



LIBRARY OF
CONGRESS

Designing Storage Architectures for Digital Preservation: Panel 2 – Tape Usage Future

September 20, 2012

Library of Congress

Thomas Youkel

Chief, Enterprise Systems
Engineering

The Library of Congress



LIBRARY OF
CONGRESS

Our Distinguished Panelists

- Shawn Brume IBM/Enterprise tape
- Peter Faulhaber FujiFilm
- Ed Childers IBM/LTO tape
- Bob Raymond Oracle



LIBRARY OF
CONGRESS

Question for the panel

- What is the future market for tape usage?
- How do you see the future specifically for tape technology and why?



LIBRARY OF
CONGRESS

Ground Rules for all of us

- 4 minutes per panelist timed
- No discussion about specific hardware or software products is allowed
- We expect 10 minutes for discussion among panel members and moderator after the individual presentations, and then questions from audience



LIBRARY OF
CONGRESS

Thoughts and considerations

- Enterprise tape (hard error rate of $10E19^{\text{th}}$) density is increasing faster than LTO (hard error rate of $10E17^{\text{th}}$)
 - Why? This was not the case before LTO-5
- Hard error rates for tape are greater than hard error rates for disk but have not changed in a number of years
 - Do these rates need to be increased given the increase in cartridge density?
 - What are the tradeoffs other than space?
- Are tape sales for archival/long-term storage applications increasing or decreasing
 - What is the long-range direction and why?



LIBRARY OF
CONGRESS

LOC Challenges

- Migration to new media takes significant time
 - LOC must migrate, but how often will this be required
 - Small increments in density are difficult to deal with
 - Interface issues are critical
 - Choice of an older interface on new tape drive impacts our decisions
 - E.g. new tape drives should use 16 Gbit FC/10 GbE/6 Gbit SAS
- LOC needs an understand for budget and planning purposes of:
 - Density futures
 - Interface futures
 - Backwards compatibility plans



LIBRARY OF
CONGRESS

Panelists – Take It Away

Audience: Please hold questions until
after the panelists have spoken