

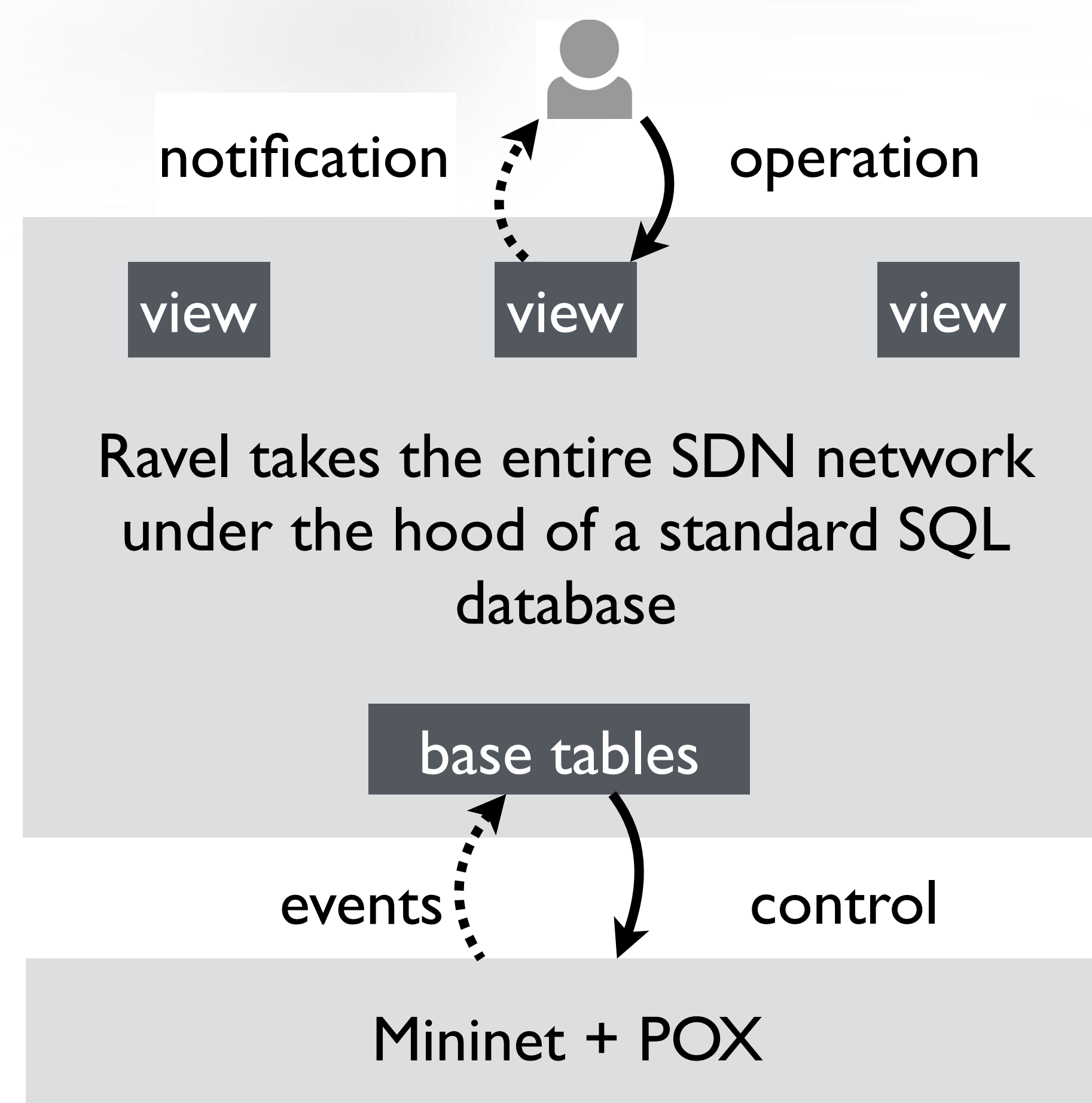


Ravel: Orchestrating Software-Defined Networks



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Ravel design



Ravel components

- users: control program embedded with SQL query and update
- views abstraction: created, queried, and updated by the applications
 - programmable: derived SQL view
 - open: SQL view is readily available to others without re-compilation
- base tables: store network state, hides hardware detail, fast network access and update

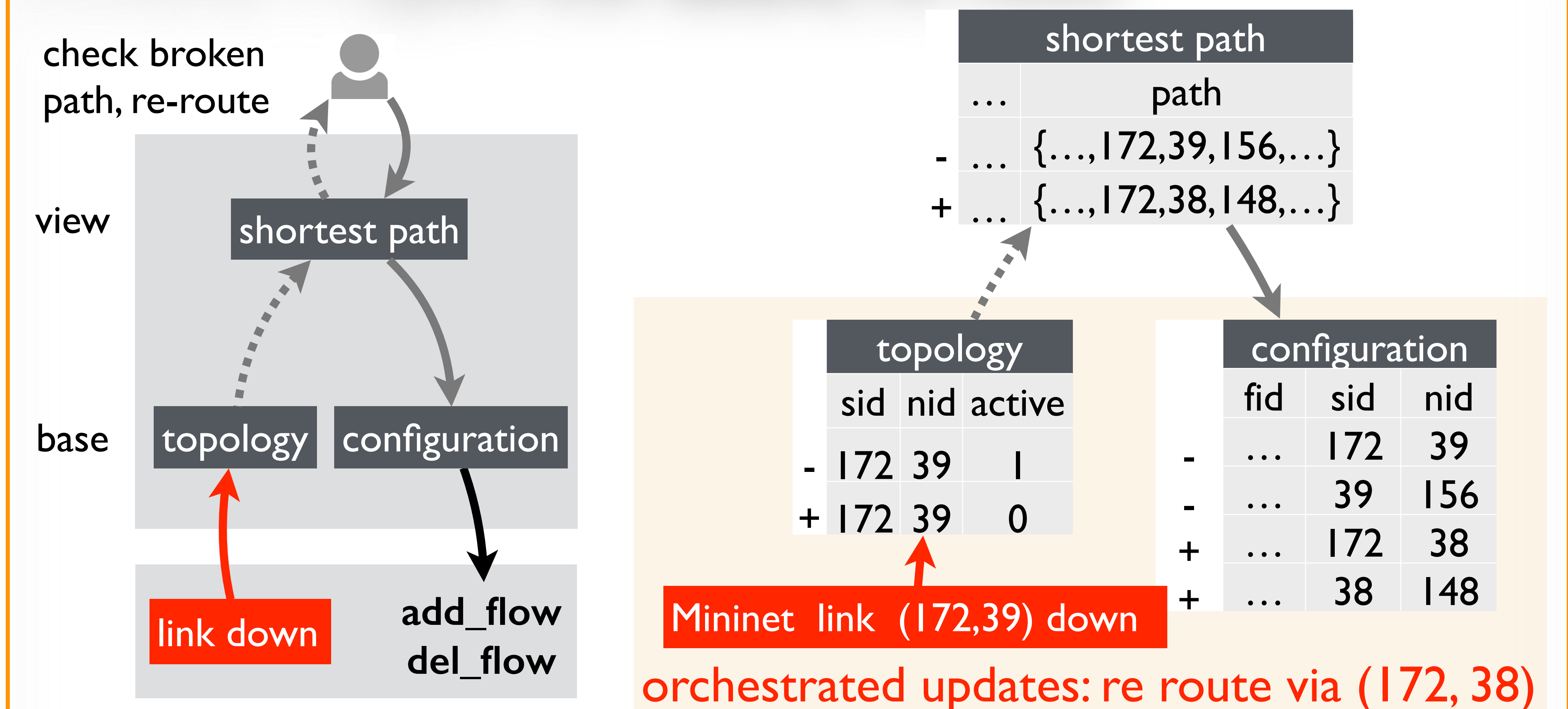
Ravel services

- vertical orchestration
 - synchronize derived views and their source views / tables
 - enables network control via view update
- horizontal orchestration
 - a priority-based data-sharing protocol that coordinates view updates
 - allows applications act autonomously while living in harmony

motivation

- SDN network is collectively driven by many applications
- the applications interact
 - applications collaborate, e.g., access control and routing
 - applications conflict, e.g., access control and load balancer
- existing solution unsatisfying
 - require a master program that coordinates the dynamics

scenario 1: Upon link failure, re route



scenario 2: upon new tenant flow request, install a load-balanced, safe route

