



Interoperability Report for ForCES (draft-ietf-forces-interop-01)

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Summary

- Location, Date and Participants
- Tested Material
- Testbed Configuration
 - Access
 - Local
 - Distributed
- Scenarios Tested
- Test Results
- Issues Found



Location, Date and Participants

- Location
 - Zhejiang Gongshang University –China
 - the Internet Technology Lab (ITL)
- Date
 - 24-25/2/ 2011
- Participants
 - Zhejiang Gongshang University/Hangzhou BAUD Networks ,China
 - NTT Corporation, Japan
 - The University of Patras,Greece

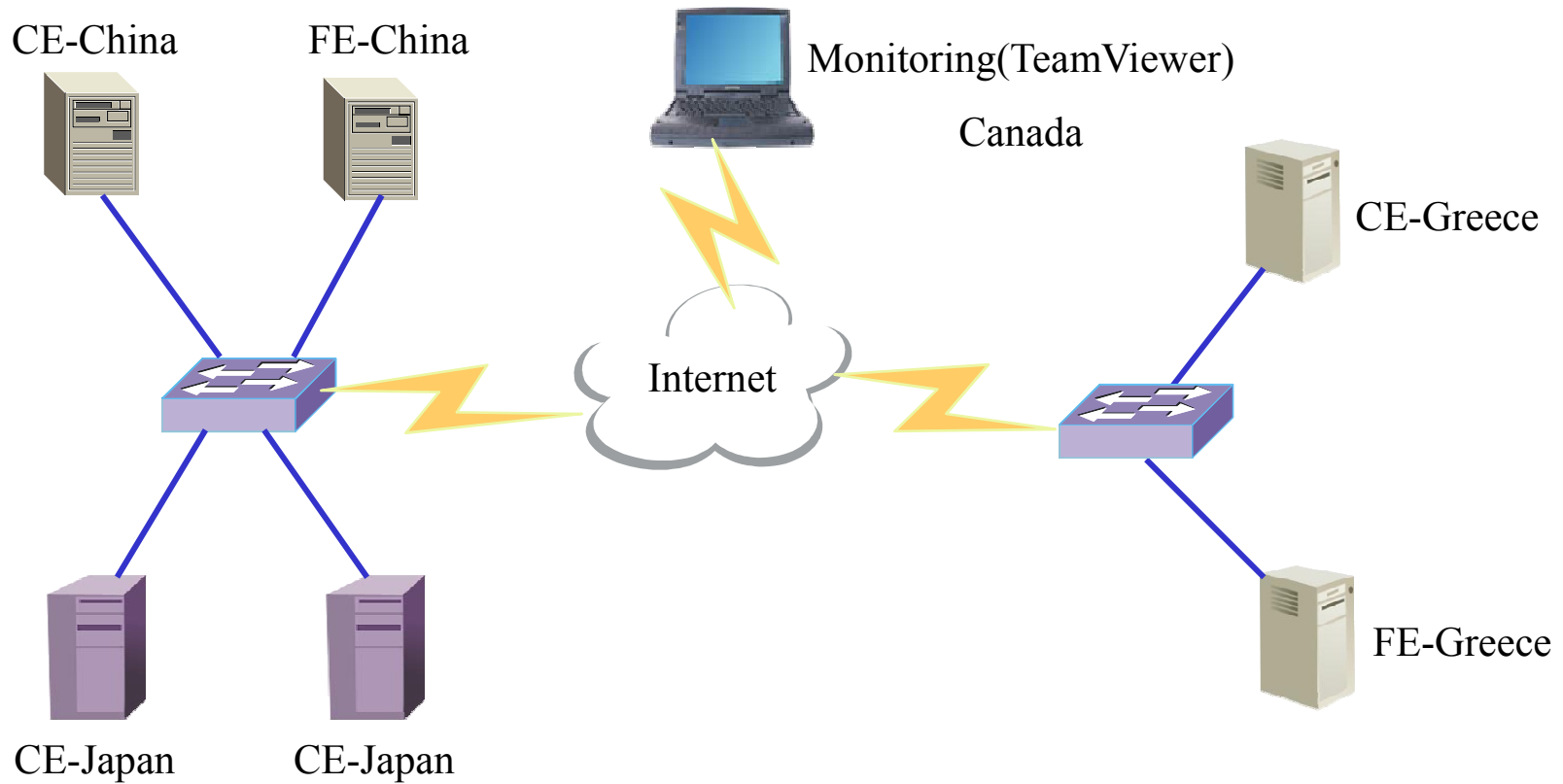


Tested Material

- Protocol, RFC5810
- Model, RFC5812
- LFB Lib, draft-03
- CEHA, draft-01

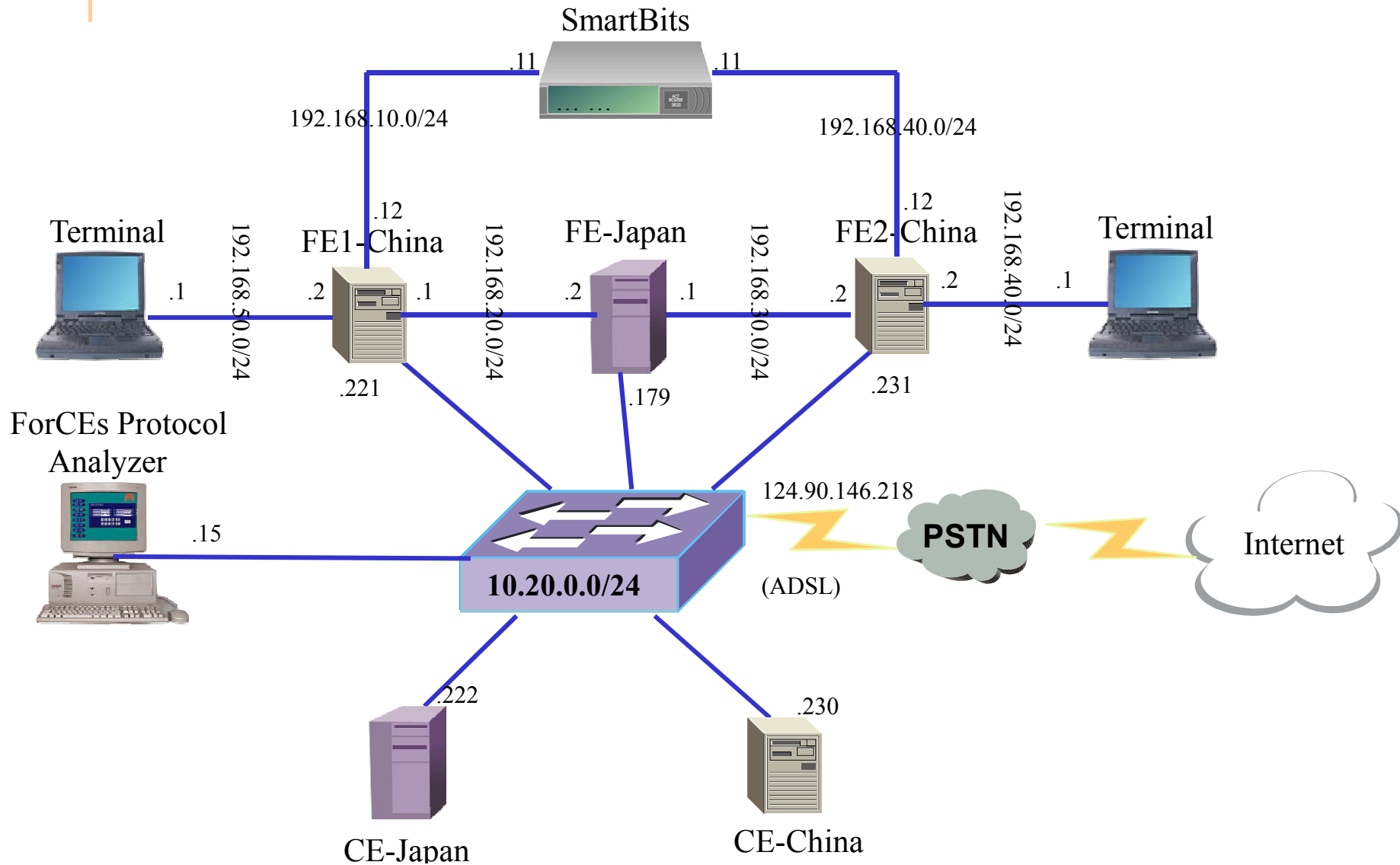


Testbed Configuration-Access



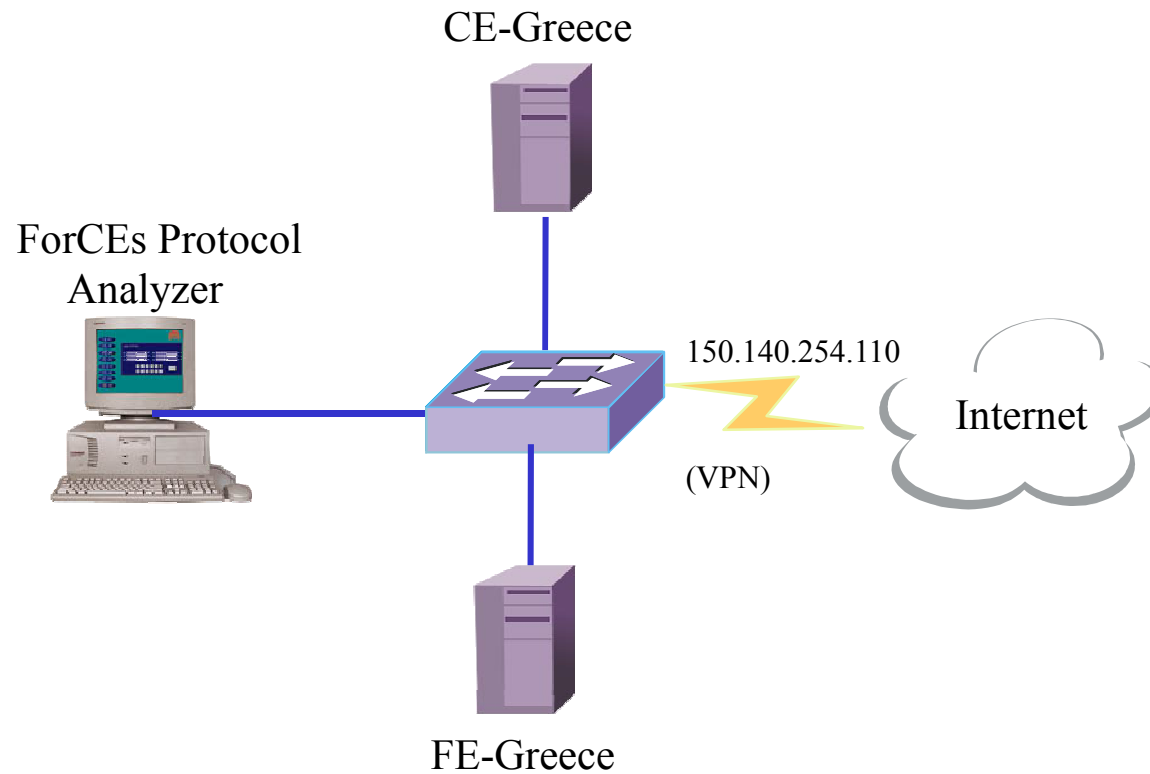


Testbed Configuration- Local



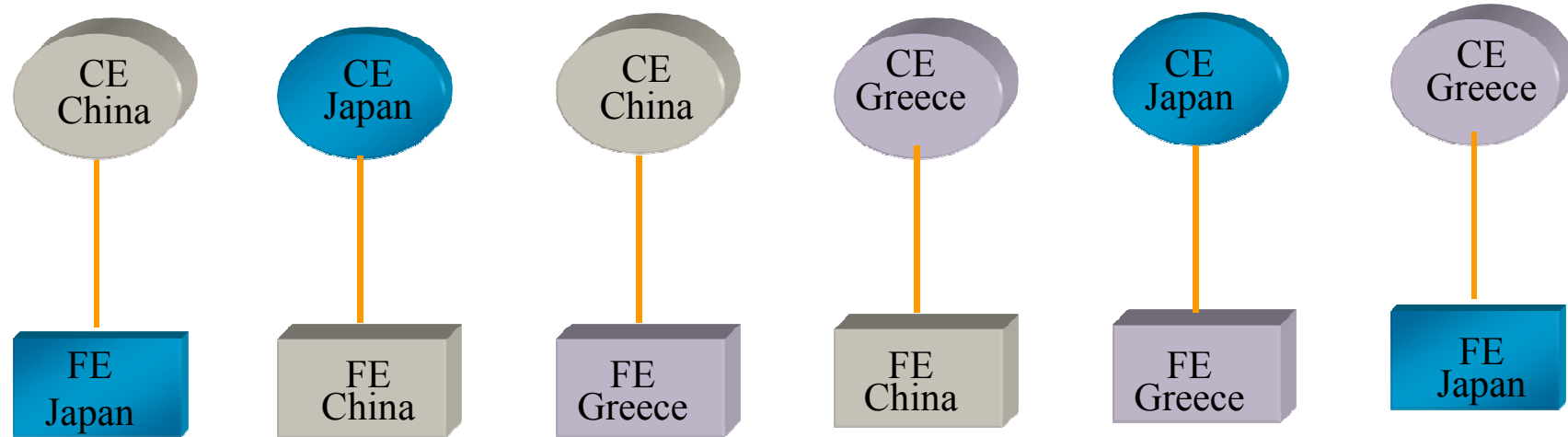


Testbed Configuration-Distributed





Scenario 1 - LFB Operation



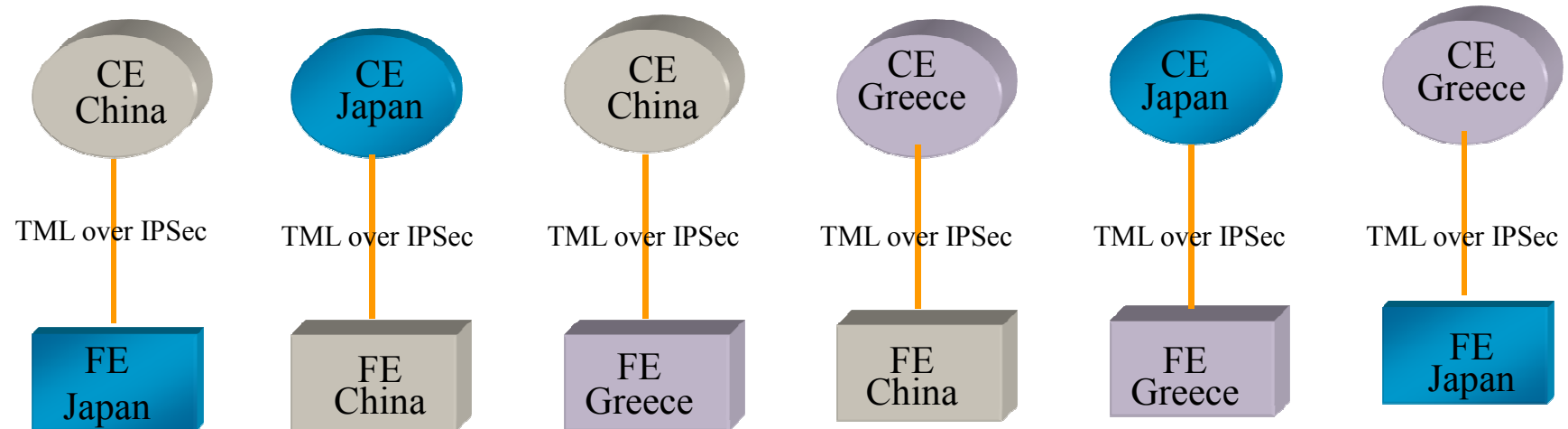
-To verify that the interoperating peer complying with RFC 5810 can decode and handle messages defined in RFC 5810.

-To verify the definition of ForCES LFB Library.

-Three implementors carried out the test in an alternative way acting as a CE or an FE, combined with 6 cases for this scenario.



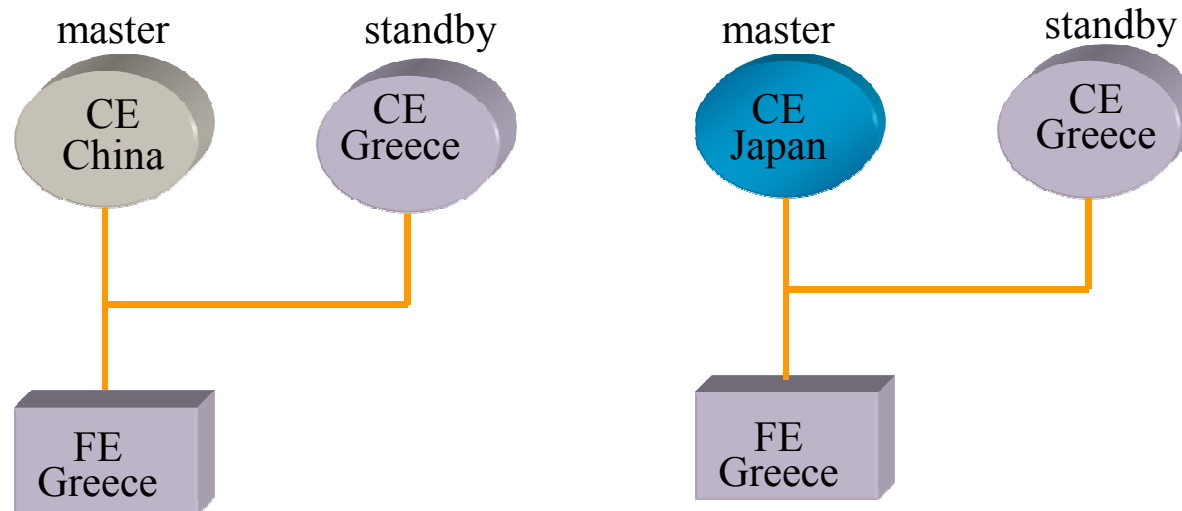
Scenario 2 - TML with IPSec



- To verify that the interoperating peer can make TML run over IPSec channel that was pre-established.
- The third party tool software 'racon' was used to establish IPSec channel.
- Three implementors carried out the test in an alternative way acting as a CE or an FE, combined with 6 cases for this scenario.



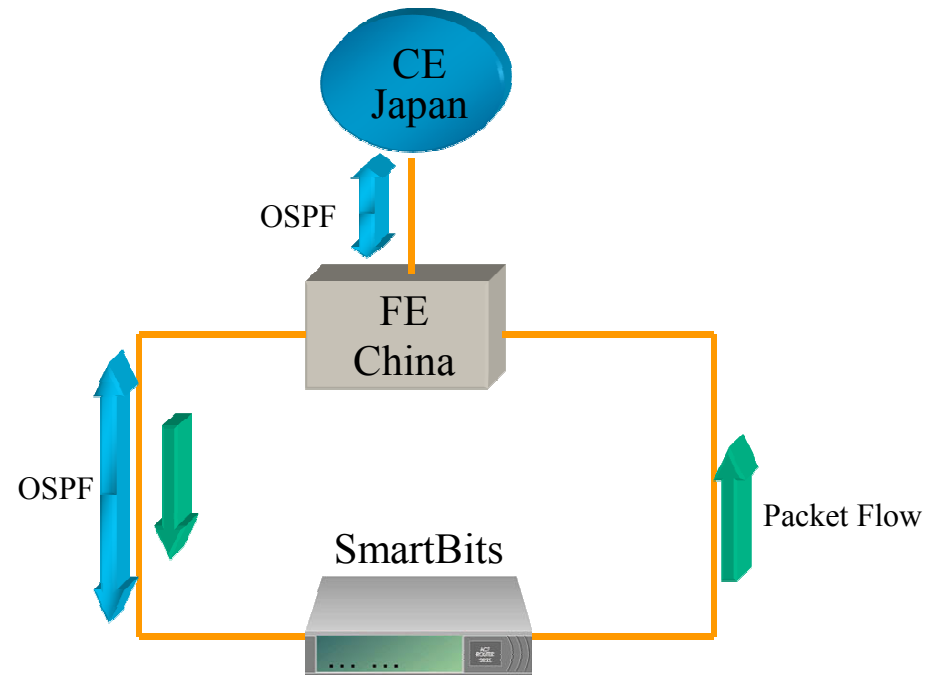
Scenario 3 - CE High Availability



- To verify the CEHA mechanics based on the CEHA document.
- One FE connected and associated with a master and backup CE.
- When the master CE is considered disconnected, the FE attempts to find another associated CE to become the master CE.



Scenario 4 - Packet forwarding (1)

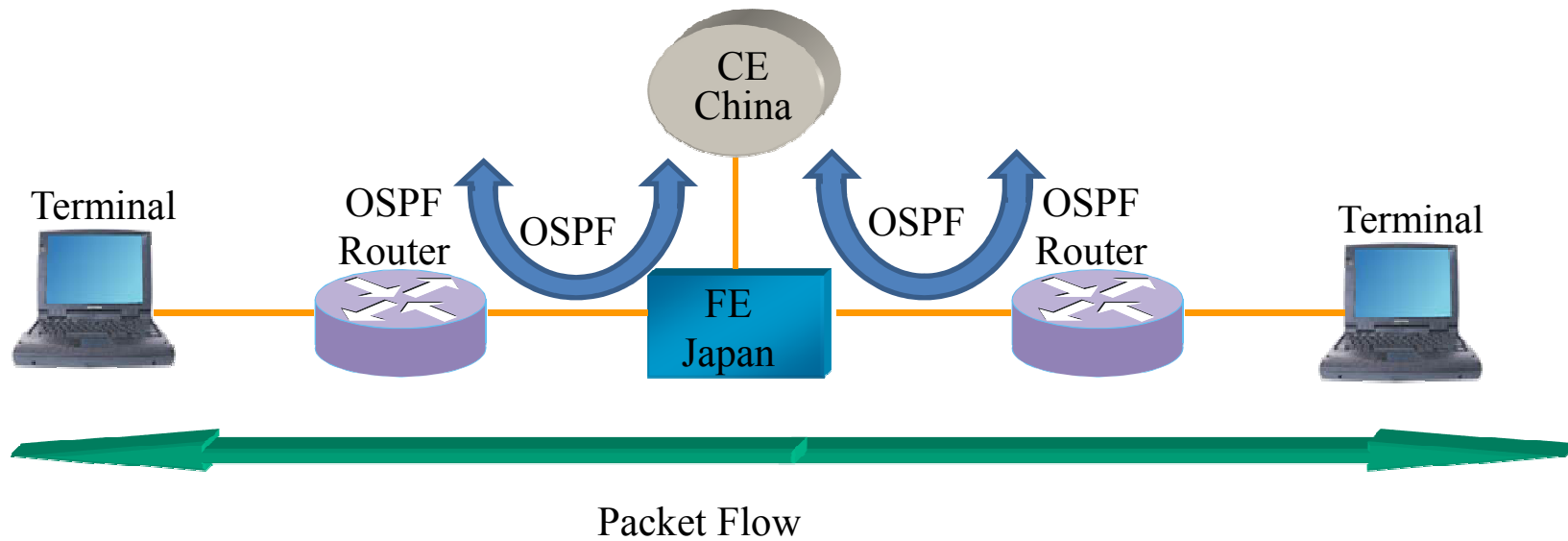


-To verify some LFBs related to the IPv4 forwarding, such as EtherPHYCop, EtherMacIn, EtherClassifier, IPv4Validator, EtherEncasulator, EtherMacOut, RedirectIn, RedirectOut, IPv4NextHop, IPv4UcastLPM.

-To confirm that whole NE including FE and CE actually work like an OSPF router which exchanges OSPF protocol information with other OSPF routers.

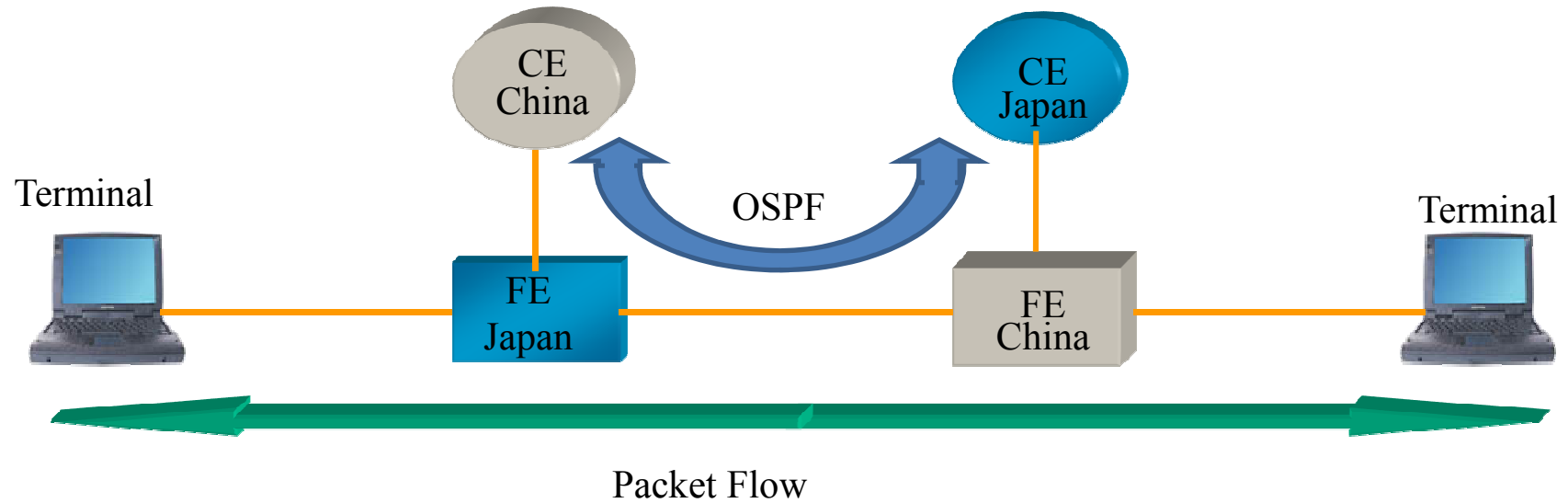


Scenario 4 - Packet forwarding (2)





Scenario 4 - Packet forwarding(3)





Test Results - Scenario 1

- Tested operations related to the IPv4 forwarding.
- Queried and configured FEObject, EtherPHYCop, EtherMacIn, EtherMacOut, EtherClassifier, ARP, EtherEncasulator, IPv4NextHop, IPv4UcastLPM.
- Succeeded in all of 6 configuration patterns.



Test Results - Scenario 2

- Tested some typical operations in the operation list of scenario1 over IPSec channel.
- Succeeded in the local configuration with Chinese and Japanese implementation.
- Some problems still remains in the distributed configuration with Greece, on the setup of the IPSec connection but not on the ForCES protocol.



Test Results - Scenario 3

- Succeeded in both of 2 configuration patterns.
- Implementation issue of how the FE prioritizes incoming messages from multiple CEs was occurred.



Test Results - Scenario 4

- Succeeded in the pattern with Japanese CE and Chinese FE.
- Some problems still remains in the pattern with Chinese CE and Japan FE, on the OSPF process but not on the ForCES protocol.



Issues Found

- About the data encapsulation format, response of PATH-DATA format and operation to array.
 - ForCES element (CE or FE) sender is free to choose whatever data structure that IETF ForCES documents define and best suits the element.
 - ForCES element (CE or FE) is preferable to accept and process information (requests and responses) that use any legitimate structure defined by IETF ForCES documents.
 - It is preferred the ForCES element responds in the same format that the request was made.
- About the message handle prioritization in the FE.



Thanks!