UAV-SDWN

DONGDA LI

Difference between wired SDN

UAV can not keep connecting with nodes do real-time network scheduler, so we can not use some solutions like OpenFlow.

Our work just like software reconfiguration of sensor nodes.

We design easy-to-use interface and build easy-to-deploy system for WSN.

Architecture

Applications
- Routing algorithm
- Network function virtualization
- Network monitor
- Task scheduler
- Algorithm evaluator

Northbound Interface

Control platform
- Topology manager
- Device manager
- Statistic service
- Synchronization service

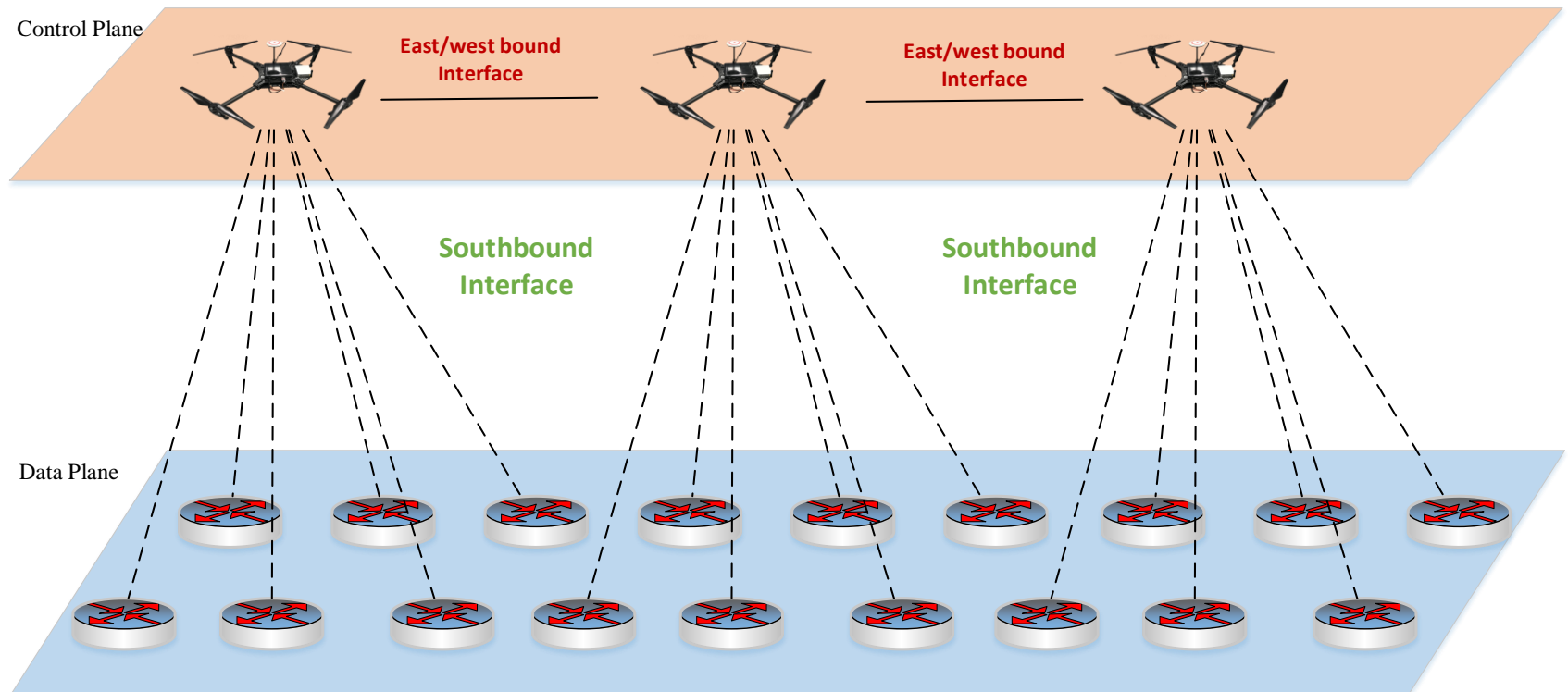Southbound Interface

Data plane
- node
- node
- node
- node
- node
- node
- node
- node

Interface

Interface

Southbound Interface: the basic interface on sensor, can easy to deploy via wireless communication

Control plane: Adopting the southbound interface to build network services and manager

Northbound Interface: high level interface provide for sensor and network application

East/west bound interface: the interface between UAVs

Southbound Interface

Abstract the interface on nodes to UAV, make the functions on sensor is easy-to-deploy

- **Sensor** interface (e.g. sample rate, report interval, data filter)

- **Communication** interface (e.g. data transfer, routing, radio duty cycle, radio power)

Services and manager

Basic services and manager provide for upper layer

Device manager: manager the nodes control by this control plane

Topology manager: maintain topology support for routing design

Synchronization: Synchronize data between UAVs

Statistic service: statistic network metrics (e.g. total energy consumption)

Routing

Optimize routing algorithm

Change routing design metrics balance according requirement

Metrics:

- Energy

- Latency

- Throughput

Algorithm Evaluator and NFV

Evaluator: Very easy to deploy and evaluate existed WSN algorithms

E.g. HCDD ECDC EEHC

NFV

Node virtualization

Sensor task virtualization

Thank you!