

USB Power Delivery ENGINEERING CHANGE NOTICE

Title: FR_Swap State Operation

**Applied to: USB Power Delivery Specification Revision 3.0
V1.1**

Brief description of the functional changes proposed:
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Once a Fast Role Swap capable Source has signaled Fast Role Swap on the CC wire it should accept any FR_Swap Message it subsequently receives. The revised state machine does not react to Fast Role Swap being signaled but instead always checks with the Device Policy Manager whether Fast Role Swap has been signaled on CC. The concept of a Fast Role swap being ok/not ok has been removed. Typos in the diagrams have been fixed.
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Benefits as a result of the proposed changes:
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This change simplifies the state machine, removing one state. It also assumes that an error occurs only if Fast Role Swap has not been signaled and FR_Swap has been received.
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An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
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No functional changes.

An analysis of the hardware implications:
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No changes.

An analysis of the software implications:
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No changes.

An analysis of the compliance testing implications:
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No changes.

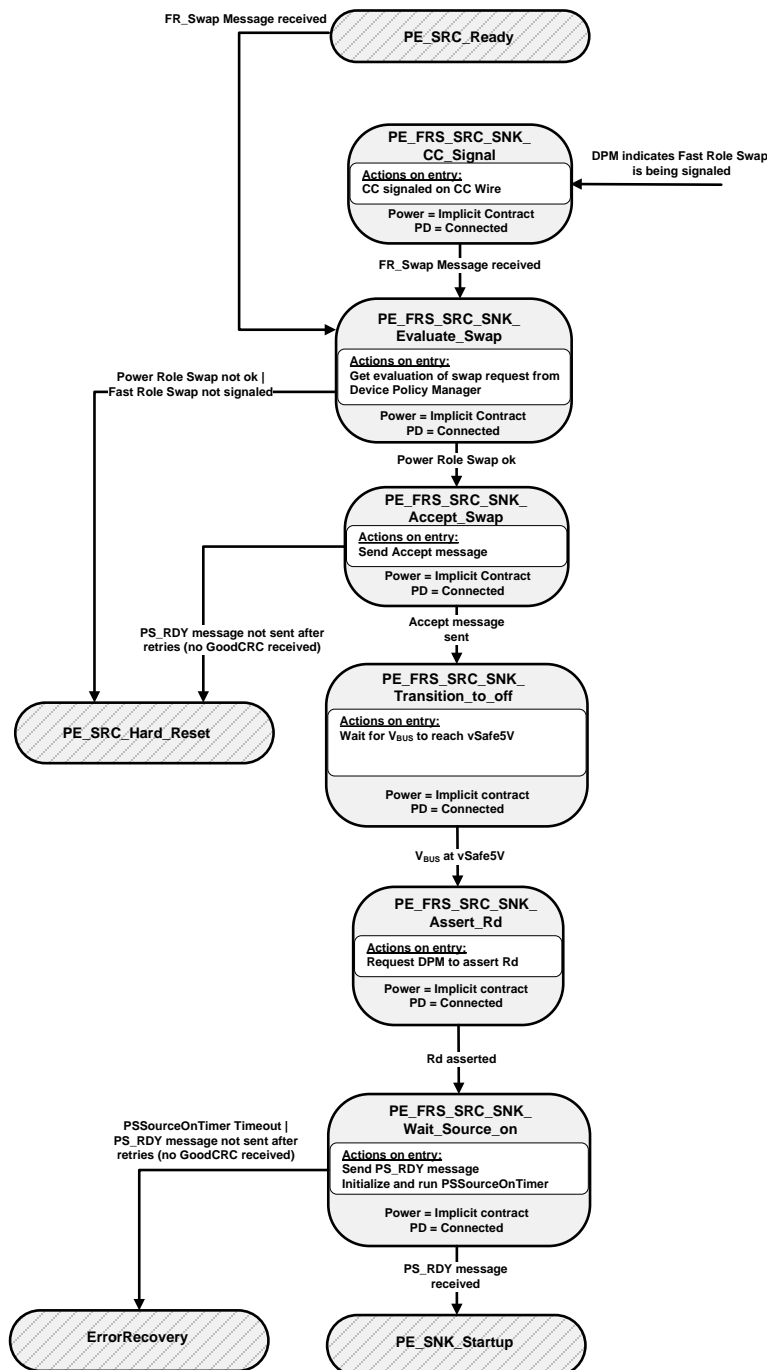
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Actual Change

(a). Section 8.3.3.16.5, Page 472

From Text:

Figure 8-105: Dual-Role Port in Source to Sink Fast Role Swap State Diagram



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8.3.3.16.5.1 PE_SRC_Ready State

The Fast Role Swap process *Shall* start only from the *PE_SRC_Ready* state where power is stable.

The Policy Engine *Shall* transition to the *PE_FRS_SRC_SNK_Evaluate_Swap* state when:

- An *FR_Swap* Message is received.

8.3.3.16.5.2 PE_FRS_SRC_SNK_CC_Signal State

The Policy Engine *Shall* transition to the *PE_FRS_SRC_SNK_CC_Signal* state from any other state provided there is an Explicit Contract in place when:

- The Device Policy Manager indicates that Fast Role Swap signaling is being applied to the CC Wire.

In the *PE_FRS_SRC_SNK_CC_Signal* state the Policy Engine waits for an *FR_Swap* Message from the new Source.

The Policy Engine *Shall* transition to the *PE_FRS_SRC_SNK_Evaluate_Swap* state when:

- An *FR_Swap* Message is received.

8.3.3.16.5.3 PE_FRS_SRC_SNK_Evaluate_Swap State

On entry to the *PE_FRS_SRC_SNK_Evaluate_Swap* state the Policy Engine *Shall* ask the Device Policy Manager whether a Fast Role Swap can be made.

The Policy Engine *Shall* transition to the *PE_FRS_SRC_SNK_Accept_Swap* state when:

- The Device Policy Manager indicates that a Fast Role Swap is ok.

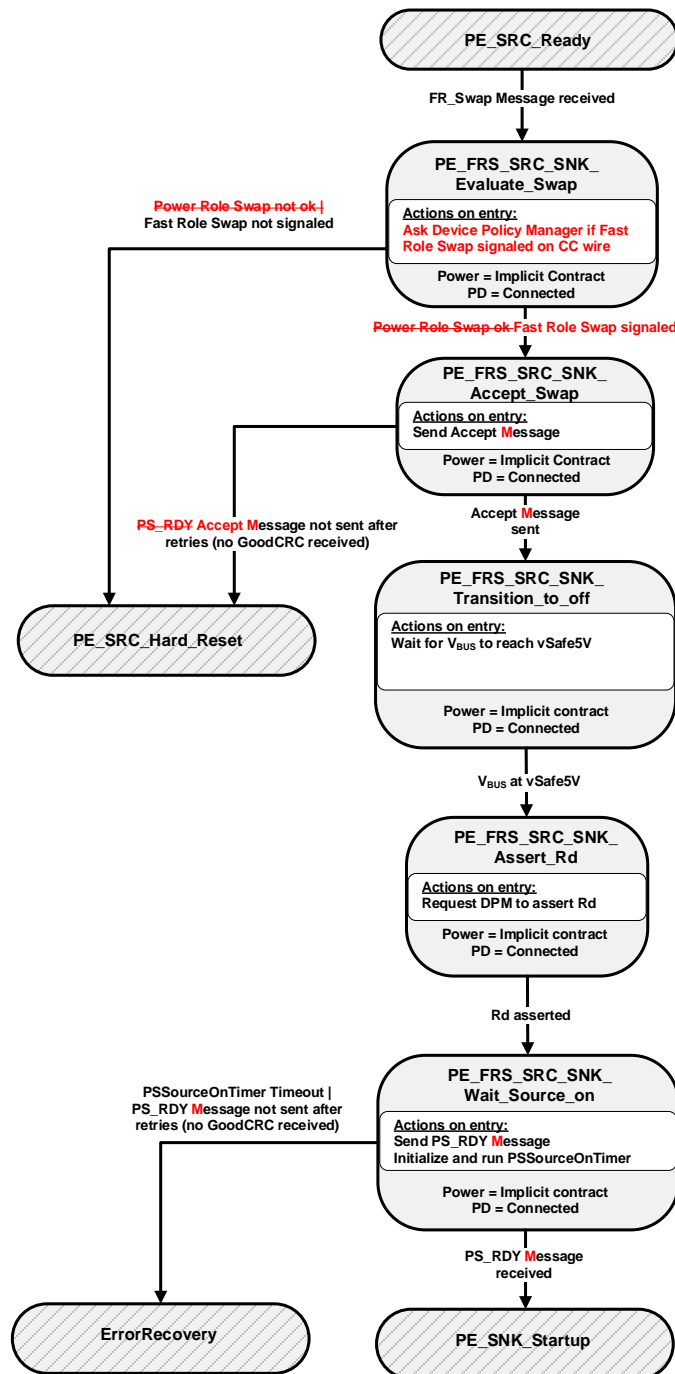
The Policy Engine *Shall* transition to the *PE_SRC_Hard_Reset* state when:

- The Device Policy Manager indicates that a Fast Role Swap is not ok or
- The Device Policy Manager indicates that a Fast Role Swap is not being signaled.

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To Text:

Figure 8-105: Dual-Role Port in Source to Sink Fast Role Swap State Diagram



8.3.3.16.5.1 PE_SRC_Ready State

The Fast Role Swap process *Shall* start only from the **PE_SRC_Ready** state where power is stable. The Policy Engine *Shall* transition to the **PE_FRS_SRC_SNK_Evaluate_Swap** state when:

- An **FR_Swap** Message is received.

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~~8.3.3.16.5.2 PE_FRS_SRC_SNK_CC_Signal State~~

The Policy Engine ~~Shall~~ transition to the ~~PE_FRS_SRC_SNK_CC_Signal~~ state from any other state provided there is an Explicit Contract in place when:

- ~~• The Device Policy Manager indicates that Fast Role Swap signaling is being applied to the CC Wire.~~

In the ~~PE_FRS_SRC_SNK_CC_Signal~~ state the Policy Engine waits for an ~~FR_Swap~~ Message from the new Source.

The Policy Engine ~~Shall~~ transition to the ~~PE_FRS_SRC_SNK_Evaluate_Swap~~ state when:

- ~~• An FR_Swap Message is received.~~

8.3.3.16.5.32 PE_FRS_SRC_SNK_Evaluate_Swap State

On entry to the **PE_FRS_SRC_SNK_Evaluate_Swap** state the Policy Engine *Shall* ask the Device Policy Manager whether ~~a Fast Role has been signaled on the CC wire~~~~Swap can be made~~.

The Policy Engine *Shall* transition to the **PE_FRS_SRC_SNK_Accept_Swap** state when:

- The Device Policy Manager indicates that a Fast Role Swap ~~has been signaled~~~~is ok~~.

The Policy Engine *Shall* transition to the **PE_SRC_Hard_Reset** state when:

- ~~• The Device Policy Manager indicates that a Fast Role Swap is not ok or~~
- The Device Policy Manager indicates that a Fast Role Swap is not being signaled.

(b). Section 8.3.3.25, Table 8-62, Page 509

To Text:

State name	Reference
Source to Sink Fast Role Swap	
PE_FRS_SRC_SNK_CC_Signal	Section 8.3.3.16.5.2
PE_FRS_SRC_SNK_Evaluate_Swap	Section 8.3.3.16.5.3
PE_FRS_SRC_SNK_Accept_Swap	Section 8.3.3.16.5.4
PE_FRS_SRC_SNK_Transition_to_off	Section 8.3.3.16.5.5
PE_FRS_SRC_SNK_Assert_Rd	Section 8.3.3.16.5.6
PE_FRS_SRC_SNK_Wait_Source_on	Section 8.3.3.16.5.7

From Text:

State name	Reference
Source to Sink Fast Role Swap	
PE_FRS_SRC_SNK_CC_Signal	Section 8.3.3.16.5.2
PE_FRS_SRC_SNK_Evaluate_Swap	Section 8.3.3.16.5.3
PE_FRS_SRC_SNK_Accept_Swap	Section 8.3.3.16.5.4
PE_FRS_SRC_SNK_Transition_to_off	Section 8.3.3.16.5.5
PE_FRS_SRC_SNK_Assert_Rd	Section 8.3.3.16.5.6
PE_FRS_SRC_SNK_Wait_Source_on	Section 8.3.3.16.5.7