How to realize CDN Interconnection (CDNI) over OpenFlow

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Introduction

- OpenFlow provides programmability and controllability with commodity switches
  - representative component for SDN
  - scalability problem
- Some studies are carried out to mitigate the controller overhead
  - Devoflow (hotnets 2010), Hyperflow (INM WREN 2010), Onix (OSDI 2010), etc.
- SDN/OpenFlow can be leveraged for efficient content delivery

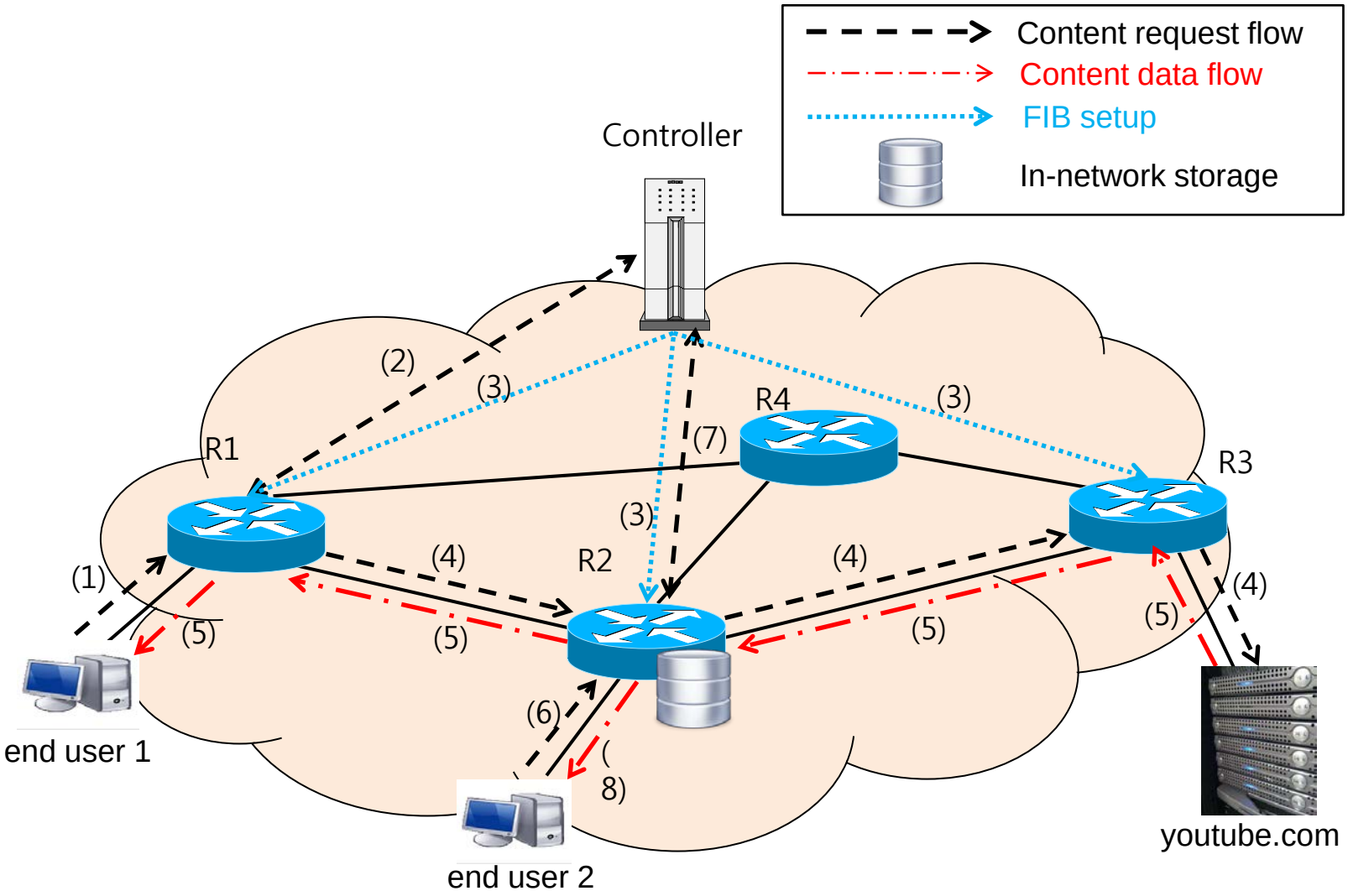
C-flow

- We propose C-flow
  - the framework to deliver content efficiently with OpenFlow in a domain
  - inter-controller signaling framework to deliver across domains

Content delivery in a single domain

- It provides framework for efficient content delivery over OpenFlow
- OpenFlow controller sets up path between an end user and the content
- It maps an IP address to an item to be delivered
  - emulates route-by-name
  - is capable of caching and retrieving content

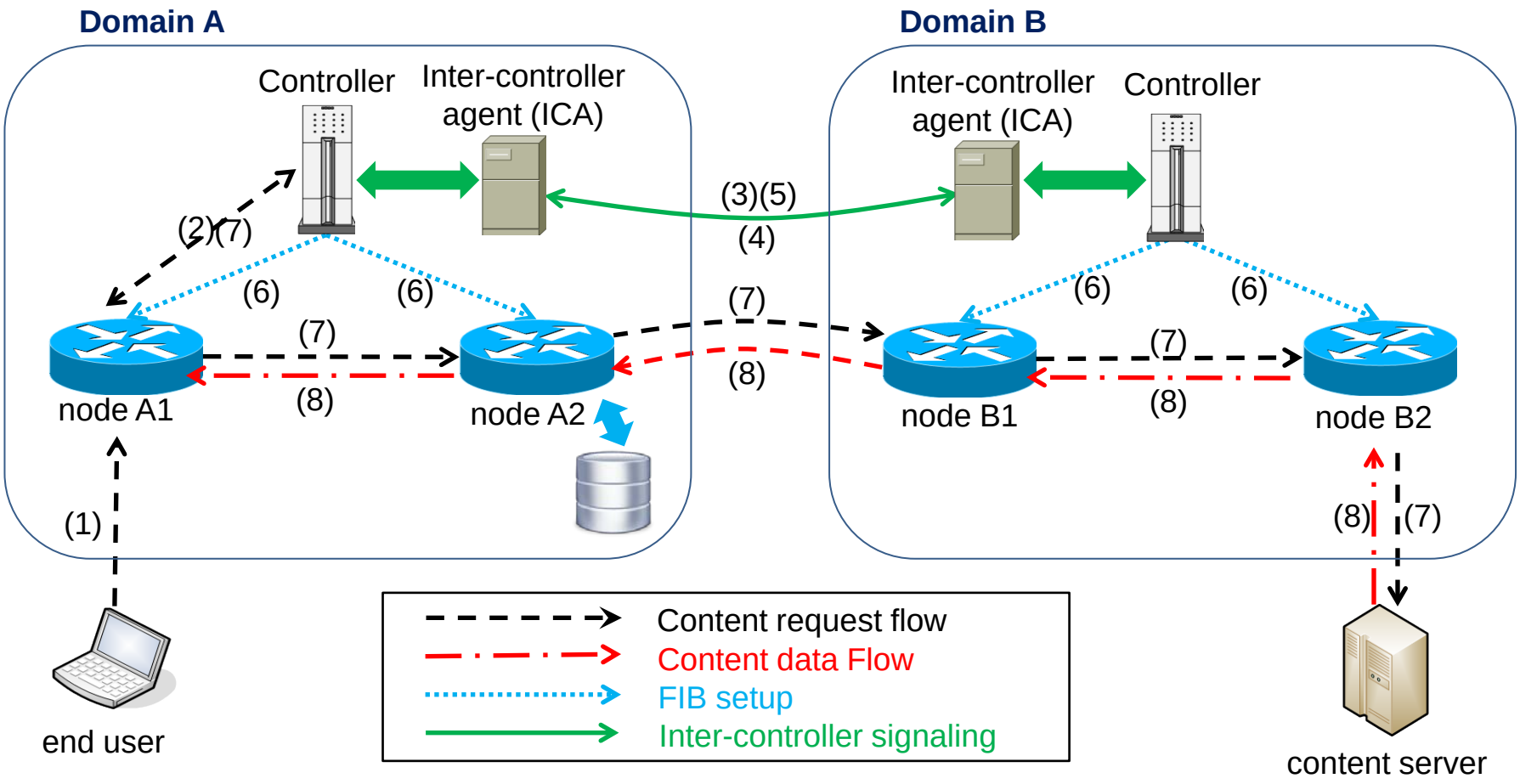
Content delivery in a single domain



Content delivery across multiple domains

- It provides inter-controller signaling for content delivery across domains
- it supports some features of CDN interconnection (CDNI)
  - Request routing interface
- inter-controller agent (ICA)
  - establishing SSL connection btw. ICAs
  - exchanging content distribution metadata
- may reuse OpenFlow signaling without modification

Content delivery across multiple domains



Conclusion

- We map an IP address to an item to deliver it efficiently
  - emulate route-by-name
- We propose the framework to deliver content across domains
  - CDNI
- Mobility support and multicasting across domains are in progress