

BITS Product Certification Program



Common Criteria Master Security Requirements

Technical Contact Information

If further information regarding technical content is required, please contact:

BITSlab@fsround.org

Tel.: 202.289.4322

Fax: 202.289.3562

Document Feedback

If you have any comments (technical or otherwise) regarding this document, please send an email to BITSlab@fsround.org. Please include the document name along with your name, email address, telephone, and fax number, and include whether you would like to be contacted. *Please note: BITS will take all comments under advisement, but reserves the right to include or exclude suggested changes.*

Master Security Requirements – Document Version Control History

*Note: **Bold** in Version/Date column indicates a public release.*

Version	Date	Changes	Author	Reviewer
.1 Draft	12 Mar 02	Initial draft	Terrie L. Diaz, SAIC, Bob Williamson, SAIC	Terrie L. Diaz, SIAC Bob Williamson, SAIC Cynthia Reese, SAIC
.2 Draft	25 Mar 02	<ul style="list-style-type: none"> - Format - Feedback from initial review - Clarity and refinement of requirements 	Terrie L. Diaz, SAIC	

Version	Date	Changes	Author	Reviewer
.3 Draft	3 Apr 02	<ul style="list-style-type: none"> - Format of document - Introduction rewrite, including BITS Certification detail and industry language - Added Appendix A for reference to 2.5.3.1.1 	Laura Lundin, BITS	
.4 Draft	17 Apr 02	<ul style="list-style-type: none"> - Feedback from technical team review 	Terrie L. Diaz, SAIC	
.5 Draft	19 Apr 02	<ul style="list-style-type: none"> - Numbering update in requirements section - Re-apply CC formatting convention 	Terrie L. Diaz, SAIC	
.6 Draft	3 May 02	<ul style="list-style-type: none"> - Feedback from second technical team review 	Terrie L. Diaz, SAIC	Bob Williamson, SAIC
.7 Draft	16 May 02	<ul style="list-style-type: none"> - Final draft – responses to third technical team review 	Terrie L. Diaz, SAIC	
.8 Draft	20 Jun 02	<ul style="list-style-type: none"> - Responses to issues raised in teleconference 14 & 18 June 	Terrie L. Diaz, SAIC	
1.0	28 Oct 02	<ul style="list-style-type: none"> - FINAL VERSION 	Laura Lundin, BITS	The BITS Lab Governance Committee

Table of Contents

1	INTRODUCTION	1
1.1	OVERVIEW	1
1.2	COMMON CRITERIA STRUCTURE.....	1
1.3	BITS CC SECURITY REQUIREMENTS FRAMEWORK.....	2
1.4	BITS PRODUCT CERTIFICATION PROGRAM.....	5
1.5	CRITERIA MODEL.....	6
2	COMMON CRITERIA FUNCTIONAL REQUIREMENTS	8
2.1	CLASS FAU: SECURITY AUDIT	13
2.1.1	SECURITY AUDIT AUTOMATIC RESPONSE (FAU_ARP).....	13
2.1.2	SECURITY AUDIT DATA GENERATION (FAU_GEN).....	13
2.1.3	SECURITY AUDIT ANALYSIS (FAU_SAA).....	14
2.1.4	SECURITY AUDIT REVIEW (FAU_SAR).....	15
2.1.5	SECURITY AUDIT EVENT STORAGE (FAU_STG)	15
2.2	CLASS FCO: COMMUNICATION.....	16
2.2.1	NON-REPUDIATION OF ORIGIN (FCO_NRO)	16
2.3	CLASS FCS: CRYPTOGRAPHIC SUPPORT.....	17
2.3.1	CRYPTOGRAPHIC KEY MANAGEMENT (FCS_CKM).....	17
2.3.2	CRYPTOGRAPHIC OPERATION (FCS_COP).....	18
2.4	CLASS FDP: USER DATA PROTECTION	18
2.4.1	ACCESS CONTROL POLICY (FDP_ACC)	18
2.4.2	ACCESS CONTROL FUNCTIONS (FDP_ACF).....	19
2.4.3	DATA AUTHENTICATION (FDP_DAU).....	20
2.4.4	INTERNAL TOE TRANSFER (FDP_ITT).....	20
2.4.5	RESIDUAL INFORMATION PROTECTION (FDP_RIP)	20
2.4.6	STORED DATA INTEGRITY (FDP_SDI).....	21
2.4.7	INTER-TSF USER DATA CONFIDENTIALITY TRANSFER PROTECTION (FDP_UCT)	21
2.4.8	INTER-TSF USER DATA INTEGRITY TRANSFER PROTECTION (FDP_UIT).....	21
2.5	CLASS FIA: IDENTIFICATION AND AUTHENTICATION	22
2.5.1	AUTHENTICATION FAILURES (FIA_AFL).....	22
2.5.2	USER ATTRIBUTE DEFINITION (FIA_ATD)	22
2.5.3	SPECIFICATION OF SECRETS (FIA_SOS).....	22
2.5.4	USER AUTHENTICATION (FIA_UAU).....	24
2.5.5	USER IDENTIFICATION (FIA_UID).....	25
2.5.6	USER-SUBJECT BINDING (FIA_USB)	25
2.6	CLASS FMT: SECURITY MANAGEMENT.....	25
2.6.1	MANAGEMENT OF FUNCTIONS IN TSF (FMT_MOF).....	26
2.6.2	MANAGEMENT OF SECURITY ATTRIBUTES (FMT_MSA).....	26
2.6.3	MANAGEMENT OF TSF DATA (FMT_MTD).....	27
2.6.4	REVOCATION (FMT_REV).....	27
2.6.5	SECURITY ATTRIBUTE EXPIRATION (FMT_SAE)	28
2.6.6	SECURITY MANAGEMENT ROLES (FMT_SMR).....	28
2.7	CLASS FPR: PRIVACY	29
2.7.1	UNOBSERVABILITY (FPR_UNO).....	29
2.8	CLASS FPT: PROTECTION OF THE TSF	29
2.8.1	UNDERLYING ABSTRACT MACHINE TEST (FPT_AMT).....	29

2.8.2	FAIL SECURE (FPT_FLS).....	29
2.8.3	CONFIDENTIALITY OF EXPORTED TSF DATA (FPT_ITC)	29
2.8.4	INTEGRITY OF EXPORTED TSF DATA (FPT_ITI).....	30
2.8.5	INTERNAL TOE TSF DATA TRANSFER (FPT_ITT).....	30
2.8.6	TRUSTED RECOVERY (FPT_RCV).....	31
2.8.7	REPLAY DETECTION (FPT_RPL).....	32
2.8.8	REFERENCE MEDIATION (FPT_RVM).....	32
2.8.9	PROTECTION OF THE TSF (FPT_SEP).....	32
2.8.10	TIME STAMPS (FPT_STM).....	33
2.8.11	INTERNAL TOE TSF DATA REPLICATION CONSISTENCY (FPT_TRC).....	33
2.8.12	TSF SELF-TEST (FPT_TST).....	33
2.9	CLASS FRU: RESOURCE UTILIZATION	34
2.9.1	FAULT TOLERANCE (FRU_FLT)	34
2.9.2	PRIORITY OF SERVICE (FRU_PRS).....	34
2.10	CLASS IDS: IDS COMPONENT REQUIREMENTS (BITS).....	34
2.10.1	ANALYZER ANALYSIS (IDS_ANL)	34
2.10.2	SYSTEM ANONYMITY (IDS_ANO).....	35
2.10.3	ANALYZER REACT ALARM (IDS_RCT).....	35
2.10.4	RESTRICTED DATA REVIEW (IDS_RDR).....	35
2.10.5	SYSTEM DATA COLLECTION (IDS_SDC)	36
2.10.6	GUARANTEE OF SYSTEM DATA AVAILABILITY (IDS_STG).....	38
2.10.7	SYSTEM SESSION STATUS (IDS_SSS).....	38
2.11	CLASS FTA: TOE ACCESS	39
2.11.1	LIMITATION ON MULTIPLE CONCURRENT SESSIONS (FTA_MCS).....	39
2.11.2	SESSION LOCKING (FTA_SSL)	39
2.11.3	TOE ACCESS BANNERS (FTA_TAB)	39
2.11.4	TOE ACCESS HISTORY (FTA_TAH).....	39
2.11.5	TOE SESSION ESTABLISHMENT (FTA_TSE)	40
2.12	CLASS FTP: TRUSTED PATH/CHANNELS	40
2.12.1	INTER-TSF TRUSTED CHANNEL (FTP_ITC).....	40
2.12.2	TRUSTED PATH (FTP_TRP).....	41
APPENDIX A: INDUSTRY STANDARDS.....		42
APPENDIX B: GLOSSARY OF TERMS.....		43
APPENDIX C: BITS PRODUCT CERTIFICATION PROGRAM OVERVIEW.....		47

1 Introduction

1.1 Overview

The Common Criteria – Master Security Requirements (CC-MSR) defines a set of functional security requirements for information technology (IT) products used by the financial services industry. The security criteria identified in the CC-MSR have been developed through the collaborative efforts of BITS member representatives from the financial services industry, key technology vendors, and other stakeholders. These criteria have been specified in this document within the context of ISO15048, the Common Criteria (CC). The CC-MSR applies to many different IT product categories and will support the technical analysis of products for the ***BITS Tested Mark*** product certification.

The CC-MSR forms the basis for the creation of BITS Product Class Security Packages. The BITS Product Class Security Packages are designed to be used within security specifications for IT products and systems articulated by financial service providers, and by technology vendors providing IT products to financial service providers.

1.2 Common Criteria Structure

The CC provides an internationally recognized syntax for specifying security functional and assurance requirements, a prescribed method for documenting the specification whereby specifications are comparable, a method for specifying that an IT product meets security functional and assurance requirements, and an internationally recognized method for evaluating IT products against their security specification.

The CC defines three types of requirement constructs: Protection Profiles, Security Targets, and Security Packages.

Protection Profiles – The CC provides consumers with an implementation-independent structure termed the Protection Profile (PP), in which to express their special requirements for IT security measures for a class of products. A PP is intended to be reusable and to define requirements that are known to be useful and effective in meeting the identified objectives, both for functions and assurance.

The PP is intended to be written by IT user groups to specify a class of product implemented in a specific environment to meet specific security objectives and to obviate identified threats. PPs can include a set of security functional requirements (SFRs) either from a Security Package for the specific class of product or stated explicitly. The PP also contains a set of security assurance requirements either from an established package known as Evaluation Assurance Levels (EALs), or stated explicitly. The assurance requirements articulated in the PP are commensurate with the environment, security objectives, and threats identified.

Security Targets – A Security Target (ST) is written by the product vendor and is the security specification for a particular product referred to as the Target of Evaluation (TOE). An ST contains a set of security requirements that may be made by reference to a PP, directly by reference to functional or assurance packages, or stated explicitly.

Security Packages – A Security Package (SP) permits the expression of a set of functional and/or assurance requirements that meet an identifiable subset of security objectives. An SP is intended to be reusable and to define requirements that are known to be useful and effective in meeting the identified objectives. An SP may be used in the construction of larger packages, PPs, and STs.

Common Criteria Evaluation – The claims made in each ST are validated by performing a third-party evaluation of a specific implementation by a Common Criteria Testing Laboratory (CCTL) certified by the government of the country in which the laboratory resides. In the U.S., the National Information Assurance Partnership (NIAP), a partnership with NIST and the NSA, uses the services of the National Voluntary Laboratory Accreditation Program (NVLAP) of NIST to certify CCTLs. Every CCTL is required to follow the same process when performing a CC evaluation.

For additional information on the Common Criteria program and structure, visit www.commoncriteria.org.

1.3 BITS CC Security Requirements Framework

Security features have been identified that outline the system attributes required to satisfy the minimum, baseline security needs of a typical financial services organization and to support its applications and infrastructure. The requirements presented in this document are

baseline in the sense they are to be used as a starting point and a benchmark against which the actual attributes of a specific product can be measured through a testing process. The concept of security packages is taken directly from the CC to provide a convenient method to specify a minimum set of SFRs for a specific category of IT product.

The framework of requirements is designed to be hierarchical, from defining the overall security attributes and features expected in the administration and operation of products, to the specific product class and related sub-class level features.

Requirements identified in the Administration and Operation section relate to the capabilities of the product itself to be secured (i.e. administrative interfaces, logging, authentication to the product, etc.). It is permissible for requirements outlined in this section to be fulfilled by the environment (underlying platform or supporting components as defined in boundaries of the test environment in the Security Target) when the TOE does not provide a required feature.

Requirements identified in the Product Class and Sub-class sections relate to the “security functionality” expected to be provided by this specific type of product. However, any product feature that does not support a security functional requirement is considered non-security product functionality and therefore would not be included within the Common Criteria syntax. Often, it is difficult to identify the difference between security features and non-security product functionality, especially when the product’s primary functionality is related to security. An example of product functionality that is not a security functional requirement is: “the product should integrate with third-party systems management tools in order to facilitate centralized proactive alert monitoring and administration simplicity/consistency, etc.”

The framework comprises the following elements:

Common Criteria – Master Security Requirements

- **(CC-MSR)** – This document defines the overall set of security requirements defined by financial institutions that can be required of all or specific classes of products. It identifies the requirements for the major attributes (e.g., system integrity) and functions (e.g., traffic filtering) of the product. This document serves as a reference document only and contains a catalog or superset of all of the SFRs from the various BITS packages.

Product Class Security Packages

- A broad range of products with similar functions are grouped into a Product Class. A Product Class could be all products providing network security or application access controls. Product Class Security Packages identify a minimum set of security requirements that are to be provided by any IT product that falls within the Product Class identified in a Class Security Package. Security requirements identified in a Product Class Security Package include requirements that relate to the administration and operation of the product and those security requirements applicable to the security functionality of that specific Product Class.

Product Sub-class Security Packages

- A Sub-class Security Package identifies common security requirements for a product type within a class of products. The Product Class from which a Product Sub-class inherits SFRs is referred to as the root Class for the specific Product Sub-class. For instance, within the class of products identified as “network security,” there may be many Sub-classes: firewalls, virtual private networks (VPNs), active content filters, etc. The firewall Product Sub-class then inherits all SFRs from its root Product Class, Network Security. For each Sub-class that demands security requirements to be articulated beyond the general requirements for a class of products, the security requirements for the Sub-class will be specified in a Sub-class Security Package and a root Product Class for the Sub-class will be identified. Every Sub-class Security Package inherits all security requirements from its root Product Class.

The combination of the security requirements identified in a Product Class Security Package including administration and operation requirements, product class and any applicable product sub-class requirements identifies the minimum “set” of security requirements for a product. For instance, in the example above, the minimum set of security requirements for all application filter firewalls is the set of all administration and operation requirements identified in the Network Security Package, all security requirements identified in the package for the Network Security class of products, and the requirements identified in the Applications Filter Firewall Sub-class section.

1.4 BITS Product Certification Program

The financial services industry has taken a leadership role in promoting and assuring the safe, sound, private and secure delivery of financial services. Through the **BITS Product Certification Program**, key players of the industry have created a vehicle for unbiased and professional facilities to test IT products against minimum-security criteria established by the industry. A ***BITS Tested Mark*** product certification is awarded to those products that meet the defined security criteria.

Technology vendors that wish to obtain a ***BITS Tested Mark*** product certification should include the BITS Security Package of requirements in the Security Target for the specific product/Target of Evaluation. The Security Target needs to be tested by an accredited Common Criteria Testing Lab and the lab must issue a statement of compliance with the BITS Security Package requirements.

If a product has already been through Common Criteria certification, the product can be submitted to a Common Criteria Testing Lab or an independent lab authorized by BITS for testing of those requirements that are included in the applicable BITS Security Package of requirements, but which were not present in the initial Common Criteria certification testing.

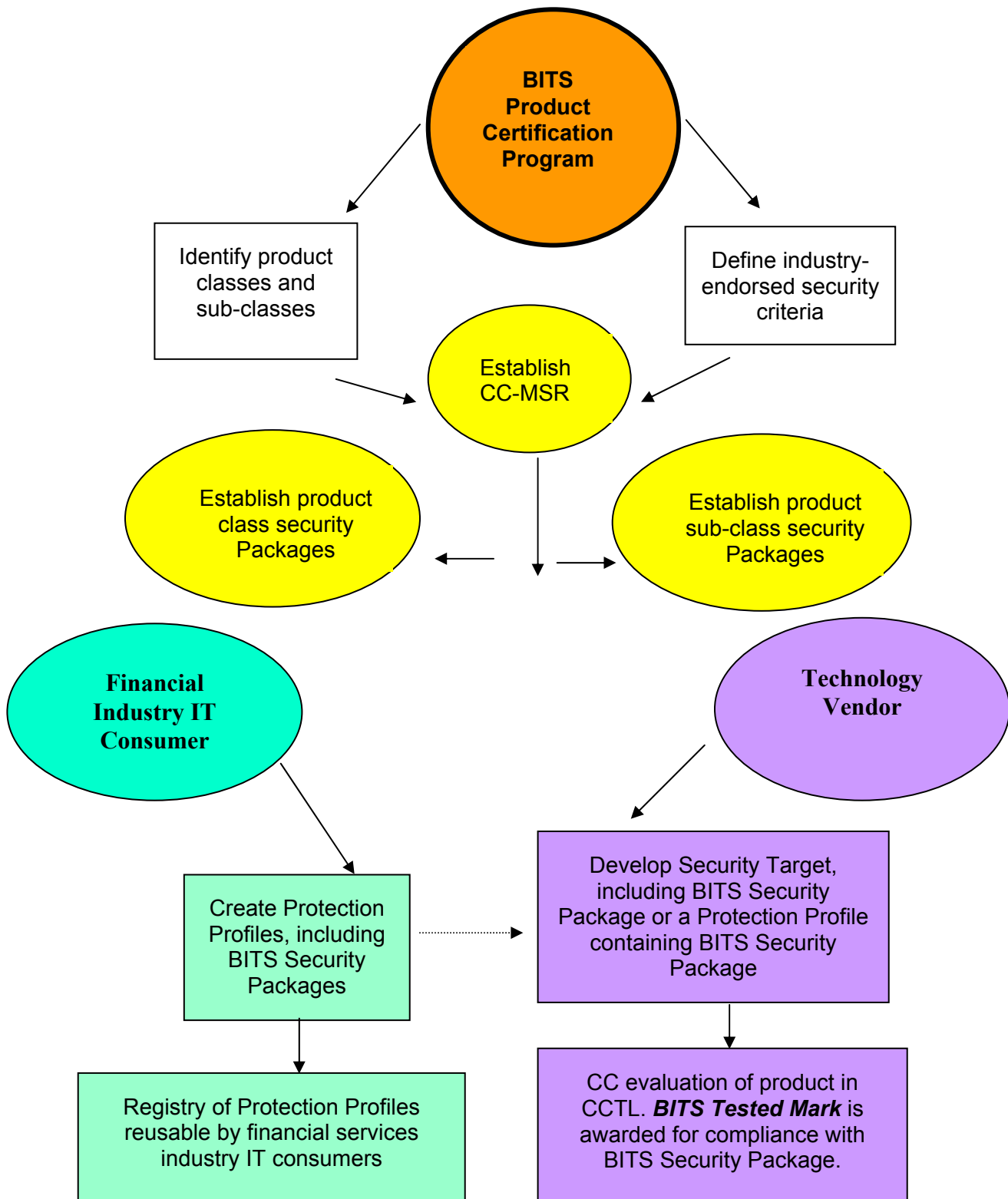
Unless otherwise noted, products are required to meet all criteria listed within a Package in order to obtain the ***BITS Tested Mark***. Certain criteria are identified within the relevant BITS Security Packages as “desired,” rather than “required.” In order to comply with the requirements necessary to achieve the ***BITS Tested Mark***, only required elements must be met. However, a product that is able to meet the desired criteria will be viewed favorably.

For more information about BITS, BITS members or the **BITS Product Certification Program** please visit www.BITSInfo.org.

1.5 Criteria Model

Figure 1 - The BITS CC Security Requirements Model shows the relationship between the different constructs described above. The model provides technology vendors with a succinct list of security requirements that are recognized by a wide spectrum of users in the financial services industry and that are necessary to achieve the ***BITS Tested Mark*** product certification. BITS-supported CC-MSR, Product Class, and Product Sub-class Security Packages can also be used to create a registry of Protection Profiles to help support industry-wide IT security criteria.

Figure 1 - The BITS CC Security Requirements Model



2 Common Criteria Functional Requirements

The Common Criteria (CC) security functional requirements (SFRs) are the refinement of the security objectives into security requirements for IT products. The CC presents security requirements under the distinct categories of functional requirements and assurance requirements. The CC-MSR does not address assurance requirements; however, they are briefly introduced in this section to provide some understanding of their role in CC security requirement specification.

Part 2 of the CC defines the CC SFRs. Examples of SFRs include requirements for identification, authentication, security audit, and non-repudiation of origin. Part 3 of the CC identifies security assurance requirements (SARs), just as Part 2 identified SFRs.

Security Assurance Requirements

For any set of SFRs specified, whether by a consumer or a vendor, the degree of assurance that the set of SFRs actually are provided can vary. The assurance requirements are levied on actions of the developer, on evidence produced and on the actions of the evaluator. Examples of assurance requirements include constraints on the rigor of the development process and requirements to search for and analyze the impact of potential security vulnerabilities.

The CC approaches the specification of assurances in SAR packages. Each SAR package identified is a super set of the previous SAR package in the level of assurance provided therefore Evaluation Assurance Levels (EAL) are typically expressed in terms of increasing levels of rigor.

Although this CC-MSR does not address SARs, all Protection Profiles and Security Targets written to be in compliance with security package requirements drawn from this CC-MSR must identify specific assurance requirements.

Security Functional Requirements

The SFRs can be derived from one of two sources. Either they are a statement of the security requirements that an IT product consumer has identified that are necessary for their business or mission, or they are a statement by a vendor of the security requirements that can be met by the security functions of a specific product.

The SFRs are organized by CC class. The CC permits four functional component operations to refine an SFR to make the SFR more specific

to the type of product or implementation required by the consumer. The four operations are assignment, refinement, selection, and iteration, to be performed on security functional requirements. The four operations are applied in the following manner:

- **Assignment:** Allows the specification of an identified parameter (indicated with bold)
- **Refinement:** Allows the addition of details (indicated with bold italics)
- **Selection:** Allows the specification of one or more elements from a list (indicated with underlined text)
- **Iteration:** Allows a component to be used more than once with varying operations (indicated by a letter in parentheses placed at the end of the element name)

The following table lists Security Functional Requirement components organized by CC functional security class.

Explicitly stated requirements have been developed to meet BITS specific requirements that were not available in the CC-MSR

Table 1 – Security Functional Requirements

Functional Security Class	Security Functional Requirement Components
Security audit (FAU)	FAU_ARP.1 - Security Alarms
	FAU_GEN.1 - Audit Data Generation
	FAU_GEN.2 - User Identity Association
	FAU_SAA.1 - Potential Violation Analysis
	FAU_SAR.1 - Audit Review
	FAU_SAR.2 - Restricted Audit Review
	FAU_SAR.3 - Selectable Audit Review
	FAU_STG.1 - Protected Audit Trail Storage
	FAU_STG.2 - Guarantees of Audit Data Availability
	FAU_STG.3 - Action In Case of Possible Audit Data Loss
Communications (FCO)	FAU_STG.4 - Prevention of Audit Data Loss
	FCO_NRO.2 - Enforced Proof of Origin
Cryptographic support (FCS)	FCO_NRR.2 - Enforce Proof of Receipt
	FCS_CKM.1 - Cryptographic Key Generation
	FCS_CKM.2 - Cryptographic Key Distribution

Functional Security Class	Security Functional Requirement Components
	FCS_CKM.3 - Cryptographic Key Access
	FCS_CKM.4 - Cryptographic Key Destruction
	FCS_COP.1 - Cryptographic Operation
User data protection (FDP)	FDP_ACC.2 - Complete Access Control
	FDP_ACF.1 - Security Attribute-Based Access Control
	FDP_DAU.2 - Data Authentication with Identification of Guarantor
	FDP_ITT.1 - Basic Internal Transfer Protection
	FDP_ITT.3 - Integrity Monitoring
	FDP_RIP.1 - Subset Residual Information Protection
	FDP_SDI.1 – Stored Data Integrity Monitoring
	FDP_UCT.1 - Basic Data Exchange Confidentiality
	FDP_UIT.1 - Data Exchange Integrity
	Identification and authentication (FIA)
FIA_ATD.1 - User Attribute Definition	
FIA_SOS.1 - Verification of Secrets	
FIA_SOS.2 - TSF Generation of Secrets	
FIA_UAU.1 - Timing of Authentication	
FIA_UAU.3 - Unforgeable Authentication	
FIA_UAU.5 - Multiple Authentication Mechanisms	
FIA_UAU.6 - Re-Authenticating	
FIA_UAU.7 - Protected Authentication Feedback	
FIA_UID.2 - User Identification Before Any Action	
FIA_USB.1 - User-Subject Binding	
Security management (FMT)	
	FMT_MSA.1 - Management of Security Attributes
	FMT_MSA.2 - Secure Security Attributes
	FMT_MSA.3 - Static Attribute Initialization
	FMT_MTD.1 - Management of TSF Data
	FMT_MTD.2 - Management Limits on TSF Data
	FMT_MTD.3 - Secure TSF Data
	FMT_REV.1 – Revocation
	FMT_SAE.1 - Time-Limited Authorization
	FMT_SMR.1 - Security Roles

Functional Security Class	Security Functional Requirement Components
Privacy (FPR)	FPR_UNO.4 - Authorized User Observability
Protection of the TSF (FPT)	FPT_AMT.1 - Abstract Machine Testing
	FPT_FLS.1 - Failure with Preservation of Secure State
	FPT_ITC.1 - Inter-TSF Confidentiality During Transmission
	FPT_ITI.1 - Inter-TSF Detection of Modification
	FPT_ITT.2 - TSF Data Transfer Separation
	FPT_ITT.3 - TSF Data Integrity Monitoring
	FPT_RCV.1 - Manual Recovery
	FPT_RCV.3 - Automated Recovery Without Undue Loss
	FPT_RCV.4 - Function Recovery
	FPT_RPL.1 - Replay Detection
	FPT_RVM.1 - Non-bypassability of the TSP
	FPT_SEP.1 - Domain Separation ¹
	FPT_STM.1 - Reliable Time Stamps
	FPT_TRC.1 – Internal TOE TSF Data Replication Consistency ²
FPT_TST.1 – Testing	
Resource Utilization (FRU)	FRU_FLT.1 – Fault Tolerance ³
	FRU_PRS.2 - Full Priority of Service ⁴
IDS Component (IDS)	IDS_ANL.1 – Analyzer Analysis (BITS) ⁵
	IDS_ANO.1 – System Anonymity ⁶
	IDS_RCT.1 – Analyzer React Alarm (BITS) ⁷
	IDS_RDR.1 – Restricted Data Review (BITS) ⁸

¹ This requirement was introduced in the Application Security Package.

² This requirement was introduced in the Application Security Package.

³ This requirement was introduced in Monitoring and IDS Package.

⁴ This requirement was introduced in the Monitoring and IDS Package.

⁵ This is an explicitly stated requirement that is unique to the IDS Product Package.

⁶ This is an explicitly stated requirement that is unique to the IDS Product Package.

⁷ This is an explicitly stated requirement that is unique to the IDS Product Package.

⁸ This is an explicitly stated requirement that is unique to the IDS Product Package.

Functional Security Class	Security Functional Requirement Components
	IDS_SDC.1 – System Data Collection (BITS) ⁹
	IDS_STG.1 – Guarantee of System Data Availability (BITS) ¹⁰
	IDS_STG.2 – Prevention of System Data Loss (BITS) ¹¹
	IDS_SSS.3 – System Session Status ¹²
TOE access (FTA)	FTA_MCS.1 - Basic Limitation on Multiple Concurrent Sessions
	FTA_SSL.3 - TSF-initiated Termination
	FTA_TAB.1 - Default TOE Access Banners
	FTA_TAH.1 -TOE Access History
	FTA_TSE.1 - TOE Session Establishment
Trusted path/channel (FTP)	FTP_ITC.1 - Inter-TSF Trusted Channel
	FTP_TRP.1 - Trusted Path

⁹ This is an explicitly stated requirement that is unique to the IDS Product Package.

¹⁰ This is an explicitly stated requirement that is unique to the IDS Product Package.

¹¹ This is an explicitly stated requirement that is unique to the IDS Product Package.

¹² This is an explicitly stated requirement that is unique to the IDS Product Package.

2.1 Class FAU: Security Audit

2.1.1 SECURITY AUDIT AUTOMATIC RESPONSE (FAU_ARP)

2.1.1.1 FAU_ARP.1 Security Alarms

2.1.1.1.1 FAU_ARP.1.1

The TSF shall **have the capability to generate a real-time alarm and/or send an email notification to the administrator** in the event that a potential security violation or audit log malfunction is detected.

2.1.2 SECURITY AUDIT DATA GENERATION (FAU_GEN)

2.1.2.1 FAU_GEN.1 Audit Data Generation

2.1.2.1.1 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 TSF functions and equipment;
- b) All auditable events for the minimal level of audit; and
- c) The following events:
 - **All sessions established**
 - **Failed user authentication attempts**
 - **Failed attempts to access resources**
 - **Administrator actions**
 - **Administrator disabling of audit logging**
 - **Changes to user's security profile and/or attributes**
 - **Changes to security profile and/or attributes of system interfaces**
 - **Changes in permission levels needed to access a resource**
 - **Changes to system security configuration**

- **Modifications to system software**
- **Changes to critical system resources**

2.1.2.1.2 FAU_GEN.1.2

The TSF shall record within each audit the following information, at a minimum:

- a) Date and time of the event, type of event, subject identity, 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:
 - **User ID**
 - **Host name of system generating the log record**
 - **Names of resources accessed**
 - **Host name of system that initiated the attempted event**

2.1.2.2 FAU_GEN.2 User Identity Association

2.1.2.2.1 FAU_GEN.2.1

The TSF shall be able to associate each auditable event with the identity of the user that caused the event.

2.1.3 SECURITY AUDIT ANALYSIS (FAU_SAA)

2.1.3.1 FAU_SAA.1 Potential Violation Analysis

2.1.3.1.1 FAU_SAA.1.1

The TSF shall apply a set of rules in monitoring the audited events and based upon these rules indicate a known or suspected violation of the TSP.

2.1.3.1.2 FAU_SAA.1.2

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

- a) Accumulation or combination of **administrator-specified set of auditable events** known to indicate a *known or suspected* security violation; and
- b) **No other rules**

2.1.4 SECURITY AUDIT REVIEW (FAU_SAR)

2.1.4.1 *FAU_SAR.1 Audit Review*

2.1.4.1.1 FAU_SAR.1.1

The TSF shall provide the **authorized administrator** with the capability to read, **retrieve, print, and copy the contents of the audit log** from the collected audit records *to a long-term storage device*.

2.1.4.1.2 FAU_SAR.1.2

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

2.1.4.2 *FAU_SAR.2 Restricted Audit Review*

2.1.4.2.1 FAU_SAR.2.1

The TSF shall prohibit all users *to read, write, modify, and/or delete* access to the audit records, except those users that have been granted explicit read, *write, modify, and/or delete* access.

2.1.4.3 *FAU_SAR.3 Selectable Audit Review*

2.1.4.3.1 FAU_SAR.3.1

The TSF shall provide the ability to perform **selective retrieval** of audit data based on **criteria with logical relations, such as a user ID and time-of-day or machine name and port-of-entry to perform functions such as producing reports and establishing audit trails**.

2.1.5 SECURITY AUDIT EVENT STORAGE (FAU_STG)

2.1.5.1 *FAU_STG.1 Protected Audit Trail Storage*

2.1.5.1.1 FAU_STG.1.1

The TSF shall protect the stored audit records from unauthorized deletion.

2.1.5.1.2 FAU_STG.1.2

The TSF shall be able to prevent modifications to the audit records.

2.1.5.2 *FAU_STG.2 Guarantees of audit data availability*

2.1.5.2.1 FAU_STG.2.1

The TSF shall protect the stored audit records from unauthorized deletion.

2.1.5.2.2 FAU_STG.2.2

The TSF shall be able to prevent *any* modifications to the audit records.

2.1.5.2.3 FAU_STG.2.3

The TSF shall ensure that **all** audit records will be maintained when the following conditions occur: audit storage exhaustion, failure, and through system restarts.

2.1.5.3 FAU_STG.3 Action in Case of Possible Audit Data Loss

2.1.5.3.1 FAU_STG.3.1

The TSF shall *have the capability to generate a real-time alarm and/or send an email notification to the administrator* if the audit trail exceeds **the storage capacity or there is a failure of the storage mechanism**.

2.1.5.4 FAU_STG.4 Prevention of Audit Data Loss

2.1.5.4.1 FAU_STG.4.1

The TSF shall prevent auditable events, except those taken by the authorized user with special rights and **provide the capability for the administrator to shut down or continue processing** if the audit trail is full.

2.2 Class FCO: Communication

2.2.1 NON-REPUDIATION OF ORIGIN (FCO_NRO)

2.2.1.1 FCO_NRO.2 Enforced proof of origin

2.2.1.1.1 FCO_NRO.2.1

The TSF shall enforce the generation of evidence of origin for transmitted **information from a user or another system that is being replicated** at all times.

2.2.1.1.2 FCO_NRO.2.2

The TSF shall be able to relate the **certificate** of the originator of the information, and the **digital signature and other characteristics such as date and time** of the information to which the evidence applies.

2.2.1.1.3 FCO_NRO.2.3

The TSF shall provide a capability to verify the evidence of origin of information to recipient, given **the originator's certificate is authentic**.

2.2.1.2 FCO_NRR.2 Enforced proof of receipt

2.2.1.2.1 FCO_NRR.2.1

The TSF shall enforce the generation of evidence of receipt for received information from a user or another system that is being replicated.

2.2.1.2.2 FCO_NRR.2.2

The TSF shall be able to relate the **certificate** of the recipient of the information, and the **digital signature** and other characteristics such as date and time of the information to which the evidence applies.

2.2.1.2.3 FCO_NRR.2.3

The TSF shall provide a capability to verify the evidence of receipt of information to originator given **the recipient's certificate is authentic**.

2.3 Class FCS: Cryptographic support

2.3.1 CRYPTOGRAPHIC KEY MANAGEMENT (FCS_CKM)

2.3.1.1 FCS_CKM.1 Cryptographic key generation

2.3.1.1.1 FCS_CKM.1.1

The TSF shall generate cryptographic keys in accordance with a specified cryptographic key generation algorithm **3DES, IDEA, RC4, RC5, or RIPEM** and specified cryptographic key sizes **1024 bit** that meet the following: **ANS X9, CMP, PKCS #7, #10, or IETF PKIX**.

2.3.1.2 FCS_CKM.2 Cryptographic key distribution

2.3.1.2.1 FCS_CKM.2.1

The TSF shall distribute cryptographic keys in accordance with a specified cryptographic key distribution method **3DES, IDEA, RC4, RC5, or RIPEM** that meets the following: **ANS X9, CMP, PKCS #7, #10, or IETF PKIX**.

2.3.1.3 FCS_CKM.3 Cryptographic key access

2.3.1.3.1 FCS_CKM.3.1

The TSF shall perform **key assignment, key access** to include prevention of use of keys where the administrator-specified time period has expired, and key recovery in accordance with a specified

cryptographic key access method **3DES, IDEA, RC4, RC5, or RIPEM** that meets the following: **ANS X9, CMP, PKCS #7, #10, or IETF PKIX**.

2.3.1.4 FCS_CKM.4 Cryptographic key destruction

2.3.1.4.1 FCS_CKM.4.1

The TSF shall destroy cryptographic keys in accordance with a specified cryptographic key destruction method **3DES, IDEA, RC4, RC5, or RIPEM**, which also includes the immediate revocation of a user and the associated keying material when requested by an authorized administrator that meets the following: **FIPS 140-2**

2.3.2 CRYPTOGRAPHIC OPERATION (FCS_COP)

2.3.2.1 FCS_COP.1 Cryptographic operation

2.3.2.1.1 FCS_COP.1.1

The TSF shall perform **data encryption services** in accordance with a specified cryptographic algorithm **3DES, IDEA, RC4, RC5, or RIPEM** and cryptographic key sizes **1024** that meet the following: **ANS X9, CMP, PKCS #7, #10, or IETF PKIX**.

2.4 Class FDP: User data protection

2.4.1 ACCESS CONTROL POLICY (FDP_ACC)

2.4.1.1 FDP_ACC.2 Complete Access Control

2.4.1.1.1 FDP_ACC.2.1

The TSF shall enforce the **Access Control Security Policy** on all **users, groups, resources, and interfaces** and all operations among subjects and objects covered by the SFP.

2.4.1.1.2 FDP_ACC.2.2

The TSF shall ensure that all operations between any subject in the *TSF Scope of Control (TSC)* and any object within the TSC are covered by an access control SFP.

2.4.2 ACCESS CONTROL FUNCTIONS (FDP_ACF)

2.4.2.1 FDP_ACF.1 Security Attribute-based Access Control

2.4.2.1.1 FDP_ACF.1.1

The TSF shall enforce the **Access Control Security Policy** to objects based on:

- **The user identity and group membership(s) associated with a subject;**
- **The ability to associate users with groups; and**
- **The following access control attributes associated with an object. The access control attributes must provide attributes with:**
 - **The ability to associate allowed or denied operations with one or more user identities**
 - **The ability to associate allowed or denied operations with one or more group identities**
 - **Defaults for allowed or denied operations (such as the ability to back-up files and time-of-day and port-of-entry)**

2.4.2.1.2 FDP_ACF.1.2

The TSF shall enforce the following rules to determine if an operation among controlled subjects and controlled objects is allowed:

- **The system shall deny the access unless a user has permission to access a resource.**
- **Unless a port has explicit permission to access a resource, the system shall deny the access to all users who log in to that interface.**

2.4.2.1.3 FDP_ACF.1.3

The TSF shall explicitly authorize access of subjects to objects based on the following additional rules:

- **No additional rules**

2.4.2.1.4 FDP_ACF.1.4

The TSF shall explicitly deny access of subjects to objects based on the:

- **If a process's access control attribute is explicitly listed in the user identity attribute without access, the process is denied access, regardless of the group identity attribute**
- **Explicitly configured settings and/or controls such as damaging commands as delete all files.**

2.4.3 DATA AUTHENTICATION (FDP_DAU)

2.4.3.1 FDP_DAU.2 Data Authentication with Identity of Guarantor

2.4.3.1.1 FDP_DAU.2.1

The TSF shall provide a capability to generate evidence that can be used as a guarantee of the validity of **any information received from a network interface or entered via a user interface**.

2.4.3.1.2 FDP_DAU.2.2

The TSF shall provide **authorized administrator** with the ability to verify evidence of the validity of the indicated information and the identity of the user that generated the evidence.

2.4.4 INTERNAL TOE TRANSFER (FDP_ITT)

2.4.4.1 FDP_ITT.1 Basic Internal Transfer Protection

2.4.4.1.1 FDP_ITT.1.1

The TSF shall enforce the **Access Control Security Policy** to prevent the **disclosure and/or modification** of user data when it is transmitted between physically separated parts of the TOE.

2.4.4.2 FDP_ITT.3 Integrity Monitoring

2.4.4.2.1 FDP_ITT.3.1

The TSF shall enforce the **Access Control Security Policy** to monitor user data transmitted between physically separated parts of the TOE for the following errors:

- **Any integrity errors such as checksums or secure hashes and replay**

2.4.4.2.2 FDP_ITT.3.2

Upon detection of a data integrity error, the TSF shall **generate an alarm and/or send e-mail notification to authorized administrator**.

2.4.5 RESIDUAL INFORMATION PROTECTION (FDP_RIP)

2.4.5.1 FDP_RIP.1 Subset Residual Information Protection

2.4.5.1.1 FDP_RIP.1.1

The TSF shall ensure that any previous information content of a resource is made unavailable upon the **allocation of the resource** to the following objects:

- **Memory and disk storage space that has been identified as being available for allocation.**

2.4.6 STORED DATA INTEGRITY (FDP_SDI)

2.4.6.1 FDP_SDI.1 Stored Data Integrity Monitoring

2.4.6.1.1 FDP_SDI.1.1

The TSF shall monitor user data, *system files, and application software* stored within the TSC for **any integrity errors** on all objects, based on the following attributes:

- Checksums
- Synchronization points

2.4.7 INTER-TSF USER DATA CONFIDENTIALITY TRANSFER PROTECTION (FDP_UCT)

2.4.7.1 FDP_UCT.1 Basic Data Exchange Confidentiality

2.4.7.1.1 FDP_UCT.1.1

The TSF shall enforce the **Access Control Security Policy** to be able to **transmit and receive** objects in a manner protected from unauthorized disclosure.

2.4.8 INTER-TSF USER DATA INTEGRITY TRANSFER PROTECTION (FDP_UIT)

2.4.8.1 FDP_UIT.1 Data Exchange Integrity

2.4.8.1.1 FDP_UIT.1.1

The TSF shall enforce the **Access Control Security Policy** to be able to transmit and receive user data in a manner protected from modification, deletion, insertion, and replay errors.

2.4.8.1.2 FDP_UIT.1.2

The TSF shall be able to determine on receipt of user data whether modification, deletion, insertion, or replay has occurred.

2.5 Class FIA: Identification and Authentication

2.5.1 AUTHENTICATION FAILURES (FIA_AFL)

2.5.1.1 FIA_AFL.1 Authentication Failure Handling

2.5.1.1.1 FIA_AFL.1.1

The TSF shall detect when **administrator specified number (maximum default number is four) of unsuccessful authentication attempts occur related to all authentication attempts.**

2.5.1.1.2 FIA_AFL.1.2

When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall:

- **Lock out the account for an administrator-specified threshold or until the administrator intervenes**
- **Notify authorized administrator (via alarm and/or e-mail)**

2.5.2 USER ATTRIBUTE DEFINITION (FIA_ATD)

2.5.2.1 FIA_ATD.1 User Attribute Definition

2.5.2.1.1 FIA_ATD.1.1

The TSF shall maintain the following list of security attributes belonging to individual users:

- **Unique user IDs**
- **Specific security characteristics as configured by an authorized administrator**
- **Autonomous processes running on behalf of a user, such as a print spooler shall be associated with an identifier code**

2.5.3 SPECIFICATION OF SECRETS (FIA_SOS)

2.5.3.1 FIA_SOS.1 Verification of Secrets

2.5.3.1.1 FIA_SOS.1.1

The TSF shall provide a mechanism to verify that secrets (*identification and authentication data, digital signatures, digital certificates, encryption keys, etc.*) meet *the following specifications:*

- **Encryption key lengths and algorithms must be compliant with public and widely accepted algorithms or financial services industry standards as listed in Appendix A.**
- **Transmission and storage of secrets must be secure; secrets shall not be transmitted in clear text or stored in clear text.**
- **Secrets shall not be displayed in clear text to any user, including the administrator.**
- **Users shall be able to change their own secrets; user must authenticate first in order to change the secret.**

- **Users shall be required to change initial secret; access is denied if user does not comply.**
- **Predefined secret expiration dates must be configurable by authorized administrator by user ID.**
- **Secrets must have redefined expiration dates with a notification warning of upcoming secret expiration date.**
- **Secrets may not be reused within an administrator-defined period.**
- **Secrets must have a predefined character length, minimum alphabetic character, minimum numeric character, and minimum special character.**
- **Secrets shall not be trivial or predictable; the use of traditional multiple use passwords or weak authentication mechanisms are unacceptable.**
- **Secrets shall not be disclosed if inadvertently chosen by another (unique) user ID.**

2.5.3.2 FIA_SOS.2 TSF Generation of Secrets

2.5.3.2.1 FIA_SOS.2.1

The TSF shall provide a mechanism to generate secrets that meet:

- **Defined quality metric as indicated in FIA_SOS.1.1**

2.5.3.2.2 FIA_SOS.2.2

The TSF shall be able to enforce the use of TSF-generated secrets for:

- **All network access**
- **All network and interface monitoring**
- **All configuration changes**
- **All access to security incident data**

2.5.4 USER AUTHENTICATION (FIA_UAU)

2.5.4.1 FIA_UAU.1 Timing of Authentication

2.5.4.1.1 FIA_UAU.1.1

The TSF shall allow **user identification** on behalf of the user to be performed before the user is authenticated.

2.5.4.1.2 FIA_UAU.1.2

The TSF shall require each user to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that user.

2.5.4.2 *FIA_UAU.3 Unforgeable Authentication*

2.5.4.2.1 FIA_UAU.3.1

The TSF shall prevent use of authentication data that has been forged by any user of the TSF.

2.5.4.2.2 FIA_UAU.3.2

The TSF shall prevent use of authentication data that has been copied from any other user of the TSF.

2.5.4.3 *FIA_UAU.5 Multiple Authentication Mechanisms*

2.5.4.3.1 FIA_UAU.5.1

The TSF shall provide **multiple (system- or user-generated secrets (passwords), PIN numbers, token seeds, smart card seeds, and/or biometrics) authentication mechanisms** to support user authentication.

2.5.4.3.2 FIA_UAU.5.2

The TSF shall authenticate any user's claimed identity according to the *following rules*:

- **General requirements that apply to all types of authentication mechanisms to minimize the compromise of the authenticator**
- **Knowledge- and possession-based requirements that address mechanisms that support security information known and possessed by the user and submitted for validation to verify the user's identity**
- **Personal characteristic-based requirements that securely capture the physical characteristics of the user and provides that data to the authentication process for validating the identity of the user**
- **System requirements including the system authenticating itself to the user and/or another system**

2.5.4.4 *FIA_UAU.6 Re-authenticating*

2.5.4.4.1 FIA_UAU.6.1

The TSF shall re-authenticate the user or process under the *following* conditions:

- **Pre-configured system requirement as defined by an authorized administrator, which includes the capability of random re-authentication during any active session**

2.5.4.5 *FIA_UAU.7 Protected Authentication Feedback*

2.5.4.5.1 FIA_UAU.7.1

The TSF shall provide only *an invalid response* (i.e., the system shall not reveal which part of the authentication procedure is incorrect) to the user while the authentication is in progress.

2.5.5 USER IDENTIFICATION (FIA_UID)

2.5.5.1 *FIA_UID.2 User Identification Before any Action*

2.5.5.1.1 FIA_UID.2.1

The TSF shall require each user to identify *his or herself* before allowing any other TSF-mediated actions on behalf of that user.

2.5.6 USER-SUBJECT BINDING (FIA_USB)

2.5.6.1 *FIA_USB.1 User-Subject Binding*

2.5.6.1.1 FIA_USB.1.1

The TSF shall associate the appropriate user security attributes with subjects acting on behalf of that user.

2.6 Class FMT: Security management

2.6.1 MANAGEMENT OF FUNCTIONS IN TSF (FMT_MOF)

2.6.1.1 *FMT_MOF.1 Management of Security Functions Behavior*

2.6.1.1.1 FMT_MOF.1.1

The TSF shall restrict the ability to disable, enable, or modify the behavior of the functions **administrator-configured confidentiality mechanisms to authorized administrators.**

2.6.2 MANAGEMENT OF SECURITY ATTRIBUTES (FMT_MSA)

2.6.2.1 FMT_MSA.1 Management of Security Attributes

2.6.2.1.1 FMT_MSA.1.1

The TSF shall enforce the **Access Control Security Policy** to restrict the ability to change default, query, modify, delete, create, and/or bypass the *following* security attributes: **administrator-configured data integrity controls, security-related attributes of users, interfaces, and software and data elements to authorized administrators.**

2.6.2.2 FMT_MSA.2 Secure Security Attributes

2.6.2.2.1 FMT_MSA.2.1

The TSF shall ensure that only secure values are accepted for security attributes.

Application Note: This component applies to security attributes that are used to maintain the TSP. Other user attributes may be specified in the ST, other attributes such as users, subjects and objects have associated security attributes that will affect the behavior of the TSF. Examples of such security attributes are the groups to which a user belongs, the roles he/she might assume, the priority of a process (subject), and the rights belonging to a role or a user. These security attributes might need to be managed by the user, a subject or a specific authorized user (a user with explicitly given rights for this management). Additionally, this component contains requirements on the values that can be assigned to security attributes. The assigned values should be such that the TOE will remain in a secure state. The definition of 'secure' is not answered in this component but is left to the development of the TOE (specifically ADV_SPM.1 Informal TOE security policy model) and the resulting information in the guidance. An example could be that if a user account is created, it should have a non-trivial password. A further example could be that the TOE shall perform validity checks on the entered data so that it only accepts data that is within acceptable ranges and proper lengths.

2.6.2.3 FMT_MSA.3 Static Attribute Initialization

2.6.2.3.1 FMT_MSA.3.1

The TSF shall enforce the **Access Control Security Policy** to provide restrictive default values for security attributes that are used to enforce the SFP.

2.6.2.3.2 FMT_MSA.3.2

The TSF shall allow the **authorized administrators** to specify alternative initial values to override the default values when an object or information is created.

2.6.3 MANAGEMENT OF TSF DATA (FMT_MTD)

2.6.3.1 FMT_MTD.1 Management of TSF Data

2.6.3.1.1 FMT_MTD.1.1

The TSF shall restrict the ability to change default, query, modify, delete, or clear the **administrator configurable security enforcing functions of the TSF data to authorized administrators.**

2.6.3.2 *FMT_MTD.2 Management of Limits on TSF Data*

2.6.3.2.1 **FMT_MTD.2.1**

The TSF shall restrict the specification of the limits for **all administrator-configurable security enforcing functions of the TSF data to authorized administrators.**

2.6.3.2.2 **FMT_MTD.2.2**

The TSF shall take the following actions if the TSF data are at or exceed the indicated limits:

- **Generate an alarm**
- **Send e-mail to the authorized administrators**

2.6.3.3 *FMT_MTD.3 Secure TSF Data*

2.6.3.3.1 **FMT_MTD.3.1**

The TSF shall ensure that only secure values are accepted for TSF data.

2.6.4 **REVOCATION (FMT_REV)**

2.6.4.1 *FMT_REV.1 Revocation*

2.6.4.1.1 **FMT_REV.1.1**

The TSF shall restrict the ability to revoke security attributes associated with the users, subjects, objects, and other additional resources within the TSC to **authorized administrators.**

2.6.4.1.2 **FMT_REV.1.2**

The TSF shall enforce the rules:

- **Access rights based on user and interface privileges**
- **Immediate revocation of attributes**
- **No other rules**

Application Note: Many security-relevant authorizations could have serious consequences if misused, so an immediate revocation method must exist, although it need not be the usual method. (For example, the usual method may be editing the trusted user's profile, but the change doesn't take effect until the user logs off and logs back on. The method for immediate revocation might be to edit the trusted user's profile and "force" the trusted user to log off.) The immediate method must be specified in the ST and in administrator guidance.

In a distributed environment the developer must provide a description of how the “immediate” aspect of this requirement is met.

2.6.5 SECURITY ATTRIBUTE EXPIRATION (FMT_SAE)

2.6.5.1 FMT_SAE.1 Time-Limited Authorization

2.6.5.1.1 FMT_SAE.1.1

The TSF shall restrict the capability to specify an expiration time, *such as, three months* for **account inactivity (active accounts that are dormant)**, to **authorized administrators**.

2.6.5.1.2 FMT_SAE.1.2

For each of these security attributes, the TSF shall be able to **automatically disable and lock the account and send notification to the authorized administrators** after the expiration time for the indicated security attribute has passed.

2.6.6 SECURITY MANAGEMENT ROLES (FMT_SMR)

2.6.6.1 FMT_SMR.1 Security Roles

2.6.6.1.1 FMT_SMR.1.1

The TSF shall maintain the roles:

- **Authorized users with privileges to modify their own authentication data (secrets/passwords)**
- **Authorized administrators**

2.6.6.1.2 FMT_SMR.1.2

The TSF shall be able to associate users with roles.

2.7 Class FPR: Privacy

2.7.1 UNOBSERVABILITY (FPR_UNO)

2.7.1.1 FPR_UNO.4 Authorized User Observability

2.7.1.1.1 FPR_UNO.4.1

The TSF shall provide **authorized administrators** with the capability to observe the usage of:

- All terminals, ports, and network addresses
- All interfaces
- All users currently logged on

2.8 Class FPT: Protection of the TSF

2.8.1 UNDERLYING ABSTRACT MACHINE TEST (FPT_AMT)

2.8.1.1 *FPT_AMT.1 Abstract Machine Testing*

2.8.1.1.1 FPT_AMT.1.1

The TSF shall run a suite of tests periodically during normal operation **and** at the request of an authorized user to demonstrate the correct operation of the security assumptions provided by the abstract machine that underlies the TSF.

2.8.2 FAIL SECURE (FPT_FLS)

2.8.2.1 *FPT_FLS.1 Failure with Preservation of Secure State*

2.8.2.1.1 FPT_FLS.1.1

The TSF shall preserve a secure state when the following types of failures occur:

- **Buffer overflow**

2.8.3 CONFIDENTIALITY OF EXPORTED TSF DATA (FPT_ITC)

2.8.3.1 *FPT_ITC.1 Inter-TSF Confidentiality During Transmission*

2.8.3.1.1 FPT_ITC.1.1

The TSF shall protect all TSF data transmitted from the TSF to a remote, trusted IT product from unauthorized disclosure during transmission.

2.8.4 INTEGRITY OF EXPORTED TSF DATA (FPT_ITI)

2.8.4.1 *FPT_ITI.1 Inter-TSF Detection of Modification*

2.8.4.1.1 FPT_ITI.1.1

The TSF shall provide the capability to detect modification of all TSF data during transmission between the TSF and a remote, trusted IT product within the following metric:

- **Data integrity checks**
- **Verification of checksums**
- **Various tools used by authorized administrators**

2.8.4.1.2 FPT_ITI.1.2

The TSF shall provide the capability to verify the integrity of all TSF data transmitted between the TSF and a remote trusted IT product and **have the ability to generate an alarm and/or send e-mail notification to the authorized administrators** if modifications are detected.

2.8.5 INTERNAL TOE TSF DATA TRANSFER (FPT_ITT)

2.8.5.1 FPT_ITT.2 TSF Data Transfer Separation

2.8.5.1.1 FPT_ITT.2.1

The TSF shall protect TSF data from disclosure *and* modification when it is transmitted between separate parts of the TOE.

2.8.5.1.2 FPT_ITT.2.2

The TSF shall separate user data from TSF data when such data is transmitted between separate parts of the TOE.

2.8.5.2 FPT_ITT.3 TSF Data Integrity Monitoring

2.8.5.2.1 FPT_ITT.3.1

The TSF shall be able to detect modification of data, substitution of data, re-ordering of data, *and* deletion of data for TSF data transmitted between separate parts of the TOE.

2.8.5.2.2 FPT_ITT.3.2

Upon detection of a data integrity error, the TSF shall take the following actions:

- **Generate an alarm**
- **Send e-mail notification to authorized administrators**
- **Reject data**

2.8.6 TRUSTED RECOVERY (FPT_RCV)

2.8.6.1 FPT_RCV.1 Manual Recovery

2.8.6.1.1 FPT_RCV.1.1

After a failure or service discontinuity, the TSF shall enter a maintenance mode where the ability to return the TOE to a secure state is provided.

2.8.6.2 *FPT_RCV.3 Automated Recovery Without Undue Loss*

2.8.6.2.1 *FPT_RCV.3.1*

When automated recovery from a failure or service discontinuity is not possible, the TSF shall enter a maintenance mode where the ability to return the TOE to a secure state is provided.

2.8.6.2.2 *FPT_RCV.3.2*

For **any system crash or shutdown** the TSF shall ensure the return of the TOE to a secure state using automated procedures.

2.8.6.2.3 *FPT_RCV.3.3*

The functions provided by the TSF to recover from failure or service discontinuity shall ensure that the secure initial state is restored without exceeding **any loss *or unauthorized disclosure*** of TSF data, ***authentication information, and/or*** objects within the TSC.

2.8.6.2.4 *FPT_RCV.3.4*

The TSF shall provide the capability to determine the objects that were or were not capable of being recovered.

2.8.6.3 *FPT_RCV.4 Function recovery*

2.8.6.3.1 *FPT_RCV.4.1*

The TSF shall ensure that **any security function, such as the audit log, that encounters a failure, of size limit exceeded**, have the property that the SF either completes successfully, or for the indicated failure scenarios, recovers to a consistent and secure state.

2.8.7 REPLAY DETECTION (FPT_RPL)

2.8.7.1 *FPT_RPL.1 Replay Detection*

2.8.7.1.1 *FPT_RPL.1.1*

The TSF shall detect replay for the following entities:

- **Transmitted authentication information**
- **Authentic messages**

2.8.7.1.2 *FPT_RPL.1.2*

The TSF shall *have the ability to generate an alarm and/or send e-mail notification to the authorized administrators* when replay is detected.

2.8.8 REFERENCE MEDIATION (FPT_RVM)

2.8.8.1 *FPT_RVM.1 Non-bypassability of the TSP*

2.8.8.1.1 FPT_RVM.1.1

The TSF shall ensure that TSP enforcement functions are invoked and succeed before each function within the TSC is allowed to proceed.

2.8.9 PROTECTION OF THE TSF (FPT_SEP)

2.8.9.1 *FPT_SEP.1 Domain separation*

2.8.9.1.1 FPT_SEP.1 TSF domain separation

2.8.9.1.1.1 FPT_SEP.1.1

The TSF shall maintain a security domain for its own execution that protects it from interference and tampering by untrusted subjects.

2.8.9.1.1.2 FPT_SEP.1.2

The TSF shall enforce separation between the security domains of subjects in the TSC.

2.8.10 TIME STAMPS (FPT_STM)

2.8.10.1 *FPT_STM.1 Reliable Time Stamps*

2.8.10.1.1 FPT_STM.1.1

The TSF shall be able to provide reliable time stamps for its own use.

2.8.11 INTERNAL TOE TSF DATA REPLICATION CONSISTENCY (FPT_TRC)

2.8.11.1 *FPT_TRC.1 Internal TSF consistency*

2.8.11.1.1 FPT_TRC.1.1

The TSF shall ensure that TSF data is consistent when replicated between parts of the TOE.

2.8.11.1.2 FPT_TRC.1.2

When parts of the TOE containing replicated TSF data are disconnected, the TSF shall ensure the consistency of the replicated TSF data upon reconnection before processing any requests for **administrator configurable changes to all or selected nodes.**

2.8.12 TSF SELF-TEST (FPT_TST)

2.8.12.1 FPT_TST.1 TSF Testing

2.8.12.1.1 FPT_TST.1.1

The TSF shall run a suite of self-tests periodically during normal operation **and** at the request of the authorized administrators, and at the conditions as deemed necessary to demonstrate the correct operation of the TSF.

2.8.12.1.2 FPT_TST.1.2

The TSF shall provide authorized *administrators* with the capability to verify the integrity of TSF data.

2.8.12.1.3 FPT_TST.1.3

The TSF shall provide authorized *administrators* with the capability to verify the integrity of stored TSF-executable code.

2.9 Class FRU: Resource Utilization

2.9.1 FAULT TOLERANCE (FRU_FLT)

2.9.1.1 FRU_FLT.1 Degraded fault tolerance

2.9.1.1.1 FRU_FLT.1.1

The TSF shall ensure the operation of [assignment: list of TOE capabilities] when the following failures occur: [assignment: list of type of failures].

2.9.2 PRIORITY OF SERVICE (FRU_PRS)

2.9.2.1 FRU_PRS.1 Limited priority of service

2.9.2.1.1 FRU_PRS.1.1

The TSF shall assign a priority to each subject in the TSF.

2.9.2.1.2 FRU_PRS.1.2

The TSF shall ensure that each access to **databases and log files** shall be mediated on the basis of the subjects' assigned priority.

2.10 Class IDS: IDS Component Requirements (BITS)

2.10.1 ANALYZER ANALYSIS (IDS_ANL)

2.10.1.1.1 IDS_ANL.1.1

The System shall perform the following analysis function(s) on all IDS data received:

- a) [selection: statistical, signature, integrity]; and
- b) [assignment: other analytical functions].

Application Note: Statistical analysis involves identifying deviations from normal patterns of behavior. For example, it may involve mean frequencies and measures of variability to identify abnormal usage. Signature analysis involves the use of patterns corresponding to known attacks or misuses of a System. For example, patterns of System settings and user activity can be compared against a database of known attacks. Integrity analysis involves comparing System settings or user activity at some point in time with those of another point in time to detect differences.

2.10.1.1.2 IDS_ANL.1.2

The System shall record within each analytical result at least the following information:

- a) Date and time of the result, type of result, identification of data source; and
- b) [assignment: other security relevant information about the result].

Application Note: The analytical conclusions drawn by the analyzer should both describe the conclusion and identify the information used to reach the conclusion.

Family Application Note: Available results from any component evaluation may be applicable to this requirement.

2.10.2 SYSTEM ANONYMITY (IDS_ANO)

2.10.2.1.1 IDS_ANO.1.1

The TSF shall ensure that [assignment: set of users and/or subjects] are unable to determine the real identity or location bound to [assignment: list of system components].

Application Note: The IDS in response to an attack or intrusion or a system restore shall not reveal itself to the attacking entity or party.

2.10.3 ANALYZER REACT ALARM (IDS_RCT)

2.10.3.1.1 IDS_RCT.1.1

The System shall send an alarm to [assignment: alarm destination] and take [assignment: appropriate actions] when an intrusion is detected.

Application Note: There must be an alarm, though the ST should refine the nature of the alarm and define its target (e.g., administrator console, audit log). The Analyzer may optionally perform other actions when intrusions are detected; these actions should be defined in the ST. An intrusion in this requirement applies to any conclusions reached by the analyzer related to past, present, and future intrusions or intrusion potential.

Family Application Note: Available results from any component evaluation may be applicable to this requirement.

2.10.4 RESTRICTED DATA REVIEW (IDS_RDR)

2.10.4.1.1 IDS_RDR.1.1

The System shall provide **authorized users** with the capability to read **all data retrieved** from the System data.

2.10.4.1.2 IDS_RDR.1.2

The System shall provide the System data in a manner suitable for the user to interpret the information.

2.10.4.1.3 IDS_RDR.1.3

The System shall prohibit all users read access to the System data, except those users that have been granted explicit read-access.

2.10.5 SYSTEM DATA COLLECTION (IDS_SDC)

2.10.5.1.1 IDS_SDC.1.1

The System shall be able to collect the following information from the targeted IT System resource(s):

- a) [selection: Start-up and shutdown, identification and authentication events, data accesses, service requests, network traffic, security configuration changes, data introduction, detected malicious code, access control configuration, service configuration, authentication configuration., accountability policy configuration, detected known vulnerabilities]; and
- b) [assignment: other specifically defined events].

Application Note: The ST will define the components of a System. This requirement indicates that the System must include at least one Sensor or Scanner by requiring a given TOE collect information pertaining to at least one of the selections in bullet a above. A Sensor would generally collect information pertaining to the following events in bullet a: start-up and shutdown, identification and authentication events, data accesses, service requests, network traffic, security configuration changes, and data introduction. The Scanner would generally collect static configuration information, which includes the following events in bullet, a: detected malicious code, access control configuration, service configuration, authentication configuration, accountability policy configuration, and detected known vulnerabilities. Malicious code includes viruses, worms, simple Trojan horses, etc. Access control configuration includes access control lists, search for writable files and directories, etc. Service configuration includes identification of network services and/or associated network ports, host services, versions of services, protocols acknowledged by services, etc. Authentication configuration includes cracking passwords, configuration settings (e.g., minimum password length, duration between allowed and required password changes), acceptable authentication means (e.g., NTLM, Kerberos), defined guest accounts, account authorizations, etc. Accountability policy configuration includes size of audit trails, whether audit is enabled, what to do when the audit trail fills, etc. Known vulnerabilities are fairly opened-ended, but may include installed patches, checks for common or default configuration errors, etc.

2.10.5.1.2 IDS_SDC.1.2

At a minimum, the System shall collect and record the following information:

- a) Date and time of the event, type of event, subject identity, and the outcome (success or failure) of the event; and
- b) The additional information specified in the Details column of Table 3 System Events.

Component	Event	Details
IDS_SDC.1	Start-up and shutdown	None
IDS_SDC.1	Identification and authentication events	User identity, location, source address, destination address
IDS_SDC.1	Data accesses	Object IDS, requested access, source address, destination address
IDS_SDC.1	Service Requests	Specific service, source address, destination address
IDS_SDC.1	Network traffic	Protocol, source address, destination address
IDS_SDC.1	Security configuration changes	Source address, destination address
IDS_SDC.1	Data introduction	Object IDS, location of object, source address, destination address
IDS_SDC.1	Start-up and shutdown of audit functions	None
IDS_SDC.1	Detected malicious code	Location, identification of code

Component	Event	Details
IDS_SDC.1	Access control configuration	Location, access settings
IDS_SDC.1	Service configuration	Service identification (name or port), interface, protocols
IDS_SDC.1	Authentication configuration	Account names for cracked passwords, account policy parameters
IDS_SDC.1	Accountability policy configuration	Accountability policy configuration parameters
IDS_SDC.1	Detected known vulnerabilities	Identification of the known Vulnerability

Table 3 System Events

Application Note: In the case where a Sensor is collecting host-based events, for the identification and authentication event, the source address could be a subject IDS on a local machine and the destination is defined by default. For the data access and data introduction events, the source address could be filename and the destination address may be target location for the file.

Family Application Note: Available results from any component evaluation may be applicable to this requirement.

2.10.6 GUARANTEE OF SYSTEM DATA AVAILABILITY (IDS_STG)

2.10.6.1.1 IDS_STG.1.1

The System shall protect the stored System data from unauthorized deletion.

2.10.6.1.2 IDS_STG.1.2

The System shall protect the stored System data from modification.

Application Note: Authorized deletion of data is not considered a modification of System data in this context. This requirement applies to the actual content of the System data, which should be protected from any modifications.

2.10.6.1.3 IDS_STG.1.3

The System shall ensure that **all** System data will be maintained when the following conditions occur: System data storage exhaustion, failure, and/or attack.

2.10.6.2 IDS_STG 2.1 Prevention of System Data Loss

2.10.6.2.1 IDS_STG.2.1

The System shall [selection: 'ignore System data', 'prevent System data, except those taken by the authorized user with special rights', 'overwrite the oldest stored System data '] and send an alarm if the storage capacity has been reached.

Application Note: The ST must define what actions the System takes if the storage capacity has been reached. Anything that causes the System to stop collecting static information may not be the best solution, as this will only affect the System and not the System on which it is collecting data (e.g., shutting down the System).

Family Application Note: Available results from any component evaluation may be applicable to this requirement. However, the System must take into account the relationships between components and address how the reaction of any given IDS component may affect any other in the System context.

2.10.7 SYSTEM SESSION STATUS (IDS_SSS)

2.10.7.1.1 IDS_SSS.3.1

The System shall verify operational status of an interactive session after a [assignment: time interval of system component inactivity].

Application Note: To verify proper working capability of the system components, it is necessary to check system status on a regular basis. If there was no mandatory communication period, then systems that weren't reporting, could be deemed operational

2.11 Class FTA: TOE access

2.11.1 LIMITATION ON MULTIPLE CONCURRENT SESSIONS (FTA_MCS)

2.11.1.1 FTA_MCS.1 *Basic Limitation on Multiple Concurrent Sessions*

2.11.1.1.1 FTA_MCS.1.1

The TSF shall restrict the maximum number of concurrent sessions that belong to the same user.

2.11.1.1.2 FTA_MCS.1.2

The TSF shall enforce, by default, a limit of **as specified by the authorized administrator** sessions per user.

2.11.2 SESSION LOCKING (FTA_SSL)

2.11.2.1 FTA_SSL.3 *TSF-Initiated Termination*

2.11.2.1.1 FTA_SSL.3.1

The TSF shall terminate an interactive session after **an authorized administrator-specified period of time**.

2.11.3 TOE ACCESS BANNERS (FTA_TAB)

2.11.3.1 FTA_TAB.1 Default TOE Access Banners

2.11.3.1.1 FTA_TAB.1.1

Before establishing a user session, the TSF shall display an advisory warning message regarding unauthorized use of the TOE.

2.11.4 TOE ACCESS HISTORY (FTA_TAH)

2.11.4.1 FTA_TAH.1 TOE Access History

2.11.4.1.1 FTA_TAH.1.1

Upon successful session establishment, the TSF shall display the date, time, and location of the last successful session establishment to the user.

2.11.4.1.2 FTA_TAH.1.2

Upon successful session establishment, the TSF shall display the date, time, and location of the last unsuccessful attempt at session establishment and the number of unsuccessful attempts since the last successful session establishment.

2.11.4.1.3 FTA_TAH.1.3

The TSF shall not erase the access history information from the user interface without giving the user an opportunity to review the information.

2.11.5 TOE SESSION ESTABLISHMENT (FTA_TSE)

2.11.5.1 FTA_TSE.1 TOE Session Establishment

2.11.5.1.1 FTA_TSE.1.1

The TSF shall be able to deny session establishment based on:

- **Time of day**
- **Day of week**
- **Calendar date of login**
- **Source of connection**

- User access rights
- As deemed necessary by an authorized administrator

2.12 Class FTP: Trusted path/channels

2.12.1 INTER-TSF TRUSTED CHANNEL (FTP_ITC)

2.12.1.1 *FTP_ITC.1 Inter-TSF Trusted Channel*

2.12.1.1.1 FTP_ITC.1.1

The TSF shall provide a communication channel between itself and a remote, trusted IT product that is logically distinct from other communication channels and provides assured identification of its end points and protection of the channel data from modification or disclosure.

2.12.1.1.2 FTP_ITC.1.2

The TSF shall permit the TSF to initiate communication via the trusted channel.

2.12.1.1.3 FTP_ITC.1.3

The TSF shall initiate communication via the trusted channel for **the validity of all traffic and transmissions.**

2.12.2 TRUSTED PATH (FTP_TRP)

2.12.2.1 *FTP_TRP.1 Trusted Path*

2.12.2.1.1 FTP_TRP.1.1

The TSF shall provide a communication path between itself, remote, **and** local users that is logically distinct from other communication paths and provides assured identification of its end points and protection of the communicated data from modification or disclosure.

2.12.2.1.2 FTP_TRP.1.2

The TSF shall permit the TSF to initiate communication via the trusted path.

2.12.2.1.3 FTP_TRP.1.3

The TSF shall require the use of the trusted path for initial user authentication, **user-defined information, and all security-related information.**

Appendix A: Industry Standards

For the purposes of the security functional requirements, the terms “public and widely used” and “financial industry standards” shall refer to those standards, algorithms, and protocols listed below as well as other relevant standards approved by the following standards organizations: IETF, ANSI X9, ITU-T, ISO, NIST, and IEEE.

Symmetric encryption algorithms	<ul style="list-style-type: none"> • 3DES (ANS X9.52, X9.66) • IDEA • RC4 • RC5 • RIPEM
Asymmetric algorithms (for symmetric key agreement or key transport)	<ul style="list-style-type: none"> • RSA (ANS X9.44) • D-H (minimum 1024-bit modulus – ANSI X9.42) • ECDH (ANS X9.63) • Elliptic Curve
Digital hashing algorithms	<ul style="list-style-type: none"> • SHA-1 (ANS X9.30-2) • MD5
Digital signature algorithms	<ul style="list-style-type: none"> • DSA (ANS X9.30-1) • rDSA (ANS X9.31) (includes RSA) • EC-DSA (ANS X9.62)
Key management standards and protocols	<ul style="list-style-type: none"> • ANS X9.70, ANS X9.73, ANS X9.69, ANS X9.24, ANS X9.77 • CMP • PKCS #7, #10 • IETF PKIX standards
Random number generators	<ul style="list-style-type: none"> • ANS X9.82
Prime number generators	<ul style="list-style-type: none"> • ANSI X9.80
Cryptographic device security	<ul style="list-style-type: none"> • ANS X9.66 • FIPS 140-2
Peer entity authentication	<ul style="list-style-type: none"> • ANS X9.72 • FIPS 196
PIN security	<ul style="list-style-type: none"> • ANS X9.8, ANS X9.86, ANS X9.87
Biometrics management and security	<ul style="list-style-type: none"> • ANS X9.84
Directory standards	<ul style="list-style-type: none"> • X.500 • LDAP v3
TCP/IP integrity	<ul style="list-style-type: none"> • IPsec

The product shall use any of the algorithms listed above or those that are supported by any of the standards organizations listed above. If the system uses any other cryptographic algorithm, then it shall be configurable to also allow the use of an acceptable algorithm in place of the unlisted algorithm.

Appendix B: Glossary of Terms

Assets — Information or resources to be protected by the countermeasures of a TOE.

Assignment — The specification of an identified parameter in a component.

Assurance — Grounds for confidence that an entity meets its security objectives.

Augmentation — The addition of one or more assurance component(s) from Part 3 to an EAL or assurance package.

Authentication Data — Information used to verify the claimed identity of a user.

Authorized User — A user who may, in accordance with the TSP, perform an operation.

Class — A grouping of families that share a common focus.

Common Criteria Protection Profile (CC-PP) — A Protection Profile as defined in Part 1 of the Common Criteria.

Component — The smallest selectable set of elements that may be included in a PP, an ST, or a package.

Dependency — A relationship between requirements such that the requirement that is depended upon must normally be satisfied in order for the other requirements to be able to meet their objectives.

Element — An indivisible security requirement.

Evaluation — Assessment of a PP, an ST, or a TOE against defined criteria.

Evaluation Assurance Level (EAL) — A package consisting of assurance components from Part 3 that represents a point on the CC predefined assurance scale.

Evaluation Scheme — The administrative and regulatory framework under which the CC is applied by an evaluation authority within a specific community.

Extension — The addition to an ST or PP of functional requirements not contained in Part 2 and/or assurance requirements not contained in Part 3 of the CC.

Family — A grouping of components that share security objectives but may differ in emphasis or rigor.

Internal Communication Channel — A communication channel between separated parts of the TOE.

Internal TOE Transfer — Communicating data between separated parts of the TOE.

Inter-TSF Transfers — Communicating data between the TOE and the security functions of other trusted IT products.

Iteration — The use of a component more than once with varying operations.

Object — An entity within the TSC that contains or receives information and upon which subjects perform operations.

Organizational Security Policies — One or more security rules, procedures, practices, or guidelines imposed by an organization upon its operations.

Package — A reusable set of either functional or assurance components (e.g., an EAL), combined together to satisfy a set of identified security objectives.

Product — A package of IT software, firmware, and/or hardware, providing functionality designed for use or incorporation within a multiplicity of systems.

Product Class — The name typically used to describe a specific IT product (e.g., biometric authentication device, firewall, or smart card).

Protection Profile (PP) — An implementation-independent set of security requirements for a category of TOEs that meet specific consumer needs.

PP Evaluation — An evaluation of a CC-PP according to the requirements identified in Part 1 of the CC and the Common Evaluation Methodology.

Reference Monitor — An abstract machine that enforces TOE access control policies.

Reference Validation Mechanism — An implementation of the reference monitor concept that is tamperproof, always invoked, and simple enough to be subjected to thorough analysis and testing.

Refinement — The addition of details to a component.

Role — A predefined set of rules establishing the allowed interactions between a user and the TOE.

Security Assurance Requirements (SARs) — Assurances associated with Part 3 of the CC; often grouped in a package called an Evaluation Assurance Level (EAL), e.g., EAL2, EAL – Medium Robustness.

Secret — Information that must be known only to authorized users and/or the TSF in order to enforce a specific SFP.

Security Attribute — Information associated with subjects, users, and/or objects that are used for the enforcement of the TSP.

Security Function (SF) — A part or parts of the TOE that have to be relied upon for enforcing a closely related subset of the rules from the TSP.

Security Function Policy (SFP) — The security policy enforced by an SF.

Security Functional Requirements (SFRs) — Security functions drawn from Part 2 of the CC.

Security Objective — A statement of intent to counter identified threats and/or that satisfies identified organization security policies and assumptions.

Security Target (ST) — A set of security requirements and specifications to be used as the basis for evaluation of an identified TOE.

Selection — The specification of one or more items from a list in a component.

Strength of Function (SOF) — A qualification of a TOE security function expressing the minimum efforts assumed necessary to defeat its expected security behavior by directly attacking its underlying security mechanisms.

SOF-basic — A level of the TOE strength of function where analysis shows that the function provides adequate protection against casual breach of TOE security by attackers possessing a low attack potential.

SOF-medium — A level of the TOE strength of function where analysis shows that the function provides adequate protection against straightforward or intentional breach of TOE security by attackers possessing a moderate attack potential.

SOF-high — A level of the TOE strength of function where analysis shows that the function provides adequate protection against a deliberately planned or organized breach of TOE security by attackers possessing a high attack potential.

Subject — An entity within the TSC that causes operations to be performed.

System — A specific IT installation, with a particular purpose and operational environment.

Target of Evaluation (TOE) — An IT product or system and its associated administrator and user guidance documentation that is the subject of an evaluation.

TOE Security Functions (TSF) — A set consisting of all hardware, software, and firmware of the TOE that must be relied upon for the correct enforcement of the TSP.

TOE Security Functions Interface (TSFI) — A set of interfaces, whether interactive (man-machine interface) or programmatic (application programming interface), through which TOE resources are accessed or mediated by the TSF, or through which information is obtained from the TSF.

TOE Security Policy (TSP) — A set of rules that regulate how assets are managed, protected, and distributed within a TOE.

TOE Security Policy Model — A structured representation of the security policy to be enforced by the TOE.

Transfers Outside TSF Control — Communicating data to entities not under control of the TSF.

Trusted Channel — A means by which a TSF and a remote, trusted IT product can communicate with necessary confidence to support the TSP.

Trusted Path — A means by which a user and a TSF can communicate with necessary confidence to support the TSP.

TSF Data — Data created by and for the TOE, which might affect the operation of the TOE.

TSF Scope of Control (TSC) — The set of interactions that can occur with or within a TOE and that are subject to the rules of the TSP.

User — Any entity (human user or external IT entity) outside the TOE that interacts with the TOE.

User Data — Data created by and for the user, which does not affect the operation of the TSF.

Appendix C: BITS Product Certification Program Overview

BITS, the Technology Group for The Financial Services Roundtable, was formed by the CEOs of the largest financial services institutions in the United States as the strategic “brain trust” for the financial services industry in the e-commerce, payments and emerging technologies arenas. BITS' activities are driven by the CEOs and their appointees—CTOs, CIOs, Vice Chairmen and Executive Vice Presidents—who make up the BITS Advisory Group and BITS Council. These leaders identify issues, develop strategic recommendations and implement the CEOs' decisions. BITS also facilitates cooperation between the financial services industry and other sectors of the Nation's critical infrastructure, government organizations, technology providers and third-party service providers.

A hallmark focus for BITS is information security. The mission of the BITS Security and Risk Assessment Steering Committee (SRA) is to strengthen the safety and soundness of financial institutions through enhancing e-commerce and payments security, sharing knowledge of successful strategies for development of secure infrastructures, products and services, and working with government agencies' and regulators' supervisory guidance and regulations. In recognition of the important role of security as a fundamental building block for all aspects of information technology use, the senior officers responsible for information security at the nation's leading financial services firms that comprise the BITS SRA developed the **BITS Product Certification Program** and the *BITS Tested Mark*.

The **BITS Product Certification Program** was designed to assure that software products contain the necessary security features to serve the financial services industry, to allow an opportunity to leverage independent testing efforts, and to provide tangible evidence of implementing a best practice within the industry. Minimum baseline security criteria for six categories of commercial software products were established through a collaborative, three-year development effort, involving the work of 32 BITS financial services member companies, 23 outside organizations and over 100 security professionals from technology vendors, government and financial regulatory agencies and leading financial services firms.

In recognition of the common goals of the **BITS Product Certification Program** and the internationally recognized Common Criteria Certification, the financial services industry, represented by BITS, became one of the first private-sector “user communities” to use the Common Criteria to define product security requirements. With the help of SAIC, BITS translated its “plain English” security criteria profile documents into packages of security requirements under the Common Criteria schema. Technology vendors are now able to test against the BITS criteria through an independent testing facility recognized by BITS or through their Common Criteria testing efforts at a Common Criteria Testing Lab.

While the criteria were created for testing purposes, many financial institutions have adopted the testing criteria as internal standards for product development. Financial institutions are including language about the *BITS Tested Mark* in their procurement policies, RFPs and vendor

contracts. BITS members are committed to making the ***BITS Tested Mark*** a major part of their technology purchasing process.

Certification helps build confidence in software products, leads to more widespread use of technology, and promotes the growth of e-commerce. The BITS Certification process is an objective means of evaluating and testing for compliance with industry-set minimum security criteria. It minimizes testing redundancy, can make product testing more efficient and reduces the cost and time-to-market industry wide. Certification with a ***BITS Tested Mark*** will not only be a key product differentiator but also a move towards aligning with current and proposed financial regulation and cyber-security legislation during a time of evolving liability issues. The ***BITS Tested Mark*** demonstrates to customers that your company is committed to addressing security issues and the security needs of the financial services industry.

After achieving a ***BITS Tested Mark***, BITS will promote the certified products within the financial services industry through activities such as:

- Issuing joint press release and arranging joint press interviews
- Including an announcement and article in the *BITS Bulletin* (BITS' bimonthly newsletter with a 5000+ readership), the *BITS Brief* (a monthly update for BITS member company CIOs and CTOs) and in a member-wide email
- Posting the announcement on the BITS Web site and add the product to the Certified Product List
- Mentioning the accomplishment during conferences, seminars and other industry presentations

In addition, vendors are free to use the ***BITS Tested Mark*** in accordance to the terms of the Seal Usage Agreement. Uses can include:

- Financial services industry sales proposals
- Advertising campaigns
- Product package design
- Vendor Web site posting
- Product marketing collateral/company brochure
- Display for trade show exhibit booth

For more information about the BITS Product Certification Program, including the program operating rules and certification seal use terms and conditions, please visit the BITS Web site at www.bitsinfo.org/fslab.html.



THE FINANCIAL SERVICES ROUNDTABLE

**MEMBER COMPANIES**

COMPANY	CITY
ABN-AMRO North America, Inc.	Chicago
AEGON USA, Inc.	Baltimore
Allfirst Financial, Inc.	Baltimore
Allied Capital Corporation	Washington, DC
AMCORE Financial, Inc.	Rockford
American General	Houston
AmSouth Bancorporation	Birmingham
Aon Corporation	Chicago
Associated Banc-Corp	Green Bay
AXA Financial Inc.	New York
BancorpSouth, Inc.	Tupelo
BancWest Corporation	Honolulu
Bank of America Corporation	Charlotte
Bank of New York Company, Inc., The	New York
Bank of Tokyo-Mitsubishi Trust Company	New York
BANK ONE CORPORATION	Chicago
BB&T Corporation	Winston-Salem
Capital One Financial Corporation	Falls Church
Charles Schwab Corporation, The	San Francisco
Charter One Financial, Inc.	Cleveland
Chubb Corporation, The	Warren
Citigroup Inc.	New York
Citizens Financial Group, Inc.	Providence
City National Corporation	Beverly Hills
Comerica Incorporated	Detroit
Commerce Bancshares, Inc.	Kansas City
Compass Bancshares, Inc.	Birmingham
Countrywide Credit Industries, Inc.	Calabasas
Credit Suisse First Boston	New York

Cullen/Frost Bankers, Inc.	San Antonio
Edward Jones Investments	St. Louis
F.N.B. Corporation	Naples
FMR Corp. (Fidelity Investments)	Boston
Fifth Third Bancorp	Cincinnati
First Commonwealth Financial Corporation	Indiana
First National of Nebraska, Inc.	Omaha
First Tennessee National Corporation	Memphis
First Virginia Banks, Inc.	Falls Church
FleetBoston Financial Corporation	Boston
Ford Financial	Dearborn
Fortis, Inc./Assurant Group	New York/Atlanta
Fulton Financial Corporation	Lancaster
General Motors Acceptance Corporation	Detroit
Goldman Sachs Group, Inc., The	New York
Guaranty Financial Services	Austin
Harris Bankcorp, Inc.	Chicago
Hartford Financial Services Group, Inc., The	Hartford
Hibernia Corporation	New Orleans
Household International, Inc.	Prospect Heights
HSBC USA Inc.	New York
Hudson United Bancorp	Mahwah
Huntington Bancshares Incorporated	Columbus
ING Americas	Atlanta
Jefferson-Pilot Corporation	Greensboro
J.P. Morgan Chase & Co.	New York
KeyCorp	Cleveland
Legg Mason, Inc.	Baltimore
M&T Bank Corporation	Buffalo
Marshall & Ilsley Corporation	Milwaukee

MassMutual Financial Group	Springfield
MBNA Corporation	Wilmington
Mellon Financial Corporation	Pittsburgh
Mercantile Bankshares Corporation	Baltimore
Merrill Lynch & Co., Inc.	New York
Minnesota Mutual	St. Paul
National City Corporation	Cleveland
National Commerce Financial Corporation	Memphis
Nationwide	Columbus
Northern Trust Corporation	Chicago
Old National Bancorp	Evansville
Pacific Century Financial Corporation	Honolulu
PNC Financial Services Group, Inc., The	Pittsburgh
Provident Bankshares Corporation	Baltimore
Provident Financial Group, Inc.	Cincinnati
Providian Financial Corporation	San Francisco
Prudential Insurance Company of America, The	Newark
Raymond James Financial, Inc.	St. Petersburg
RBC Centura Banks, Inc.	Rocky Mount
Regions Financial Corporation	Birmingham
Riggs National Corporation	Washington, D.C.
Sky Financial Group, Inc.	Bowling Green
St. Paul Companies, Inc., The	St. Paul
State Farm Insurance Companies	Bloomington
State Street	Boston
SunTrust Banks, Inc.	Atlanta
Synovus	Columbus
UBS Warburg LLC	Stamford
Union Planters Corporation	Memphis
U.S. Bancorp	Minneapolis

United Bankshares, Inc.	Parkersburg
USAA	San Antonio
Wachovia Corporation	Charlotte
Waddell & Reed Financial, Inc.	Overland Park
Washington Mutual, Inc.	Seattle
Wells Fargo & Company	San Francisco
Whitney Holding Corporation	New Orleans
Zions Bancorporation	Salt Lake City
Zurich North America	Schaumburg

BITS ONLY MEMBER COMPANIES

COMPANY	CITY
SouthTrust Bank	Birmingham

BITS AFFILIATE ORGANIZATIONS

ORGANIZATION	CITY
American Bankers Association (ABA)	Washington, D.C.
America's Community Bankers (ACB)	Washington, D.C.
Association for Payment Clearing Services (APACS)	London
Canadian Bankers Association (CBA)	Toronto
Canadian Payments Association (CPA)	Ottawa
CUNA	Washington, D.C.
ECCHO	Dallas
Independent Community Bankers of America (ICBA)	Washington, D.C.
NACHA	Herndon
Spectrum EBP, L.L.C.	Union

VISA USA

San Francisco

BITS STRATEGIC ALLIANCES

ORGANIZATION

CITY

US Department of the Navy

Reston

Financial Services Technology Consortium (FSTC)

Chicago