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A TBT eGFX MONITOR TOPOLOGY, WHICH ABLE TO SUPPORT OPTIONAL eGFX CARD BE AND SUPPORT BASIC DISPLAY FUNCTION WITH SAME USB TYPE-C CONNECTOR WHEN CONNECTING NON-TBT HOST

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Title:

A TBT eGFX monitor topology, which able to support optional eGFX card be and support basic display function with same USB Type-C connector when connecting non-TBT host.

Abstract:

Enterprise customer requires to join a lot of meeting and take the notebook back to home to continuous some light loaded working, but some of customer requires drawing/reviewing CAD which requires external graphic card to support working smoothly. Intel TBT technology allows TBT NB connects external Graphic Card in TBT docking, so to be an TBT eGFX monitor can make user to have better graphic performance for CAD usage even use light notebooks.



Figure 1. An TBT eGFX display allows user can use smaller notebook have good graphic progress ability when connecting to TBT eGFX monitor.

Problem Solved:

This disclosure describes a topology of a monitor include TBT eGFX (external graphic card) topology, which not only support TBT notebooks and still can display with non TBT notebooks and allows user to upgrade their graphic card.

Prior Solutions:

Traditional solution is using a TBT eGFX BOX and monitor connects a to TBT eGFX BOX, which waist a lot of spaces. If to support non-TBT host, user requires to connect monitor to notebook directly and loss docking abilities.

Descriptions:

TBT eGFX product requires TBT controller inside, to provide PCIe Tunnel to connect eGFX with TBT notebooks. This topology requires a TBT controller which is Titan Ridge DD, which supports PCIe Tunnel for eGFX usage and DP1.4 re-driver when connecting a non-TBT notebook over USB Type-C, this monitor cannot provide external graphic card ability when connecting a non-TBT notebook.

by using a DP MUX to

- let the basic display function still works when graphic card is not installed.
- When eGFX is installed, provide video from graphic card to Scaler IC for light up panel IC (An IC to get video from input port (DP, HDMI, USB-C) and drive video to panel in a monitor)
- To support DP output to Scaler when external graphic card is not installed or connecting a non-TBT host

We still able to add USB functional support for this eGFX docking monitor like USB external port, ethernet, audio, and we can support USB function no matter TBT notebook or non-TBT notebook

eGFX can be standard PCIe/MXM graphic card or HP customized HPNDC (New Daughter Card) based on support requirement.

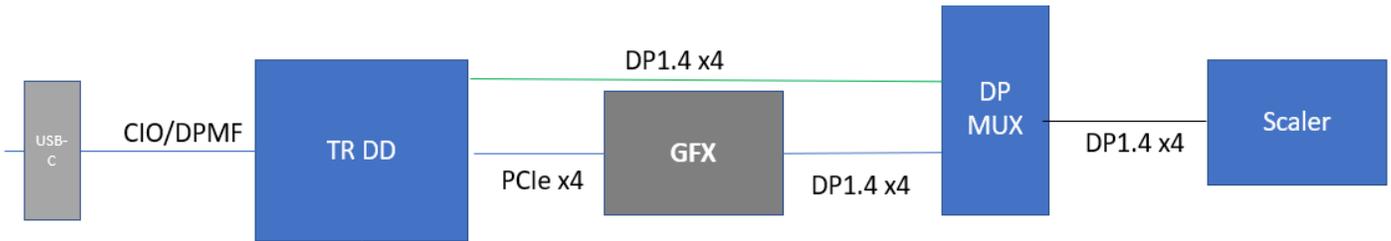


Figure 2. A topology to let eGFX be optional and supports non-TBT host display.

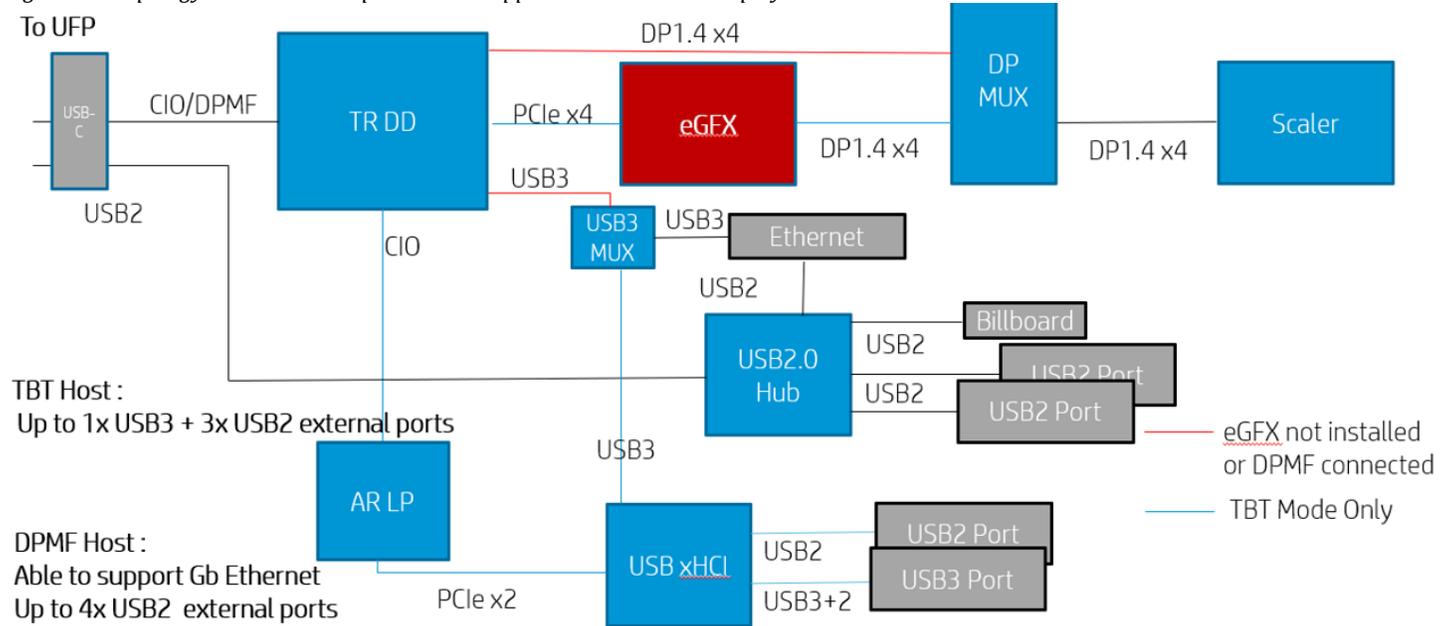


Figure 3. An example topology to let eGFX to extend USB port in a docking display.

Advantages:

This disclosure tells a method to let user's TBT notebook to have graphic card support when docking a TBT eGFX docking monitor, also this docking monitor supports basic display (no graphic card ability) even when connecting to non-TBT notebooks over USB Type-C. Allows user to remove/install their graphic card. And when share the same HW design when eGFX is installed and not installed.

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