Parallel Vs. Sequential

- Both one phase and two phase require more processing at the connection manager.
- Two phase algorithm takes up a bit more time at the agent - double of the overhead
- These cause the performance problem when the load is high
- When would the parallel approach make sense ?

  Perhaps when the compuation on the switch, e.g., billing, fault recovery provision etc., is much larger than the overhead.

  Good old law of parallel computing applies !

COMING SOON !

Multi-Threaded Virtual Switch

Fault tolerant issues

NEXT SEPTEMBER

Ivan Ming-Chit Tam, Weiguo Wang, Regis Guillaume, Douglas Tang, Chua Hoon Peng, Ajit Mohan,

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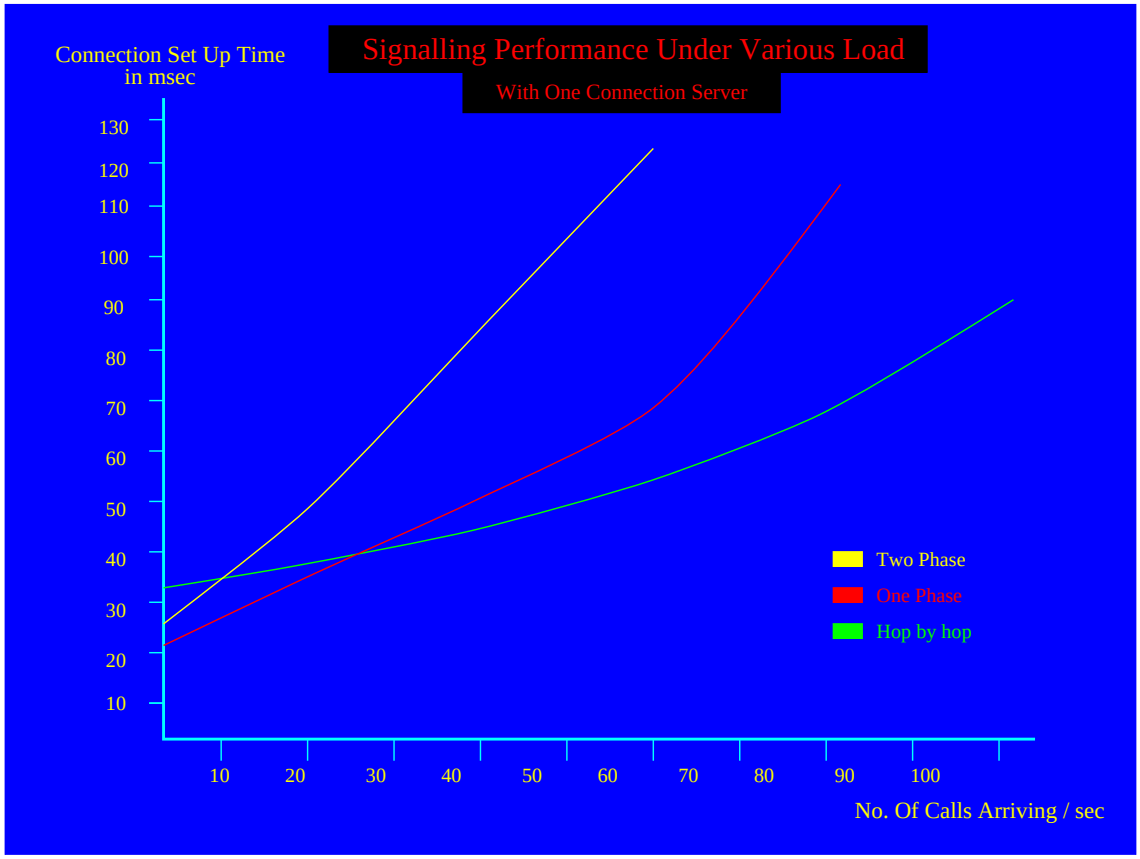
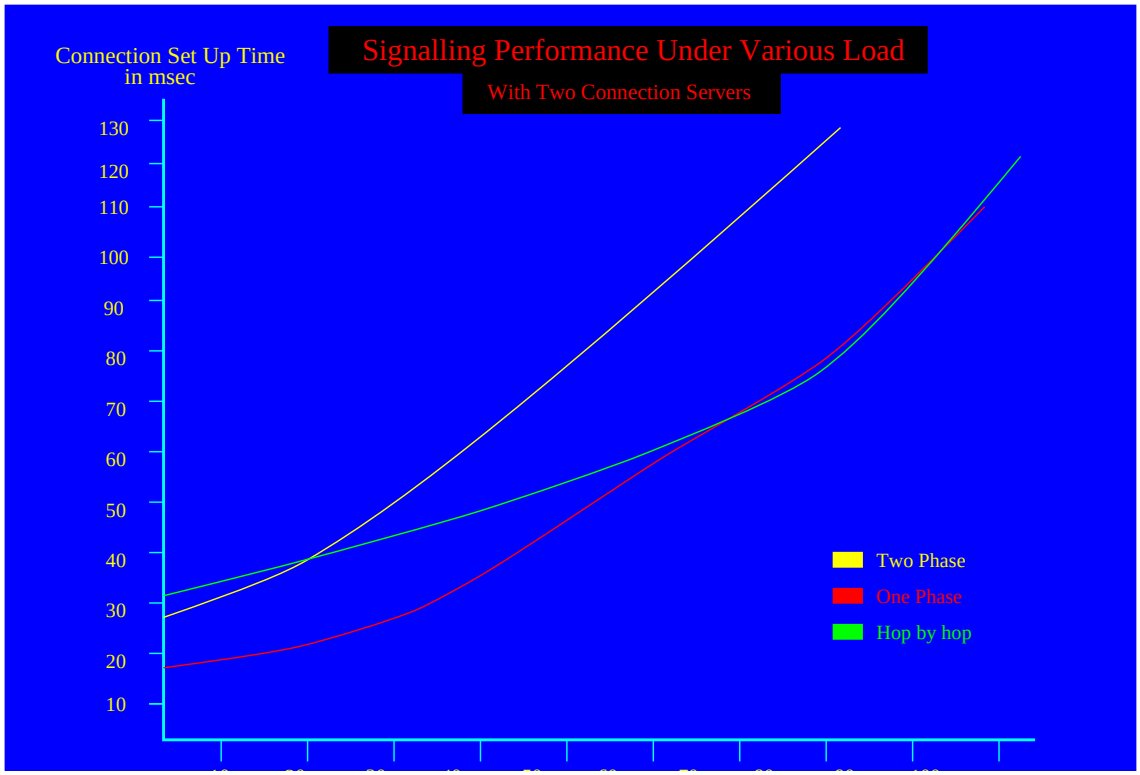

Signalling Performance Under Various Load
With One Connection Server
Connection Set Up Time
in msec
130
120
110
100
90
80
70
60
50
40
30
20
10
10
20
30
40
50
60
70
80
90
100
No. Of Calls Arriving / sec
Two Phase
One Phase
Hop by hop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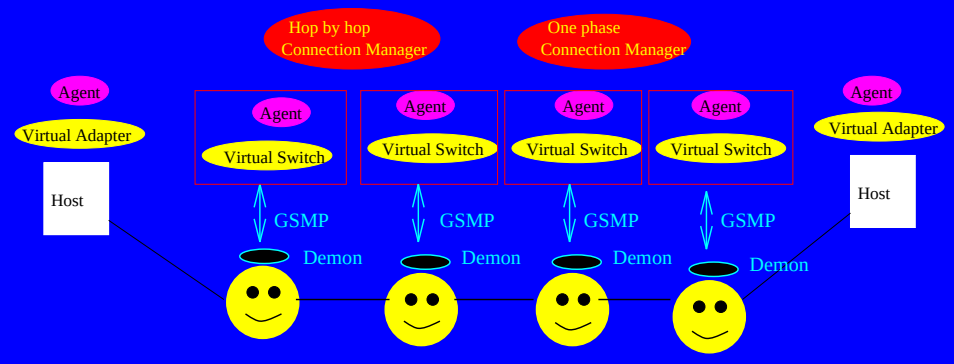
130
120
110
100
90
80
70
60
50
40
30
20
10
Two Phase
One Phase
Hop by hop

Redistribution of Virtual Switch and Agent



- Move virtual switch and agent out of switch.
- Use GSMP as protocol between virtual switch and a switch demon
- Scalable - allow more switch intelligence to be put into agent or virtual switch.

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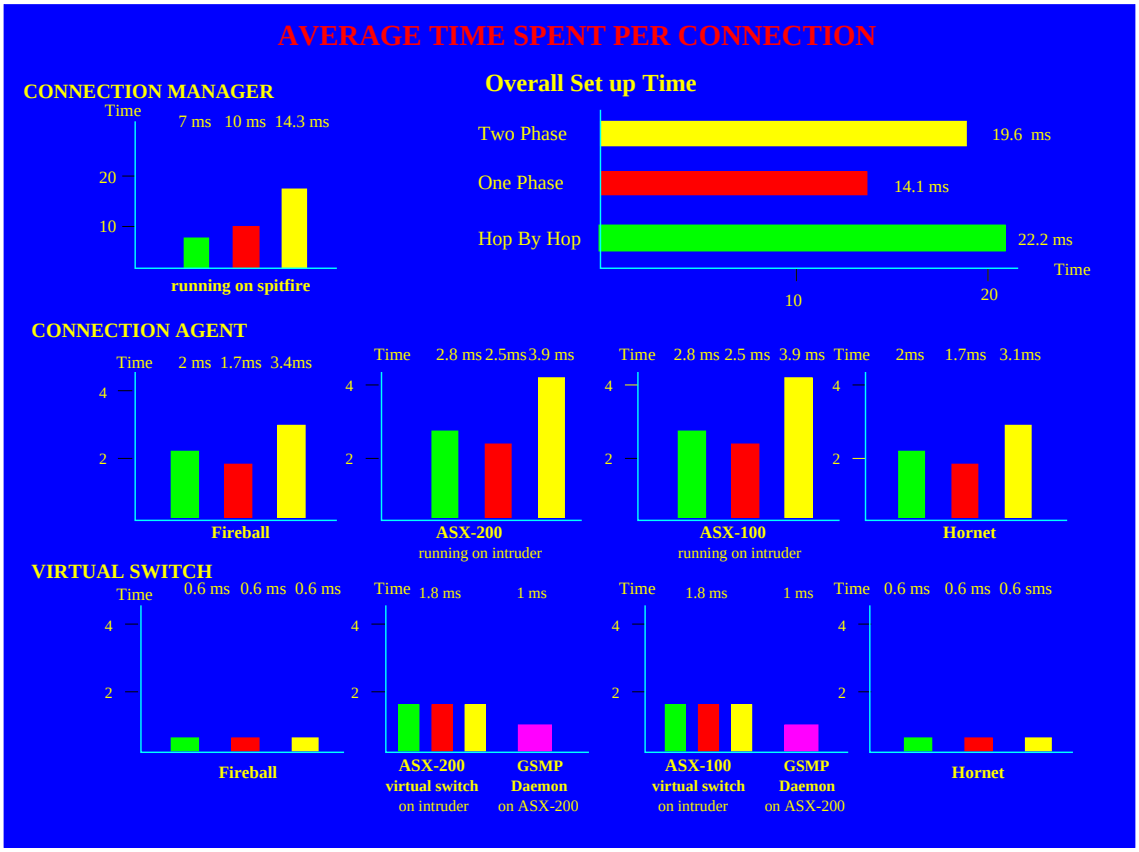
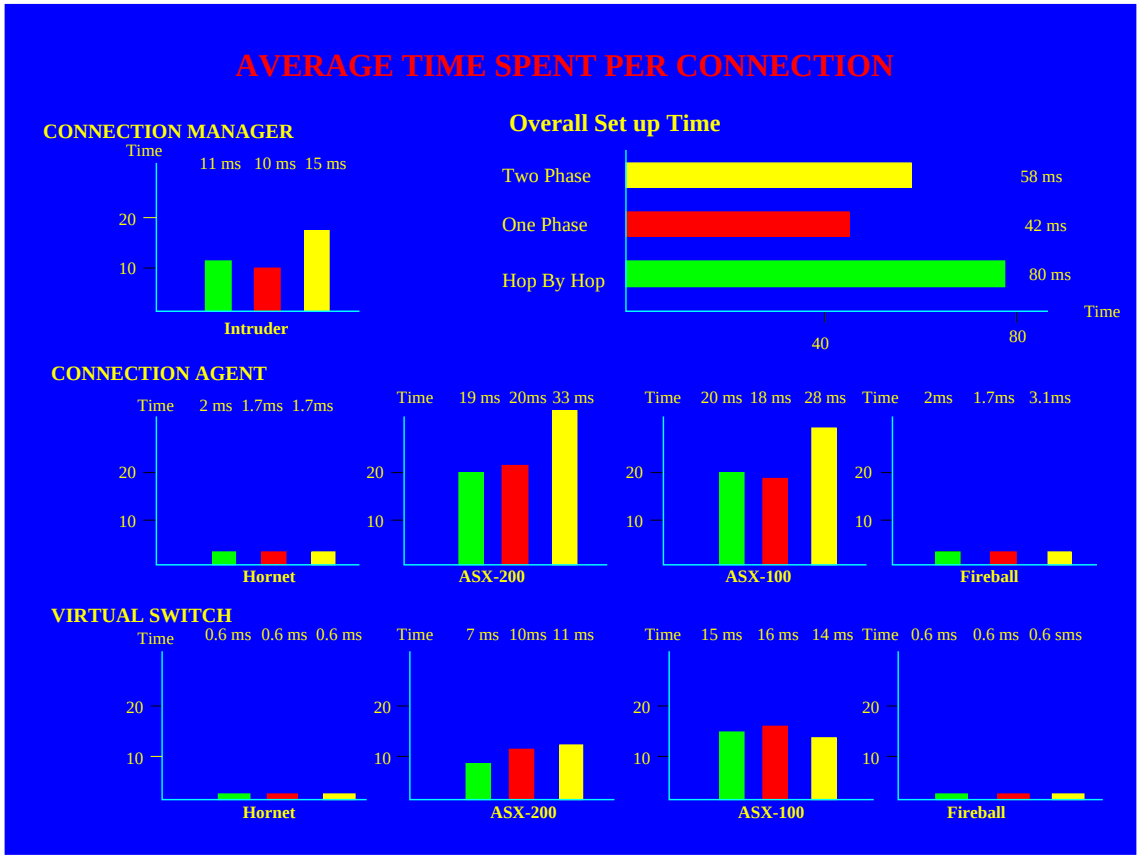
AVERAGE TIME SPENT PER CONNECTION





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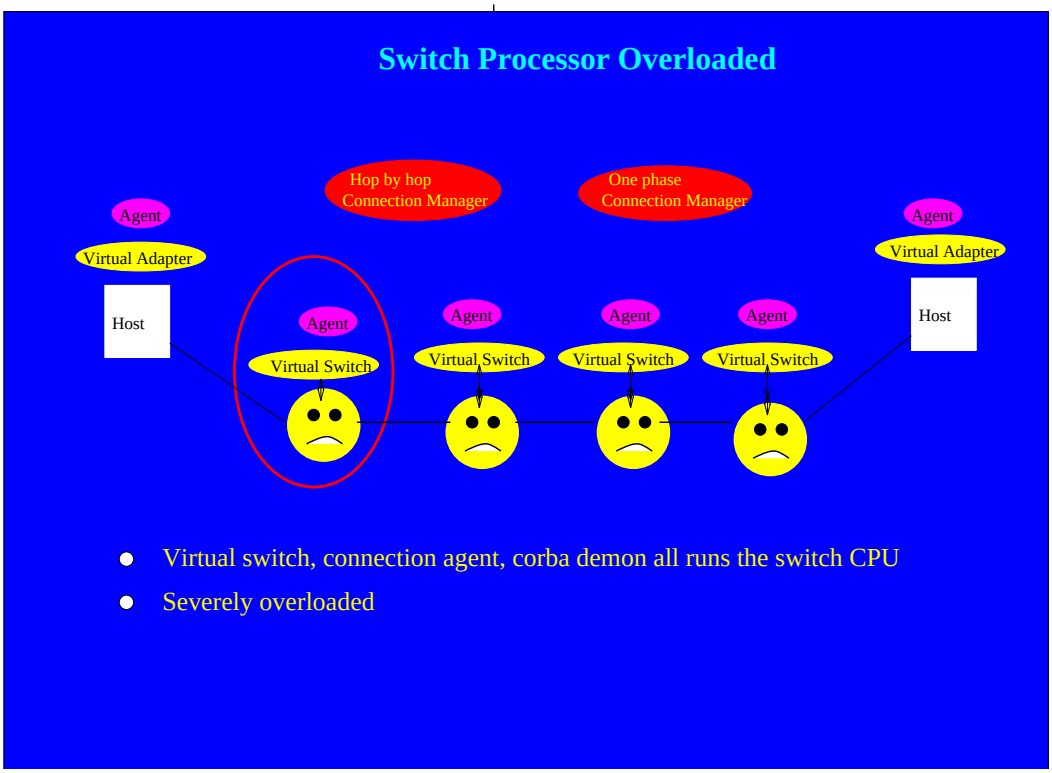
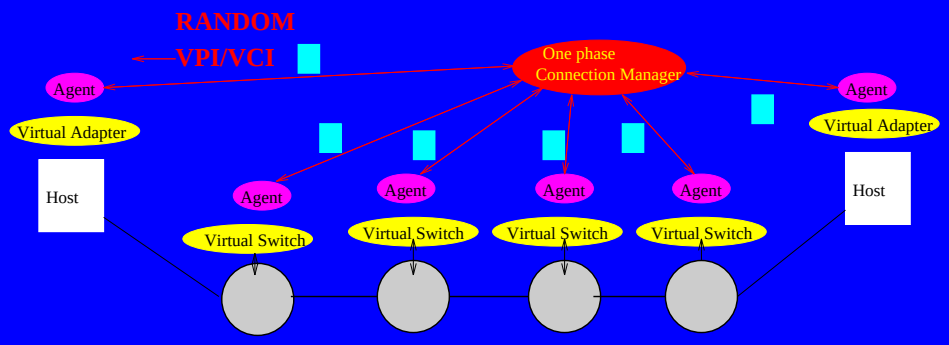


One Phase



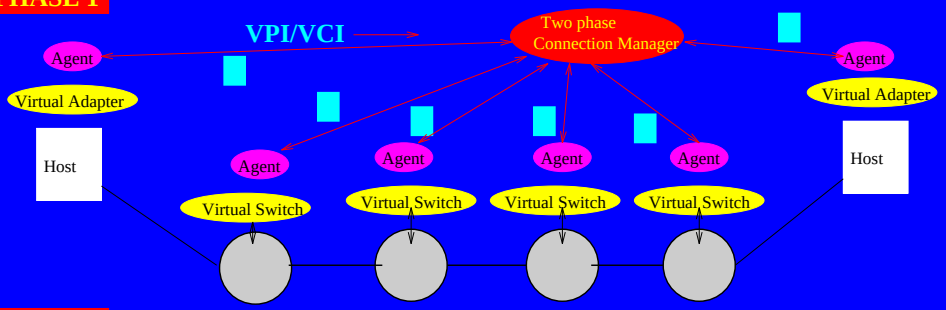
One Phase ⟶ Two Phase

If output VCI collides, virtual switch assigns a new one and returns the value to the manager

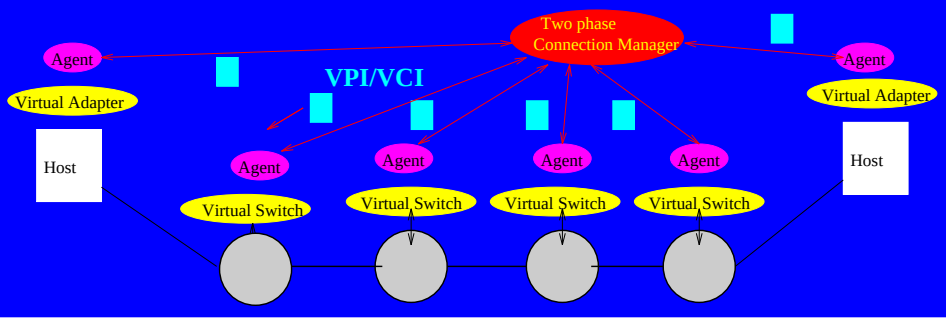
Manager informs the next switch about the change

Two Phase

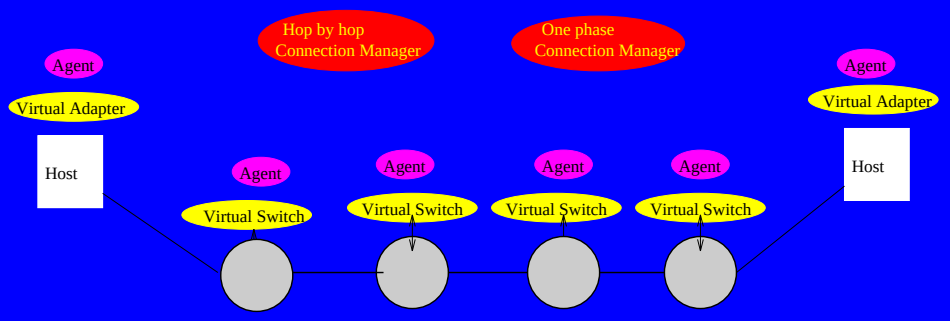
PHASE 1



PHASE 2

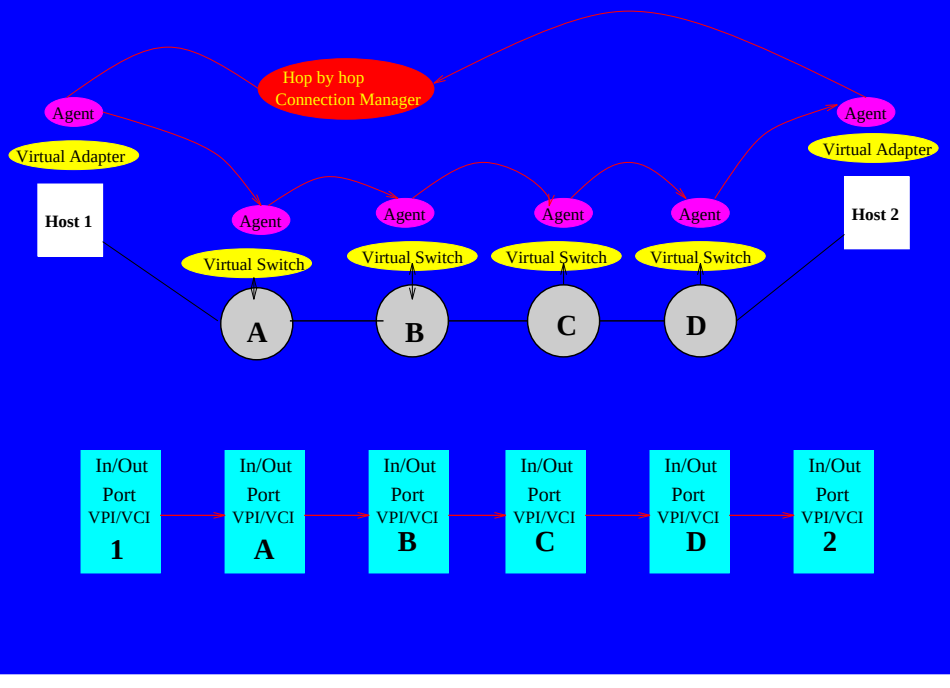


Architecture Components



1. Host creates virtual connection object in connection manager
2. Host invokes 'set up' method of the connection object with source, destination addresses.
3. Connection object gets route from routing agent.
4. Connection object makes calls to connection agents on the switches
5. Connection agents call back to connection object to report 'set up' results
6. Host asks the connection object to query on set up status.
7. Calls in 2, 4, and 5 are CORBA one-way calls.

HOP BY HOP



A Performance Study of Three Connection Algoroithms Over A Scablable Open Signalling Platform

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In this talk ....

- **Connection Architecture that support multiple algorithms**
- **Best case performance under before and after the change**
- **Architecture change that involves redistributing of functionalities**
- **Performance comparision of algorithms under heavy load**

Connection Architecture that Support Multiple Algorithms

Motivation

- **Investigate different types of connection algorithms, e.g., hop by hop, two phase, and one phase. In performance, and processing load put onto the signalling system.**
- **We find that the BIB defines elementary operations, e.g., getOutputChannelIdentifier, setInputChannelIdentifier and commitChannel.**

  To set up a connection requires multiple remote operations, i.e., multiple RPC calls to the Virtual Switch BIB, expensive.

- **Create a semi-Intelligent agent on every switch to support multiple types of connection algorithms.**