Supporting Document
Mandatory Technical Document

PP-Module for Client Virtualization Systems

Version: 1.1

2020-11-17

National Information Assurance Partnership

Foreword

This is a Supporting Document (SD), intended to complement the Common Criteria version 3 and the associated Common Evaluation Methodology for Information Technology Security Evaluation.

SDs may be “Guidance Documents”, that highlight specific approaches and application of the standard to areas where no mutual recognition of its application is required, and as such, are not of normative nature, or “Mandatory Technical Documents”, whose application is mandatory for evaluations whose scope is covered by that of the SD. The usage of the latter class is not only mandatory, but certificates issued as a result of their application are recognized under the CCRA.

Technical Editor:
National Information Assurance Partnership (NIAP)

Document history:

Version	Date	Comment
1.0	2016-11-17	Initial Publication
1.1	2020-11-17	Converted to PP-Module and applied all active TDs

General Purpose:
The purpose of this SD is to define evaluation methods for the functional behavior of Client Virtualization products.

Acknowledgements:
This SD was developed with support from NIAP Client Virtualization Systems Technical Community members, with representatives from industry, government agencies, Common Criteria Test Laboratories, and members of academia.

Table of Contents

1 Introduction
1.1 Technology Area and Scope of Supporting Document
1.2 Structure of the Document
1.3 Terms
1.3.1 Common Criteria Terms
1.3.2 Technical Terms
2 Evaluation Activities for SFRs
2.1 Protection Profile for Virtualization
2.1.1 Modified SFRs
2.2 TOE SFR Evaluation Activities

2.2.1 Auditable Events for Mandatory SFRs
2.2.2 Security Management (FMT)
2.3 Evaluation Activities for Optional SFRs
2.4 Evaluation Activities for Selection-Based SFRs
2.5 Evaluation Activities for Objective SFRs
3 Evaluation Activities for SARs
4 Required Supplementary Information
Appendix A - References

1 Introduction

1.1 Technology Area and Scope of Supporting Document

The scope of the Client Virtualization Systems PP-Module is to describe the security functionality of Client Virtualization products in terms of [CC] and to define functional and assurance requirements for them. The PP-Module is intended for use with the following Base-PP:

- Protection Profile for Virtualization, Version 1.1

This SD is mandatory for evaluations of TOEs that claim conformance to a PP-Configuration that includes the PP-Module for :

- Client Virtualization Systems, Version 1.1

As such it defines Evaluation Activities for the functionality described in the PP-Module as well as any impacts to the Evaluation Activites to the Base-PP(s) it modifies.

Although Evaluation Activities are defined mainly for the evaluators to follow, in general they also help developers to prepare for evaluation by identifying specific requirements for their TOE. The specific requirements in Evaluation Activities may in some cases clarify the meaning of Security Functional Requirements (SFR), and may identify particular requirements for the content of Security Targets (ST) (especially the TOE Summary Specification), user guidance documentation, and possibly supplementary information (e.g. for entropy analysis or cryptographic key management architecture).

1.2 Structure of the Document

Evaluation Activities can be defined for both SFRs and Security Assurance Requirements (SAR), which are themselves defined in separate sections of the SD.

If any Evaluation Activity cannot be successfully completed in an evaluation, then the overall verdict for the evaluation is a 'fail'. In rare cases there may be acceptable reasons why an Evaluation Activity may be modified or deemed not applicable for a particular TOE, but this must be approved by the Certification Body for the evaluation.

In general, if all Evaluation Activities (for both SFRs and SARs) are successfully completed in an evaluation then it would be expected that the overall verdict for the evaluation is a ‘pass’. To reach a ‘fail’ verdict when the Evaluation Activities have been successfully completed would require a specific justification from the evaluator as to why the Evaluation Activities were not sufficient for that TOE.

Similarly, at the more granular level of assurance components, if the Evaluation Activities for an assurance component and all of its related SFR Evaluation Activities are successfully completed in an evaluation then it would be expected that the verdict for the assurance component is a ‘pass’. To reach a ‘fail’ verdict for the assurance component when these Evaluation Activities have been successfully completed would require a specific justification from the evaluator as to why the Evaluation Activities were not sufficient for that TOE.

1.3 Terms

The following sections list Common Criteria and technology terms used in this document.

1.3.1 Common Criteria Terms

Assurance	Grounds for confidence that a TOE meets the SFRs [CC].
Base Protection Profile (Base-PP)	Protection Profile used as a basis to build a PP-Configuration.
Common Criteria (CC)	Common Criteria for Information Technology Security Evaluation (International Standard ISO/IEC 15408).
Common	Within the context of the Common Criteria Evaluation and Validation Scheme (CCEVS), an

Criteria Testing Laboratory	IT security evaluation facility, accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) and approved by the NIAP Validation Body to conduct Common Criteria-based evaluations.
Common Evaluation Methodology (CEM)	Common Evaluation Methodology for Information Technology Security Evaluation.
Distributed TOE	A TOE composed of multiple components operating as a logical whole.
Operational Environment (OE)	Hardware and software that are outside the TOE boundary that support the TOE functionality and security policy.
Protection Profile (PP)	An implementation-independent set of security requirements for a category of products.
Protection Profile Configuration (PP-Configuration)	A comprehensive set of security requirements for a product type that consists of at least one Base-PP and at least one PP-Module.
Protection Profile Module (PP-Module)	An implementation-independent statement of security needs for a TOE type complementary to one or more Base Protection Profiles.
Security Assurance Requirement (SAR)	A requirement to assure the security of the TOE.
Security Functional Requirement (SFR)	A requirement for security enforcement by the TOE.
Security Target (ST)	A set of implementation-dependent security requirements for a specific product.
TOE Security Functionality (TSF)	The security functionality of the product under evaluation.
TOE Summary Specification (TSS)	A description of how a TOE satisfies the SFRs in an ST.
Target of Evaluation (TOE)	The product under evaluation.

1.3.2 Technical Terms

Administrator	Administrators perform management activities on the VS. These management functions do not include administration of software running within Guest VMs, such as the Guest OS. Administrators need not be human as in the case of embedded or headless VMs. Administrators are often nothing more than software entities that operate within the VM.
Domain	A Domain or Information Domain is a policy construct that groups together execution environments and networks by sensitivity of information and access control policy. For example, classification levels represent information domains. Within classification levels, there might be other domains representing communities of interest or coalitions. In the context of a VS, information domains are generally implemented as collections of VMs connected by virtual networks. The VS itself can be considered an Information Domain, as can its Management Subsystem.
Guest Operating System (OS)	An operating system that runs within a Guest VM.
Guest VM	A Guest VM is a VM that contains a virtual environment for the execution of an independent computing system. Virtual environments execute mission workloads and implement customer-specific client or server functionality in Guest VMs, such as a web server or

	desktop productivity applications.
Host Operating System (OS)	An operating system onto which a VS is installed. Relative to the VS, the Host OS is part of the Platform.
Hypercall	An API function that allows VM-aware software running within a VM to invoke VMM functionality.
Hypervisor	The Hypervisor is part of the VMM. It is the software executive of the physical platform of a VS. A Hypervisor's primary function is to mediate access to all CPU and memory resources, but it is also responsible for either the direct management or the delegation of the management of all other hardware devices on the hardware platform.
Management Subsystem	Components of the VS that allow VS Administrators to configure and manage the VMM, as well as configure Guest VMs. VMM management functions include VM configuration, virtualized network configuration, and allocation of physical resources.
Platform	The hardware, firmware, and software environment into which a VS is installed and executes.
User	Users operate Guest VMs and are subject to configuration policies applied to the VS by Administrators. Users need not be human as in the case of embedded or headless VMs, users are often nothing more than software entities that operate within the VM.
Virtual Machine (VM)	A Virtual Machine is a virtualized hardware environment in which an operating system may execute.
Virtual Machine Manager (VMM)	A VMM is a collection of software components responsible for enabling VMs to function as expected by the software executing within them. Generally, the VMM consists of a Hypervisor, Service VMs, and other components of the VS, such as virtual devices, binary translation systems, and physical device drivers. It manages concurrent execution of all VMs and virtualizes platform resources as needed.
Virtualization System (VS)	A software product that enables multiple independent computing systems to execute on the same physical hardware platform without interference from one other. For the purposes of this document, the VS consists of a Virtual Machine Manager (VMM), Virtual Machine abstractions, a management subsystem, and other components.

2 Evaluation Activities for SFRs

The EAs presented in this section capture the actions the evaluator performs to address technology specific aspects covering specific SARs (e.g. ASE_TSS.1, ADV_FSP.1, AGD_OPE.1, and ATE_IND.1) – this is in addition to the CEM work units that are performed in Section 3 Evaluation Activities for SARs.

Regarding design descriptions (designated by the subsections labelled TSS, as well as any required supplementary material that may be treated as proprietary), the evaluator must ensure there is specific information that satisfies the EA. For findings regarding the TSS section, the evaluator's verdicts will be associated with the CEM work unit ASE_TSS.1-1. Evaluator verdicts associated with the supplementary evidence will also be associated with ASE_TSS.1-1, since the requirement to provide such evidence is specified in ASE in the PP.

For ensuring the guidance documentation provides sufficient information for the administrators/users as it pertains to SFRs, the evaluator's verdicts will be associated with CEM work units ADV_FSP.1-7, AGD_OPE.1-4, and AGD_OPE.1-5.

Finally, the subsection labelled Tests is where the authors have determined that testing of the product in the context of the associated SFR is necessary. While the evaluator is expected to develop tests, there may be instances where it is more practical for the developer to construct tests, or where the developer may have existing tests. Therefore, it is acceptable for the evaluator to witness developer-generated tests in lieu of executing the tests. In this case, the evaluator must ensure the developer's tests are executing both in the manner declared by the developer and as mandated by the EA. The CEM work units that are associated with the EAs specified in this section are: ATE_IND.1-3, ATE_IND.1-4, ATE_IND.1-5, ATE_IND.1-6, and ATE_IND.1-7.

2.1 Protection Profile for Virtualization

The EAs defined in this section are only applicable in cases where the TOE claims conformance to a PP-Configuration that includes the Virtualization PP.

2.1.1 Modified SFRs

The PP-Module does not modify any requirements when the Virtualization PP is the base.

2.2 TOE SFR Evaluation Activities

2.2.1 Auditable Events for Mandatory SFRs

2.2.2 Security Management (FMT)

FMT_MOF_EXT.1 Management of Security Functions Behavior

2.3 Evaluation Activities for Optional SFRs

The PP-Module does not define any optional requirements.

2.4 Evaluation Activities for Selection-Based SFRs

The PP-Module does not define any selection-based requirements.

2.5 Evaluation Activities for Objective SFRs

The PP-Module does not define any objective requirements.

3 Evaluation Activities for SARs

The PP-Module does not define any SARs beyond those defined within the Virtualization PP base to which it must claim conformance. It is important to note that a TOE that is evaluated against the PP-Module is inherently evaluated against this Base-PP as well. The Virtualization PP includes a number of Evaluation Activities associated with both SFRs and SARs. Additionally, the PP-Module includes a number of SFR-based Evaluation Activities that similarly refine the SARs of the Base-PPs. The evaluation laboratory will evaluate the TOE against the Base-PP and supplement that evaluation with the necessary SFRs that are taken from the PP-Module.

4 Required Supplementary Information

This Supporting Document has no required supplementary information beyond the ST, operational guidance, and testing.

Appendix A - References

Identifier	Title
[VirtPP]	Protection Profile for Virtualization, Version: 1.1, 2020-11-17