BIER Multicast Overlay for HTTP Response


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Recap : Multicast HTTP using BIER

  – Example realization of the use case (https://tools.ietf.org/html/draft-ietf-bier-use-cases-06#section-3.10)
  – A Few requirements

• Operational details were described
  • Required Functional elements
    • PCE
    • Service Router
  • Suggested Protocols
    • Between Service Routers and PCE, Registration with PCE
The multicast overlay is formed by the BFIR and BFER of the BIER layer and the additional SR (Service Handler) and PCE (Path Computation Element) elements.
Realization over IPMC

• “HTTP Response Multicast” maybe realized over IP Multicast (IPMC)
  • Require support for group formation, maintain group state and IGMP signaling to join a group

• For fewer receivers
  – Many of the bitrates may not be required and dropped by the CNAP
  – Extremely high and undesirable amount of IP multicast signaling protocol activity (PIM/IGMP)
Realization over BIER

• Components
  – **SR**: terminates application level protocols, extracts the URI to determine the PATH ID via PCE request
  – **PCE**: keeps track of all service execution end points and how to reach them. (can be part of BIER-TE)
  – Interface functions to BFIR where the PATH ID is mapped to BIER header

• Achieving Multicast
  – SNAP simply coalesces the forwarded HTTP requests from the CNAP, and determines for every requested block the set of CNAPs requesting it
  – A set of CNAPs corresponds to a set of bits in the BIER-bitstring, one bit per CNAP
  – The SNAP then sends the block into BIER with the appropriate bitstring set
Advantages of Realization over BIER

• Eliminates any dynamic multicast signaling between CNAP and SNAP
• Avoid sending of any unnecessary data block, which in the IP multicast solution is pretty much unavoidable
• SNAP can also easily control how long to delay sending of blocks
  – For example, it may wait for some percentage of the time of a block (e.g., 50% = 1 second), ensuring that it is coalescing as many requests into one BIER multicast answer as possible
Next steps

• We suggest to include an additional Applicability Statement documenting “How BIER can be applied to aggregate HTTP responses over a BIER infrastructure”
  • The draft will elaborate on the solution to support the applicability statement