# USB Type-C ENGINEERING CHANGE NOTICE

## Title: Dual-Role Products Swap Guidelines
## Applied to: USB Type-C® Specification Release 2.1, May 2021

| **Brief description of the functional changes proposed:** |
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| Adds guidelines regarding use of USB PD data and power swap rules to help implementers know when to initiate swaps for DRP based products to avoid situations that could result in port partners locking themselves in a specific role without any valid use case. |

| **Benefits as a result of the proposed changes:** |
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| Intent is to improve interoperability by encouraging use of USB PD swaps in situations where mismatches may result because some implementations don't take the initiative to swap roles as opposed to relying on the port partner. |

| **An assessment of the impact to the existing revision and systems that currently conform to the USB specification:** |
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| Unless existing products are updated, they might not always end up in their preferred power and data roles. |

| **An analysis of the hardware implications:** |
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| No changes to HW required. FW in the PD or port controller might need to be updated. |

| **An analysis of the software implications:** |
|---|
| No impact to SW. |

| **An analysis of the compliance testing implications:** |
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| No change required. |

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## Actual Change Requested
### Changes using modified or new text and tables

### (a) Additions to end of Section 4.5.1.4.2 (USB PD-based Power Role, Data Role and V$_{CONN}$ Swapping)

A USB Type-C dual-role product that supports *USB PD* should use *USB PD* PR_Swap and DR_Swap to ensure that it gets into its preferred power and/or data roles. For example, a hub's UFP or a monitor's UFP that prefers being in the Source role should initiate PR_Swap if needed to switch from being in the Sink role to the preferred Source role. Similarly, a small mobile device that prefers the Sink role should initiate PR_Swap to switch from being in the Source role to the preferred Sink role.

Table 4-XX summarizes the recommended use of power or data role swaps by USB Type-C dual-role ports that have preferred power or data roles. For dual-role ports where only one data role is relevant to its functional purpose, that data role should be its preferred data role, e.g., the physical upstream port of a hub would have a preferred data role of UFP on that port.

**Table 4-XX  Use of Power and Data Role Swaps for Dual-Role Ports with Preferred Roles**

| Preferred Roles of the Dual-Role Port: | When initially connected to a: | |
| --- | --- | --- |
| | Source / DFP | Sink / UFP |
| Source / No DR preference | Issue PR_Swap | |
| Source / DFP | Issue PR_Swap and DR_Swap | |
| Source / UFP | Issue PR_Swap | Issue DR_Swap |
| Sink / No DR preference | | Issue PR_Swap |
| Sink / DFP | Issue DR_Swap | Issue PR_Swap |
| Sink / UFP | | Issue PR_Swap and DR_Swap |
| No PR preference / DFP | Issue DR_Swap | |
| No PR preference / UFP | | Issue DR_Swap |