Realization of SDN using Opendaylight

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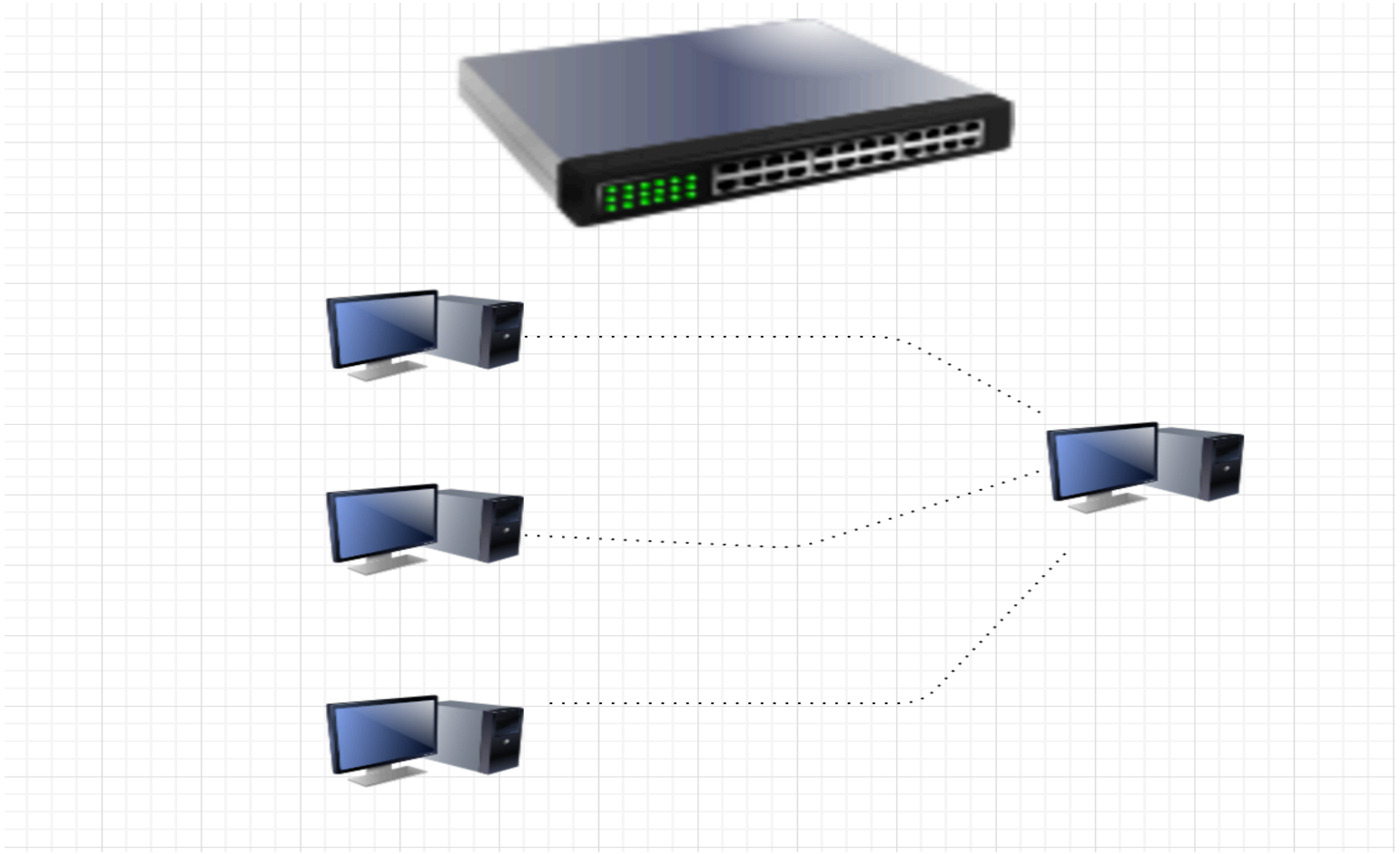
Use Cases

- QoS-Enabled Adaptive Video Streaming
- Priority QoS for Critical Applications
- Dynamic Network Bandwidth Allocation
- Bandwidth on Demand (BWoD)
- On-Demand Personal Virtual Networks
- Simplified Customer Premise Equipment

QoS-Enabled Adaptive Video Streaming



QoS-Enabled Adaptive Video Streaming

- Flows were pushed through the entire path between source and destination
- Client will provide source and destination IP/ MAC address
- Application will choose port
- Streaming was demonstrated using a VLC on the destination host
- Host with the SDN path, showed high quality in the video.

To achieve QoS,

- Created separate queues(q0,q1) for the dedicated host.
- Flows with specified bandwidth were pushed
- QoS-enabled adaptive video streaming eliminates packet loss, delay & jitter, ensuring quality viewing experience for the customer

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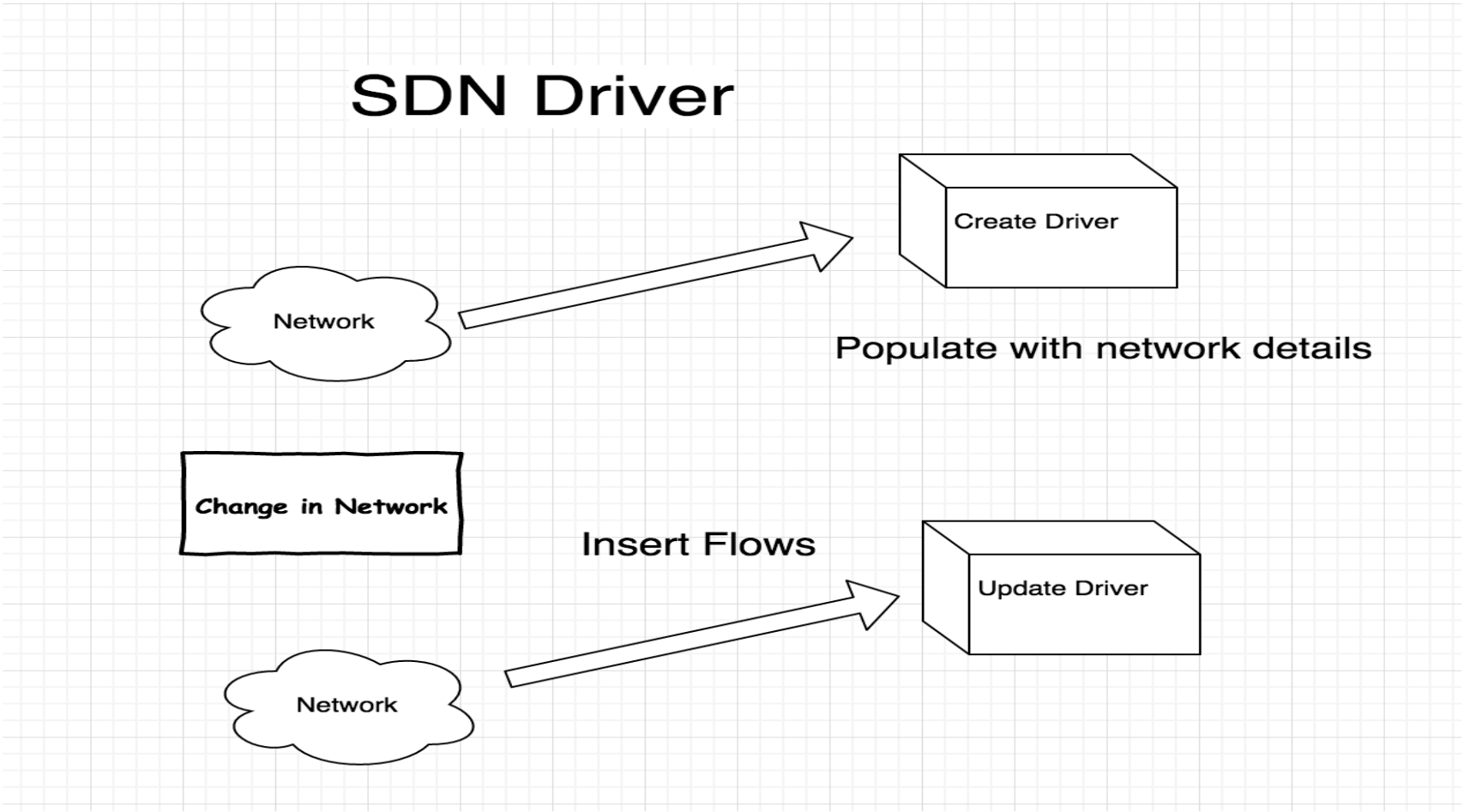
SDN DRIVER @ MAX

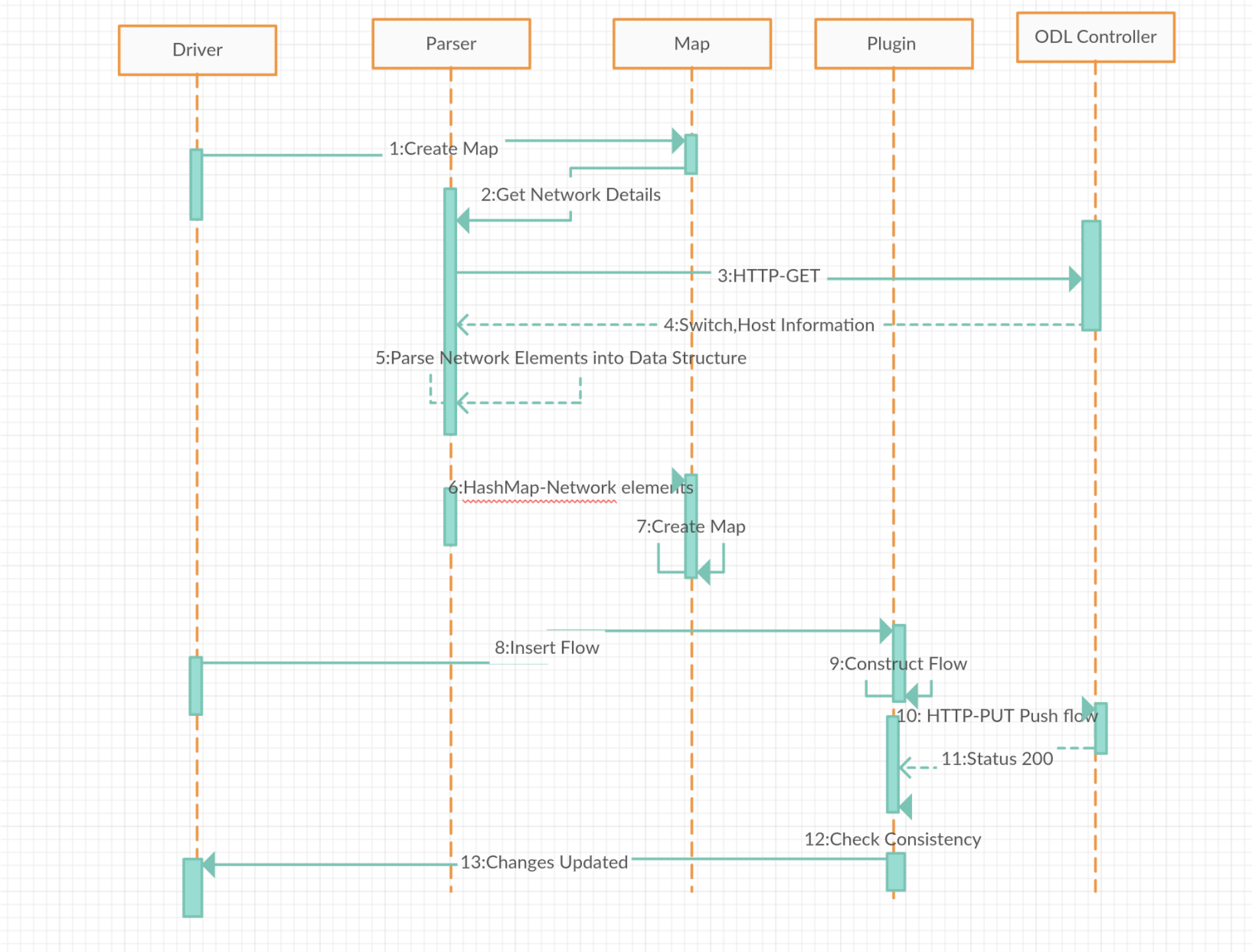
Flow Based REST API



Flow Based REST API

- Network Orchestration project
- SDN Driver through RESTFul Webservices
- Application communicates with the SDN Controller
- Fetches the network information through REST API
- Network Data is modeled into application

CONTROL FLOW OF THE DRIVER


Driver
Parser
Map
Plugin
ODL Controller
1:Create Map
2:Get Network Details
3:HTTP-GET
4:Switch,Host Information
5:Parse Network Elements into Data Structure
6:HashMap-Network elements
7:Create Map
8:Insert Flow
9:Construct Flow
10: HTTP-PUT Push flow
11:Status 200
12:Check Consistency
13:Changes Updated

DEMO MANUAL

MAJOR CHALLENGES FACED:

- Parse network elements into a data structure
  Reason: Multiple fields for a flow entry

- Construction of a flow
  No definite documentation for a syntax of a flow

- Inconsistency between Operational & Config dataStore

Future work

- A Generic JavaEE framework that pushes flows into the Network
- Priority QoS for Critical Applications
- Interactions with legacy networking protocols

You cannot connect the dots looking forward, you can only connect them looking backward !

Thank you

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MAX TEAM

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Thank you

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