

# Cross-Domain Cascade Composition

by [Nick Clark](#) | Published April 25, 2026

## What It Specifies

Cross-domain dependencies enter the topology graph with cross-domain credentials. Cascade analysis traverses the dependencies across domains; the cross-domain analysis carries credentials from both source and target domains.

Cross-domain composition is governance-credentialed. The composition authority, the cross-domain mapping, and the resulting cascade analyses all enter lineage; downstream audit verifies cross-domain analysis structurally.

## Why It Matters Structurally

Single-domain cascade analysis faces structural blindness to cross-domain effects. Real cascades cross domain boundaries; the architecture must support the crossings structurally.

Cross-domain composition produces structural support. The architecture admits cross-domain dependencies; cascade analysis traverses the dependencies; cross-domain mitigation proceeds through coordinated authority.

## How It Composes With Mesh Operation

The architecture defines the cross-domain mapping format, the cross-domain analysis primitives, and the cross-domain mitigation coordination. Implementations apply the architecture; cross-domain operations proceed structurally.

Composition with other features. Cross-jurisdictional cross-domain composition, byzantine-robust cross-domain analysis, and dispute mechanism for cross-domain disagreements all build on the composition primitive.

## **What This Enables**

Defense-civil cascade analysis (defense-grid interactions, defense-communication interactions) gains structurally-supported composition. Civilian cross-sector resilience gains the same.

The architecture also supports composition evolution. As cross-domain dependencies are characterized through operational experience, composition mappings update through governance procedures.