

ECN for USB Power Delivery Specification Revision 3.2

Version 1.1, 2024-10

Title: ECN Wait in EPR_Request

Brief description of the functional changes proposed:

Clarify behavior of when a sink can receive a wait or reject to a request in EPR mode. Allows a reject on any request except the first one after entering EPR mode. There is confusion on this in compliance as it has been in the spec both ways in the past and the text does not align with the generic state diagram.

Benefits as a result of the proposed changes:

Clarify for compliance checks when wait or reject is allowed or required.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:

Some systems expect a wait and some expect a reject based on past revisions

An analysis of the hardware implications:

none

An analysis of the software implications:

Minor changes to exit conditions in state machine. No new states

An analysis of the compliance testing implications:

Clarifies and allows compliance to have a proper procedure to follow.

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Actual Change Requested

(a). Section 6.4.9, Page 205

6.1.1 EPR_Request Message

An **EPR_Request** Message **Shall** be sent by a Sink, operating in *EPR Mode*, to request power, typically during the request phase of a power *Negotiation*. The **EPR_Request** Message **Shall** be sent in response to the most recent **EPR_Source_Capabilities** Message. The **EPR_Request** Message **Shall** return a Sink Request Data Object (RDO) that **Shall** identify the Power Data Object being requested followed by a copy of the Power Data Object being requested.

Note: The requested Power Data Object **May** be either an EPR (A)PDO or SPR (A)PDO. The **EPR_Request** Message **Shall** be as shown in [Figure 6.32, "EPR_Request Message"](#).

Figure 6.32 EPR_Request Message

Header	RDO	Copy of PDO
No. of Data Objects = 2		

The Source **Shall** verify the PDO in the **EPR_Request** Message exactly matches the PDO in the latest **EPR_Source_Capabilities** Message pointed to by the Object Position field in the RDO.

The Source **Shall** respond to an **EPR_Request** Message in the same manner as it responds to a **Request** Message with ~~an Accept Message, or a Reject Message~~ the exception of the first **EPR_Request** (see [Section 6.9, "Accept, Reject and Wait"](#)). The Explicit Contract Negotiation process for EPR is the same as the process for SPR Mode except that the **Source_Capabilities** Message is replaced by the **EPR_Source_Capabilities** and the **Request** Message is replaced by the **EPR_Request** Message.

A Sink in *EPR Mode* that receives a Reject to the first **EPR_Request** after receiving the first **EPR_Source_Capabilities** upon entering *EPR Mode* **Shall** initiate a *Hard Reset*.

An *EPR Source* operating in *SPR Mode* that receives a **EPR_Request** Message **Shall** initiate a *Hard Reset*.

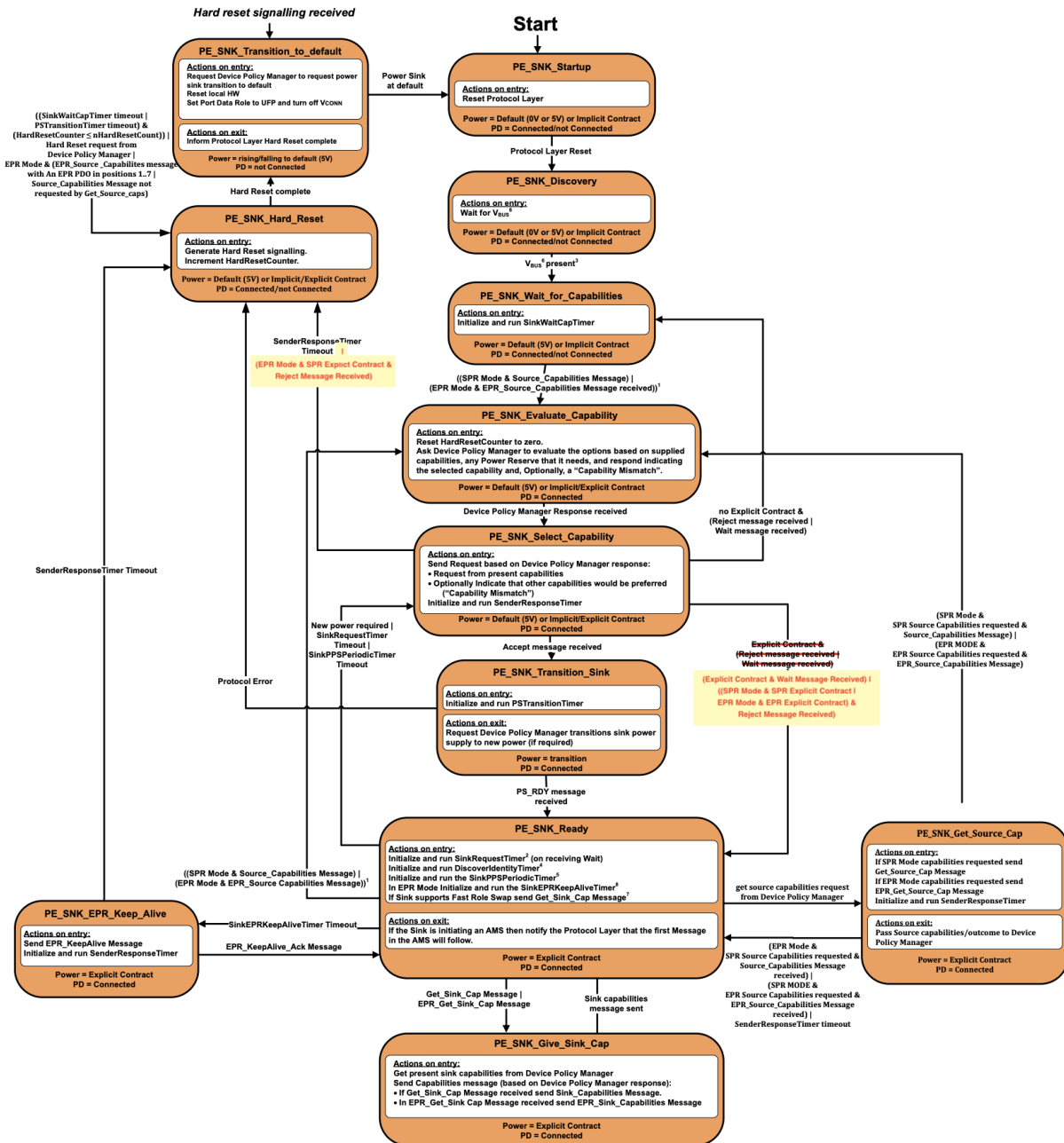
The RDO takes a different form depending on the kind of power requested. The PDO and APDO formats are detailed in [Section 6.4.2, "Request Message"](#).

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(b). Section 8.3.3.3, Page 835, Figure 8.133

Figure 8.133 Sink Port State Diagram



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(c). Section 8.3.3.3.5, Page 837

8.3.3.1.1 PE_SNK_Select_Capability State

On entry to the **PE_SNK_Select_Capability** state the *Policy Engine* **Shall** request the *Protocol Layer* to send a response *Message*, based on the evaluation from the *Device Policy Manager*. The *Message* **Shall** be one of the following:

- A Request from the offered *Source Capabilities*.
- A Request from the offered *Source Capabilities* with an indication that another power level would be preferred (**Capability Mismatch** bit set).

When in *SPR Mode* a **Request** *Message* **Shall** be sent.

When in *EPR Mode* an **EPR_Request** *Message* **Shall** be sent.

The *Policy Engine* **Shall** initialize and run the **SenderResponseTimer**.

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

- An **Accept** *Message* is received from the *Source*.

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

- There is no *Explicit Contract* in place and
- A **Reject** *Message* is received from the *Source* or
- A **Wait** *Message* is received from the *Source*.

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

- ~~There is an *Explicit Contract* in place and~~
- ~~A **Reject** *Message* is received from the *Source* or~~
- ~~A **Wait** *Message* is received from the *Source*.~~
- There is an *SPR Explicit Contract* in *SPR Mode* or an *EPR Explicit Contract* in *EPR Mode* and a **Reject** *Message* is received from the *Source* or
- There is an *Explicit Contract* in place and a **Wait** *Message* is received from the *Source*.

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

- A **SenderResponseTimer** timeout occurs; or
- An *EPR Explicit Contract* has not been established in *EPR Mode* and a **Reject** *Message* is received from the *Source*.