.1.1 Class structure	5
6.1.2 Family structure.....	6
6.1.3 Component structure	8
6.2 Component catalogue.....	9
6.2.1 Component changes highlighting	10
7 Class FAU: Security audit.....	10
7.1 Security audit automatic response (FAU_ARP)	11
7.1.1 Family Behaviour.....	11
7.1.2 Component levelling	11
7.1.3 Management of FAU_ARP.1	11
7.1.4 Audit of FAU_ARP.1	11
7.1.5 FAU_ARP.1 Security alarms.....	11
7.2 Security audit data generation (FAU_GEN)	11
7.2.1 Family Behaviour.....	11
7.2.2 Component levelling	11
7.2.3 Management of FAU_GEN.1, FAU_GEN.2.....	11
7.2.4 Audit of FAU_GEN.1, FAU_GEN.2	11
7.2.5 FAU_GEN.1 Audit data generation	12
7.2.6 FAU_GEN.2 User identity association.....	12
7.3 Security audit analysis (FAU_SAA)	12
7.3.1 Family Behaviour.....	12
7.3.2 Component levelling	12
7.3.3 Management of FAU_SAA.1	13
7.3.4 Management of FAU_SAA.2	13
7.3.5 Management of FAU_SAA.3	13
7.3.6 Management of FAU_SAA.4	13
7.3.7 Audit of FAU_SAA.1, FAU_SAA.2, FAU_SAA.3, FAU_SAA.4.....	13
7.3.8 FAU_SAA.1 Potential violation analysis	13
7.3.9 FAU_SAA.2 Profile based anomaly detection	14
7.3.10 FAU_SAA.3 Simple attack heuristics	14
7.3.11 FAU_SAA.4 Complex attack heuristics.....	15
7.4 Security audit review (FAU_SAR)	15
7.4.1 Family Behaviour.....	15
7.4.2 Component levelling	15
7.4.3 Management of FAU_SAR.1	15
7.4.4 Management of FAU_SAR.2, FAU_SAR.3	15
7.4.5 Audit of FAU_SAR.1	15
7.4.6 Audit of FAU_SAR.2	16
7.4.7 Audit of FAU_SAR.3	16

7.4.8	FAU_SAR.1 Audit review	16
7.4.9	FAU_SAR.2 Restricted audit review	16
7.4.10	FAU_SAR.3 Selectable audit review	16
7.5	Security audit event selection (FAU_SEL)	16
7.5.1	Family Behaviour	16
7.5.2	Component levelling	17
7.5.3	Management of FAU_SEL.1	17
7.5.4	Audit of FAU_SEL.1	17
7.5.5	FAU_SEL.1 Selective audit	17
7.6	Security audit event storage (FAU_STG)	17
7.6.1	Family Behaviour	17
7.6.2	Component levelling	17
7.6.3	Management of FAU_STG.1	18
7.6.4	Management of FAU_STG.2	18
7.6.5	Management of FAU_STG.3	18
7.6.6	Management of FAU_STG.4	18
7.6.7	Audit of FAU_STG.1, FAU_STG.2	18
7.6.8	Audit of FAU_STG.3	18
7.6.9	Audit of FAU_STG.4	18
7.6.10	FAU_STG.1 Protected audit trail storage	18
7.6.11	FAU_STG.2 Guarantees of audit data availability	19
7.6.12	FAU_STG.3 Action in case of possible audit data loss	19
7.6.13	FAU_STG.4 Prevention of audit data loss	19
8	Class FCO: Communication	20
8.1	Non-repudiation of origin (FCO_NRO)	20
8.1.1	Family Behaviour	20
8.1.2	Component levelling	20
8.1.3	Management of FCO_NRO.1, FCO_NRO.2	20
8.1.4	Audit of FCO_NRO.1	20
8.1.5	Audit of FCO_NRO.2	21
8.1.6	FCO_NRO.1 Selective proof of origin	21
8.1.7	FCO_NRO.2 Enforced proof of origin	21
8.2	Non-repudiation of receipt (FCO_NRR)	22
8.2.1	Family Behaviour	22
8.2.2	Component levelling	22
8.2.3	Management of FCO_NRR.1, FCO_NRR.2	22
8.2.4	Audit of FCO_NRR.1	22
8.2.5	Audit of FCO_NRR.2	22
8.2.6	FCO_NRR.1 Selective proof of receipt	22
8.2.7	FCO_NRR.2 Enforced proof of receipt	23
9	Class FCS: Cryptographic support	24
9.1	Cryptographic key management (FCS_CKM)	24
9.1.1	Family Behaviour	24
9.1.2	Component levelling	24
9.1.3	Management of FCS_CKM.1, FCS_CKM.2, FCS_CKM.3, FCS_CKM.4	25
9.1.4	Audit of FCS_CKM.1, FCS_CKM.2, FCS_CKM.3, FCS_CKM.4	25
9.1.5	FCS_CKM.1 Cryptographic key generation	25
9.1.6	FCS_CKM.2 Cryptographic key distribution	25
9.1.7	FCS_CKM.3 Cryptographic key access	25
9.1.8	FCS_CKM.4 Cryptographic key destruction	26
9.2	Cryptographic operation (FCS_COP)	26
9.2.1	Family Behaviour	26
9.2.2	Component levelling	26
9.2.3	Management of FCS_COP.1	26
9.2.4	Audit of FCS_COP.1	26
9.2.5	FCS_COP.1 Cryptographic operation	27
10	Class FDP: User data protection	27
10.1	Access control policy (FDP_ACC)	29

10.1.1	Family Behaviour.....	29
10.1.2	Component levelling	30
10.1.3	Management of FDP_ACC.1, FDP_ACC.2	30
10.1.4	Audit of FDP_ACC.1, FDP_ACC.2.....	30
10.1.5	FDP_ACC.1 Subset access control	30
10.1.6	FDP_ACC.2 Complete access control.....	30
10.2	Access control functions (FDP_ACF)	30
10.2.1	Family Behaviour.....	30
10.2.2	Component levelling	30
10.2.3	Management of FDP_ACF.1	31
10.2.4	Audit of FDP_ACF.1	31
10.2.5	FDP_ACF.1 Security attribute based access control	31
10.3	Data authentication (FDP_DAU).....	32
10.3.1	Family Behaviour.....	32
10.3.2	Component levelling	32
10.3.3	Management of FDP_DAU.1, FDP_DAU.2	32
10.3.4	Audit of FDP_DAU.1	32
10.3.5	Audit of FDP_DAU.2	32
10.3.6	FDP_DAU.1 Basic Data Authentication.....	32
10.3.7	FDP_DAU.2 Data Authentication with Identity of Guarantor	33
10.4	Export from the TOE (FDP_ETC)	33
10.4.1	Family Behaviour.....	33
10.4.2	Component levelling	33
10.4.3	Management of FDP_ETC.1.....	33
10.4.4	Management of FDP_ETC.2.....	33
10.4.5	Audit of FDP_ETC.1, FDP_ETC.2	33
10.4.6	FDP_ETC.1 Export of user data without security attributes	34
10.4.7	FDP_ETC.2 Export of user data with security attributes.....	34
10.5	Information flow control policy (FDP_IFC)	34
10.5.1	Family Behaviour.....	34
10.5.2	Component levelling	35
10.5.3	Management of FDP_IFC.1, FDP_IFC.2	35
10.5.4	Audit of FDP_IFC.1, FDP_IFC.2.....	35
10.5.5	FDP_IFC.1 Subset information flow control	35
10.5.6	FDP_IFC.2 Complete information flow control.....	35
10.6	Information flow control functions (FDP_IFF).....	35
10.6.1	Family Behaviour.....	35
10.6.2	Component levelling	36
10.6.3	Management of FDP_IFF.1, FDP_IFF.2.....	36
10.6.4	Management of FDP_IFF.3, FDP_IFF.4, FDP_IFF.5	36
10.6.5	Management of FDP_IFF.6.....	36
10.6.6	Audit of FDP_IFF.1, FDP_IFF.2, FDP_IFF.5	36
10.6.7	Audit of FDP_IFF.3, FDP_IFF.4, FDP_IFF.6	37
10.6.8	FDP_IFF.1 Simple security attributes	37
10.6.9	FDP_IFF.2 Hierarchical security attributes	37
10.6.10	FDP_IFF.3 Limited illicit information flows.....	38
10.6.11	FDP_IFF.4 Partial elimination of illicit information flows	39
10.6.12	FDP_IFF.5 No illicit information flows.....	39
10.6.13	FDP_IFF.6 Illicit information flow monitoring.....	39
10.7	Import from outside of the TOE (FDP_ITC).....	39
10.7.1	Family Behaviour.....	39
10.7.2	Component levelling	39
10.7.3	Management of FDP_ITC.1, FDP_ITC.2	40
10.7.4	Audit of FDP_ITC.1, FDP_ITC.2.....	40
10.7.5	FDP_ITC.1 Import of user data without security attributes.....	40
10.7.6	FDP_ITC.2 Import of user data with security attributes	40
10.8	Internal TOE transfer (FDP_ITT).....	41
10.8.1	Family Behaviour.....	41
10.8.2	Component levelling	41
10.8.3	Management of FDP_ITT.1, FDP_ITT.2.....	41

10.8.4	Management of FDP_ITT.3, FDP_ITT.4	42
10.8.5	Audit of FDP_ITT.1, FDP_ITT.2	42
10.8.6	Audit of FDP_ITT.3, FDP_ITT.4	42
10.8.7	FDP_ITT.1 Basic internal transfer protection	42
10.8.8	FDP_ITT.2 Transmission separation by attribute	42
10.8.9	FDP_ITT.3 Integrity monitoring	43
10.8.10	FDP_ITT.4 Attribute-based integrity monitoring	43
10.9	Residual information protection (FDP_RIP)	43
10.9.1	Family Behaviour	43
10.9.2	Component levelling	44
10.9.3	Management of FDP_RIP.1, FDP_RIP.2	44
10.9.4	Audit of FDP_RIP.1, FDP_RIP.2	44
10.9.5	FDP_RIP.1 Subset residual information protection	44
10.9.6	FDP_RIP.2 Full residual information protection	44
10.10	Rollback (FDP_ROL)	44
10.10.1	Family Behaviour	44
10.10.2	Component levelling	44
10.10.3	Management of FDP_ROL.1, FDP_ROL.2	45
10.10.4	Audit of FDP_ROL.1, FDP_ROL.2	45
10.10.5	FDP_ROL.1 Basic rollback	45
10.10.6	FDP_ROL.2 Advanced rollback	45
10.11	Stored data integrity (FDP_SDI)	46
10.11.1	Family Behaviour	46
10.11.2	Component levelling	46
10.11.3	Management of FDP_SDI.1	46
10.11.4	Management of FDP_SDI.2	46
10.11.5	Audit of FDP_SDI.1	46
10.11.6	Audit of FDP_SDI.2	46
10.11.7	FDP_SDI.1 Stored data integrity monitoring	46
10.11.8	FDP_SDI.2 Stored data integrity monitoring and action	47
10.12	Inter-TSF user data confidentiality transfer protection (FDP_UCT)	47
10.12.1	Family Behaviour	47
10.12.2	Component levelling	47
10.12.3	Management of FDP_UCT.1	47
10.12.4	Audit of FDP_UCT.1	47
10.12.5	FDP_UCT.1 Basic data exchange confidentiality	47
10.13	Inter-TSF user data integrity transfer protection (FDP_UIT)	48
10.13.1	Family Behaviour	48
10.13.2	Component levelling	48
10.13.3	Management of FDP_UIT.1, FDP_UIT.2, FDP_UIT.3	48
10.13.4	Audit of FDP_UIT.1	48
10.13.5	Audit of FDP_UIT.2, FDP_UIT.3	48
10.13.6	FDP_UIT.1 Data exchange integrity	49
10.13.7	FDP_UIT.2 Source data exchange recovery	49
10.13.8	FDP_UIT.3 Destination data exchange recovery	49
11	Class FIA: Identification and authentication	50
11.1	Authentication failures (FIA_AFL)	51
11.1.1	Family Behaviour	51
11.1.2	Component levelling	51
11.1.3	Management of FIA_AFL.1	52
11.1.4	Audit of FIA_AFL.1	52
11.1.5	FIA_AFL.1 Authentication failure handling	52
11.2	User attribute definition (FIA_ATD)	52
11.2.1	Family Behaviour	52
11.2.2	Component levelling	52
11.2.3	Management of FIA_ATD.1	52
11.2.4	Audit of FIA_ATD.1	52
11.2.5	FIA_ATD.1 User attribute definition	53
11.3	Specification of secrets (FIA_SOS)	53

11.3.1	Family Behaviour.....	53
11.3.2	Component levelling	53
11.3.3	Management of FIA_SOS.1.....	53
11.3.4	Management of FIA_SOS.2.....	53
11.3.5	Audit of FIA_SOS.1, FIA_SOS.2	53
11.3.6	FIA_SOS.1 Verification of secrets	53
11.3.7	FIA_SOS.2 TSF Generation of secrets	54
11.4	User authentication (FIA_UAU).....	54
11.4.1	Family Behaviour.....	54
11.4.2	Component levelling	54
11.4.3	Management of FIA_UAU.1.....	54
11.4.4	Management of FIA_UAU.2.....	55
11.4.5	Management of FIA_UAU.3, FIA_UAU.4, FIA_UAU.7	55
11.4.6	Management of FIA_UAU.5.....	55
11.4.7	Management of FIA_UAU.6.....	55
11.4.8	Audit of FIA_UAU.1	55
11.4.9	Audit of FIA_UAU.2	55
11.4.10	Audit of FIA_UAU.3	55
11.4.11	Audit of FIA_UAU.4	56
11.4.12	Audit of FIA_UAU.5	56
11.4.13	Audit of FIA_UAU.6	56
11.4.14	Audit of FIA_UAU.7	56
11.4.15	FIA_UAU.1 Timing of authentication	56
11.4.16	FIA_UAU.2 User authentication before any action	56
11.4.17	FIA_UAU.3 Unforgeable authentication	57
11.4.18	FIA_UAU.4 Single-use authentication mechanisms	57
11.4.19	FIA_UAU.5 Multiple authentication mechanisms.....	57
11.4.20	FIA_UAU.6 Re-authenticating	57
11.4.21	FIA_UAU.7 Protected authentication feedback.....	57
11.5	User identification (FIA_UID).....	58
11.5.1	Family Behaviour.....	58
11.5.2	Component levelling	58
11.5.3	Management of FIA_UID.1	58
11.5.4	Management of FIA_UID.2	58
11.5.5	Audit of FIA_UID.1, FIA_UID.2.....	58
11.5.6	FIA_UID.1 Timing of identification	58
11.5.7	FIA_UID.2 User identification before any action	59
11.6	User-subject binding (FIA_USB).....	59
11.6.1	Family Behaviour.....	59
11.6.2	Component levelling	59
11.6.3	Management of FIA_USB.1.....	59
11.6.4	Audit of FIA_USB.1.....	59
11.6.5	FIA_USB.1 User-subject binding	59
12	Class FMT: Security management.....	60
12.1	Management of functions in TSF (FMT_MOF).....	61
12.1.1	Family Behaviour.....	61
12.1.2	Component levelling	61
12.1.3	Management of FMT_MOF.1	61
12.1.4	Audit of FMT_MOF.1.....	62
12.1.5	FMT_MOF.1 Management of security functions behaviour	62
12.2	Management of security attributes (FMT_MSA).....	62
12.2.1	Family Behaviour.....	62
12.2.2	Component levelling	62
12.2.3	Management of FMT_MSA.1	62
12.2.4	Management of FMT_MSA.2	62
12.2.5	Management of FMT_MSA.3.....	63
12.2.6	Management of FMT_MSA.4.....	63
12.2.7	Audit of FMT_MSA.1.....	63
12.2.8	Audit of FMT_MSA.2.....	63

12.2.9	Audit of FMT_MSA.3	63
12.2.10	Audit of FMT_MSA.4	63
12.2.11	FMT_MSA.1 Management of security attributes	63
12.2.12	FMT_MSA.2 Secure security attributes	64
12.2.13	FMT_MSA.3 Static attribute initialisation	64
12.2.14	FMT_MSA.4 Security attribute value inheritance	64
12.3	Management of TSF data (FMT_MTD).....	65
12.3.1	Family Behaviour	65
12.3.2	Component levelling	65
12.3.3	Management of FMT_MTD.1	65
12.3.4	Management of FMT_MTD.2	65
12.3.5	Management of FMT_MTD.3	65
12.3.6	Audit of FMT_MTD.1	65
12.3.7	Audit of FMT_MTD.2	65
12.3.8	Audit of FMT_MTD.3	65
12.3.9	FMT_MTD.1 Management of TSF data	65
12.3.10	FMT_MTD.2 Management of limits on TSF data	66
12.3.11	FMT_MTD.3 Secure TSF data	66
12.4	Revocation (FMT_REV)	66
12.4.1	Family Behaviour	66
12.4.2	Component levelling	66
12.4.3	Management of FMT_REV.1	66
12.4.4	Audit of FMT_REV.1	67
12.4.5	FMT_REV.1 Revocation	67
12.5	Security attribute expiration (FMT_SAE)	67
12.5.1	Family Behaviour	67
12.5.2	Component levelling	67
12.5.3	Management of FMT_SAE.1	67
12.5.4	Audit of FMT_SAE.1	67
12.5.5	FMT_SAE.1 Time-limited authorisation	67
12.6	Specification of Management Functions (FMT_SMF)	68
12.6.1	Family Behaviour	68
12.6.2	Component levelling	68
12.6.3	Management of FMT_SMF.1	68
12.6.4	Audit of FMT_SMF.1	68
12.6.5	FMT_SMF.1 Specification of Management Functions	68
12.7	Security management roles (FMT_SMR)	68
12.7.1	Family Behaviour	68
12.7.2	Component levelling	69
12.7.3	Management of FMT_SMR.1	69
12.7.4	Management of FMT_SMR.2	69
12.7.5	Management of FMT_SMR.3	69
12.7.6	Audit of FMT_SMR.1	69
12.7.7	Audit of FMT_SMR.2	69
12.7.8	Audit of FMT_SMR.3	69
12.7.9	FMT_SMR.1 Security roles	69
12.7.10	FMT_SMR.2 Restrictions on security roles	70
12.7.11	FMT_SMR.3 Assuming roles	70
13	Class FPR: Privacy	71
13.1	Anonymity (FPR_ANO)	71
13.1.1	Family Behaviour	71
13.1.2	Component levelling	71
13.1.3	Management of FPR_ANO.1, FPR_ANO.2	71
13.1.4	Audit of FPR_ANO.1, FPR_ANO.2	71
13.1.5	FPR_ANO.1 Anonymity	72
13.1.6	FPR_ANO.2 Anonymity without soliciting information	72
13.2	Pseudonymity (FPR_PSE)	72
13.2.1	Family Behaviour	72
13.2.2	Component levelling	72

13.2.3	Management of FPR_PSE.1, FPR_PSE.2, FPR_PSE.3.....	72
13.2.4	Audit of FPR_PSE.1, FPR_PSE.2, FPR_PSE.3.....	72
13.2.5	FPR_PSE.1 Pseudonymity.....	73
13.2.6	FPR_PSE.2 Reversible pseudonymity	73
13.2.7	FPR_PSE.3 Alias pseudonymity	73
13.3	Unlinkability (FPR_UNL)	74
13.3.1	Family Behaviour.....	74
13.3.2	Component levelling	74
13.3.3	Management of FPR_UNL.1	74
13.3.4	Audit of FPR_UNL.1	74
13.3.5	FPR_UNL.1 Unlinkability.....	74
13.4	Unobservability (FPR_UNO)	74
13.4.1	Family Behaviour.....	74
13.4.2	Component levelling	75
13.4.3	Management of FPR_UNO.1, FPR_UNO.2.....	75
13.4.4	Management of FPR_UNO.3	75
13.4.5	Management of FPR_UNO.4	75
13.4.6	Audit of FPR_UNO.1, FPR_UNO.2	75
13.4.7	Audit of FPR_UNO.3	75
13.4.8	Audit of FPR_UNO.4	75
13.4.9	FPR_UNO.1 Unobservability	75
13.4.10	FPR_UNO.2 Allocation of information impacting unobservability	76
13.4.11	FPR_UNO.3 Unobservability without soliciting information.....	76
13.4.12	FPR_UNO.4 Authorised user observability	76
14	Class FPT: Protection of the TSF	76
14.1	Fail secure (FPT_FLS).....	77
14.1.1	Family Behaviour.....	77
14.1.2	Component levelling	78
14.1.3	Management of FPT_FLS.1.....	78
14.1.4	Audit of FPT_FLS.1	78
14.1.5	FPT_FLS.1 Failure with preservation of secure state.....	78
14.2	Availability of exported TSF data (FPT_ITA).....	78
14.2.1	Family Behaviour.....	78
14.2.2	Component levelling	78
14.2.3	Management of FPT_ITA.1.....	78
14.2.4	Audit of FPT_ITA.1	78
14.2.5	FPT_ITA.1 Inter-TSF availability within a defined availability metric	78
14.3	Confidentiality of exported TSF data (FPT_ITC)	79
14.3.1	Family Behaviour.....	79
14.3.2	Component levelling	79
14.3.3	Management of FPT_ITC.1.....	79
14.3.4	Audit of FPT_ITC.1	79
14.3.5	FPT_ITC.1 Inter-TSF confidentiality during transmission.....	79
14.4	Integrity of exported TSF data (FPT_ITI).....	79
14.4.1	Family Behaviour.....	79
14.4.2	Component levelling	79
14.4.3	Management of FPT_ITI.1	80
14.4.4	Management of FPT_ITI.2	80
14.4.5	Audit of FPT_ITI.1	80
14.4.6	Audit of FPT_ITI.2	80
14.4.7	FPT_ITI.1 Inter-TSF detection of modification.....	80
14.4.8	FPT_ITI.2 Inter-TSF detection and correction of modification.....	80
14.5	Internal TOE TSF data transfer (FPT_ITT).....	81
14.5.1	Family Behaviour.....	81
14.5.2	Component levelling	81
14.5.3	Management of FPT_ITT.1	81
14.5.4	Management of FPT_ITT.2	81
14.5.5	Management of FPT_ITT.3	81
14.5.6	Audit of FPT_ITT.1, FPT_ITT.2.....	82

14.5.7	Audit of FPT_ITT.3	82
14.5.8	FPT_ITT.1 Basic internal TSF data transfer protection.....	82
14.5.9	FPT_ITT.2 TSF data transfer separation.....	82
14.5.10	FPT_ITT.3 TSF data integrity monitoring	82
14.6	TSF physical protection (FPT_PHP)	83
14.6.1	Family Behaviour	83
14.6.2	Component levelling	83
14.6.3	Management of FPT_PHP.1	83
14.6.4	Management of FPT_PHP.2	83
14.6.5	Management of FPT_PHP.3	83
14.6.6	Audit of FPT_PHP.1	83
14.6.7	Audit of FPT_PHP.2	84
14.6.8	Audit of FPT_PHP.3	84
14.6.9	FPT_PHP.1 Passive detection of physical attack.....	84
14.6.10	FPT_PHP.2 Notification of physical attack	84
14.6.11	FPT_PHP.3 Resistance to physical attack	84
14.7	Trusted recovery (FPT_RCV).....	85
14.7.1	Family Behaviour	85
14.7.2	Component levelling	85
14.7.3	Management of FPT_RCV.1	85
14.7.4	Management of FPT_RCV.2, FPT_RCV.3	85
14.7.5	Management of FPT_RCV.4	85
14.7.6	Audit of FPT_RCV.1, FPT_RCV.2, FPT_RCV.3	85
14.7.7	Audit of FPT_RCV.4	85
14.7.8	FPT_RCV.1 Manual recovery	86
14.7.9	FPT_RCV.2 Automated recovery.....	86
14.7.10	FPT_RCV.3 Automated recovery without undue loss.....	86
14.7.11	FPT_RCV.4 Function recovery	87
14.8	Replay detection (FPT_RPL).....	87
14.8.1	Family Behaviour	87
14.8.2	Component levelling	87
14.8.3	Management of FPT_RPL.1	87
14.8.4	Audit of FPT_RPL.1	87
14.8.5	FPT_RPL.1 Replay detection	87
14.9	State synchrony protocol (FPT_SSP).....	88
14.9.1	Family Behaviour	88
14.9.2	Component levelling	88
14.9.3	Management of FPT_SSP.1, FPT_SSP.2	88
14.9.4	Audit of FPT_SSP.1, FPT_SSP.2	88
14.9.5	FPT_SSP.1 Simple trusted acknowledgement	88
14.9.6	FPT_SSP.2 Mutual trusted acknowledgement.....	88
14.10	Time stamps (FPT_STM)	89
14.10.1	Family Behaviour	89
14.10.2	Component levelling	89
14.10.3	Management of FPT_STM.1	89
14.10.4	Audit of FPT_STM.1	89
14.10.5	FPT_STM.1 Reliable time stamps.....	89
14.11	Inter-TSF TSF data consistency (FPT_TDC)	89
14.11.1	Family Behaviour	89
14.11.2	Component levelling	89
14.11.3	Management of FPT_TDC.1	89
14.11.4	Audit of FPT_TDC.1	89
14.11.5	FPT_TDC.1 Inter-TSF basic TSF data consistency	90
14.12	Testing of external entities (FPT_TEE).....	90
14.12.1	Family Behaviour	90
14.12.2	Component levelling	90
14.12.3	Management of FPT_TEE.1.....	90
14.12.4	Audit of FPT_TEE.1.....	90
14.12.5	FPT_TEE.1 Testing of external entities	90
14.13	Internal TOE TSF data replication consistency (FPT_TRC)	91

14.13.1	Family Behaviour.....	91
14.13.2	Component levelling	91
14.13.3	Management of FPT_TRC.1	91
14.13.4	Audit of FPT_TRC.1	91
14.13.5	FPT_TRC.1 Internal TSF consistency.....	91
14.14	TSF self test (FPT_TST)	92
14.14.1	Family Behaviour.....	92
14.14.2	Component levelling	92
14.14.3	Management of FPT_TST.1.....	92
14.14.4	Audit of FPT_TST.1	92
14.14.5	FPT_TST.1 TSF testing	92
15	Class FRU: Resource utilisation.....	93
15.1	Fault tolerance (FRU_FLT).....	93
15.1.1	Family Behaviour.....	93
15.1.2	Component levelling	93
15.1.3	Management of FRU_FLT.1, FRU_FLT.2	93
15.1.4	Audit of FRU_FLT.1	93
15.1.5	Audit of FRU_FLT.2	93
15.1.6	FRU_FLT.1 Degraded fault tolerance	94
15.1.7	FRU_FLT.2 Limited fault tolerance	94
15.2	Priority of service (FRU_PRS).....	94
15.2.1	Family Behaviour.....	94
15.2.2	Component levelling	94
15.2.3	Management of FRU_PRS.1, FRU_PRS.2	94
15.2.4	Audit of FRU_PRS.1, FRU_PRS.2	94
15.2.5	FRU_PRS.1 Limited priority of service.....	94
15.2.6	FRU_PRS.2 Full priority of service	95
15.3	Resource allocation (FRU_RSA).....	95
15.3.1	Family Behaviour.....	95
15.3.2	Component levelling	95
15.3.3	Management of FRU_RSA.1	95
15.3.4	Management of FRU_RSA.2	95
15.3.5	Audit of FRU_RSA.1, FRU_RSA.2	96
15.3.6	FRU_RSA.1 Maximum quotas	96
15.3.7	FRU_RSA.2 Minimum and maximum quotas.....	96
16	Class FTA: TOE access	97
16.1	Limitation on scope of selectable attributes (FTA_LSA)	97
16.1.1	Family Behaviour.....	97
16.1.2	Component levelling	97
16.1.3	Management of FTA_LSA.1	97
16.1.4	Audit of FTA_LSA.1	97
16.1.5	FTA_LSA.1 Limitation on scope of selectable attributes	98
16.2	Limitation on multiple concurrent sessions (FTA_MCS)	98
16.2.1	Family Behaviour.....	98
16.2.2	Component levelling	98
16.2.3	Management of FTA_MCS.1	98
16.2.4	Management of FTA_MCS.2	98
16.2.5	Audit of FTA_MCS.1, FTA_MCS.2.....	98
16.2.6	FTA_MCS.1 Basic limitation on multiple concurrent sessions	98
16.2.7	FTA_MCS.2 Per user attribute limitation on multiple concurrent sessions.....	99
16.3	Session locking and termination (FTA_SSL).....	99
16.3.1	Family Behaviour.....	99
16.3.2	Component levelling	99
16.3.3	Management of FTA_SSL.1	99
16.3.4	Management of FTA_SSL.2	99
16.3.5	Management of FTA_SSL.3	99
16.3.6	Management of FTA_SSL.4	100
16.3.7	Audit of FTA_SSL.1, FTA_SSL.2	100
16.3.8	Audit of FTA_SSL.3	100

16.3.9	Audit of FTA_SSL.4	100
16.3.10	FTA_SSL.1 TSF-initiated session locking	100
16.3.11	FTA_SSL.2 User-initiated locking	100
16.3.12	FTA_SSL.3 TSF-initiated termination	101
16.3.13	FTA_SSL.4 User-initiated termination	101
16.4	TOE access banners (FTA_TAB).....	101
16.4.1	Family Behaviour	101
16.4.2	Component levelling	101
16.4.3	Management of FTA_TAB.1	101
16.4.4	Audit of FTA_TAB.1	101
16.4.5	FTA_TAB.1 Default TOE access banners.....	101
16.5	TOE access history (FTA_TAH).....	102
16.5.1	Family Behaviour	102
16.5.2	Component levelling	102
16.5.3	Management of FTA_TAH.1	102
16.5.4	Audit of FTA_TAH.1	102
16.5.5	FTA_TAH.1 TOE access history	102
16.6	TOE session establishment (FTA_TSE)	102
16.6.1	Family Behaviour	102
16.6.2	Component levelling	102
16.6.3	Management of FTA_TSE.1	103
16.6.4	Audit of FTA_TSE.1	103
16.6.5	FTA_TSE.1 TOE session establishment.....	103
17	Class FTP: Trusted path/channels.....	103
17.1	Inter-TSF trusted channel (FTP_ITC)	104
17.1.1	Family Behaviour	104
17.1.2	Component levelling	104
17.1.3	Management of FTP_ITC.1	104
17.1.4	Audit of FTP_ITC.1	104
17.1.5	FTP_ITC.1 Inter-TSF trusted channel.....	104
17.2	Trusted path (FTP_TRP).....	105
17.2.1	Family Behaviour	105
17.2.2	Component levelling	105
17.2.3	Management of FTP_TRP.1	105
17.2.4	Audit of FTP_TRP.1	105
17.2.5	FTP_TRP.1 Trusted path	105
Annex A	(normative) Security functional requirements application notes.....	107
A.1	Structure of the notes	107
A.1.1	Class structure.....	107
A.1.2	Family structure	108
A.1.3	Component structure	109
A.2	Dependency tables	109
Annex B	(normative) Functional classes, families, and components	115
Annex C	(normative) Class FAU: Security audit.....	116
C.1	Audit requirements in a distributed environment	116
C.2	Security audit automatic response (FAU_ARP)	117
C.2.1	User notes	117
C.2.2	FAU_ARP.1 Security alarms	117
C.3	Security audit data generation (FAU_GEN)	118
C.3.1	User notes	118
C.3.2	FAU_GEN.1 Audit data generation.....	119
C.3.3	FAU_GEN.2 User identity association	120
C.4	Security audit analysis (FAU_SAA)	120
C.4.1	User notes	120
C.4.2	FAU_SAA.1 Potential violation analysis	120
C.4.3	FAU_SAA.2 Profile based anomaly detection	121
C.4.4	FAU_SAA.3 Simple attack heuristics.....	122
C.4.5	FAU_SAA.4 Complex attack heuristics	122

C.5	Security audit review (FAU_SAR)	123
C.5.1	User notes	123
C.5.2	FAU_SAR.1 Audit review	124
C.5.3	FAU_SAR.2 Restricted audit review	124
C.5.4	FAU_SAR.3 Selectable audit review	124
C.6	Security audit event selection (FAU_SEL)	125
C.6.1	User notes	125
C.6.2	FAU_SEL.1 Selective audit	125
C.7	Security audit event storage (FAU_STG)	125
C.7.1	User notes	125
C.7.2	FAU_STG.1 Protected audit trail storage	126
C.7.3	FAU_STG.2 Guarantees of audit data availability	126
C.7.4	FAU_STG.3 Action in case of possible audit data loss	126
C.7.5	FAU_STG.4 Prevention of audit data loss	127
Annex D	(normative) Class FCO: Communication	128
D.1	Non-repudiation of origin (FCO_NRO)	128
D.1.1	User notes	128
D.1.2	FCO_NRO.1 Selective proof of origin	129
D.1.3	FCO_NRO.2 Enforced proof of origin	129
D.2	Non-repudiation of receipt (FCO_NRR)	130
D.2.1	User notes	130
D.2.2	FCO_NRR.1 Selective proof of receipt	130
D.2.3	FCO_NRR.2 Enforced proof of receipt	131
Annex E	(normative) Class FCS: Cryptographic support	132
E.1	Cryptographic key management (FCS_CKM)	133
E.1.1	User notes	133
E.1.2	FCS_CKM.1 Cryptographic key generation	134
E.1.3	FCS_CKM.2 Cryptographic key distribution	134
E.1.4	FCS_CKM.3 Cryptographic key access	134
E.1.5	FCS_CKM.4 Cryptographic key destruction	135
E.2	Cryptographic operation (FCS_COP)	135
E.2.1	User notes	135
E.2.2	FCS_COP.1 Cryptographic operation	136
Annex F	(normative) Class FDP: User data protection	137
F.1	Access control policy (FDP_ACC)	140
F.1.1	User notes	140
F.1.2	FDP_ACC.1 Subset access control	140
F.1.3	FDP_ACC.2 Complete access control	141
F.2	Access control functions (FDP_ACF)	141
F.2.1	User notes	141
F.2.2	FDP_ACF.1 Security attribute based access control	141
F.3	Data authentication (FDP_DAU)	143
F.3.1	User notes	143
F.3.2	FDP_DAU.1 Basic Data Authentication	143
F.3.3	FDP_DAU.2 Data Authentication with Identity of Guarantor	143
F.4	Export from the TOE (FDP_ETC)	143
F.4.1	User notes	143
F.4.2	FDP_ETC.1 Export of user data without security attributes	144
F.4.3	FDP_ETC.2 Export of user data with security attributes	144
F.5	Information flow control policy (FDP_IFC)	145
F.5.1	User notes	145
F.5.2	FDP_IFC.1 Subset information flow control	146
F.5.3	FDP_IFC.2 Complete information flow control	146
F.6	Information flow control functions (FDP_IFF)	146
F.6.1	User notes	146
F.6.2	FDP_IFF.1 Simple security attributes	147
F.6.3	FDP_IFF.2 Hierarchical security attributes	148
F.6.4	FDP_IFF.3 Limited illicit information flows	149

F.6.5	FDP_IFF.4 Partial elimination of illicit information flows	149
F.6.6	FDP_IFF.5 No illicit information flows	150
F.6.7	FDP_IFF.6 Illicit information flow monitoring	150
F.7	Import from outside of the TOE (FDP_ITC)	151
F.7.1	User notes	151
F.7.2	FDP_ITC.1 Import of user data without security attributes	152
F.7.3	FDP_ITC.2 Import of user data with security attributes	152
F.8	Internal TOE transfer (FDP_ITT)	152
F.8.1	User notes	152
F.8.2	FDP_ITT.1 Basic internal transfer protection	153
F.8.3	FDP_ITT.2 Transmission separation by attribute	153
F.8.4	FDP_ITT.3 Integrity monitoring	153
F.8.5	FDP_ITT.4 Attribute-based integrity monitoring	154
F.9	Residual information protection (FDP_RIP)	155
F.9.1	User notes	155
F.9.2	FDP_RIP.1 Subset residual information protection	156
F.9.3	FDP_RIP.2 Full residual information protection	156
F.10	Rollback (FDP_ROL)	156
F.10.1	User notes	156
F.10.2	FDP_ROL.1 Basic rollback	157
F.10.3	FDP_ROL.2 Advanced rollback	157
F.11	Stored data integrity (FDP_SDI)	158
F.11.1	User notes	158
F.11.2	FDP_SDI.1 Stored data integrity monitoring	158
F.11.3	FDP_SDI.2 Stored data integrity monitoring and action	158
F.12	Inter-TSF user data confidentiality transfer protection (FDP_UCT)	158
F.12.1	User notes	158
F.12.2	FDP_UCT.1 Basic data exchange confidentiality	159
F.13	Inter-TSF user data integrity transfer protection (FDP_UIT)	159
F.13.1	User notes	159
F.13.2	FDP_UIT.1 Data exchange integrity	159
F.13.3	FDP_UIT.2 Source data exchange recovery	160
F.13.4	FDP_UIT.3 Destination data exchange recovery	160
Annex G	(normative) Class FIA: Identification and authentication	161
G.1	Authentication failures (FIA_AFL)	162
G.1.1	User notes	162
G.1.2	FIA_AFL.1 Authentication failure handling	163
G.2	User attribute definition (FIA_ATD)	164
G.2.1	User notes	164
G.2.2	FIA_ATD.1 User attribute definition	164
G.3	Specification of secrets (FIA_SOS)	164
G.3.1	User notes	164
G.3.2	FIA_SOS.1 Verification of secrets	165
G.3.3	FIA_SOS.2 TSF Generation of secrets	165
G.4	User authentication (FIA_UAU)	165
G.4.1	User notes	165
G.4.2	FIA_UAU.1 Timing of authentication	165
G.4.3	FIA_UAU.2 User authentication before any action	166
G.4.4	FIA_UAU.3 Unforgeable authentication	166
G.4.5	FIA_UAU.4 Single-use authentication mechanisms	166
G.4.6	FIA_UAU.5 Multiple authentication mechanisms	167
G.4.7	FIA_UAU.6 Re-authenticating	167
G.4.8	FIA_UAU.7 Protected authentication feedback	168
G.5	User identification (FIA_UID)	168
G.5.1	User notes	168
G.5.2	FIA_UID.1 Timing of identification	168
G.5.3	FIA_UID.2 User identification before any action	168
G.6	User-subject binding (FIA_USB)	169
G.6.1	User notes	169

G.6.2	FIA_USB.1 User-subject binding	169
Annex H	(normative) Class FMT: Security management.....	170
H.1	Management of functions in TSF (FMT_MOF)	171
H.1.1	User notes	171
H.1.2	FMT_MOF.1 Management of security functions behaviour	172
H.2	Management of security attributes (FMT_MSA)	172
H.2.1	User notes	172
H.2.2	FMT_MSA.1 Management of security attributes	173
H.2.3	FMT_MSA.2 Secure security attributes	173
H.2.4	FMT_MSA.3 Static attribute initialisation	174
H.2.5	FMT_MSA.4 Security attribute value inheritance	174
H.3	Management of TSF data (FMT_MTD)	174
H.3.1	User notes	174
H.3.2	FMT_MTD.1 Management of TSF data.....	174
H.3.3	FMT_MTD.2 Management of limits on TSF data.....	175
H.3.4	FMT_MTD.3 Secure TSF data	175
H.4	Revocation (FMT_REV)	176
H.4.1	User notes	176
H.4.2	FMT_REV.1 Revocation	176
H.5	Security attribute expiration (FMT_SAE)	176
H.5.1	User notes	176
H.5.2	FMT_SAE.1 Time-limited authorisation.....	177
H.6	Specification of Management Functions (FMT_SMF)	177
H.6.1	User notes	177
H.6.2	FMT_SMF.1 Specification of Management Functions	177
H.7	Security management roles (FMT_SMR).....	177
H.7.1	User notes	177
H.7.2	FMT_SMR.1 Security roles	178
H.7.3	FMT_SMR.2 Restrictions on security roles	178
H.7.4	FMT_SMR.3 Assuming roles	178
Annex I	(normative) Class FPR: Privacy	179
I.1	Anonymity (FPR_ANO)	180
I.1.1	User notes	180
I.1.2	FPR_ANO.1 Anonymity.....	181
I.1.3	FPR_ANO.2 Anonymity without soliciting information	181
I.2	Pseudonymity (FPR_PSE)	182
I.2.1	User notes	182
I.2.2	FPR_PSE.1 Pseudonymity.....	183
I.2.3	FPR_PSE.2 Reversible pseudonymity	183
I.2.4	FPR_PSE.3 Alias pseudonymity	184
I.3	Unlinkability (FPR_UNL)	185
I.3.1	User notes	185
I.3.2	FPR_UNL.1 Unlinkability.....	186
I.4	Unobservability (FPR_UNO)	186
I.4.1	User notes	186
I.4.2	FPR_UNO.1 Unobservability	187
I.4.3	FPR_UNO.2 Allocation of information impacting unobservability	187
I.4.4	FPR_UNO.3 Unobservability without soliciting information.....	188
I.4.5	FPR_UNO.4 Authorised user observability	189
Annex J	(normative) Class FPT: Protection of the TSF	190
J.1	Fail secure (FPT_FLS).....	192
J.1.1	User notes	192
J.1.2	FPT_FLS.1 Failure with preservation of secure state.....	192
J.2	Availability of exported TSF data (FPT_ITA).....	192
J.2.1	User notes	192
J.2.2	FPT_ITA.1 Inter-TSF availability within a defined availability metric	192
J.3	Confidentiality of exported TSF data (FPT_ITC)	193
J.3.1	User notes	193

J.3.2	FPT_ITC.1 Inter-TSF confidentiality during transmission	193
J.4	Integrity of exported TSF data (FPT_ITI)	193
J.4.1	User notes	193
J.4.2	FPT_ITI.1 Inter-TSF detection of modification	193
J.4.3	FPT_ITI.2 Inter-TSF detection and correction of modification	194
J.5	Internal TOE TSF data transfer (FPT_ITT)	194
J.5.1	User notes	194
J.5.2	Evaluator notes	194
J.5.3	FPT_ITT.1 Basic internal TSF data transfer protection	195
J.5.4	FPT_ITT.2 TSF data transfer separation	195
J.5.5	FPT_ITT.3 TSF data integrity monitoring	195
J.6	TSF physical protection (FPT_PHP)	195
J.6.1	User notes	195
J.6.2	FPT_PHP.1 Passive detection of physical attack	196
J.6.3	FPT_PHP.2 Notification of physical attack	196
J.6.4	FPT_PHP.3 Resistance to physical attack	196
J.7	Trusted recovery (FPT_RCV)	197
J.7.1	User notes	197
J.7.2	FPT_RCV.1 Manual recovery	198
J.7.3	FPT_RCV.2 Automated recovery	199
J.7.4	FPT_RCV.3 Automated recovery without undue loss	199
J.7.5	FPT_RCV.4 Function recovery	200
J.8	Replay detection (FPT_RPL)	200
J.8.1	User notes	200
J.8.2	FPT_RPL.1 Replay detection	200
J.9	State synchrony protocol (FPT_SSP)	201
J.9.1	User notes	201
J.9.2	FPT_SSP.1 Simple trusted acknowledgement	201
J.9.3	FPT_SSP.2 Mutual trusted acknowledgement	201
J.10	Time stamps (FPT_STM)	201
J.10.1	User notes	201
J.10.2	FPT_STM.1 Reliable time stamps	201
J.11	Inter-TSF TSF data consistency (FPT_TDC)	202
J.11.1	User notes	202
J.11.2	FPT_TDC.1 Inter-TSF basic TSF data consistency	202
J.12	Testing of external entities (FPT_TEE)	202
J.12.1	User notes	202
J.12.2	Evaluator notes	203
J.12.3	FPT_TEE.1 Testing of external entities	203
J.13	Internal TOE TSF data replication consistency (FPT_TRC)	204
J.13.1	User notes	204
J.13.2	FPT_TRC.1 Internal TSF consistency	204
J.14	TSF self test (FPT_TST)	204
J.14.1	User notes	204
J.14.2	FPT_TST.1 TSF testing	204
Annex K	(normative) Class FRU: Resource utilisation	206
K.1	Fault tolerance (FRU_FLT)	206
K.1.1	User notes	206
K.1.2	FRU_FLT.1 Degraded fault tolerance	207
K.1.3	FRU_FLT.2 Limited fault tolerance	207
K.2	Priority of service (FRU_PRS)	207
K.2.1	User notes	207
K.2.2	FRU_PRS.1 Limited priority of service	208
K.2.3	FRU_PRS.2 Full priority of service	208
K.3	Resource allocation (FRU_RSA)	208
K.3.1	User notes	208
K.3.2	FRU_RSA.1 Maximum quotas	209
K.3.3	FRU_RSA.2 Minimum and maximum quotas	209
Annex L	(normative) Class FTA: TOE access	211

L.1	Limitation on scope of selectable attributes (FTA_LSA)	211
L.1.1	User notes	211
L.1.2	FTA_LSA.1 Limitation on scope of selectable attributes	212
L.2	Limitation on multiple concurrent sessions (FTA_MCS)	212
L.2.1	User notes	212
L.2.2	FTA_MCS.1 Basic limitation on multiple concurrent sessions	212
L.2.3	FTA_MCS.2 Per user attribute limitation on multiple concurrent sessions	212
L.3	Session locking and termination (FTA_SSL)	213
L.3.1	User notes	213
L.3.2	FTA_SSL.1 TSF-initiated session locking	213
L.3.3	FTA_SSL.2 User-initiated locking	214
L.3.4	FTA_SSL.3 TSF-initiated termination	214
L.3.5	FTA_SSL.4 User-initiated termination	214
L.4	TOE access banners (FTA_TAB)	214
L.4.1	User notes	214
L.4.2	FTA_TAB.1 Default TOE access banners	215
L.5	TOE access history (FTA_TAH)	215
L.5.1	User notes	215
L.5.2	FTA_TAH.1 TOE access history	215
L.6	TOE session establishment (FTA_TSE)	215
L.6.1	User notes	215
L.6.2	FTA_TSE.1 TOE session establishment	216
Annex M	(normative) Class FTP: Trusted path/channels	217
M.1	Inter-TSF trusted channel (FTP_ITC)	217
M.1.1	User notes	217
M.1.2	FTP_ITC.1 Inter-TSF trusted channel	217
M.2	Trusted path (FTP_TRP)	218
M.2.1	User notes	218
M.2.2	FTP_TRP.1 Trusted path	218

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15408-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 27, *IT Security techniques*. The identical text of ISO/IEC 15408 is published by the Common Criteria Project Sponsoring Organisations as Common Criteria for Information Technology Security Evaluation. The common XML source for both publications can be found at <http://www.oc.ccn.cni.es/xml>

This third edition cancels and replaces the second edition (ISO/IEC 15408-2:2005), which has been technically revised.

ISO/IEC 15408 consists of the following parts, under the general title *Information technology — Security techniques — Evaluation criteria for IT security*:

- *Part 1: Introduction and general model*
- *Part 2: Security functional components*
- *Part 3: Security assurance components*

This corrected version of ISO/IEC 15408-2:2008 incorporates miscellaneous editorial corrections mainly related to FDP_UTC, FDP_UTI, FDP_ACF.1.4, FAU_SEL.1.1, FPT_TST.1, FDP_ITT.4, and FPT_TEE.

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Introduction

Security functional components, as defined in this part of ISO/IEC 15408, are the basis for the security functional requirements expressed in a Protection Profile (PP) or a Security Target (ST). These requirements describe the desired security behaviour expected of a Target of Evaluation (TOE) and are intended to meet the security objectives as stated in a PP or an ST. These requirements describe security properties that users can detect by direct interaction (i.e. inputs, outputs) with the IT or by the IT response to stimulus.

Security functional components express security requirements intended to counter threats in the assumed operating environment of the TOE and/or cover any identified organisational security policies and assumptions.

The audience for this part of ISO/IEC 15408 includes consumers, developers, and evaluators of secure IT products. ISO/IEC 15408-1:2009, Clause 5 provides additional information on the target audience of ISO/IEC 15408, and on the use of ISO/IEC 15408 by the groups that comprise the target audience. These groups may use this part of ISO/IEC 15408 as follows:

- a) Consumers, who use this part of ISO/IEC 15408 when selecting components to express functional requirements to satisfy the security objectives expressed in a PP or ST. ISO/IEC 15408-1:2009, Clause 6 provides more detailed information on the relationship between security objectives and security requirements.
- b) Developers, who respond to actual or perceived consumer security requirements in constructing a TOE, may find a standardised method to understand those requirements in this part of ISO/IEC 15408. They can also use the contents of this part of ISO/IEC 15408 as a basis for further defining the TOE security functionality and mechanisms that comply with those requirements.
- c) Evaluators, who use the functional requirements defined in this part of ISO/IEC 15408 in verifying that the TOE functional requirements expressed in the PP or ST satisfy the IT security objectives and that all dependencies are accounted for and shown to be satisfied. Evaluators also should use this part of ISO/IEC 15408 to assist in determining whether a given TOE satisfies stated requirements.

Information technology — Security techniques — Evaluation criteria for IT security —

Part 2: Security functional components

1 Scope

This part of ISO/IEC 15408 defines the required structure and content of security functional components for the purpose of security evaluation. It includes a catalogue of functional components that will meet the common security functionality requirements of many IT products.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 15408-1, *Information technology — Security techniques — Evaluation criteria for IT security — Part 1: Introduction and general model*

3 Terms and definitions, symbols and abbreviated terms

For the purposes of this document, the terms, definitions, symbols and abbreviated terms given in ISO/IEC 15408-1 apply.

4 Overview

ISO/IEC 15408 and the associated security functional requirements described herein are not meant to be a definitive answer to all the problems of IT security. Rather, ISO/IEC 15408 offers a set of well understood security functional requirements that can be used to create trusted products reflecting the needs of the market. These security functional requirements are presented as the current state of the art in requirements specification and evaluation.

This part of ISO/IEC 15408 does not presume to include all possible security functional requirements but rather contains those that are known and agreed to be of value by this part of ISO/IEC 15408 authors at the time of release.

Since the understanding and needs of consumers may change, the functional requirements in this part of ISO/IEC 15408 will need to be maintained. It is envisioned that some PP/ST authors may have security needs not (yet) covered by the functional requirement components in this part of ISO/IEC 15408. In those cases the PP/ST author may choose to consider using functional requirements not taken from ISO/IEC 15408 (referred to as extensibility), as explained in Annexes A and B of ISO/IEC 15408-1:2009.

4.1 Organisation of this part of ISO/IEC 15408

Clause 5 describes the paradigm used in the security functional requirements of this part of ISO/IEC 15408.

Clause 6 introduces the catalogue of this part of ISO/IEC 15408 functional components while Clauses 7 through 17 describe the functional classes.

Annex A provides explanatory information for potential users of the functional components including a complete cross reference table of the functional component dependencies.

Annex B through Annex M provide the explanatory information for the functional classes. This material must be seen as normative instructions on how to apply relevant operations and select appropriate audit or documentation information; the use of the auxiliary verb *should* means that the instruction is strongly preferred, but others may be justifiable. Where different options are given, the choice is left to the PP/ST author.

Those who author PPs or STs should refer to Clause 2 of ISO/IEC 15408-1:2009 for relevant structures, rules, and guidance:

- a) ISO/IEC 15408-1:2009, Clause 3 defines the terms used in ISO/IEC 15408.
- b) ISO/IEC 15408-1:2009, Annex A defines the structure for STs.
- c) ISO/IEC 15408-1:2009, Annex B defines the structure for PPs.

5 Functional requirements paradigm

This clause describes the paradigm used in the security functional requirements of this part of ISO/IEC 15408. Key concepts discussed are highlighted in bold/italics. This subclause is not intended to replace or supersede any of the terms found in ISO/IEC 15408-1:2009, Clause 3.

This part of ISO/IEC 15408 is a catalogue of security functional components that can be specified for a **Target of Evaluation (TOE)**. A TOE is a set of software, firmware and/or hardware possibly accompanied by user and administrator guidance documentation. A TOE may contain resources such as electronic storage media (e.g. main memory, disk space), peripheral devices (e.g. printers), and computing capacity (e.g. CPU time) that can be used for processing and storing information and is the subject of an evaluation.

TOE evaluation is concerned primarily with ensuring that a defined set of **security functional requirements (SFRs)** is enforced over the TOE resources. The SFRs define the rules by which the TOE governs access to and use of its resources, and thus information and services controlled by the TOE.

The SFRs may define multiple **Security Function Policies (SFPs)** to represent the rules that the TOE must enforce. Each such SFP must specify its **scope of control**, by defining the subjects, objects, resources or information, and operations to which it applies. All SFPs are implemented by the TSF (see below), whose mechanisms enforce the rules defined in the SFRs and provide necessary capabilities.

Those portions of a TOE that must be relied on for the correct enforcement of the SFRs are collectively referred to as the **TOE Security Functionality (TSF)**. The TSF consists of all hardware, software, and firmware of a TOE that is either directly or indirectly relied upon for security enforcement.

The TOE may be a monolithic product containing hardware, firmware, and software.

Alternatively a TOE may be a distributed product that consists internally of multiple separated parts. Each of these parts of the TOE provides a particular service for the TOE, and is connected to the other parts of the TOE through an **internal communication channel**. This channel can be as small as a processor bus, or may encompass a network internal to the TOE.

When the TOE consists of multiple parts, each part of the TOE may have its own part of the TSF which exchanges user and TSF data over internal communication channels with other parts of the TSF. This interaction is called **internal TOE transfer**. In this case the separate parts of the TSF abstractly form the composite TSF, which enforces the SFRs.

TOE interfaces may be localised to the particular TOE, or they may allow interaction with other IT products over **external communication channels**. These external interactions with other IT products may take two forms:

- a) The SFRs of the other “trusted IT product” and the SFRs of the TOE have been administratively coordinated and the other trusted IT product is assumed to enforce its SFRs correctly (e. g. by being separately evaluated). Exchanges of information in this situation are called **inter-TSF transfers**, as they are between the TSFs of distinct trusted products.
- b) The other IT product may not be trusted, it may be called an “untrusted IT product”. Therefore its SFRs are either unknown or their implementation is not viewed as trustworthy. TSF mediated exchanges of information in this situation are called **transfers outside of the TOE**, as there is no TSF (or its policy characteristics are unknown) on the other IT product.

The set of interfaces, whether interactive (man-machine interface) or programmatic (application programming interface), through which resources are accessed that are mediated by the TSF, or information is obtained from the TSF, is referred to as the **TSF Interface (TSFI)**. The TSFI defines the boundaries of the TOE functionality that provide for the enforcement of the SFRs.

Users are outside of the TOE. However, in order to request that services be performed by the TOE that are subject to rules defined in the SFRs, users interact with the TOE through the TSFIs. There are two types of users of interest to this part of ISO/IEC 15408: **human users** and **external IT entities**. Human users may further be differentiated as **local human users**, meaning they interact directly with the TOE via TOE devices (e.g. workstations), or **remote human users**, meaning they interact indirectly with the TOE through another IT product.

A period of interaction between users and the TSF is referred to as a user **session**. Establishment of user sessions can be controlled based on a variety of considerations, for example: user authentication, time of day, method of accessing the TOE, and number of allowed concurrent sessions (per user or in total).

This part of ISO/IEC 15408 uses the term **authorised** to signify a user who possesses the rights and/or privileges necessary to perform an operation. The term **authorised user**, therefore, indicates that it is allowable for a user to perform a specific operation or a set of operations as defined by the SFRs.

To express requirements that call for the separation of administrator duties, the relevant security functional components (from family FMT_SMR) explicitly state that administrative **roles** are required. A role is a pre-defined set of rules establishing the allowed interactions between a user operating in that role and the TOE. A TOE may support the definition of any number of roles. For example, roles related to the secure operation of a TOE may include “Audit Administrator” and “User Accounts Administrator”.

TOEs contain **resources** that may be used for the processing and storing of information. The primary goal of the TSF is the complete and correct enforcement of the SFRs over the resources and information that the TOE controls.

TOE resources can be structured and utilised in many different ways. However, this part of ISO/IEC 15408 makes a specific distinction that allows for the specification of desired security properties. All entities that can be created from resources can be characterised in one of two ways. The entities may be active, meaning that they are the cause of actions that occur internal to the TOE and cause operations to be performed on information. Alternatively, the entities may be passive, meaning that they are either the container from which information originates or to which information is stored.

Active entities in the TOE that perform operations on objects are referred to as **subjects**. Several types of subjects may exist within a TOE:

- a) those acting on behalf of an authorised user (e.g. UNIX processes);
- b) those acting as a specific functional process that may in turn act on behalf of multiple users (e.g. functions as might be found in client/server architectures); or
- c) those acting as part of the TOE itself (e.g. processes not acting on behalf of a user).

This part of ISO/IEC 15408 addresses the enforcement of the SFRs over types of subjects as those listed above.

Passive entities in the TOE that contain or receive information and upon which subjects perform operations are called **objects**. In the case where a subject (an active entity) is the target of an operation (e.g. interprocess communication), a subject may also be acted on as an object.

Objects can contain **information**. This concept is required to specify information flow control policies as addressed in the FDP class.

Users, subjects, information, objects, sessions and resources controlled by rules in the SFRs may possess certain **attributes** that contain information that is used by the TOE for its correct operation. Some attributes, such as file names, may be intended to be informational or may be used to identify individual resources while others, such as access control information, may exist specifically for the enforcement of the SFRs. These latter attributes are generally referred to as “**security attributes**”. The word attribute will be used as a shorthand in some places of this part of ISO/IEC 15408 for the word “security attribute”. However, no matter what the intended purpose of the attribute information, it may be necessary to have controls on attributes as dictated by the SFRs.

Data in a TOE is categorised as either user data or TSF data. Figure 1 depicts this relationship. **User Data** is information stored in TOE resources that can be operated upon by users in accordance with the SFRs and upon which the TSF places no special meaning. For example, the content of an electronic mail message is user data. TSF Data is information used by the TSF in making decisions as required by the SFRs. **TSF Data** may be influenced by users if allowed by the SFRs. Security attributes, authentication data, TSF internal status variables used by the rules defined in the SFRs or used for the protection of the TSF and access control list entries are examples of TSF data.

There are several SFPs that apply to data protection such as **access control SFPs** and **information flow control SFPs**. The mechanisms that implement access control SFPs base their policy decisions on attributes of the users, resources, subjects, objects, sessions, TSF status data and operations within the scope of control. These attributes are used in the set of rules that govern operations that subjects may perform on objects.

The mechanisms that implement information flow control SFPs base their policy decisions on the attributes of the subjects and information within the scope of control and the set of rules that govern the operations by subjects on information. The attributes of the information, which may be associated with the attributes of the container or may be derived from the data in the container, stay with the information as it is processed by the TSF.

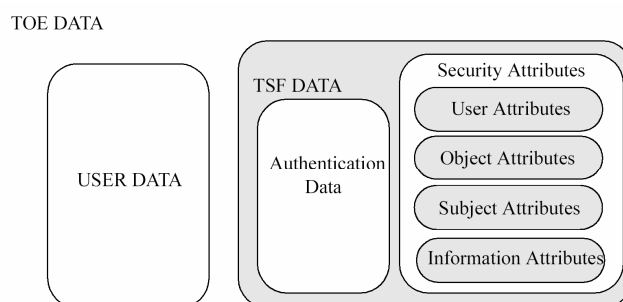


Figure 1 — Relationship between user data and TSF data

Two specific types of TSF data addressed by this part of ISO/IEC 15408 can be, but are not necessarily, the same. These are **authentication data** and **secrets**.

Authentication data is used to verify the claimed identity of a user requesting services from a TOE. The most common form of authentication data is the password, which depends on being kept secret in order to be an effective security mechanism. However, not all forms of authentication data need to be kept secret. Biometric authentication devices (e.g. fingerprint readers, retinal scanners) do not rely on the fact that the data is kept secret, but rather that the data is something that only one user possesses and that cannot be forged.

The term secrets, as used in this part of ISO/IEC 15408, while applicable to authentication data, is intended to also be applicable to other types of data that must be kept secret in order to enforce a specific SFP. For example, a trusted channel mechanism that relies on cryptography to preserve the confidentiality of information being transmitted via the channel can only be as strong as the method used to keep the cryptographic keys secret from unauthorised disclosure.

Therefore, some, but not all, authentication data needs to be kept secret and some, but not all, secrets are used as authentication data. Figure 2 shows this relationship between secrets and authentication data. In the Figure the types of data typically encountered in the authentication data and the secrets subclauses are indicated.

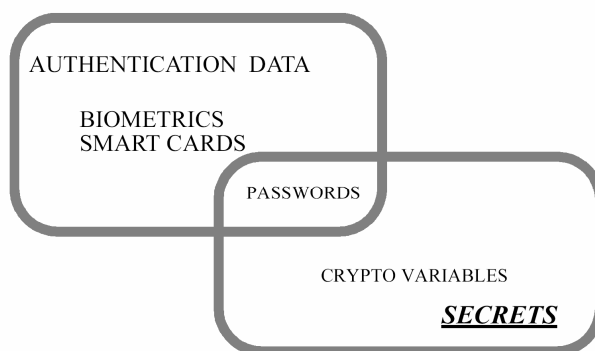


Figure 2 — Relationship between “authentication data” and “secrets”

6 Security functional components

6.1 Overview

This clause defines the content and presentation of the functional requirements of ISO/IEC 15408, and provides guidance on the organisation of the requirements for new components to be included in an ST. The functional requirements are expressed in classes, families, and components.

6.1.1 Class structure

Figure 3 illustrates the functional class structure in diagrammatic form. Each functional class includes a class name, class introduction, and one or more functional families.

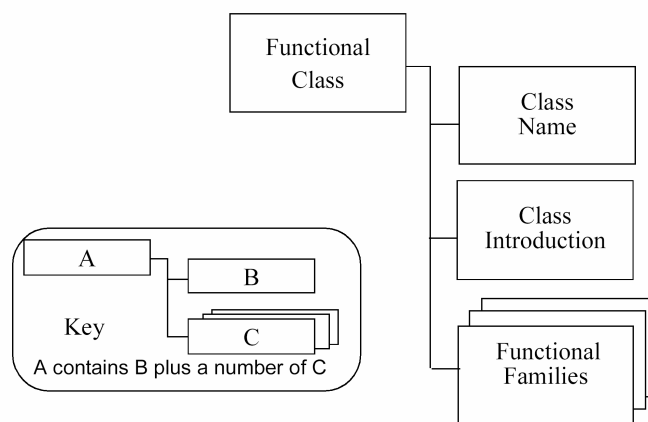


Figure 3 — Functional class structure

6.1.1.1 Class name

The class name subclause provides information necessary to identify and categorise a functional class. Every functional class has a unique name. The categorical information consists of a short name of three characters. The short name of the class is used in the specification of the short names of the families of that class.

6.1.1.2 Class introduction

The class introduction expresses the common intent or approach of those families to satisfy security objectives. The definition of functional classes does not reflect any formal taxonomy in the specification of the requirements.

The class introduction provides a figure describing the families in this class and the hierarchy of the components in each family, as explained in 6.2.

6.1.2 Family structure

Figure 4 illustrates the functional family structure in diagrammatic form.

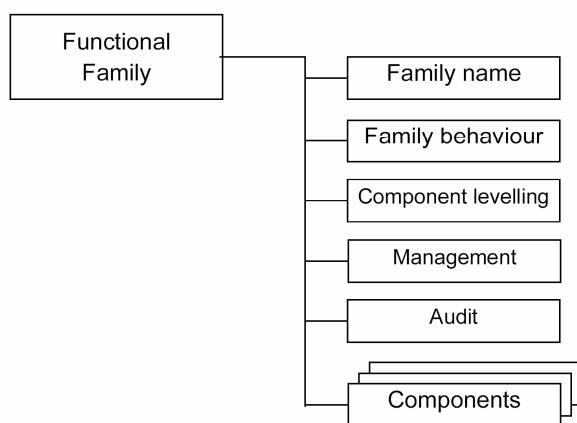


Figure 4 — Functional family structure

6.1.2.1 Family name

The family name subclause provides categorical and descriptive information necessary to identify and categorise a functional family. Every functional family has a unique name. The categorical information consists of a short name of seven characters, with the first three identical to the short name of the class followed by an underscore and the short name of the family as follows XXX_YYY. The unique short form of the family name provides the principal reference name for the components.

6.1.2.2 Family behaviour

The family behaviour is the narrative description of the functional family stating its security objective and a general description of the functional requirements. These are described in greater detail below:

- a) The *security objectives* of the family address a security problem that may be solved with the help of a TOE that incorporates a component of this family;
- b) The description of the *functional requirements* summarises all the requirements that are included in the component(s). The description is aimed at authors of PPs, STs and functional packages who wish to assess whether the family is relevant to their specific requirements.

6.1.2.3 Component levelling

Functional families contain one or more components, any one of which can be selected for inclusion in PPs, STs and functional packages. The goal of this subclause is to provide information to users in selecting an appropriate functional component once the family has been identified as being a necessary or useful part of their security requirements.

This subclause of the functional family description describes the components available, and their rationale. The exact details of the components are contained within each component.

The relationships between components within a functional family may or may not be hierarchical. A component is hierarchical to another if it offers more security.

As explained in 6.2 the descriptions of the families provide a graphical overview of the hierarchy of the components in a family.

6.1.2.4 Management

The *management* clauses contain information for the PP/ST authors to consider as management activities for a given component. The clauses reference components of the management class (FMT), and provide guidance regarding potential management activities that may be applied via operations to those components.

A PP/ST author may select the indicated management components or may include other management requirements not listed to detail management activities. As such the information should be considered informative.

6.1.2.5 Audit

The *audit* requirements contain auditable events for the PP/ST authors to select, if requirements from the class FAU: Security audit, are included in the PP/ST. These requirements include security relevant events in terms of the various levels of detail supported by the components of the Security audit data generation (FAU_GEN) family. For example, an audit note might include actions that are in terms of: Minimal - successful use of the security mechanism; Basic - any use of the security mechanism as well as relevant information regarding the security attributes involved; Detailed - any configuration changes made to the mechanism, including the actual configuration values before and after the change.

It should be observed that the categorisation of auditable events is hierarchical. For example, when Basic Audit Generation is desired, all auditable events identified as being both Minimal and Basic should be included in the PP/ST through the use of the appropriate assignment operation, except when the higher level event simply provides more detail than the lower level event. When Detailed Audit Generation is desired, all identified auditable events (Minimal, Basic and Detailed) should be included in the PP/ST.

In the class FAU: Security audit the rules governing the audit are explained in more detail.

6.1.3 Component structure

Figure 5 illustrates the functional component structure.

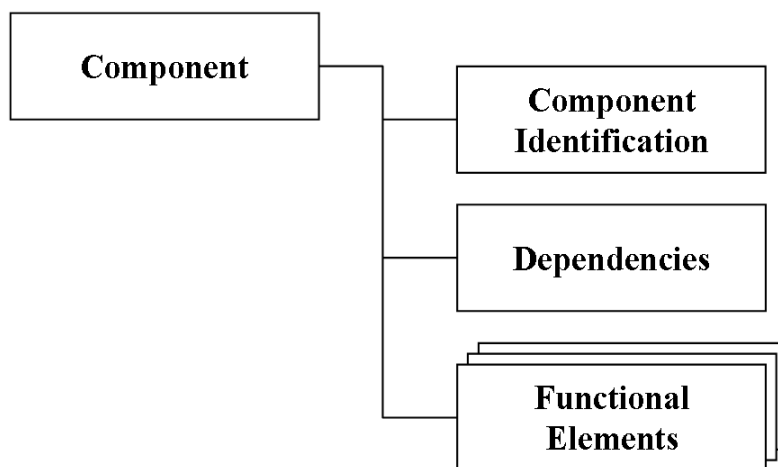


Figure 5 — Functional component structure

6.1.3.1 Component identification

The component identification subclause provides descriptive information necessary to identify, categorise, register and cross-reference a component. The following is provided as part of every functional component:

A unique name. The name reflects the purpose of the component.

A short name. A unique short form of the functional component name. This short name serves as the principal reference name for the categorisation, registration and cross-referencing of the component. This short name reflects the class and family to which the component belongs and the component number within the family.

A hierarchical-to list. A list of other components that this component is hierarchical to and for which this component can be used to satisfy dependencies to the listed components.

6.1.3.2 Functional elements

A set of elements is provided for each component. Each element is individually defined and is self-contained.

A functional element is a security functional requirement that if further divided would not yield a meaningful evaluation result. It is the smallest security functional requirement identified and recognised in ISO/IEC 15408.

When building packages, PPs and/or STs, it is not permitted to select only one or more elements from a component. The complete set of elements of a component must be selected for inclusion in a PP, ST or package.

A unique short form of the functional element name is provided. For example the requirement name FDP_IFF.4.2 reads as follows: F - functional requirement, DP - class “User data protection”, _IFF - family “Information flow control functions”, .4 - 4th component named “Partial elimination of illicit information flows”, .2 - 2nd element of the component.

6.1.3.3 Dependencies

Dependencies among functional components arise when a component is not self sufficient and relies upon the functionality of, or interaction with, another component for its own proper functioning.

Each functional component provides a complete list of dependencies to other functional and assurance components. Some components may list “No dependencies”. The components depended upon may in turn have dependencies on other components. The list provided in the components will be the direct dependencies. That is only references to the functional requirements that are required for this requirement to perform its job properly. The indirect dependencies, that is the dependencies that result from the depended upon components can be found in Annex A of this part of ISO/IEC 15408. It is noted that in some cases the dependency is optional in that a number of functional requirements are provided, where each one of them would be sufficient to satisfy the dependency (see for example FDP_UIT.1 Data exchange integrity).

The dependency list identifies the minimum functional or assurance components needed to satisfy the security requirements associated with an identified component. Components that are hierarchical to the identified component may also be used to satisfy the dependency.

The dependencies indicated in this part of ISO/IEC 15408 are normative. They must be satisfied within a PP/ST. In specific situations the indicated dependencies might not be applicable. The PP/ST author, by providing the rationale why it is not applicable, may leave the depended upon component out of the package, PP or ST.

6.2 Component catalogue

The grouping of the components in this part of ISO/IEC 15408 does not reflect any formal taxonomy.

This part of ISO/IEC 15408 contains classes of families and components, which are rough groupings on the basis of related function or purpose, presented in alphabetic order. At the start of each class is an informative diagram that indicates the taxonomy of each class, indicating the families in each class and the components in each family. The diagram is a useful indicator of the hierarchical relationship that may exist between components.

In the description of the functional components, a subclause identifies the dependencies between the component and any other components.

In each class a figure describing the family hierarchy similar to Figure 6, is provided. In Figure 6 the first family, Family 1, contains three hierarchical components, where component 2 and component 3 can both be used to satisfy dependencies on component 1. Component 3 is hierarchical to component 2 and can also be used to satisfy dependencies on component 2.

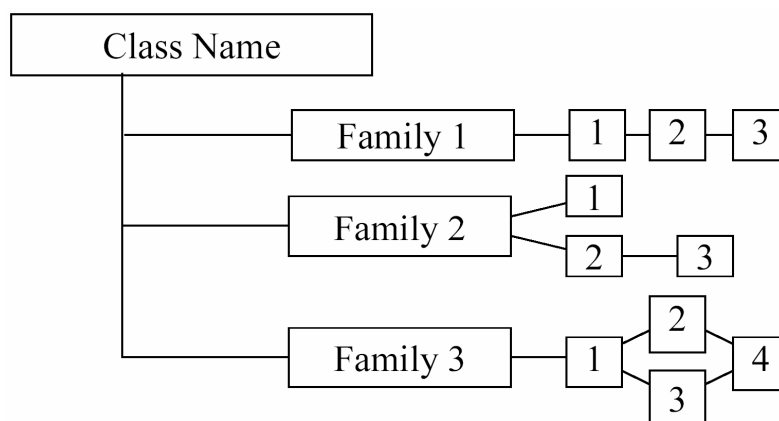


Figure 6 — Sample class decomposition diagram

In Family 2 there are three components not all of which are hierarchical. Components 1 and 2 are hierarchical to no other components. Component 3 is hierarchical to component 2, and can be used to satisfy dependencies on component 2, but not to satisfy dependencies on component 1.

In Family 3, components 2, 3, and 4 are hierarchical to component 1. Components 2 and 3 are both hierarchical to component 1, but non-comparable. Component 4 is hierarchical to both component 2 and component 3.

These diagrams are meant to complement the text of the families and make identification of the relationships easier. They do not replace the “Hierarchical to:” note in each component that is the mandatory claim of hierarchy for each component.

6.2.1 Component changes highlighting

The relationship between components within a family is highlighted using a **bolding** convention. This bolding convention calls for the bolding of all new requirements. For hierarchical components, requirements are bolded when they are enhanced or modified beyond the requirements of the previous component. In addition, any new or enhanced permitted operations beyond the previous component are also highlighted using **bold** type.

7 Class FAU: Security audit

Security auditing involves recognising, recording, storing, and analysing information related to security relevant activities (i.e. activities controlled by the TSF). The resulting audit records can be examined to determine which security relevant activities took place and whom (which user) is responsible for them.

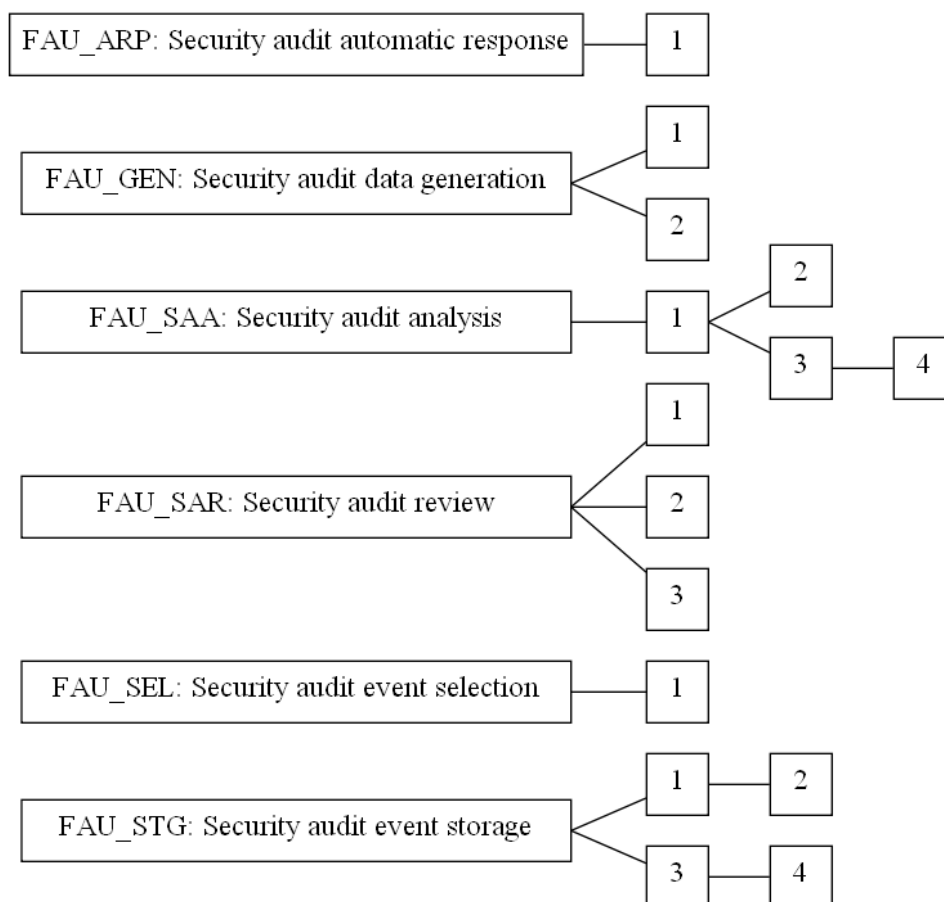


Figure 7 — FAU: Security audit class decomposition

7.1 Security audit automatic response (FAU_ARP)

7.1.1 Family Behaviour

This family defines the response to be taken in case of detected events indicative of a potential security violation.

7.1.2 Component levelling

At FAU_ARP.1 Security alarms, the TSF shall take actions in case a potential security violation is detected.

7.1.3 Management of FAU_ARP.1

The following actions could be considered for the management functions in FMT:

- a) the management (addition, removal, or modification) of actions.

7.1.4 Audit of FAU_ARP.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: Actions taken due to potential security violations.

7.1.5 FAU_ARP.1 Security alarms

Hierarchical to: No other components.

Dependencies: FAU_SAA.1 Potential violation analysis

7.1.5.1 FAU_ARP.1.1

The TSF shall take [assignment: *list of actions*] upon detection of a potential security violation.

7.2 Security audit data generation (FAU_GEN)

7.2.1 Family Behaviour

This family defines requirements for recording the occurrence of security relevant events that take place under TSF control. This family identifies the level of auditing, enumerates the types of events that shall be auditable by the TSF, and identifies the minimum set of audit-related information that should be provided within various audit record types.

7.2.2 Component levelling

FAU_GEN.1 Audit data generation defines the level of auditable events, and specifies the list of data that shall be recorded in each record.

At FAU_GEN.2 User identity association, the TSF shall associate auditable events to individual user identities.

7.2.3 Management of FAU_GEN.1, FAU_GEN.2

There are no management activities foreseen.

7.2.4 Audit of FAU_GEN.1, FAU_GEN.2

There are no auditable events foreseen.

7.2.5 FAU_GEN.1 Audit data generation

Hierarchical to: No other components.

Dependencies: FPT_STM.1 Reliable time stamps

7.2.5.1 FAU_GEN.1.1

The TSF shall be able to generate an audit record of the following auditable events:

- a) Start-up and shutdown of the audit functions;
- b) All auditable events for the [selection, choose one of: *minimum, basic, detailed, not specified*] level of audit; and
- c) [assignment: *other specifically defined auditable events*].

7.2.5.2 FAU_GEN.1.2

The TSF shall record within each audit record at least the following information:

- a) Date and time of the event, type of event, subject identity (if applicable), and the outcome (success or failure) of the event; and
- b) For each audit event type, based on the auditable event definitions of the functional components included in the PP/ST, [assignment: *other audit relevant information*].

7.2.6 FAU_GEN.2 User identity association

Hierarchical to: No other components.

Dependencies: FAU_GEN.1 Audit data generation

FIA_UID.1 Timing of identification

7.2.6.1 FAU_GEN.2.1

For audit events resulting from actions of identified users, the TSF shall be able to associate each auditable event with the identity of the user that caused the event.

7.3 Security audit analysis (FAU_SAA)

7.3.1 Family Behaviour

This family defines requirements for automated means that analyse system activity and audit data looking for possible or real security violations. This analysis may work in support of intrusion detection, or automatic response to a potential security violation.

The actions to be taken based on the detection can be specified using the Security audit automatic response (FAU_ARP) family as desired.

7.3.2 Component levelling

In FAU_SAA.1 Potential violation analysis, basic threshold detection on the basis of a fixed rule set is required.

In FAU_SAA.2 Profile based anomaly detection, the TSF maintains individual profiles of system usage, where a profile represents the historical patterns of usage performed by members of the profile target group. A profile target group refers to a group of one or more individuals (e.g. a single user, users who share a group ID or

group account, users who operate under an assigned role, users of an entire system or network node) who interact with the TSF. Each member of a profile target group is assigned an individual suspicion rating that represents how well that member's current activity corresponds to the established patterns of usage represented in the profile. This analysis can be performed at runtime or during a post-collection batch-mode analysis.

In FAU_SAA.3 Simple attack heuristics, the TSF shall be able to detect the occurrence of signature events that represent a significant threat to enforcement of the SFRs. This search for signature events may occur in real-time or during a post-collection batch-mode analysis.

In FAU_SAA.4 Complex attack heuristics, the TSF shall be able to represent and detect multi-step intrusion scenarios. The TSF is able to compare system events (possibly performed by multiple individuals) against event sequences known to represent entire intrusion scenarios. The TSF shall be able to indicate when a signature event or event sequence is found that indicates a potential violation of the enforcement of the SFRs.

7.3.3 Management of FAU_SAA.1

The following actions could be considered for the management functions in FMT:

- a) maintenance of the rules by (adding, modifying, deletion) of rules from the set of rules.

7.3.4 Management of FAU_SAA.2

The following actions could be considered for the management functions in FMT:

- a) maintenance (deletion, modification, addition) of the group of users in the profile target group.

7.3.5 Management of FAU_SAA.3

The following actions could be considered for the management functions in FMT:

- a) maintenance (deletion, modification, addition) of the subset of system events.

7.3.6 Management of FAU_SAA.4

The following actions could be considered for the management functions in FMT:

- a) maintenance (deletion, modification, addition) of the subset of system events;
- b) maintenance (deletion, modification, addition) of the set of sequence of system events.

7.3.7 Audit of FAU_SAA.1, FAU_SAA.2, FAU_SAA.3, FAU_SAA.4

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: Enabling and disabling of any of the analysis mechanisms;
- b) Minimal: Automated responses performed by the tool.

7.3.8 FAU_SAA.1 Potential violation analysis

Hierarchical to: No other components.

Dependencies: FAU_GEN.1 Audit data generation

7.3.8.1 FAU_SAA.1.1

The TSF shall be able to apply a set of rules in monitoring the audited events and based upon these rules indicate a potential violation of the enforcement of the SFRs.

7.3.8.2 FAU_SAA.1.2

The TSF shall enforce the following rules for monitoring audited events:

- a) Accumulation or combination of [assignment: *subset of defined auditable events*] known to indicate a potential security violation;
- b) [assignment: *any other rules*].

7.3.9 FAU_SAA.2 Profile based anomaly detection

Hierarchical to: No other components.

Dependencies: FIA_UID.1 Timing of identification

7.3.9.1 FAU_SAA.2.1

The TSF shall be able to maintain profiles of system usage, where an individual profile represents the historical patterns of usage performed by the member(s) of [assignment: *the profile target group*].

7.3.9.2 FAU_SAA.2.2

The TSF shall be able to maintain a suspicion rating associated with each user whose activity is recorded in a profile, where the suspicion rating represents the degree to which the user's current activity is found inconsistent with the established patterns of usage represented in the profile.

7.3.9.3 FAU_SAA.2.3

The TSF shall be able to indicate a possible violation of the enforcement of the SFRs when a user's suspicion rating exceeds the following threshold conditions [assignment: *conditions under which anomalous activity is reported by the TSF*].

7.3.10 FAU_SAA.3 Simple attack heuristics

Hierarchical to: No other components.

Dependencies: No dependencies.

7.3.10.1 FAU_SAA.3.1

The TSF shall be able to maintain an internal representation of the following signature events [assignment: *a subset of system events*] that may indicate a violation of the enforcement of the SFRs.

7.3.10.2 FAU_SAA.3.2

The TSF shall be able to compare the signature events against the record of system activity discernible from an examination of [assignment: *the information to be used to determine system activity*].

7.3.10.3 FAU_SAA.3.3

The TSF shall be able to indicate a potential violation of the enforcement of the SFRs when a system event is found to match a signature event that indicates a potential violation of the enforcement of the SFRs.

7.3.11 FAU_SAA.4 Complex attack heuristics

Hierarchical to: FAU_SAA.3 Simple attack heuristics

Dependencies: No dependencies.

7.3.11.1 FAU_SAA.4.1

The TSF shall be able to maintain an internal representation of the following **event sequences of known intrusion scenarios** [assignment: *list of sequences of system events whose occurrence are representative of known penetration scenarios*] and the following signature events [assignment: *a subset of system events*] that may indicate a **potential** violation of the enforcement of the SFRs.

7.3.11.2 FAU_SAA.4.2

The TSF shall be able to compare the signature events **and event sequences** against the record of system activity discernible from an examination of [assignment: *the information to be used to determine system activity*].

7.3.11.3 FAU_SAA.4.3

The TSF shall be able to indicate a potential violation of the enforcement of the SFRs when system **activity** is found to match a signature event **or event sequence** that indicates a potential violation of the enforcement of the SFRs.

7.4 Security audit review (FAU_SAR)

7.4.1 Family Behaviour

This family defines the requirements for audit tools that should be available to authorised users to assist in the review of audit data.

7.4.2 Component levelling

FAU_SAR.1 Audit review, provides the capability to read information from the audit records.

FAU_SAR.2 Restricted audit review, requires that there are no other users except those that have been identified in FAU_SAR.1 Audit review that can read the information.

FAU_SAR.3 Selectable audit review, requires audit review tools to select the audit data to be reviewed based on criteria.

7.4.3 Management of FAU_SAR.1

The following actions could be considered for the management functions in FMT:

- a) maintenance (deletion, modification, addition) of the group of users with read access right to the audit records.

7.4.4 Management of FAU_SAR.2, FAU_SAR.3

There are no management activities foreseen.

7.4.5 Audit of FAU_SAR.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Basic: Reading of information from the audit records.

7.4.6 Audit of FAU_SAR.2

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Basic: Unsuccessful attempts to read information from the audit records.

7.4.7 Audit of FAU_SAR.3

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Detailed: the parameters used for the viewing.

7.4.8 FAU_SAR.1 Audit review

Hierarchical to: No other components.

Dependencies: FAU_GEN.1 Audit data generation

7.4.8.1 FAU_SAR.1.1

The TSF shall provide [assignment: *authorised users*] with the capability to read [assignment: *list of audit information*] from the audit records.

7.4.8.2 FAU_SAR.1.2

The TSF shall provide the audit records in a manner suitable for the user to interpret the information.

7.4.9 FAU_SAR.2 Restricted audit review

Hierarchical to: No other components.

Dependencies: FAU_SAR.1 Audit review

7.4.9.1 FAU_SAR.2.1

The TSF shall prohibit all users read access to the audit records, except those users that have been granted explicit read-access.

7.4.10 FAU_SAR.3 Selectable audit review

Hierarchical to: No other components.

Dependencies: FAU_SAR.1 Audit review

7.4.10.1 FAU_SAR.3.1

The TSF shall provide the ability to apply [assignment: *methods of selection and/or ordering*] of audit data based on [assignment: *criteria with logical relations*].

7.5 Security audit event selection (FAU_SEL)

7.5.1 Family Behaviour

This family defines requirements to select the set of events to be audited during TOE operation from the set of all auditable events.

7.5.2 Component levelling

FAU_SEL.1 Selective audit, requires the ability to select the set of events to be audited from the set of all auditable events, identified in FAU_GEN.1 Audit data generation, based upon attributes to be specified by the PP/ST author.

7.5.3 Management of FAU_SEL.1

The following actions could be considered for the management functions in FMT:

- a) maintenance of the rights to view/modify the audit events.

7.5.4 Audit of FAU_SEL.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: All modifications to the audit configuration that occur while the audit collection functions are operating.

7.5.5 FAU_SEL.1 Selective audit

Hierarchical to: No other components.

Dependencies: FAU_GEN.1 Audit data generation

FMT_MTD.1 Management of TSF data

7.5.5.1 FAU_SEL.1.1

The TSF shall be able to select the set of events to be audited from the set of all auditable events based on the following attributes:

- a) **[selection: *object identity, user identity, subject identity, host identity, event type*]**
- b) **[assignment: *list of additional attributes that audit selectivity is based upon*]**

7.6 Security audit event storage (FAU_STG)

7.6.1 Family Behaviour

This family defines the requirements for the TSF to be able to create and maintain a secure audit trail. Stored audit records refers to those records within the audit trail, and not the audit records that have been retrieved (to temporary storage) through selection.

7.6.2 Component levelling

At FAU_STG.1 Protected audit trail storage, requirements are placed on the audit trail. It will be protected from unauthorised deletion and/or modification.

FAU_STG.2 Guarantees of audit data availability, specifies the guarantees that the TSF maintains over the audit data given the occurrence of an undesired condition.

FAU_STG.3 Action in case of possible audit data loss, specifies actions to be taken if a threshold on the audit trail is exceeded.

FAU_STG.4 Prevention of audit data loss, specifies actions in case the audit trail is full.

7.6.3 Management of FAU_STG.1

There are no management activities foreseen.

7.6.4 Management of FAU_STG.2

The following actions could be considered for the management functions in FMT:

- a) maintenance of the parameters that control the audit storage capability.

7.6.5 Management of FAU_STG.3

The following actions could be considered for the management functions in FMT:

- a) maintenance of the threshold;
- b) maintenance (deletion, modification, addition) of actions to be taken in case of imminent audit storage failure.

7.6.6 Management of FAU_STG.4

The following actions could be considered for the management functions in FMT:

- a) maintenance (deletion, modification, addition) of actions to be taken in case of audit storage failure.

7.6.7 Audit of FAU_STG.1, FAU_STG.2

There are no auditable events foreseen.

7.6.8 Audit of FAU_STG.3

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Basic: Actions taken due to exceeding of a threshold.

7.6.9 Audit of FAU_STG.4

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Basic: Actions taken due to the audit storage failure.

7.6.10 FAU_STG.1 Protected audit trail storage

Hierarchical to: No other components.

Dependencies: FAU_GEN.1 Audit data generation

7.6.10.1 FAU_STG.1.1

The TSF shall protect the stored audit records in the audit trail from unauthorised deletion.

7.6.10.2 FAU_STG.1.2

The TSF shall be able to [selection, choose one of: *prevent*, *detect*] unauthorised modifications to the stored audit records in the audit trail.

7.6.11 FAU_STG.2 Guarantees of audit data availability

Hierarchical to: FAU_STG.1 Protected audit trail storage

Dependencies: FAU_GEN.1 Audit data generation

7.6.11.1 FAU_STG.2.1

The TSF shall protect the stored audit records in the audit trail from unauthorised deletion.

7.6.11.2 FAU_STG.2.2

The TSF shall be able to [selection, choose one of: *prevent*, *detect*] unauthorised modifications to the stored audit records in the audit trail.

7.6.11.3 FAU_STG.2.3

The TSF shall ensure that [assignment: *metric for saving audit records*] stored audit records will be maintained when the following conditions occur: [selection: *audit storage exhaustion, failure, attack*].

7.6.12 FAU_STG.3 Action in case of possible audit data loss

Hierarchical to: No other components.

Dependencies: FAU_STG.1 Protected audit trail storage

7.6.12.1 FAU_STG.3.1

The TSF shall [assignment: *actions to be taken in case of possible audit storage failure*] if the audit trail exceeds [assignment: *pre-defined limit*].

7.6.13 FAU_STG.4 Prevention of audit data loss

Hierarchical to: FAU_STG.3 Action in case of possible audit data loss

Dependencies: FAU_STG.1 Protected audit trail storage

7.6.13.1 FAU_STG.4.1

The TSF shall [selection, choose one of: *“ignore audited events”*, *“prevent audited events, except those taken by the authorised user with special rights”*, *“overwrite the oldest stored audit records”*] and [assignment: *other actions to be taken in case of audit storage failure*] if the audit trail is full.

8 Class FCO: Communication

This class provides two families specifically concerned with assuring the identity of a party participating in a data exchange. These families are related to assuring the identity of the originator of transmitted information (proof of origin) and assuring the identity of the recipient of transmitted information (proof of receipt). These families ensure that an originator cannot deny having sent the message, nor can the recipient deny having received it.

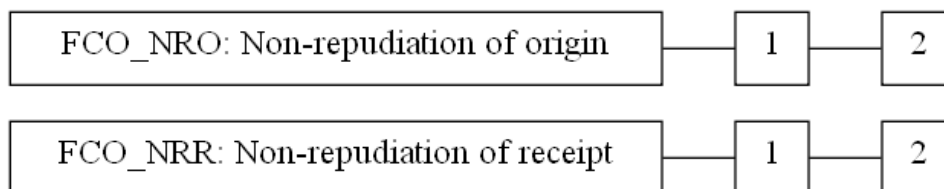


Figure 8 — FCO: Communication class decomposition

8.1 Non-repudiation of origin (FCO_NRO)

8.1.1 Family Behaviour

Non-repudiation of origin ensures that the originator of information cannot successfully deny having sent the information. This family requires that the TSF provide a method to ensure that a subject that receives information during a data exchange is provided with evidence of the origin of the information. This evidence can then be verified by either this subject or other subjects.

8.1.2 Component levelling

FCO_NRO.1 Selective proof of origin, requires the TSF to provide subjects with the capability to request evidence of the origin of information.

FCO_NRO.2 Enforced proof of origin, requires that the TSF always generate evidence of origin for transmitted information.

8.1.3 Management of FCO_NRO.1, FCO_NRO.2

The following actions could be considered for the management functions in FMT:

- a) The management of changes to information types, fields, originator attributes and recipients of evidence.

8.1.4 Audit of FCO_NRO.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: The identity of the user who requested that evidence of origin would be generated.
- b) Minimal: The invocation of the non-repudiation service.
- c) Basic: Identification of the information, the destination, and a copy of the evidence provided.
- d) Detailed: The identity of the user who requested a verification of the evidence.

8.1.5 Audit of FCO_NRO.2

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: The invocation of the non-repudiation service.
- b) Basic: Identification of the information, the destination, and a copy of the evidence provided.
- c) Detailed: The identity of the user who requested a verification of the evidence.

8.1.6 FCO_NRO.1 Selective proof of origin

Hierarchical to: No other components.

Dependencies: FIA_UID.1 Timing of identification

8.1.6.1 FCO_NRO.1.1

The TSF shall be able to generate evidence of origin for transmitted [assignment: *list of information types*] at the request of the [selection: *originator, recipient, [assignment: list of third parties]*].

8.1.6.2 FCO_NRO.1.2

The TSF shall be able to relate the [assignment: *list of attributes*] of the originator of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.

8.1.6.3 FCO_NRO.1.3

The TSF shall provide a capability to verify the evidence of origin of information to [selection: *originator, recipient, [assignment: list of third parties]*] given [assignment: *limitations on the evidence of origin*].

8.1.7 FCO_NRO.2 Enforced proof of origin

Hierarchical to: FCO_NRO.1 Selective proof of origin

Dependencies: FIA_UID.1 Timing of identification

8.1.7.1 FCO_NRO.2.1

The TSF shall **enforce the generation of** evidence of origin for transmitted [assignment: *list of information types*] at **all times**.

8.1.7.2 FCO_NRO.2.2

The TSF shall be able to relate the [assignment: *list of attributes*] of the originator of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.

8.1.7.3 FCO_NRO.2.3

The TSF shall provide a capability to verify the evidence of origin of information to [selection: *originator, recipient, [assignment: list of third parties]*] given [assignment: *limitations on the evidence of origin*].

8.2 Non-repudiation of receipt (FCO_NRR)

8.2.1 Family Behaviour

Non-repudiation of receipt ensures that the recipient of information cannot successfully deny receiving the information. This family requires that the TSF provide a method to ensure that a subject that transmits information during a data exchange is provided with evidence of receipt of the information. This evidence can then be verified by either this subject or other subjects.

8.2.2 Component levelling

FCO_NRR.1 Selective proof of receipt, requires the TSF to provide subjects with a capability to request evidence of the receipt of information.

FCO_NRR.2 Enforced proof of receipt, requires that the TSF always generate evidence of receipt for received information.

8.2.3 Management of FCO_NRR.1, FCO_NRR.2

The following actions could be considered for the management functions in FMT:

- a) The management of changes to information types, fields, originator attributes and third parties recipients of evidence.

8.2.4 Audit of FCO_NRR.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: The identity of the user who requested that evidence of receipt would be generated.
- b) Minimal: The invocation of the non-repudiation service.
- c) Basic: Identification of the information, the destination, and a copy of the evidence provided.
- d) Detailed: The identity of the user who requested a verification of the evidence.

8.2.5 Audit of FCO_NRR.2

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: The invocation of the non-repudiation service.
- b) Basic: Identification of the information, the destination, and a copy of the evidence provided.
- c) Detailed: The identity of the user who requested a verification of the evidence.

8.2.6 FCO_NRR.1 Selective proof of receipt

Hierarchical to: No other components.

Dependencies: FIA_UID.1 Timing of identification

8.2.6.1 FCO_NRR.1.1

The TSF shall be able to generate evidence of receipt for received [assignment: list of information types] at the request of the [selection: originator, recipient, [assignment: list of third parties]].

8.2.6.2 FCO_NRR.1.2

The TSF shall be able to relate the [assignment: *list of attributes*] of the recipient of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.

8.2.6.3 FCO_NRR.1.3

The TSF shall provide a capability to verify the evidence of receipt of information to [selection: *originator, recipient, [assignment: list of third parties]*] given [assignment: *limitations on the evidence of receipt*].

8.2.7 FCO_NRR.2 Enforced proof of receipt

Hierarchical to: FCO_NRR.1 Selective proof of receipt

Dependencies: FIA_UID.1 Timing of identification

8.2.7.1 FCO_NRR.2.1

The TSF shall **enforce the generation of** evidence of receipt for received [assignment: *list of information types*] at **all times**.

8.2.7.2 FCO_NRR.2.2

The TSF shall be able to relate the [assignment: *list of attributes*] of the recipient of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.

8.2.7.3 FCO_NRR.2.3

The TSF shall provide a capability to verify the evidence of receipt of information to [selection: *originator, recipient, [assignment: list of third parties]*] given [assignment: *limitations on the evidence of receipt*].

9 Class FCS: Cryptographic support

The TSF may employ cryptographic functionality to help satisfy several high-level security objectives. These include (but are not limited to): identification and authentication, non-repudiation, trusted path, trusted channel and data separation. This class is used when the TOE implements cryptographic functions, the implementation of which could be in hardware, firmware and/or software.

The FCS: Cryptographic support class is composed of two families: Cryptographic key management (FCS_CKM) and Cryptographic operation (FCS_COP). The Cryptographic key management (FCS_CKM) family addresses the management aspects of cryptographic keys, while the Cryptographic operation (FCS_COP) family is concerned with the operational use of those cryptographic keys.

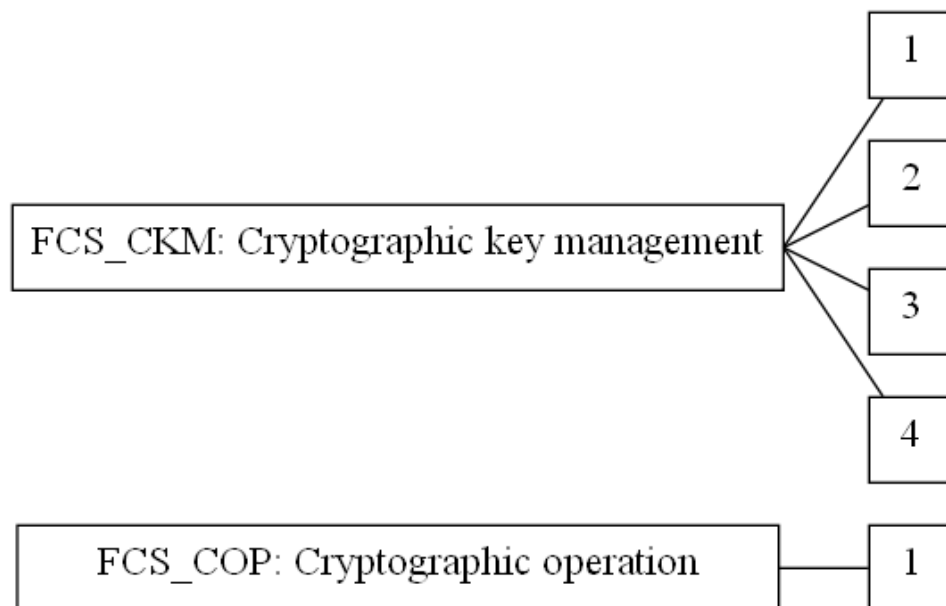


Figure 9 — FCS: Cryptographic support class decomposition

9.1 Cryptographic key management (FCS_CKM)

9.1.1 Family Behaviour

Cryptographic keys must be managed throughout their life cycle. This family is intended to support that lifecycle and consequently defines requirements for the following activities: cryptographic key generation, cryptographic key distribution, cryptographic key access and cryptographic key destruction. This family should be included whenever there are functional requirements for the management of cryptographic keys.

9.1.2 Component levelling

FCS_CKM.1 Cryptographic key generation, requires cryptographic keys to be generated in accordance with a specified algorithm and key sizes which can be based on an assigned standard.

FCS_CKM.2 Cryptographic key distribution, requires cryptographic keys to be distributed in accordance with a specified distribution method which can be based on an assigned standard.

FCS_CKM.3 Cryptographic key access, requires access to cryptographic keys to be performed in accordance with a specified access method which can be based on an assigned standard.

FCS_CKM.4 Cryptographic key destruction, requires cryptographic keys to be destroyed in accordance with a specified destruction method which can be based on an assigned standard.

9.1.3 Management of FCS_CKM.1, FCS_CKM.2, FCS_CKM.3, FCS_CKM.4

There are no management activities foreseen.

9.1.4 Audit of FCS_CKM.1, FCS_CKM.2, FCS_CKM.3, FCS_CKM.4

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: Success and failure of the activity.
- b) Basic: The object attribute(s), and object value(s) excluding any sensitive information (e.g. secret or private keys).

9.1.5 FCS_CKM.1 Cryptographic key generation

Hierarchical to: No other components.

Dependencies: [FCS_CKM.2 Cryptographic key distribution, or
FCS_COP.1 Cryptographic operation]
FCS_CKM.4 Cryptographic key destruction

9.1.5.1 FCS_CKM.1.1

The TSF shall generate cryptographic keys in accordance with a specified cryptographic key generation algorithm [assignment: *cryptographic key generation algorithm*] and specified cryptographic key sizes [assignment: *cryptographic key sizes*] that meet the following: [assignment: *list of standards*].

9.1.6 FCS_CKM.2 Cryptographic key distribution

Hierarchical to: No other components.

Dependencies: [FDP_ITC.1 Import of user data without security attributes, or
FDP_ITC.2 Import of user data with security attributes, or
FCS_CKM.1 Cryptographic key generation]
FCS_CKM.4 Cryptographic key destruction

9.1.6.1 FCS_CKM.2.1

The TSF shall distribute cryptographic keys in accordance with a specified cryptographic key distribution method [assignment: *cryptographic key distribution method*] that meets the following: [assignment: *list of standards*].

9.1.7 FCS_CKM.3 Cryptographic key access

Hierarchical to: No other components.

Dependencies: [FDP_ITC.1 Import of user data without security attributes, or
FDP_ITC.2 Import of user data with security attributes, or
FCS_CKM.1 Cryptographic key generation]
FCS_CKM.4 Cryptographic key destruction

9.1.7.1 FCS_CKM.3.1

The TSF shall perform [assignment: *type of cryptographic key access*] in accordance with a specified cryptographic key access method [assignment: *cryptographic key access method*] that meets the following: [assignment: *list of standards*].

9.1.8 FCS_CKM.4 Cryptographic key destruction

Hierarchical to: No other components.

Dependencies: [FDP_ITC.1 Import of user data without security attributes, or
FDP_ITC.2 Import of user data with security attributes, or
FCS_CKM.1 Cryptographic key generation]

9.1.8.1 FCS_CKM.4.1

The TSF shall destroy cryptographic keys in accordance with a specified cryptographic key destruction method [assignment: *cryptographic key destruction method*] that meets the following: [assignment: *list of standards*].

9.2 Cryptographic operation (FCS_COP)

9.2.1 Family Behaviour

In order for a cryptographic operation to function correctly, the operation must be performed in accordance with a specified algorithm and with a cryptographic key of a specified size. This family should be included whenever there are requirements for cryptographic operations to be performed.

Typical cryptographic operations include data encryption and/or decryption, digital signature generation and/or verification, cryptographic checksum generation for integrity and/or verification of checksum, secure hash (message digest), cryptographic key encryption and/or decryption, and cryptographic key agreement.

9.2.2 Component levelling

FCS_COP.1 Cryptographic operation, requires a cryptographic operation to be performed in accordance with a specified algorithm and with a cryptographic key of specified sizes. The specified algorithm and cryptographic key sizes can be based on an assigned standard.

9.2.3 Management of FCS_COP.1

There are no management activities foreseen.

9.2.4 Audit of FCS_COP.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

- a) Minimal: Success and failure, and the type of cryptographic operation.
- b) Basic: Any applicable cryptographic mode(s) of operation, subject attributes and object attributes.