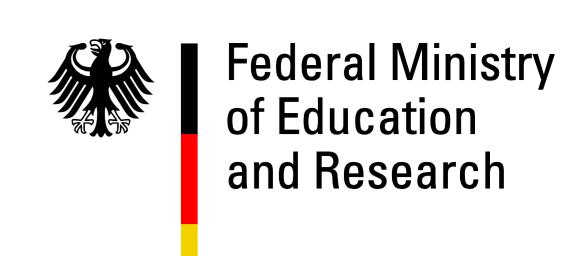


Functional Composition Security



Common Functional Composition (FC) Concept

- Decomposing the layered network stacks into Functional Blocks (FB)
- Dynamically composing based on the Users/Applications requirements
- Inputs to functional composition process:

FC Framework Common components in a FC Framework Request Workflow FB Providers Engine FB Repository

Application

Requirements

Workflow Functional

Composition Administrator

Policies + Domain Policies + Network Constraints

Offerings

Network

Security Threats

- Functional Composition Availability
 - Interrupting
 - Communication between common components
 - Connection between FBs
 - Workflow signalling
 - Requesting
 - Malicious FBs
- Functional Composition Integrity and Confidentiality
 - Sniffing data traffic between FBs
 - Forwarding the user data to a third party
 - Manipulating Workflow during signalling
 - Attacker can act as a legitimate Workflow Engine
 - Malicious FBs

Dynamic and flexibility FC Framework Site-to-Site Requester End-to-End Workflow Workflow Engine Engine End-to-Site End-to-Site FB Provider FB Repository End-to-Site UNIVERSITÄT DUISBURG ESSEN

Security Requirements

- FC common components security
 - Sensible points in a FC Framework
 - Communication between them must be secure
- Functional Block security
 - Insecure FB can cause security problems
 - Authentication
 - Conformance testing
 - Detection for anomalies
- ► FB Communication security
 - Communication between the FBs keeps the entire operability of the FC together
 - Availability, integrity and confidentiality
- Workflow security
 - Workflow specifies the processing steps
 - Authentication
 - Integrity
- Request security
 - Authentication
 - Monitoring the FC reaction

Outlook

- Functional Composition Security System
 - Communication security
 - Conformance testing

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Anomaly detection and defence

