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A fool proof carrier design for front access storage expansion board

Jui Lin Chen
Hewlett Packard Enterprise

Chia-Yuan Liu
Hewlett Packard Enterprise

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A fool proof carrier design for front access storage expansion board

Abstract

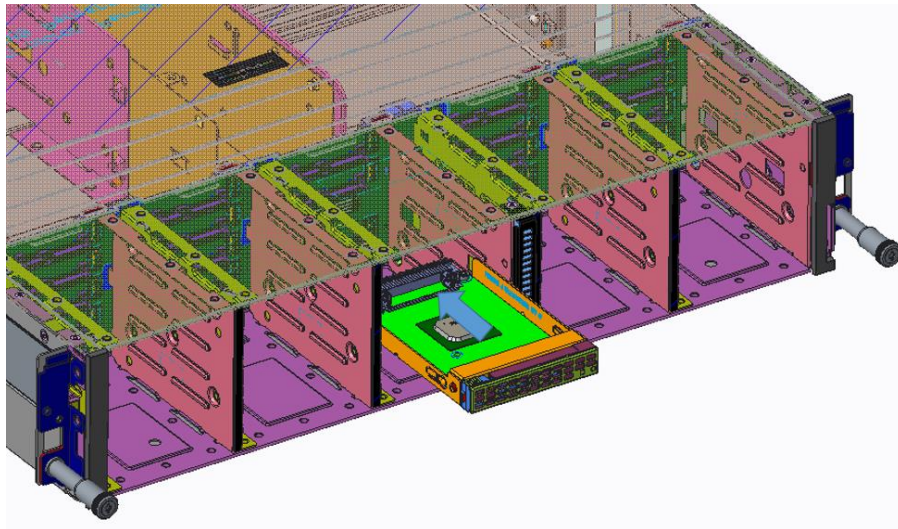
Storage applications, by their very nature, need an expansion hardware to consolidate more hard drives to a controller. Typically the expansion hardware is designed as an independent printed circuit board and connect to the hard drive backplane in the opposite side of hard drives. When the system is installed in the rack, it requires users to move the whole system box from the position in order to open the lid. It also requires users to power off the system before disconnect the expansion board from the hard drive backplane.

Problem statement

Applications in a high density rack server system, it does not have enough space to store an independent expansion board inside of the system box i.e the opposite side of hard drive, it also a huge effort for a customer to move the system box from the rack and open the lid. Our solution enable the expansion board been stored at the same side of hard drive so that it is front access-able and needn't move the heavy box from the rack. Our solution also provide a fool proof design to prevent user interrupt the connection between expansion board and hard drive backplane accidentally.

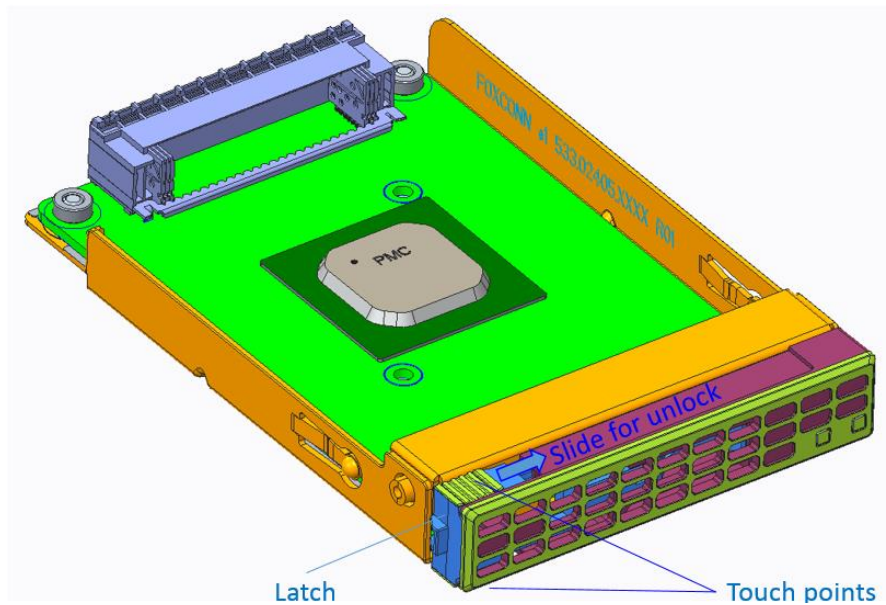
Our solution

In our solution, we design a carrier to fix the expansion board, the carrier is installed in the front side of system box as the same behavior that we install a hot-plug hard drive and through the installation, the expansion board connect to the hard drive backplane.

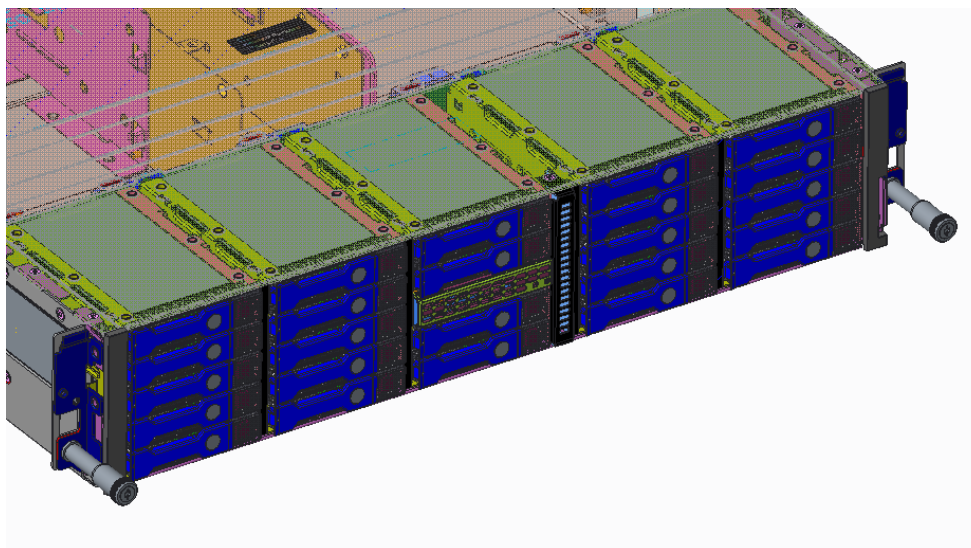


The carrier has a latch mechanism and it locks with the box when it is fully inserted into it. The way to remove the carrier is slide the latch by the touch points in the top and/or the bottom sides

of carrier.

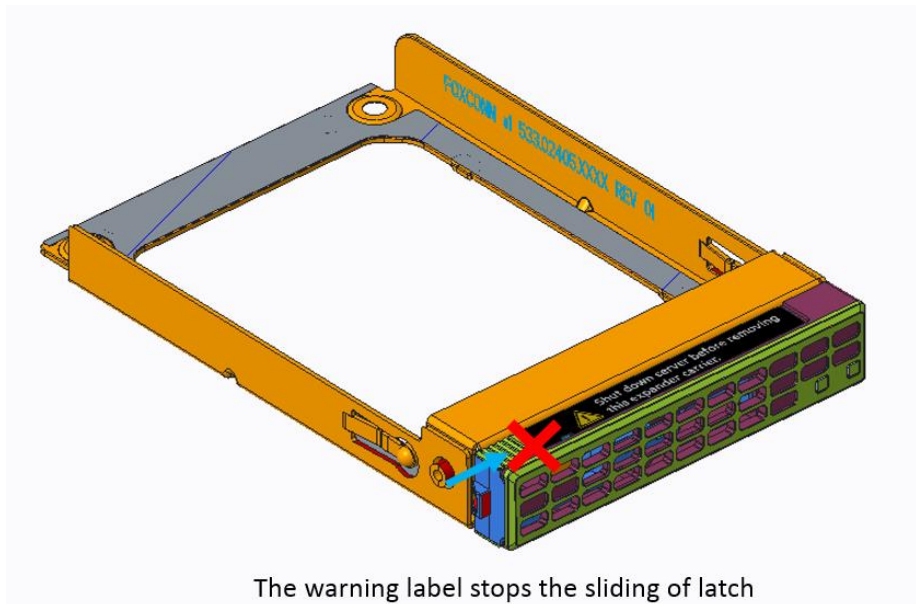
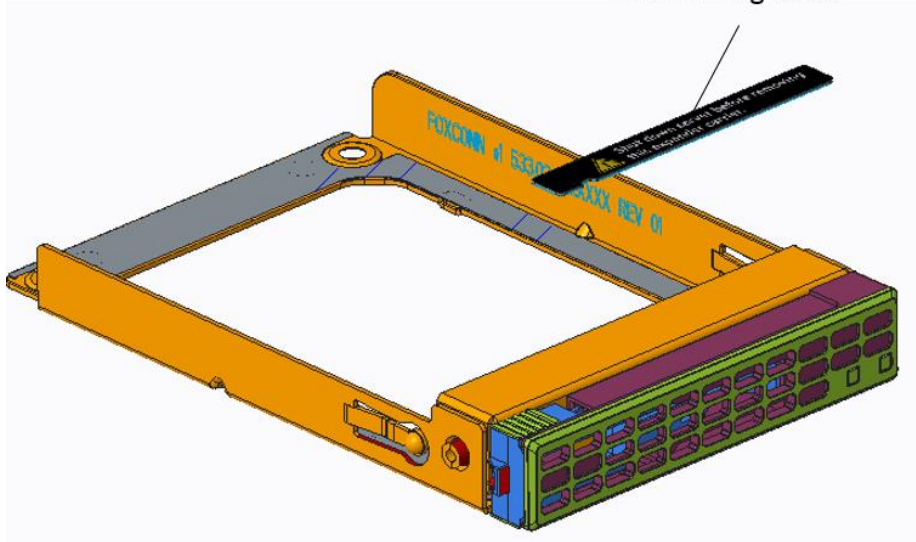


Once the system is full loaded by hard drives, there is no chance for the user to touch the touch points of the latch.



Further in our solution there is a warning label being paste on the carrier to remind user power off the system before this expansion device, and, since the label is paste in the sliding path of unlocking the latch, the label provide the “stop” function for the latch’s sliding. The only way that to unlock this carrier is firstly require to remove the warning label.

The warning label



The warning label stops the sliding of latch

Through this carrier design, we accomplish the targets:

1. Install the expansion board in the side as hard drive so it is front access-able
2. Prevent the users to mistakenly unlock the carrier and remove the expansion board
3. Provide a second protection by the warning label

Disclosed by Jui Lin Chen and Chia-Yuan Liu, Hewlett Packard Enterprise