End-to-end Data Protection and Tapes (07-373r4)

Kevin Butt

- Customers are looking for solutions using standards based end-to-end data protection
- End-to-end data protection in the standards
- Disk based solutions are getting chosen over tape based solutions.

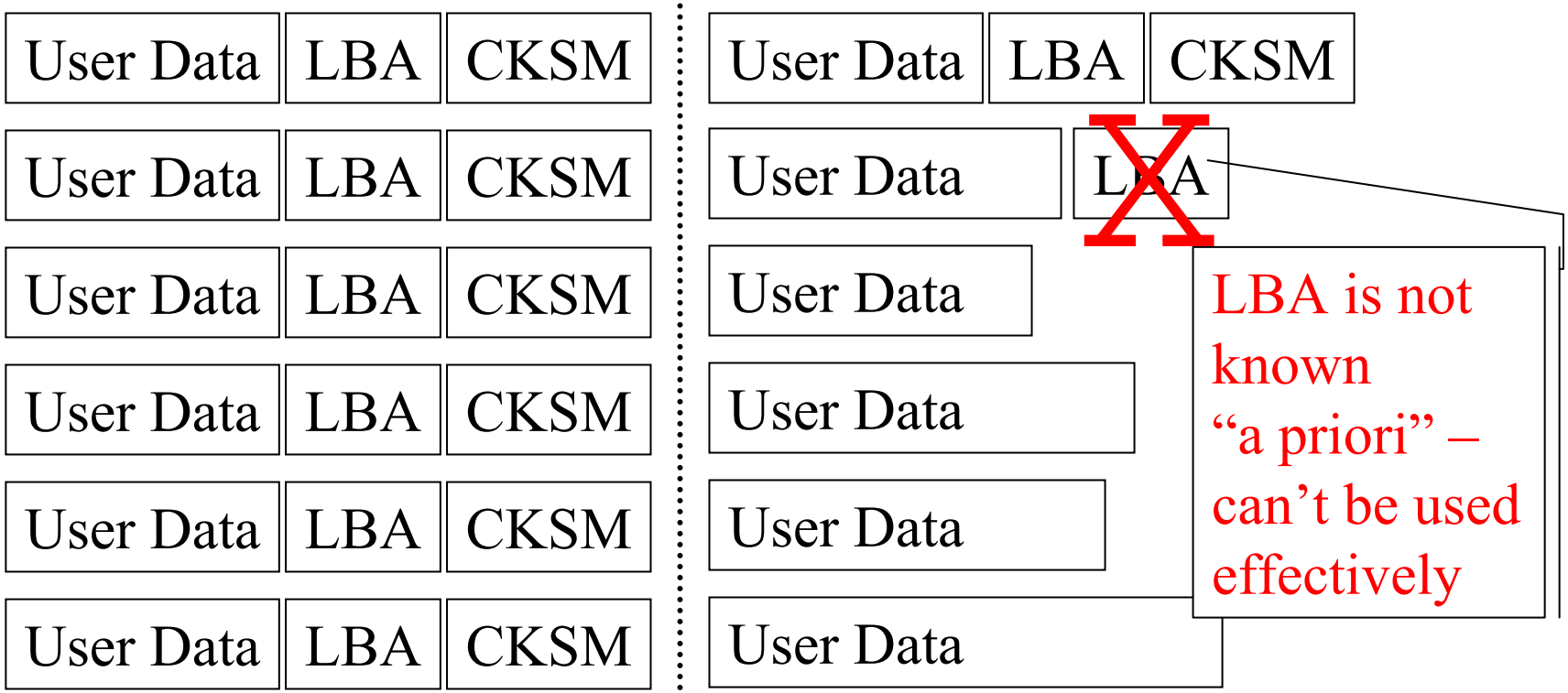
- Tape standards (i.e., SSC-3) need to add end-to-end data protection
- IBM has an end-to-end data protection solution for tapes
- Tape will be seen as having a complete solution for protecting data

Potential for data corruption

(same on tape as disk)

- Between the application and the HBA
- Interfaces to the data delivery subsystem on both ends of the wire
- Internal to the device
- As block is transferred between intermediate devices (e.g., protocol bridges)

Disk data vs. Tape data



Existing vendor-specific methods

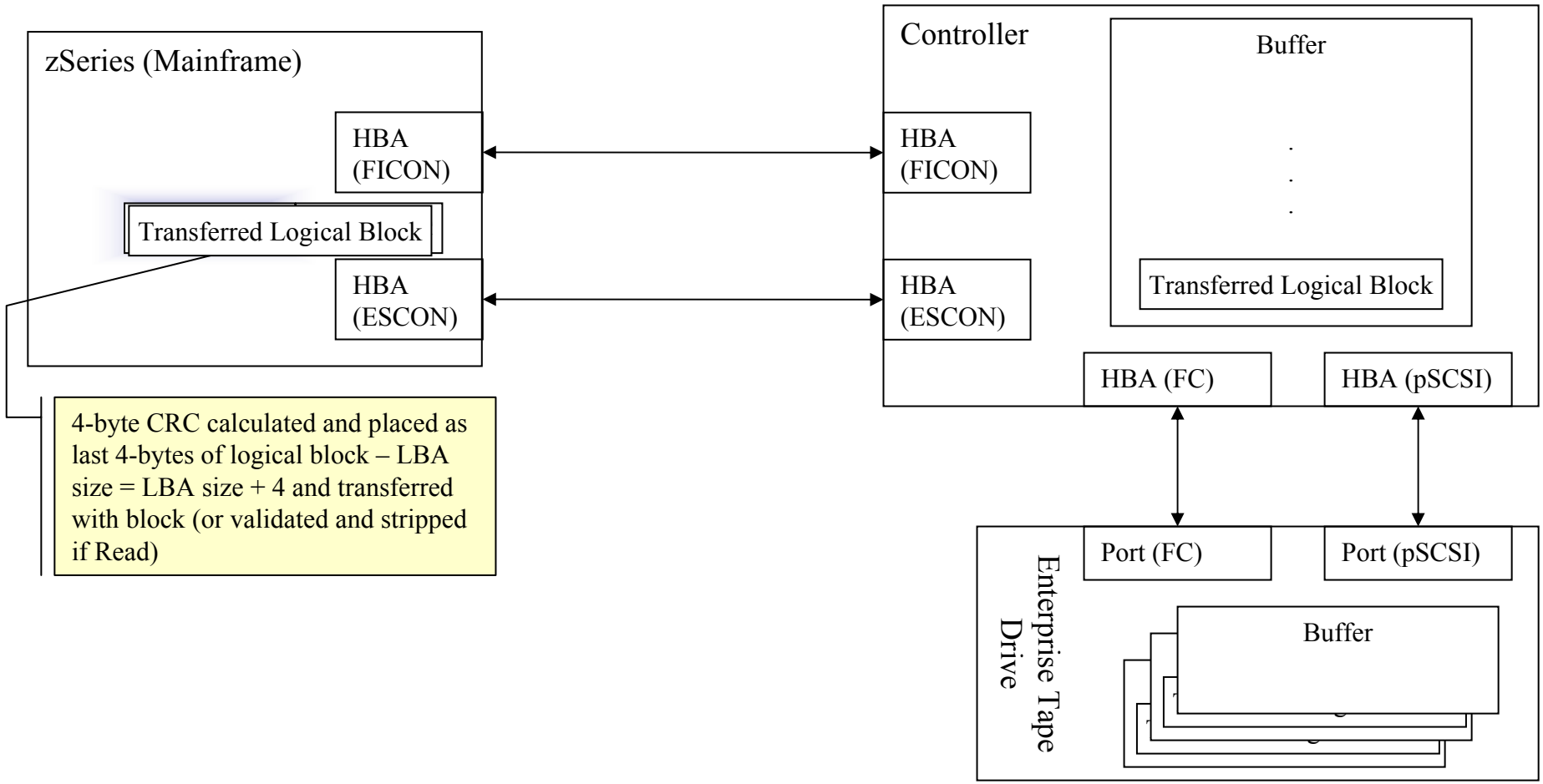
- IBM has a proven solution in its enterprise tape drives.
  - Used for more than 12 years
- Began with 3480 Tape drives
- Continued in 3590 and 3592
- 4-byte CRC placed on logical block and transferred with the block
  - Validated at multiple points along the path

Benefits to IBM and the customer with this solution

- Prior to solution
  - Data Integrity Issues
  - Difficult to find where the problem occurred
- After solution
  - Quickly find where problems occur
  - Data Integrity issues disappeared (Integrity was assured)
  - H/W issues discovered before host believes the data is on the medium

Diagram of IBM Solution

(logical representation)



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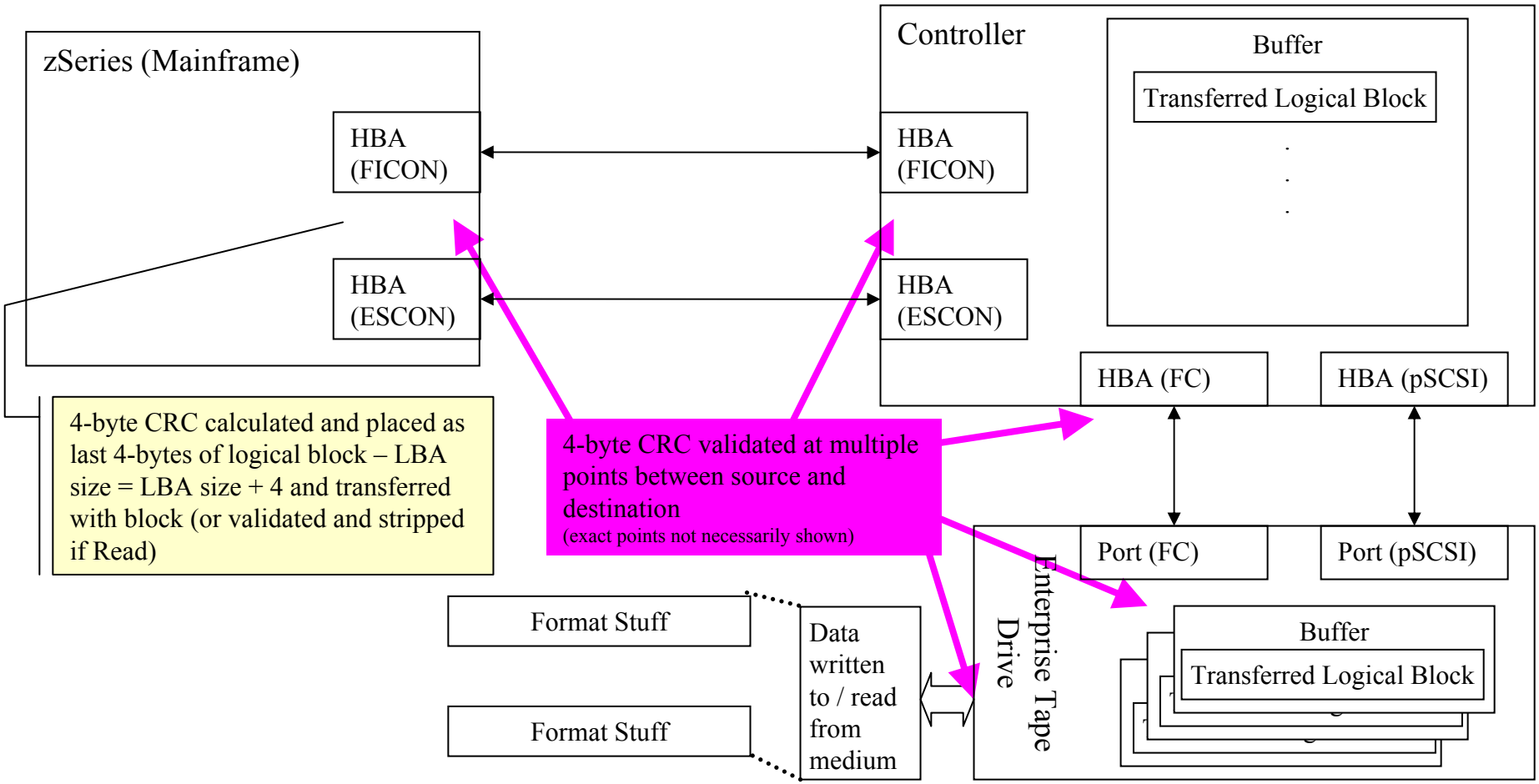

Likelihood of quick adoption

- Tape drives today protect data blocks.
  - ECC
  - CRC
- E2E protection fits into media format schemes in use today
- Does not require change in Transport Layer Protocols

Proposal – Implement end-to-end logical block protection on tape

- There is a proven method that has been in use for more than twelve years
- Leverage this proven solution
- Make sure that options are available to meet all vendors needs
- For proposal against SSC-3 see (http://www.t10.org/ftp/t10/document.07/07-374r3.pdf)