Persistent Reservation
What if the keys are not unique?

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To be as Specific as Necessary, and no Moreso

• The current definition of Persistent Reservation (intentionally) leaves the Device Server’s behavior unspecified when multiple Initiators use the same Reservation Key.

• We should be more specific on this topic.
  – The advantage outweighs the cost.
PR Recap

• Each initiator (that is, each port on a host) registers a key
  – Device Server remembers the key-to-initiator mapping

• Initiator passes the key in each PR Out.
  – Device Server checks for a match, using key-to-initiator mapping.
  – Device Server remembers reservations, including the reserving initiator ID and/or the key.

• Initiator can request a list of all Reservations.
  – Device Server returns reservation descriptor, which includes the key of the reserving initiator (not its ID)
PR Recap (cont.)

• Initiator requests a preemption by issuing a PR Out specifying a key.
  – Device Server uses the key-to-initiator mapping to determine which initiator to preempt.
What if keys are not unique?

• Behavior is unpredictable.
  – Presumably, the Device Server shall be prepared to remember each initiator’s key, even if not unique.
  – If Device Server locates Reservations by the initiator’s key, then Reservations will be “shared”.
  – Preempt may apply to all initiators with the same key, or Device Server may just pick one, or...?

• This gives implementation flexibility, but it may have more disadvantages than it is worth, for the typical applications...
Why Implement Non-Unique Keys?

• One key per node, same on all ports, is adequate for typical applications:
• Typically, Preemption is used to remove a node from a cluster.
  – The goal is to remove the state associated with all of a node’s ports from the device server.
• The key-to-initiator map consumes scarce non-volatile storage in the Device Server
  – Less space may be required when there is just one key per node.
Proposal

• Change SPC-2 to specify the behavior of the Device Server when multiple initiators use the same key.
  – Reservations are identified according to the Initiator’s ID, not it’s key.
  – Preemption applies to all initiators with the key specified in the Service Action key.

• No change in behavior when all initiators register with the same key.