



NetIDE

Approaches to conflict resolution

Dr. Pedro A. Aranda Gutiérrez
pedroa.aranda@telefonica.com



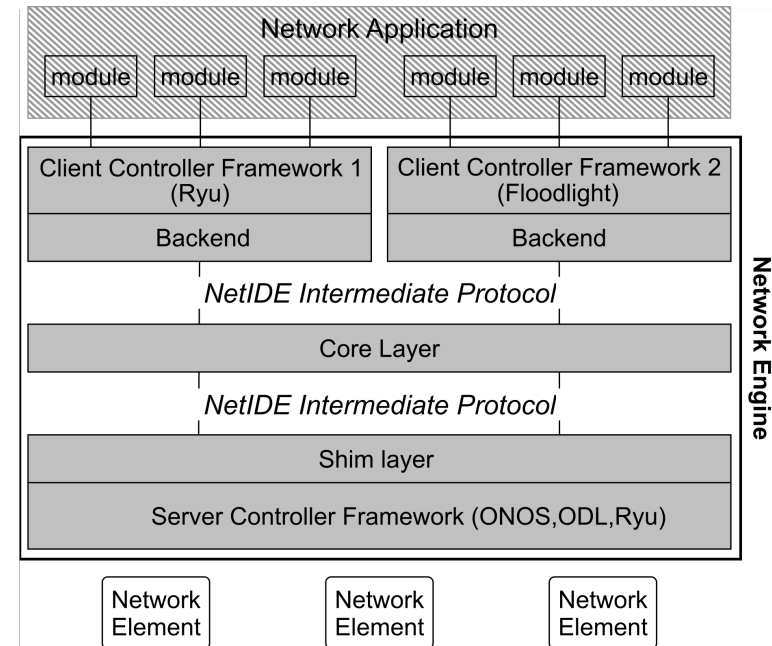
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Background

- * Results from the NetIDE project
- * Started as OF-centric, but were extended to cover other protocols
- * Current status:
 - * OF version-oblivious architecture
 - * Extending to netconf

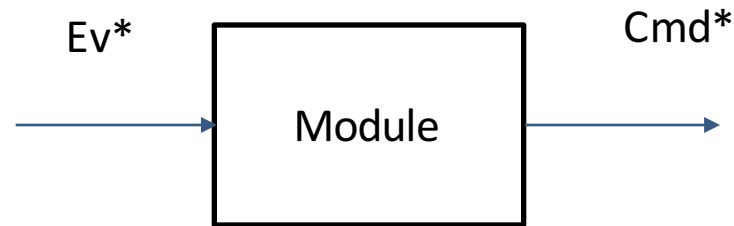
Short recap

- * NetIDE architecture
 - * Client/Server SDN controller paradigm of ONF
 - * Network Application's modules are given the runtime environment they expect in the client controller
 - * Multi-controller support (OpenDaylight, Ryu, Floodlight, ONOS, ...)



- * ONF SDN architectural concepts

The OF model



- * or should I say non-model?
- * If you ever wanted a simple model, there you are
- * Whether it is use-/meaningful is a different question

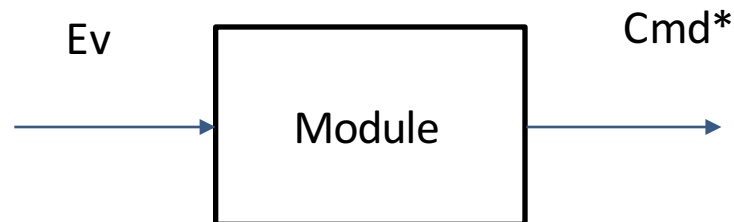
Our assumptions

- * There is no conflict against network state
- * Examples that may sound like conflict but are not:
 - * Shut down an active interface
 - * Change next hop for a given prefix
- * If the result is unwanted
 - * we face a bug in the application
 - * but the network element should not try to correct this bug

So, when can we do anything?

- * In comes the transaction concept:
 - * A network event and its resulting commands (or lack thereof) form a unit, we call *transaction*

$\{Ev, Cmd^*\}$

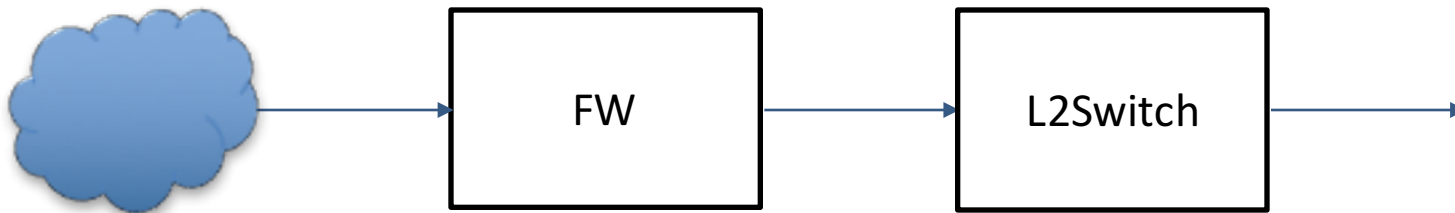


Conflicts become obvious with transactions

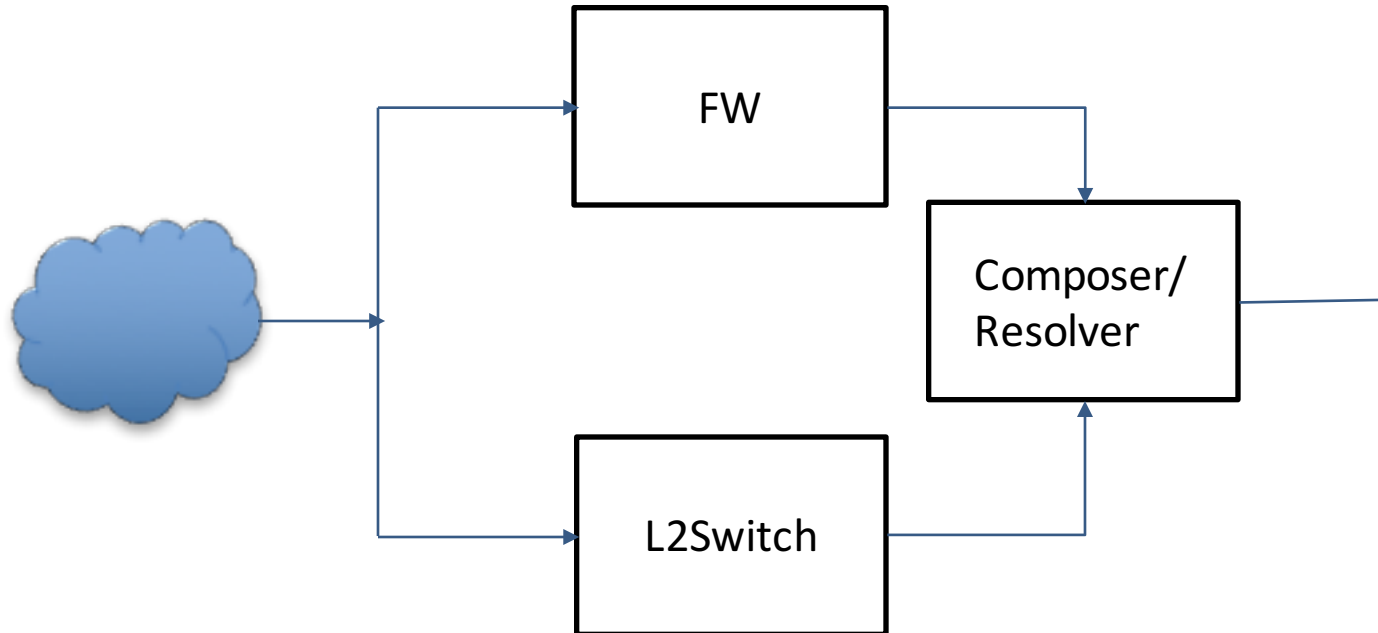
- * When two or more transactions triggered by the same event are sent to the network
 - * Conflicts are easy to detect
 - * We can start thinking about automated remedies for them

Applying the results to application composition

- * In SDN we should start thinking in other terms than stitching
- * Example: Connecting a DMZ to the Internet



Composing a stealth firewall



Next steps

- * As said before, integration of netconf
- * An attempt at pro-active applications
 - * Comamnds are not triggered by events
 - * Normally when an application is started



NetIDE

Thank you!

Questions? Reactions...



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