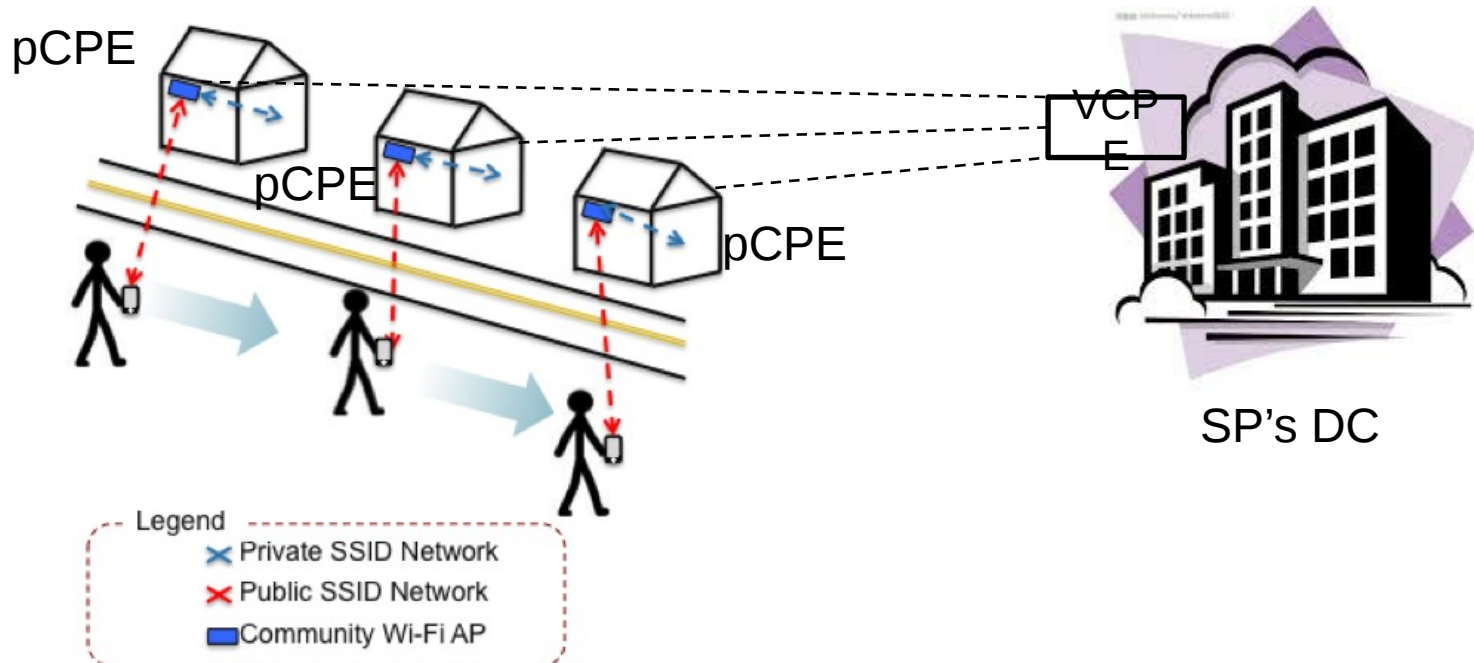Motivations & Use cases of

vCPE Architectures

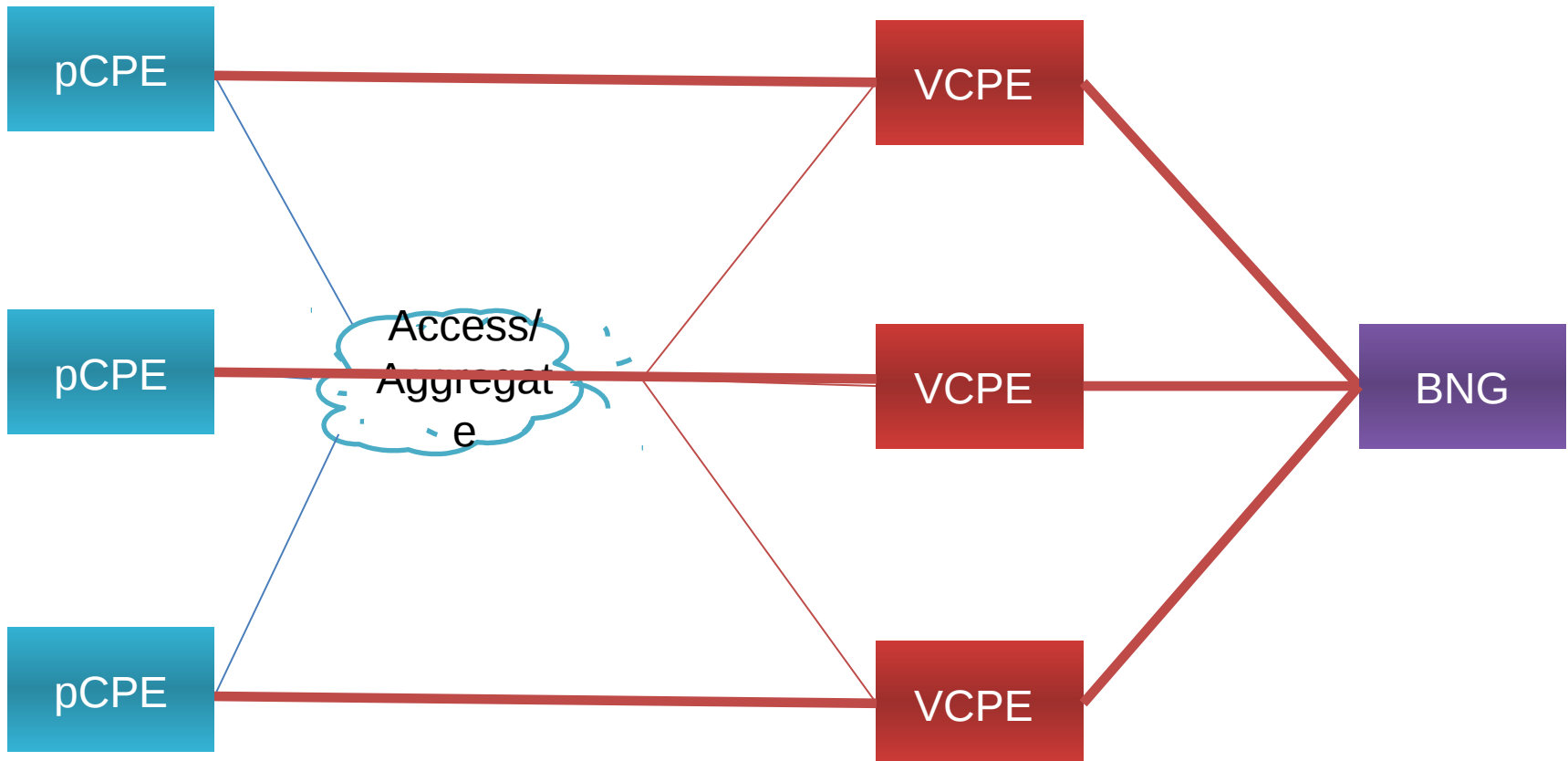draft-fu-dmm-vcpe-models-00

(Under WT#4)

Fu Qiao
2015.7.20

Motivations

- Usecase of Community Wi-Fi
  - Use RG to provide public Wi-Fi network to users passing by.
- VCPE (Virtual Customer Premises Equipment)
  - Shift most of the networking and service functionalities from the customer side to the network side.
- Motivations
  - Faster deployment
  - Lower cost
  - Easier maintenance

pCPE

pCPE

pCPE

VCPE

SP's DC

Legend
- Private SSID Network
- Public SSID Network
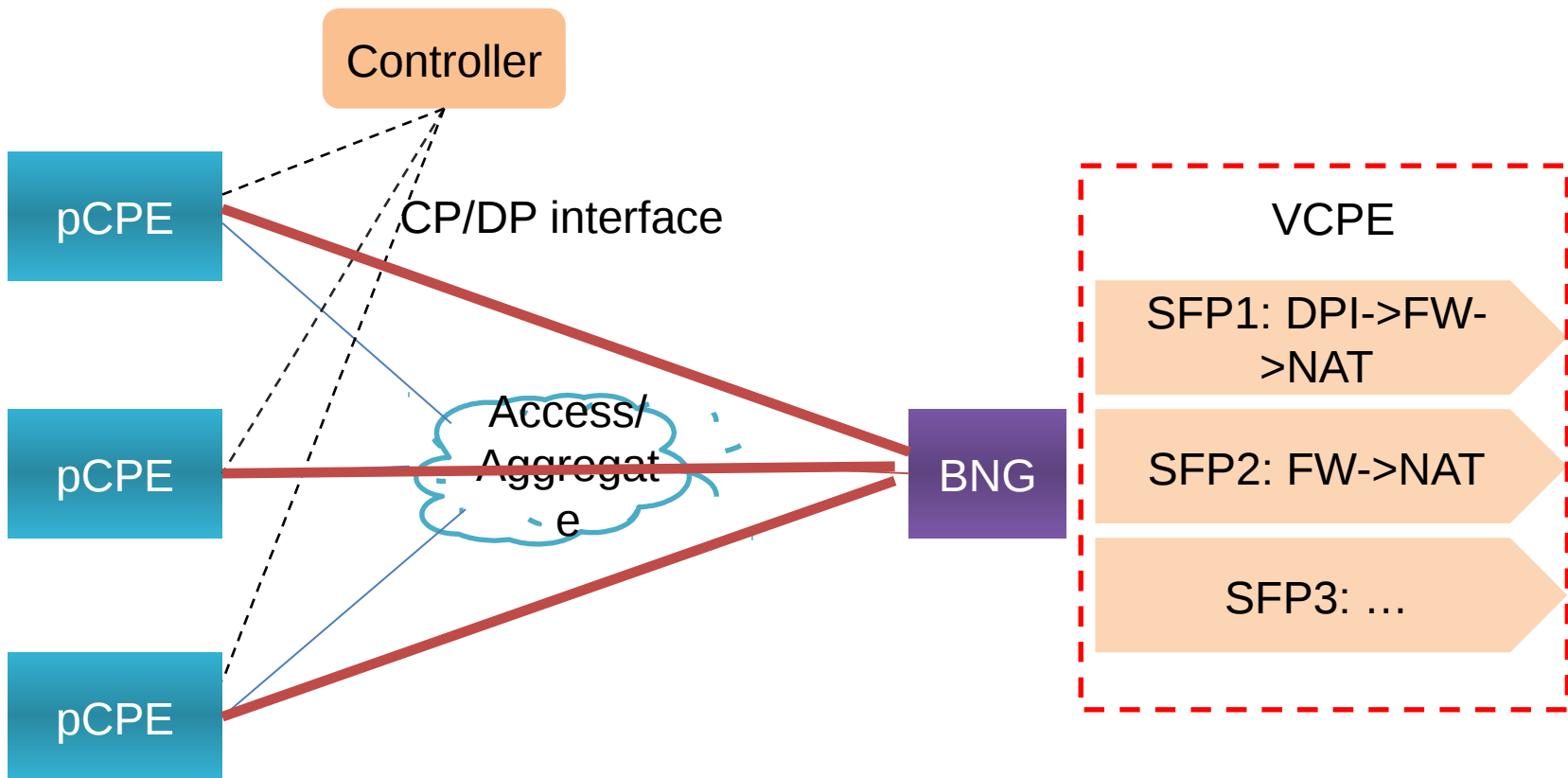- Community Wi-Fi AP

Models of VCPE Deployment--1

- **Model 1: VCPE as a logical Instance.**
  - --1:1 deployment of pCPE and VCPE

Models of VCPE Deployment--2

- **Model 2: VCPE as Service Function Chains.**
  --vCPE is modeled as a service in Gi-LAN/Service Chain; BNG knows how to classify the traffic from a given CPE with the help of the control plane, and run it through the service chain.

Models of VCPE Deployment--3

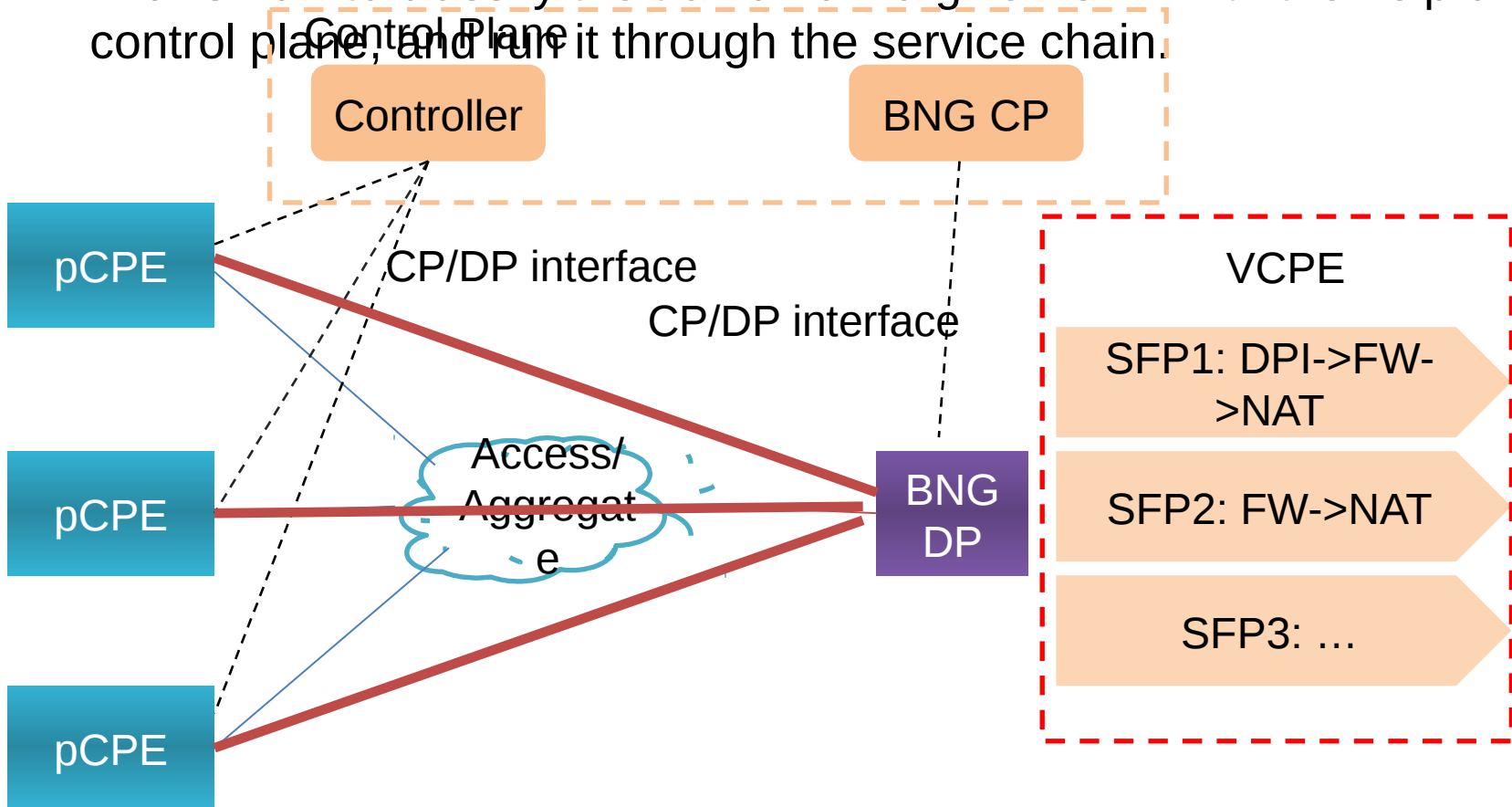- **Model 3: VCPE as Service Function Chains, BNG is CP/DP decomposed**

    --vCPE is modeled as a service in Gi-LAN/Service Chain; BNG knows how to classify the traffic from a given CPE with the help of the control plane, and run it through the service chain.

Control Plane

Controller

BNG CP

pCPE

CP/DP interface

CP/DP interface

VCPE

pCPE

Access/ Aggregate

BNG DP

SFP1: DPI->FW->NAT

SFP2: FW->NAT

pCPE

SFP3: …

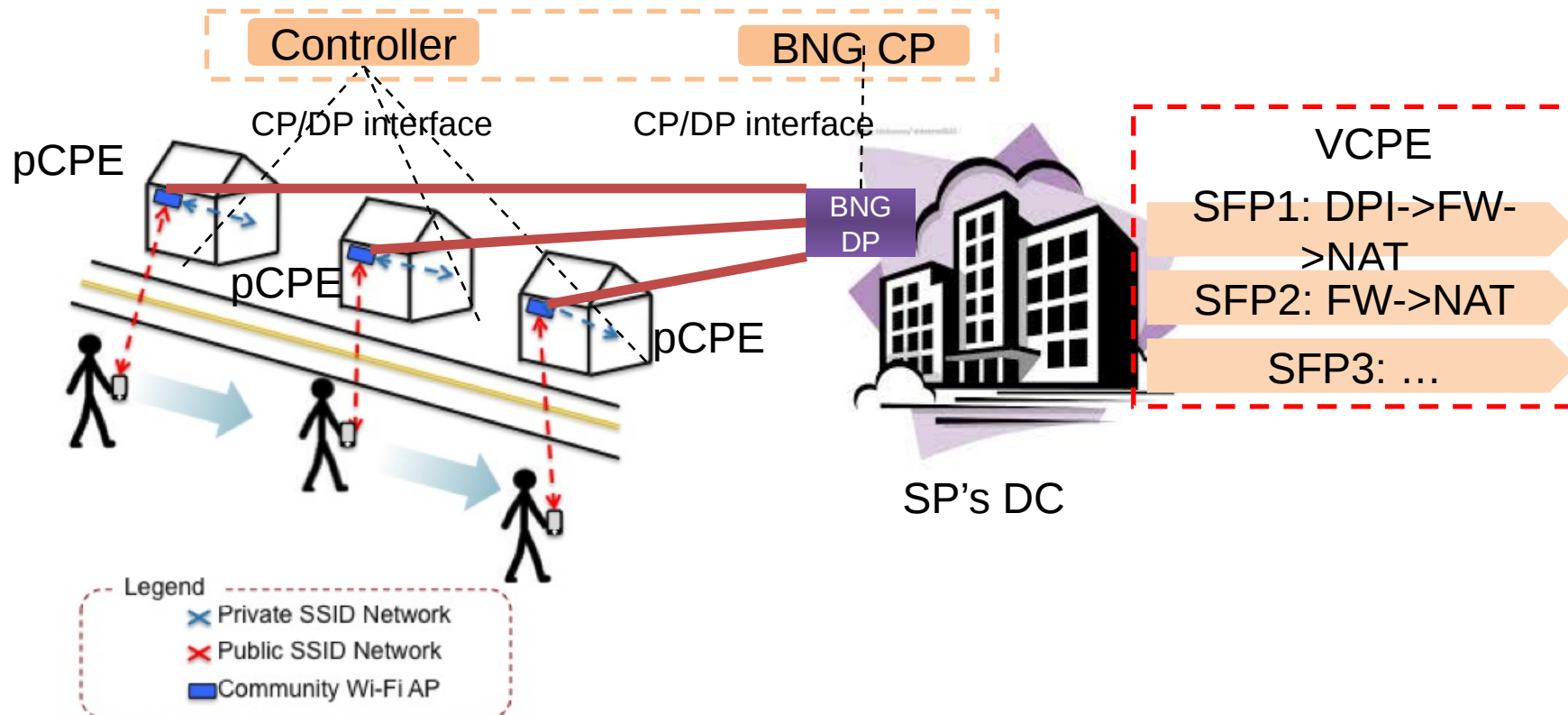# VCPE deployment in the Community Wi-Fi Scenario

FPC Client Capability:
- Set specific VLAN to each SSID
- Set the QoS for specific VLAN ID
- Inform the agent the specific SFC for each VLAN ID
- Instruct the agent to handle the MN hand-over of the public Wi-Fi users

FPC Agent Capability:
- Set specific VLAN to each SSID following the command from the client.
- Set the QoS for specific VLAN ID   following the command from the client
- Direct the traffic for specific VLAN ID to a certain SFC following the command of the client.
- Handle the MN hand-over of the   public Wi-Fi users.

Conclusion and Needs for the WG

- Update in this version:
  - Detail discussion of vcpe usecase in the community Wi-Fi scenario using DMM protocol
  - Requirements for the FPC protocol

  - What do you want from this document
    - There is no IETF document on vCPE; This work is important as all SP's are moving towards this architecture
    - We expect this document to be on Standards Track as there may be protocol extensions
    - We want to publish one architecture document on this topic
    - Ask for Adoption under WT#4