Motivation

▶ **New regulations regarding rules for retaining data for years beyond point of creation or last change**

▶ **Harder to comply with regulations without technology to provide "mistake proofing"**

▶ **Several Data Retention products out there today:**
  – **EMC Centera**
  – **NetApp SnapLock**

▶ **Products effectively implement Write Once, Read Many semantics over read/write magnetic disks**

▸ **Lots of creative ideas, including event based triggers for setting or extending retention dates**

▸ **These ideas often reflect the fluid nature of legislation, regulations, and demands of auditors**

▸ **Rich semantics being addressed in SNIA – DMF - XAN**

▸ **Proposal on table to NFSv4 WG is for two new attributes with associated semantics**
  – **Retain: write once Boolean which says a file MUST be retained at least till its retention time**
  – **Retention Time: the time (date) that a file with Retain == TRUE must be preserved**

▸ **Proposal does not encompass automatic disposal of expired data**
  – **Regulations often specify electronic shredding and auditing**
  – **Servers are free to audit the deletion/shredding of expired retained data**

▶ **Advisory versus Mandatory**

▶ **We could support a variation of Retain that allows a file to be appended but not over written**
  – **Mechanics of this are under discussion**

▶ **Should Retention semantics apply to just regular files or non-regular files too?**
  – **Note: SNIA's Fixed Content Aware Storage WG doesn't consider directories**
  – **Discussion about what the semantics of Retain on directories actually means. E.g. if Retain is TRUE, do we**
    • **allow changes to contents of files in directories?**
    • **allow files to be added to a directory?**

▶ **Next Steps**
  – **More discussion is needed to reach consensus on**
    • **Where to add Retention to NFSv4.1 feature set**
    • **The precise semantics**
  – **Proposed edits to minor version I-D**