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# Easy Connect Vertical Drive Cage

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## Easy Connect Vertical Drive Cage

*An Easy Connect Vertical Drive Cage allows storage drives and cages to interlock together for better mechanical support.*

With increasing demands for storage capacity on today's storage servers, creative designs are required in order to accommodate the maximum capacity requirements of hard/flash disk drives that can be supported on a single system. Some designs utilize vertical insertion for storage drive cages, which can result in the following challenges:

- a. With drives inserted downward, the full mass of the drive cage is supported by the HDD connector, with a much smaller and thinner contact surface area, which gradually degrades the drive connector, yielding poor quality metrics.
- b. Vibrational impact from fans is more difficult to manage, as there is more wobbling from the small contact surface area.
- c. Higher cost and design efforts for mechanical cage design in order to mitigate the issues listed above.

Current vertical insertion designs used standard drive cages inserted downwards instead of horizontally (Fig. 1). A mechanical cage would be required to provide physical support for these drives.

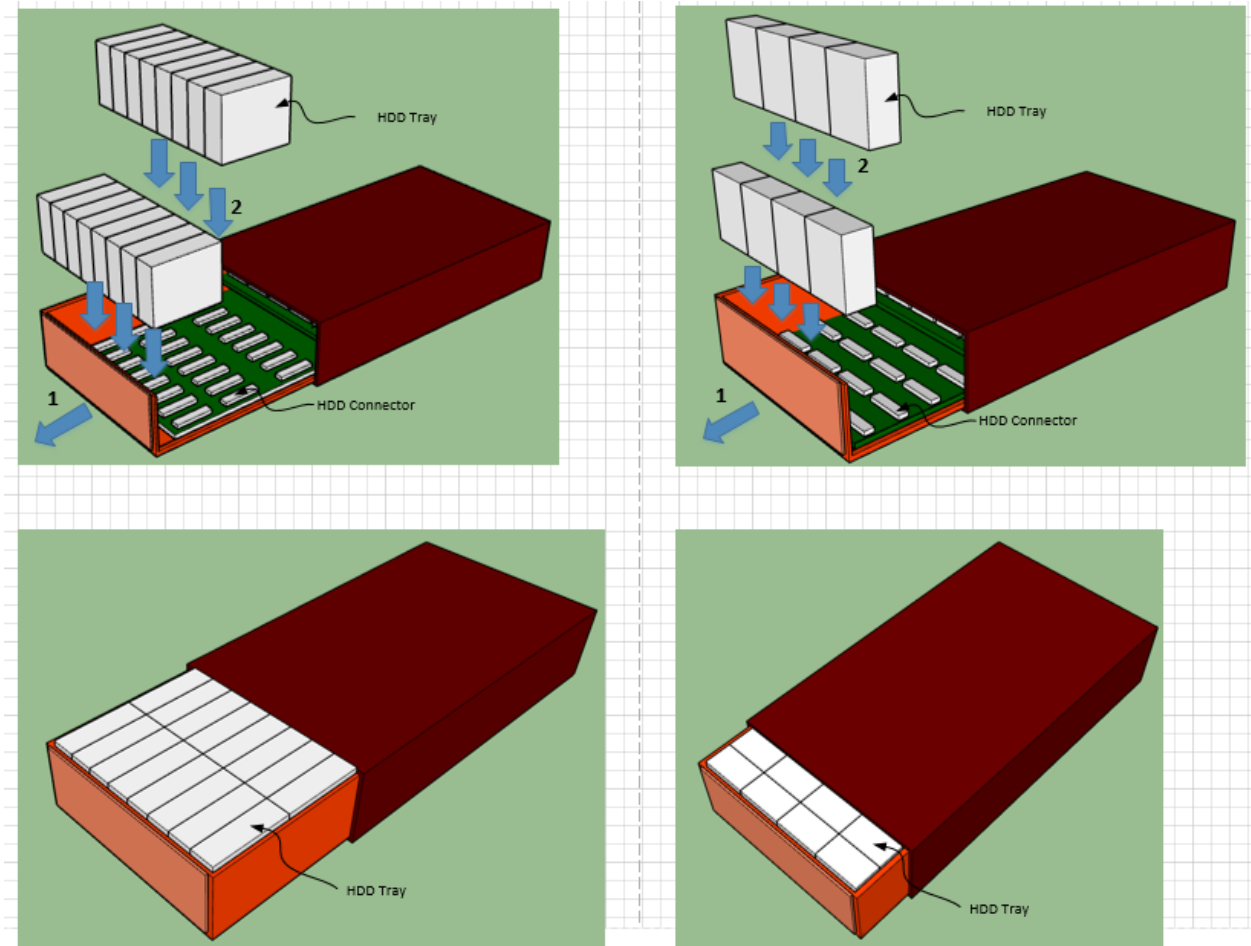


Fig. 1

Figure 2 highlights the proposed Easy Connect Vertical Drive Cage. The uniquely shaped cage-less design allows drive cages to interlock with adjacent drive cages along with components of the chassis, providing structural support to minimize wobbling and vibrational impacts. Figure 3 shows the interlocking properties of the new drive cage design, preventing the drive cage from vertical or horizontal motion that potentially could disconnect the drive from the connector. The interlocking design also eliminates the need for a mechanical cage to house the drive cages. Figure 4 highlights the mechanical cage-less design.

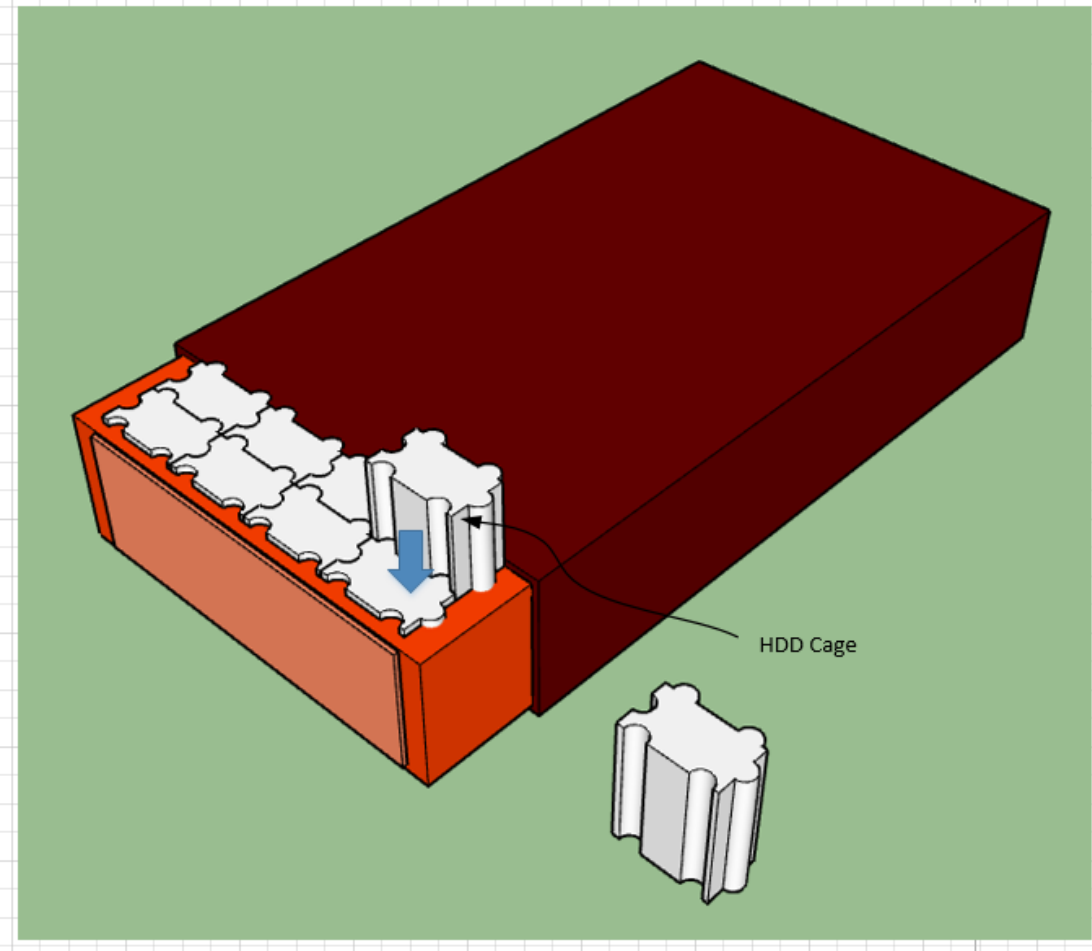


Fig. 2

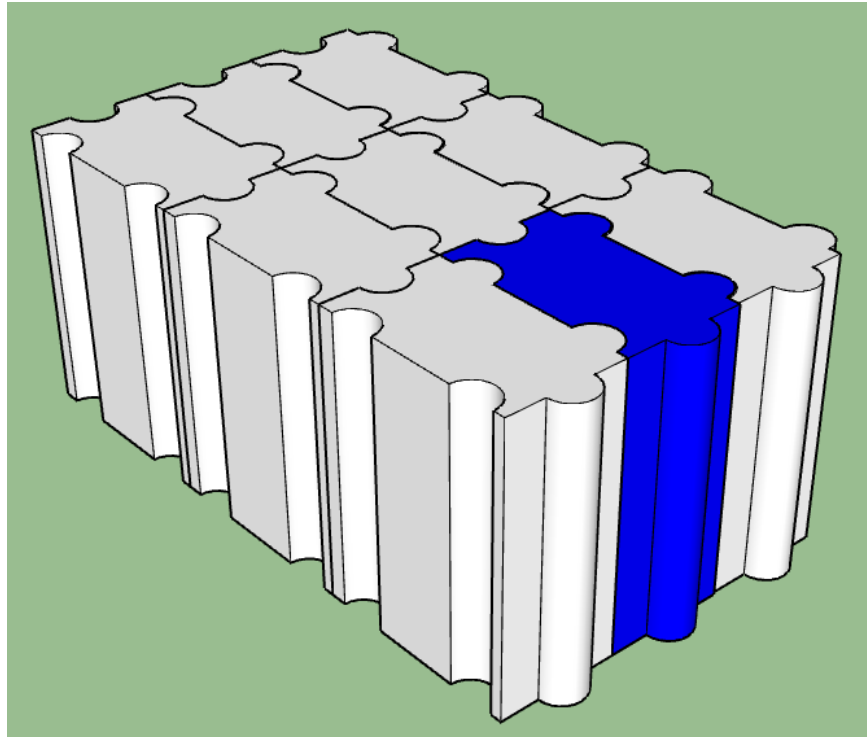


Fig. 3

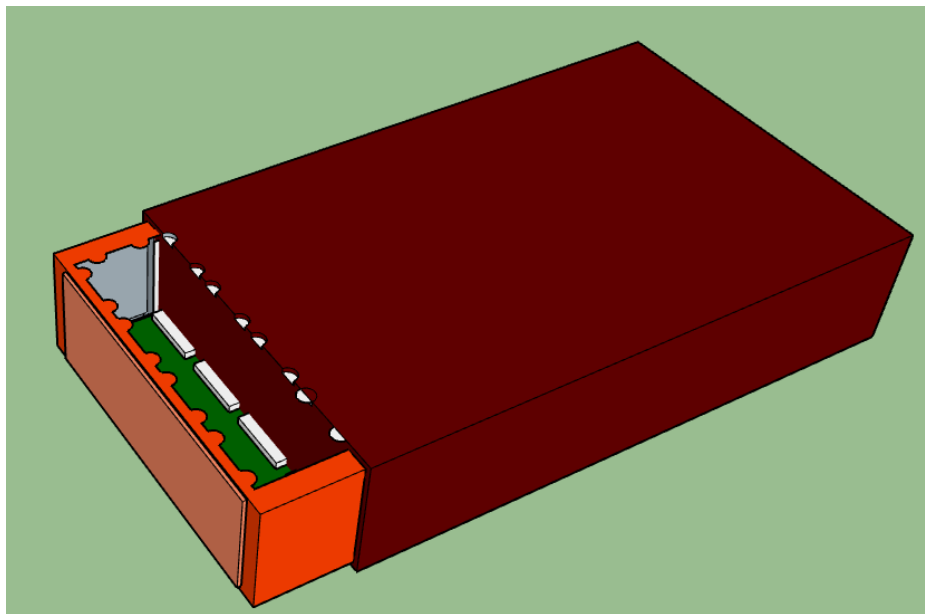


Fig. 4

By utilizing the proposed drive cage over existing designs, users can benefit from the following:

- a. Built-In insertion guidance, which yields better quality metrics on the drive connector, which will see less damage statistically.
- b. Vibrational impact is minimized as chassis and cages interlock for added structural support
- c. Eliminates the need for mechanical cage design for design, material cost, and labor savings
- d. Easy Drive Cage access eliminates top cover design for additional design, material cost, and labor savings
- e. Eliminating fixed mechanical cage design allows for more flexibility in storage array size

Disclosed by Eason Chen, Peter Liao, Geoffrey Sun, Mealy Cheng and Phoebus Lin, Hewlett Packard Enterprise