**OF-Switch-1.0.0-TestCases detailed testing methodology:**

**Openflow protocol messages**

1. **Features Request**

**Test Description**: Check features request is implemented

**Test mode**: Automated

**Test Title**: Features\_Request

**Ports**: I (Control Plane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

a) Send OFPT\_FEATURES\_REQUEST from controller.

c) Verify OFPT\_FEATURES\_REPLY is received without errors

1. **Configuration request**

**Test Description:** Check basic get configuration request is implemented

**Test mode**: Automated

**Test Title**: Configuration\_Request

**Ports**: I (Control Plane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

a) Send OFPT\_GET\_CONFIG\_REQUEST

c) Verify OFPT\_GET\_CONFIG\_REPLY is received without errors.

1. **Modify State (ADD)**

**Test Description:** Check basic Flow ADD request is implemented

**Test mode**: Automated

**Test Title**: Modify\_State\_Add

**Ports**: 3 (1 Control Plane 2 dataplane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

a) Send OFPT\_FLOW\_MOD, command = OFPFC\_ADD

b) Send ofp\_table\_stats request

c) Verify that active\_count=1 in the reply

1. **Modify State (DELETE)**

**Test Description:** Check basic Flow Delete request is implemented

**Test mode**: Automated

**Test Title**: Modify\_State\_Delete

**Ports**: 3 (1 Control Plane 2 dataplane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

a) Send OFPT\_FLOW\_MOD, command = OFPFC\_ADD

b) Send ofp\_table\_stats request

c) Verify that active\_count=1 in the reply

d) Send OFPT\_FLOW\_MOD, command = OFPFC\_DELETE

e) Send ofp\_table\_stats request

f) Verify active \_count=0 in the reply

1. **Modify State (MODIFY)**

**Test Description:** Check basic Flow Modify request is implemented

**Test mode**: Automated

**Test Title**: Modify\_State\_Modify

**Ports**: 3 (1 Control Plane and 2 Dataplane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

1. Send OFPT\_FLOW\_MOD , command = OFPFC\_ADD, action A
2. Send ofp\_table\_stats request, Verify active\_count=1
3. Send OFPT\_FLOW\_MOD , command = OFPFC\_MODIFY, action A’
4. Send Test Packet matching the flow
5. Verify packet implements action A’
6. **Read State**

**Test Description:** Check basic Read State is implemented

**Test mode**: Automated

**Test Title**: Read\_State

**Ports**: 3 (1 Control Plane, 2 dataplane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

1. Send OFPT\_FLOW\_MOD, command = OFPFC\_ADD
2. Create a OFPC\_FLOW\_STATS message and send it
3. Verify switch replies without errors
4. **Send packet**

**Test Description:** Check basic Send-Packet is implemented.

*Send-Packet: These are used by the controller to send packets out of a specified port on the switch.*

**Test mode**: Automated

**Test Title**: Send\_Packet

**Ports**: 5 (1 Control Plane, 4 Dataplane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

a) Send OFPT\_PACKET\_OUT out message from controller to switch for every dataplane port.

b) Verify the packet appears on the each dataplane port

c) Verify sent packet matches the received packet

1. **Barrier Request**

**Test Description:** This test checks that a basic barrier request does not generate an error.

**Test mode**: Automated

**Test Title**: BarrierRequestReply

**Ports**: I (Control Plane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

a) Send OFPT\_BARRIER\_REQUEST

c) Verify OFPT\_BARRIER\_REPLY is received on the control plane.

1. **Packet In**

**Test Description**: Check packet\_in is implemented. This test just checks that non matched dataplane packets generate a packet\_in

**Test mode**: Automated

**Test Title**: Packet\_In

**Ports**: 2 (1 Control Plane and 1 Dataplane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

1. Send a packet to dataplane port , without inserting a flow entry
2. Verify a OFPT\_PACKET\_IN is generated on the control plane
3. **Hello**

**Test Description**: This test checks for basic Hello message generation with correct version field.

**Test mode**: Automated

**Test Title**: Hello

**Ports**: 1 (Control Plane)

**Initial State**: Default (Clear switch state), Connection Setup

**Test-Field**: Mandatory

**Test Notes:**

1. Send OFPT\_HELLO from controller to switch
2. Verify switch also sends OFPT\_HELLO message in response
3. Verify version field in the hello message is set to Openflow version 1.0.0
4. **Echo**

**Test Description**: This test checks for basic Echo Reply message generation with correct version field with same transaction id.

**Test mode**: Automated

**Test Title**: EchoWithoutBody

**Ports**: 1 (Control Plane)

**Initial State**: Default (Clear switch state), Connection setup

**Test-Field**: Mandatory

**Test Notes:**

1. Send OFPT\_ECHO\_REQUEST from the controller side.
2. Verify switch responds back with OFPT\_ECHO\_REPLY with same xid.
3. Verify Openflow version in header is set to Openflow version 1.0.0.