

Proposal for a Linkage between Zero Trust and MLS CDS^{*}

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Abstract

Zero trust and CDS, which share the commonality of not relying on implicit trust, can play complementary roles in cybersecurity. This study proposes a method for deploying zero trust PDPs and PEPs within MLS CDS.

1 Introduction

CDS is a data-transfer gateway between domains of differing trust, and Zero Trust is a policy engine that controls access by evaluating the trustworthiness of users and devices. This paper organizes the two concepts and proposes a linkage method with MLS CDS.

2 Background

2-1. ZT

ZT consists of a PDP that makes the final determination on access, a PA that converts decisions into commands and sets up paths, and a PEP that opens and closes connections according to the commands[1].

2-1. MLS CDS

MLS CDS is a concept that supports processing and storing information of different security levels within a single system or network. It assigns a security label to all data and ensures that this label is maintained during data transmission[2].

3 MLS CDS and ZT Linkage plan

As a plan to deploy Zero Trust's PEP and PDP in the MLS CDS, first, the PDP, which is

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responsible for policy decisions, can secure all activities related to data labeling and can be placed inside the DMZ, which maintains a higher security level. The PEP, the policy enforcement point, can be distributed at every threshold of the data flow. First, at the boundary, they are placed in front of and behind each Portal so that, according to the PDP's determination, they decide whether to allow the connection, and inside the DMZ, PEPs are placed at the ingress and processing parts of the Identity and Request Source Manager so that policy is enforced by combining the contents of the request with the label information possessed by the target resource .

4 Conclusion

In this paper, we proposed a linkage approach between MLS CDS—one of the three elements of CDS—and Zero Trust. CDS can perform an important role by utilizing the two core points of Zero Trust, the Policy Decision Point (PDP) and the Policy Enforcement Point (PEP), and Zero Trust can be integrated with the three CDS elements—Access CDS, Transfer CDS, and MLS CDS—to play mutually complementary roles.

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