

CONFIDENTIALITY IS SEVERITY OF DISCLOSURE

Analyzing Confidentiality Risks and Comparing IT-Architectures for Business Networks

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introduction

Q: What is confidentiality risk ?
A:

The fundamental problem of confidentiality is that it is not possible to monitor all unauthorized persons to check if they access things they are not entitled to. In the case of business networks this gets more complicated because it introduces new persons.

1

goal

The objective of the Confidentiality Risk Assessment and Comparison (CRAC) method is to provide decision support by allowing comparison of confidentiality risk of different architectures, especially for building networked cooperations and changing an existing network.

2

idea

component risk
A1 (iA1,rA1)
A2 (iA2,rA2)
...
An (iAn,rAn)

impact IFG reachability APG risk

We propose to model the information flow with Information Flow Graphs (IFG) and attack propagation with Attack Propagation Graphs (APG), and consequently combine them to determine the risk.

3

trade-offs

process trade-off:

practicality precision security cost

product trade-off:

4

result

Table 1: Risk presentation table.

components	Architecture 1		Architecture 2	
	impact	reachability	impact	reachability
A4	high	medium	high	high
A5	high	medium	high	high
A10	medium	medium	high	medium
A16	medium	low	medium	medium
A18	null	null	low	high
A21	null	null	high	high
A23	null	null	high	high

- Architecture 1 is more robust w.r.t. confidentiality than Architecture 2.
- Implementing measures to increase the security of Architecture 2 requires higher security expenditure.
- For practicality reasons less precise (qualitative) values are used.

5

conclusions

We develop and evaluate the CRAC method, which

- imposes understanding of the confidentiality risks of networked businesses, and
- provides decision support for choosing the IT-architecture that fits their risk profile better.

We are validating the CRAC method in two field studies.

6

