VID on VDP Reply
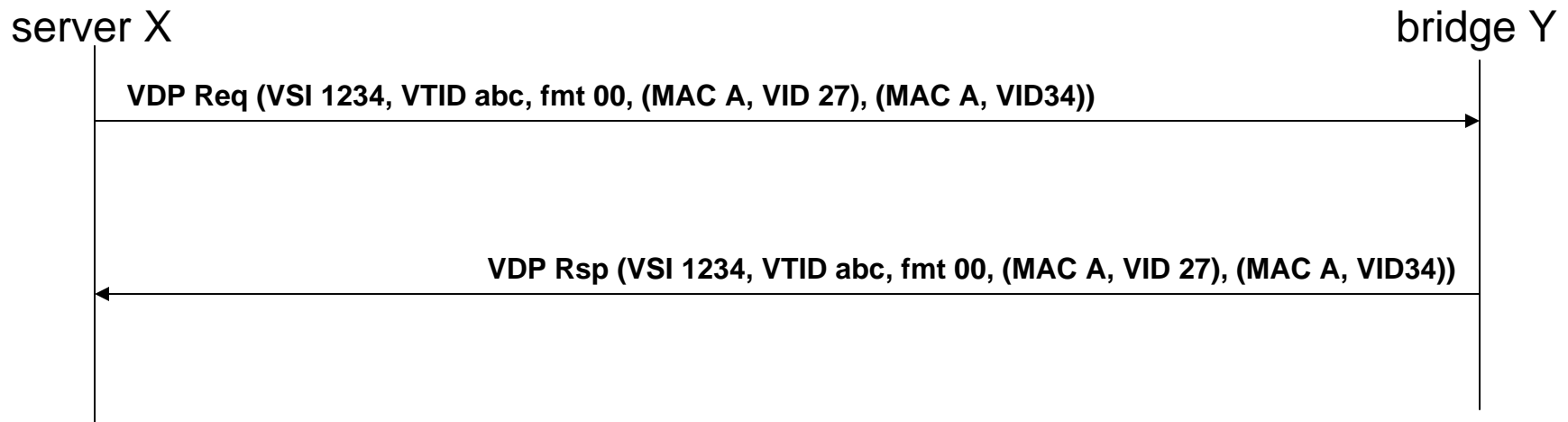# Sequence Diagrams

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Typical *Enterprise* Data Center
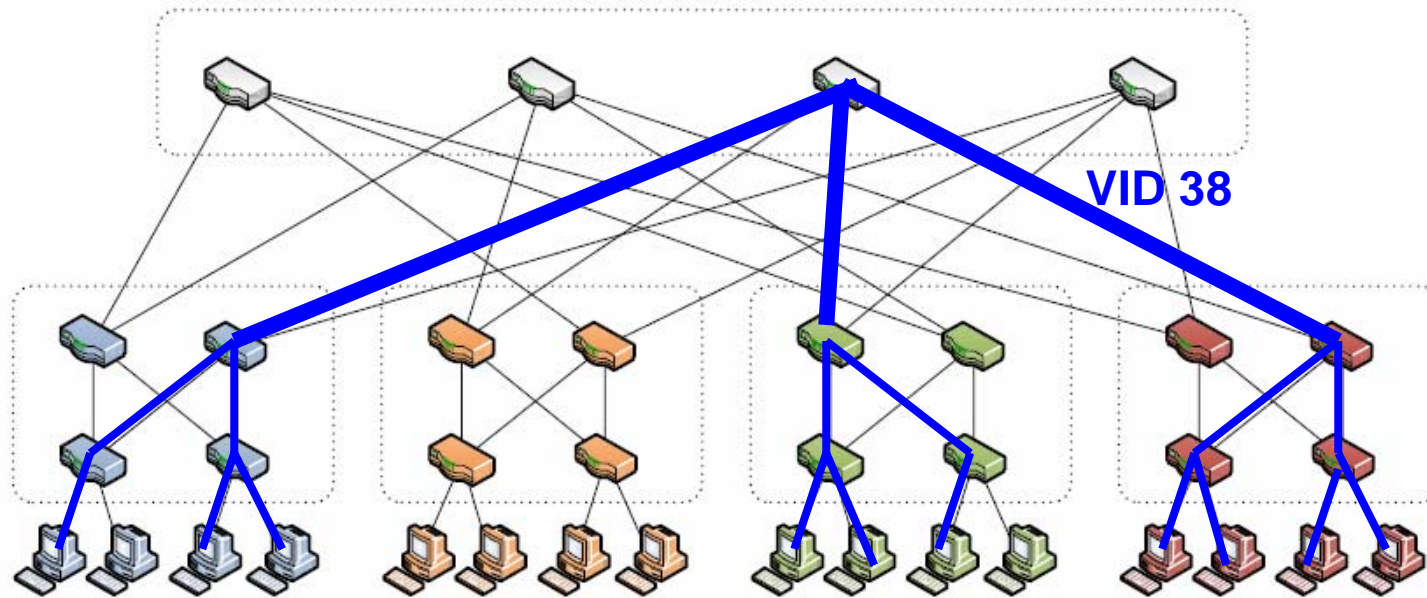
- Relatively small number of VLANs (<< 4K);
- VLAN identified by *same* VID throughout data center;
  - VID 38 might represent 'web server traffic' or 'engineering organization';
  - Static and global nature of VID allows it to be known to the Server Admin;
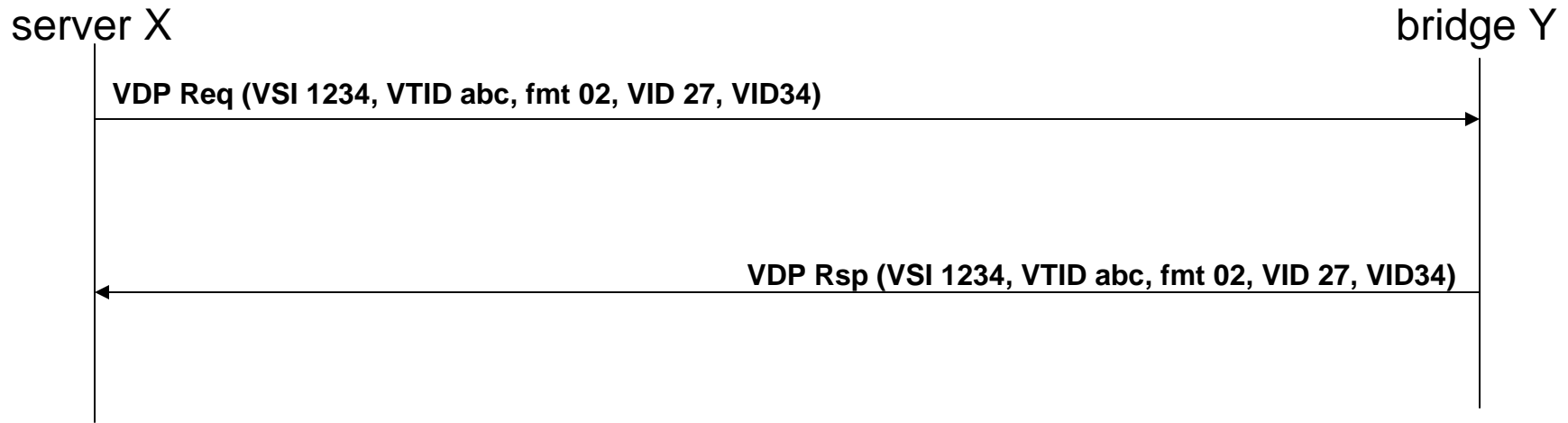
Scenario 1: Filter on (MAC, VID) pairs VID Global and known to Server

server X   bridge Y

VDP Req (VSI 1234, VTID abc, fmt 00, (MAC A, VID 27), (MAC A, VID34))

VDP Rsp (VSI 1234, VTID abc, fmt 00, (MAC A, VID 27), (MAC A, VID34))

- VDP Req instructs bridge to use the filter ((MAC A, VID 27) (MAC A, VID 34)) to identify traffic associated with VSI 1234 in order to apply VSI-type identified by VTID abc;

- This VDP message would carry a 'MAC/VLAN Format' value of 'Basic MAC/VLAN Format' = 00;

Scenario 2: Filter on VID list
VID Global and known to Server

server X   bridge Y

VDP Req (VSI 1234, VTID abc, fmt 02, VID 27, VID34)

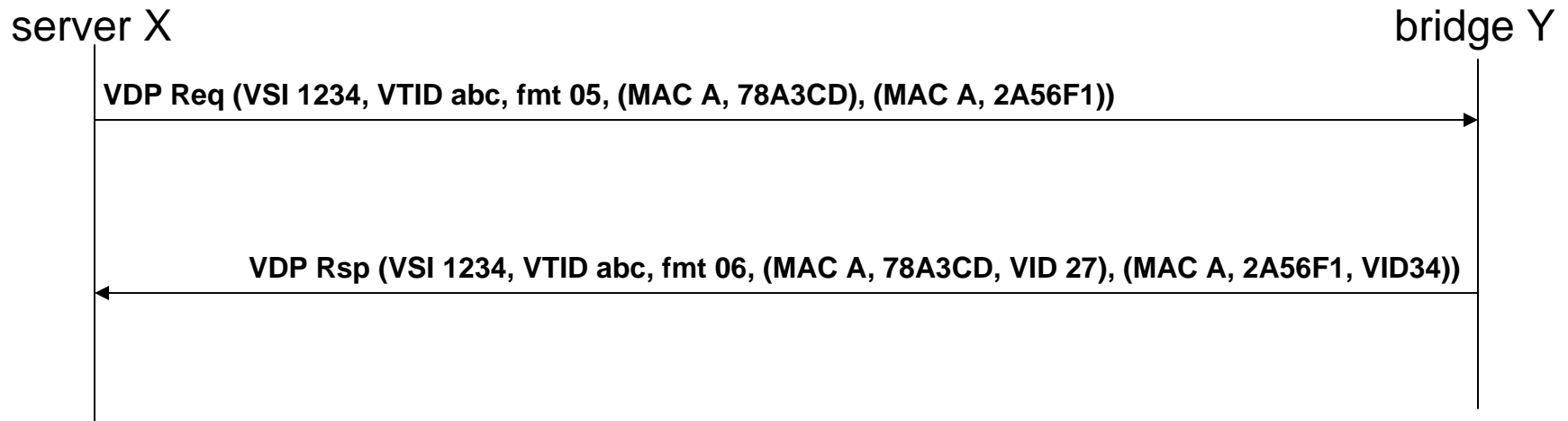**VDP Rsp (VSI 1234, VTID abc, fmt 02, VID 27, VID34)**

- VDP Req instructs bridge to use the filter (VID 27, VID 34) to identify traffic associated with VSI 1234 in order to apply VSI-type identified by VTID abc;

- This VDP message would carry a 'MAC/VLAN Format' value of 'VID-only format' = 02;

- Same as scenario 1 except that VID list replaces list of (MAC, VID) pairs;

Cloud Service Provider

2A56F1 (Jack's Garden Markets)

Rack 114
VID 35

Rack 115

Rack 116
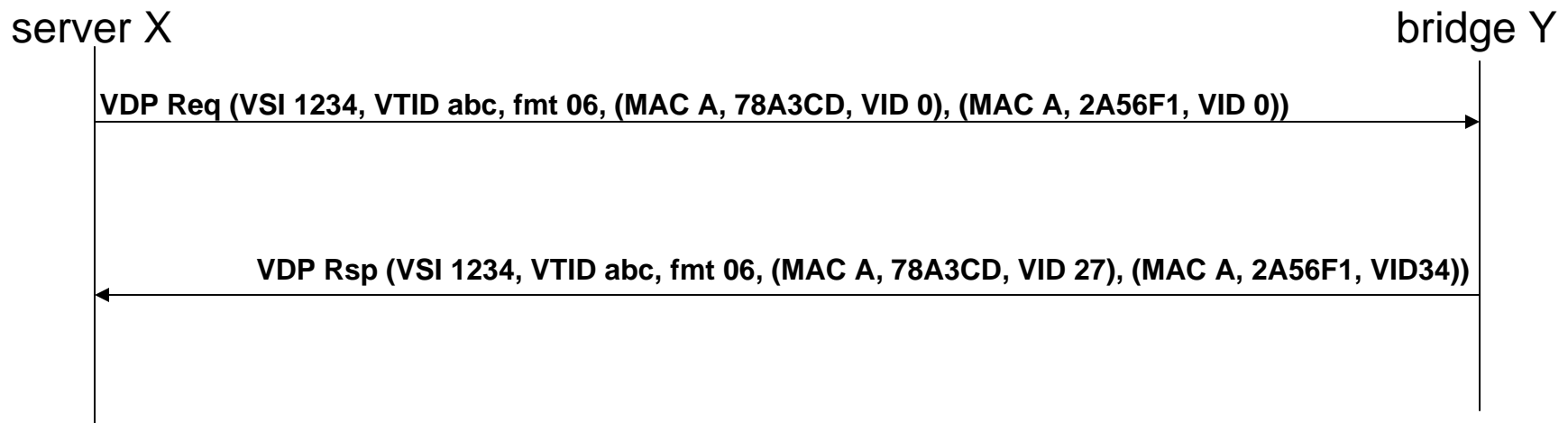**VID 1028**

Rack 117
VID 314
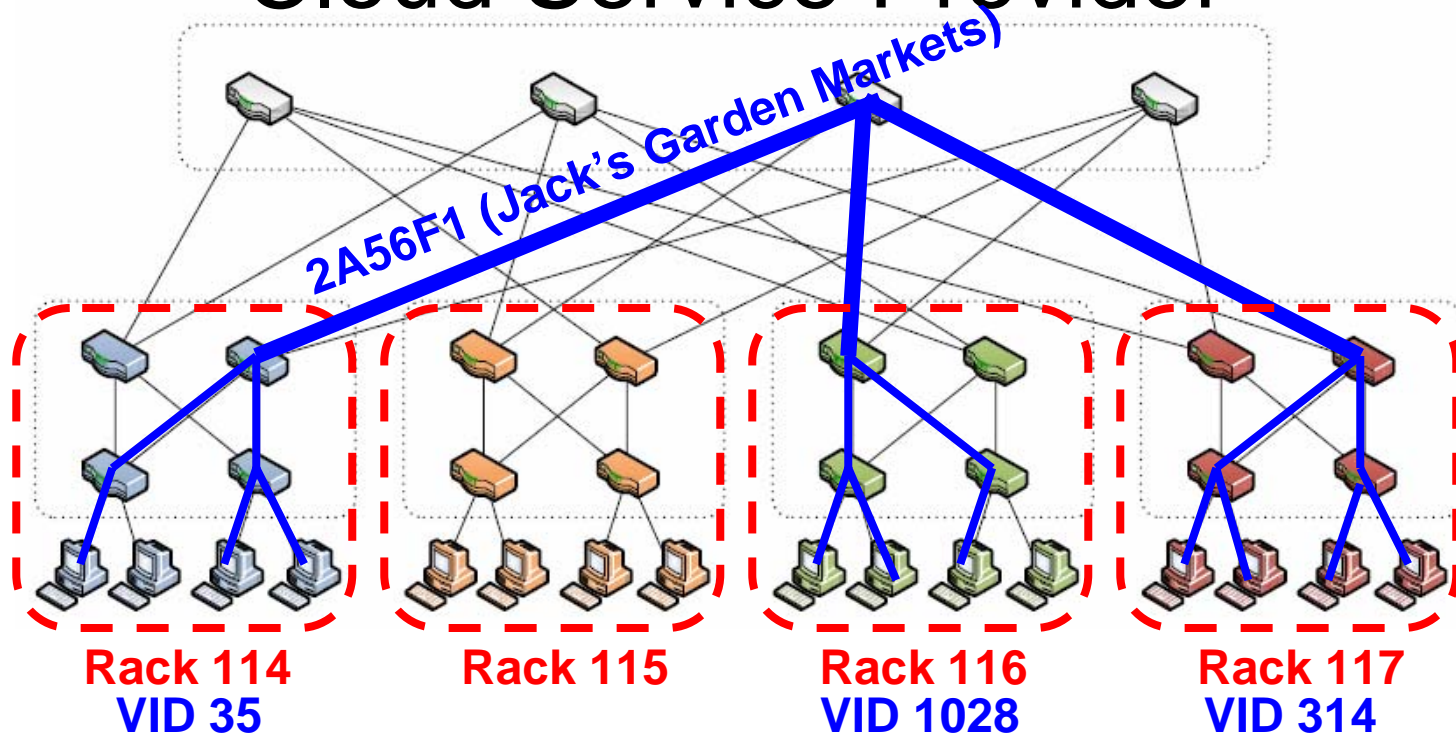
- Data Center providing *cloud services* likely to have >4K Service Instances;
  - Any one rack supports up to 4K;
- GroupID 2A56F1 (Jack's Garden Markets) is mapped to different VID at each rack boundary;
- Network Admin (vs. Server Admin) must control assignment of VID to GroupID at each rack;

Scenario 3: Filter on (MAC, VID) pairs; VID assigned by *Bridge*

server X   bridge Y

VDP Req (VSI 1234, VTID abc, fmt 05, (MAC A, 78A3CD), (MAC A, 2A56F1))

VDP Rsp (VSI 1234, VTID abc, fmt 06, (MAC A, 78A3CD, VID 27), (MAC A, 2A56F1, VID34))
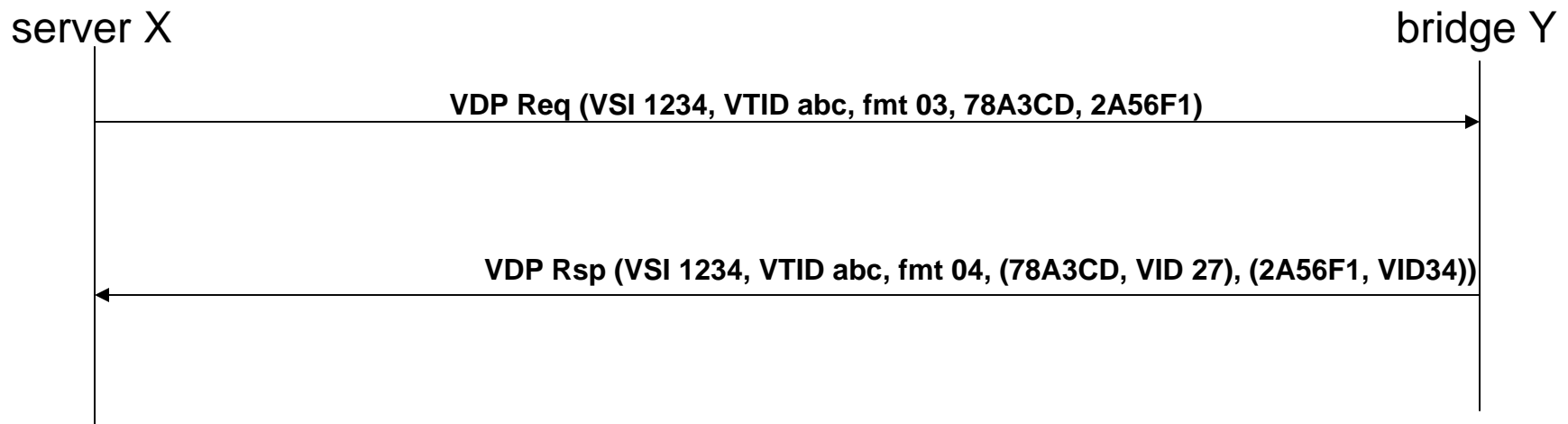
- VDP Req instructs bridge to use the filter ((MAC A, GroupID1) (MAC A, GroupID2)) to identify traffic associated with VSI 1234 in order to apply VSI-type identified by VTID abc;
- Bridge determines that GroupID1 is associated with VID 27 and GroupID2 is associated with VID 34 in the local rack; The bridge will use the filter ((MAC A, VID 27), (MAC A, VID 34));
- Bridge supplies server with the local VID values associated with the GroupIDs;
- The VDP Req carries a 'MAC/VLAN Format' value of 'MAC/GroupID' = 05 and the VDP Rsp carries a 'MAC/VLAN Format' value of 'MAC/GroupID/VID' = 06 ;

6

Scenario 3-*alt*: Filter on (MAC, VID) pairs; VID assigned by *Bridge*

server X   bridge Y

VDP Req (VSI 1234, VTID abc, fmt 06, (MAC A, 78A3CD, VID 0), (MAC A, 2A56F1, VID 0))

VDP Rsp (VSI 1234, VTID abc, fmt 06, (MAC A, 78A3CD, VID 27), (MAC A, 2A56F1, VID34))

- Same as scenario 3 except VDP Req and VDP Rsp use the same 'MAC/VLAN format' (06);

- VID values are zero on VDP Req;

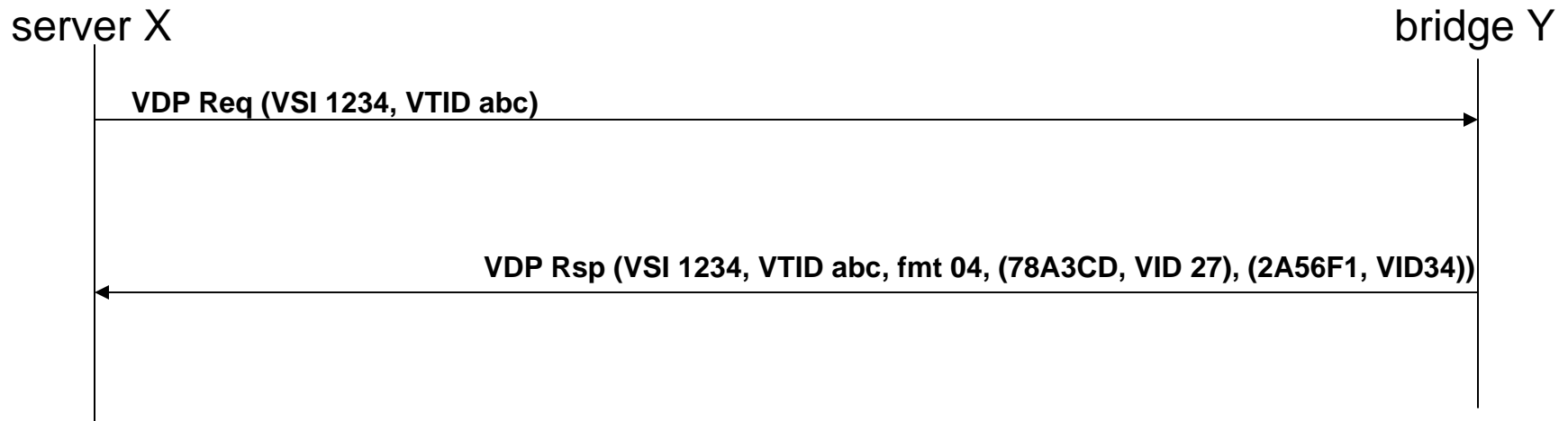- Similar could be done with Scenarios 4 and 5 but not shown here;

Scenario 4: Filter on VID list; VID assigned by *Bridge*

server X   bridge Y

VDP Req (VSI 1234, VTID abc, fmt 03, 78A3CD, 2A56F1)

VDP Rsp (VSI 1234, VTID abc, fmt 04, (78A3CD, VID 27), (2A56F1, VID34))

- VDP Req instructs bridge to use the filter (GroupID1, GroupID2)) to identify traffic associated with VSI 1234 in order to apply VSI-type identified by VTID abc;

- Bridge determines that GroupID1 is associated with VID 27 and GroupID2 is associated with VID 34 in the local rack; The bridge will use the filter (VID 27, VID 34);

- Bridge supplies server with the local VID values associated with the GroupIDs;

- The VDP Req carries a 'MAC/VLAN Format' value of 'GroupID' = 03 and the VDP Rsp carries a 'MAC/VLAN Format' value of 'GroupID/VID' = 04;

8

Scenario 5: Filter specified by VSI-type

server X   bridge Y

VDP Req (VSI 1234, VTID abc)

VDP Rsp (VSI 1234, VTID abc, fmt 04, (78A3CD, VID 27), (2A56F1, VID34))

- VDP Req provides *no* filter info;
- Bridge finds filter info in VSI-type; say, (VID 27, VID 34);
- Bridge determines that GroupID1 is associated with VID 27 and GroupID2 is associated with VID 34 in the local rack; The bridge will use the filter (VID 27, VID 34);
- Bridge supplies server with the local VID values associated with the GroupIDs;
- The VDP Rsp carries a 'MAC/VLAN Format' value of 'GroupID/VID' = 04;

Summary

- New flows for cloud service case where VID associated with a particular Service Instance can vary from rack to rack;
  - Server can no longer specify VID in VDP
- Flows same as existing except server specifies global 'GroupID' instead of local 'VID';
  - Bridge replies to server with GroupID $\leftrightarrow$ VID mapping that server uses for data traffic;
- Additional case in which filter is not specified in VDP but obtained from VSI-type;
  - Bridge replies with local VID value corresponding to GroupID found in VSI-type;
- New flows imply *no* change to VDP state machines;
- *Does* require additional values of the 'MAC/VLAN Format' field;
  - change is *fully specified* in accompanying document VidInVdpRsp
- This is a very simple but essential feature if cloud service data centers are to be supported by Qbg;