<u>Using PCE to act as a SDN Central Controller (PCECC) Component</u>

<u>draft-zhao-pce-pcep-extension-for-pce-controller-03.txt</u>

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Major updates in this new versi

- Move the sections for label range related functionalities to the appendix se ctions for now, the next step will use another separate documents to cover this.
- Based on Adrian's suggestion from last IETF meeting, we have added on e option for the PCECC label entry update functionality. So now the label e ntry update can be done either using a new message option or it can be do ne using the existing message by modifying the message's original forma t and procedures. These two options are:
 - New message: PCLabelUpd
 - Existing message: PCInitiate

Option 1: Using a New Message PCLabelUpd

```
PCC
              Ingress
        PCC +----
        Transit
                 <---PCInitiate,PLSP-ID=0,P=1,D=1--- PCECC LSP</pre>
                                                        Initiate
                  --- PCRpt, PLSP-ID=2, P=1, D=1, C=1--->
Egress
                                                        PCECC LSP
                         (LSP ID=0.GOING-UP)
                                                       (LSPID=2
                                                        assigned)
    <---- PCLabelUpd, PLSP-ID=2 -
                                                        Labe
                         (LSP ID=2)
                                                        download
            <---- PCLabelUpd. PLSP-ID=2 ------
                                                        Label
                         (LSP ID=2)
                                                        download
                   --- PCLabelUpd, PLSP-ID=2 -----
                                                        Label
                                                        download
                         (LSP ID=2)
                  <-- PCUpd, PLSP-ID=2, P=1, D=1----
                                                        PCECC LSP
                         (LSP ID=2)
                                                        Update
```

```
The format of the PCLabelUpd message is as follows:
<PCLabelUpd Message> ::= <Common Header>
                                 <pce-label-update-list>
Where:
<pce-label-update-list> ::= <pce-label-update>
                           [<pce-label-update-list>]
<pce-label-update> ::= (<pce-label-download>|<pce-label-map>)
Where:
<pce-label-download> ::= <SRP>
                                 <LSP>
                         <label-list>
<pce-label-map> ::= <SRP>
                        <LABEL>
                        <FEC>
<label-list > ::= <LABEL>
                          [<label-list>]
```

Option 2: Using the Existing Message PCInitiate

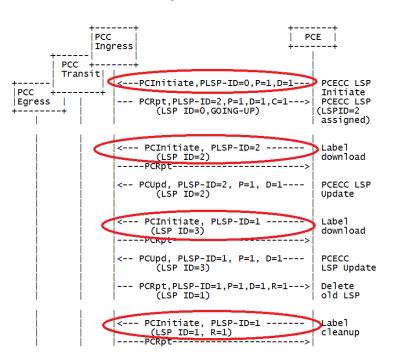
```
PCC
                                            PCE
      Ingress
                                                             <PCInitiate Message> ::= <Common Header>
Transit
                                                                                        <PCE-initiated-lsp-list>
          <---PCInitiate,PLSP-ID=0,P=1,D=1--
                                              CECC LSP
                                                          Where:
                                              Initiate
                                              PCECC LSP
          -- PCRpt.PLSP-ID=2.P=1.D=1.C=1---
                 (LSP ID=0.GOING-UP)
                                              LSPID=2
                                                             <PCE-initiated-lsp-list> ::= <PCE-initiated-lsp-request>
                                              assigned)
                                                                                            [<PCE-initiated-lsp-list>]
   PCInitiate, PLSP-ID=2
                                              Label
                                              download
                                                             <PCE-initiated-lsp-request> ::= (<PCE-initiated-lsp-instantiation>
    PCRpt
                                                                                                |<PCE-initiated-lsp-deletion>)
                                              Label
    <---- PCInitiate. PLSP-ID=2
                                              download
                                                             <PCE-initiated-lsp-instantiation> ::= <SRP>
                                                                                                      <LSP>
            -- PCInitiate, PLSP-ID=2 -----
                                              LabeT
                                                                                                      <END-POINTS>
                                              download
                                                                                                      <ERO>
                                                                                                      [<attribute-list>]
          <-- PCUpd. PLSP-ID=2. P=1. D=1----
                                               PCECC LSP
                 (LSP ID=2)
                                              Update
```

Compare 2: For the LSP Setup and Update Option 2

Option 1

PCC PCE Ingress PCC +----+ Transit ---PCInitiate, PLSP-ID=0, P=1, D=1---DPCECC LSP Initiate --- PCRpt,PLSP-ID=2,P=1,D=1,C=1---> PCECC LSP (LSP ID=0.GOING-UP) (LSPID=2 assigned) PCLabelupd, PLSP-ID=2 -----Labe1 (LSP ID=2) download -----РСКР L-<-- PCUpd, PLSP-ID=2, P=1, D=1----PCECC LSP (LSP ID=2) Update --- PCLabelUpd, PLSP-ID=1 -----Labe1 (LSP ID=3) download ----PCRpt----<-- PCUpd, PLSP-ID=1, P=1, D=1----PCECC (LSP ID=3) LSP Update --- PCRpt.PLSP-ID=1,P=1,D=1,R=1---> Delete old LSP (LSP ID=1) <--- PCLabelUpd. PLSP-ID=1 -----Labe1 (LSP ID=1. R=1) cleanup

--PCRpt-----



The Analysis of the Two Choices

Option 1: Using a New Message PCLabelUpd

Advantages: It is clean for the procedure's flow, especially it is easy for trouble shooting and maintain.

Also for the label entry which has only label list downloading, you don't need a new message.

Disadvantage: It introduces a new message.

Option 2 : Using the Existing Message **PCInitiate**

Advantages: Leveraging the existing message.

Disadvantage: It over loads the original functionality of the original message. It is harder to

debugging the message. For the pure label list/label range download, it still needs a 95th IET**mews** massage.

Next Steps

- We will collect more feedbacks for these two options for the label entry downloading;
- We will break this version of the draft into a few drafts to cover the different use cases specified in the PCECC use case draft individual ly so we can progress these protocol extensions in parallel or in a s equential order based on the urgency of each use case.
- After we posed these PCECC drafts, we have been approached by p eople working at another PCE vendor saying that they want to get i nvolved, so we hope that they will be able to make contributions to the work in future revisions.

Thanks!