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ESYNC Overview

Presented to
Worldwide ENC Database Working Group
(WENDWG) in Brest, France

26 February - 28 February 2019

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Problem with Updating

- Most update solutions today rely on building custom patches and levying apply processing on the end user
  - Results in labor-intensive effort by the data provider to produce, quality check, and distribute patch products
  - Results in labor-intensive effort by an end user to retrieve and apply patch products
- Most update solutions today rely on a baseline where unique patches are only applied to a specific baseline
  - Digital Nautical Charts (DNC) use cumulative Vector Database Updates (VDU) that can only be applied to specific DNC Editions
  - Electronic Navigational Charts (ENC) use sequential patch updates that can only be applied to a Base ENC Cell

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NGA DNC Updating Today

Requires NGA production of cumulative VDU

Large file size limits download in low bandwidth

Labor-intensive production of unique patches

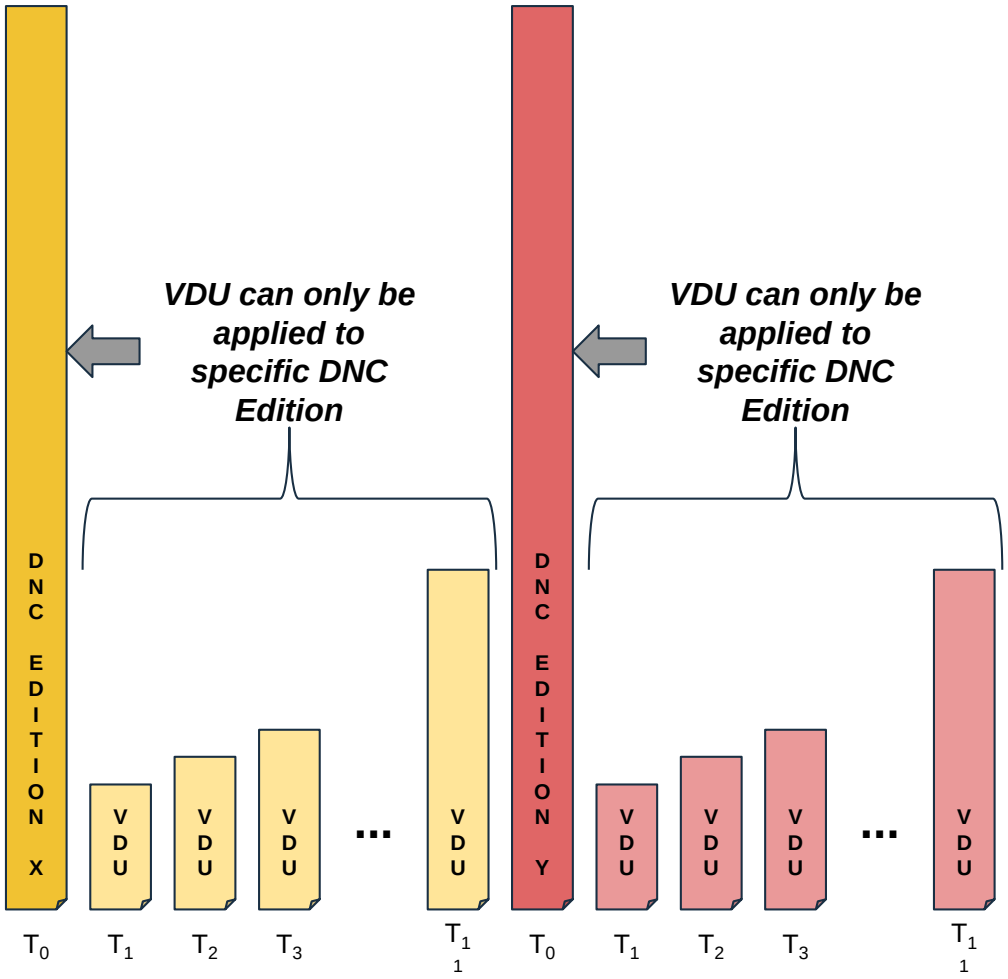
VDU can only be applied to specific DNC Edition

VDU can only be applied to specific DNC Edition

Requires applying VDU to specific DNC Edition

Limits updating until new DNC Edition download

Labor-intensive apply processing by end user



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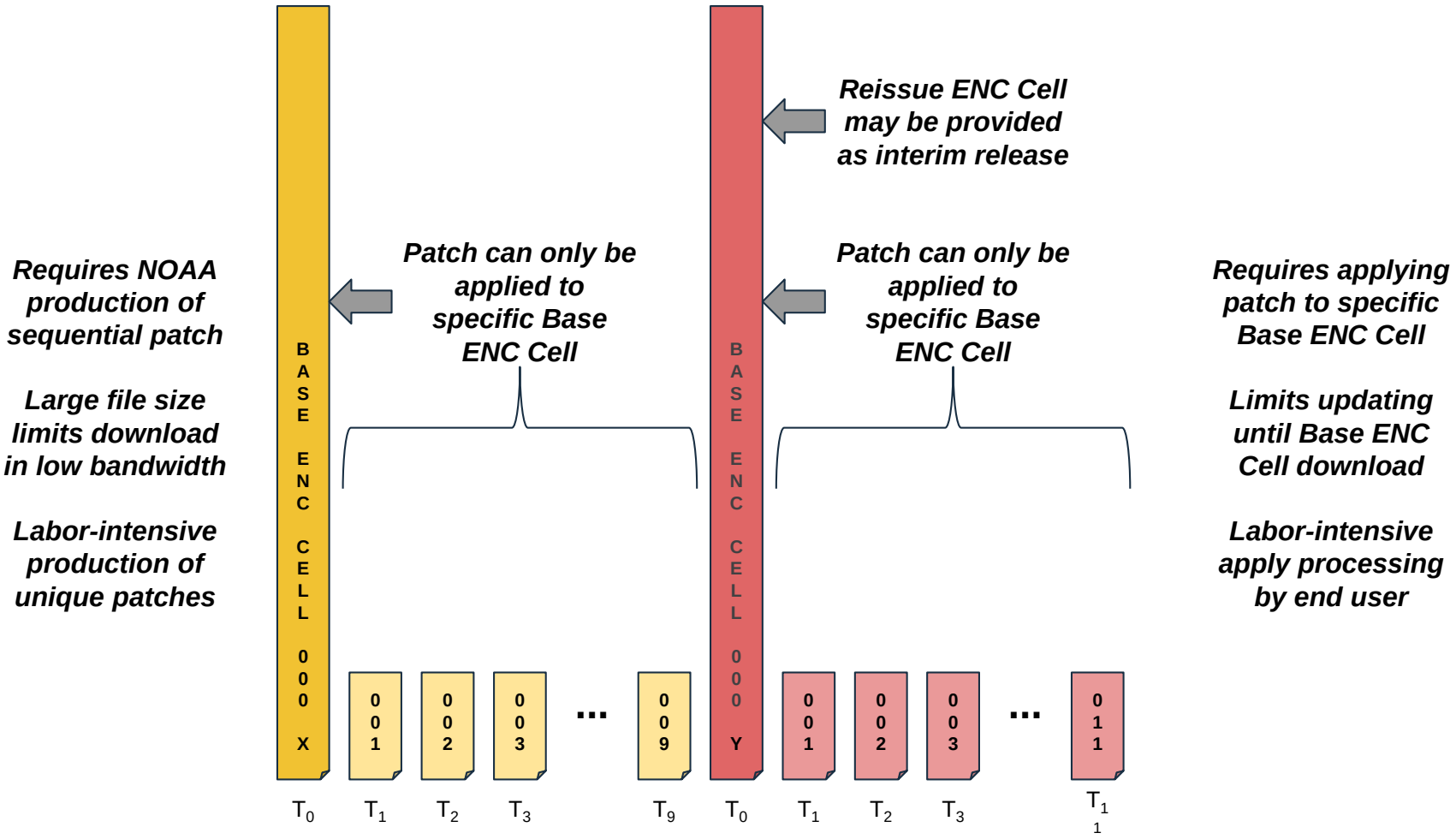
NOAA ENC Updating Today



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Updating with ESYNC

- ESYNC incorporates differencing in the infrastructure
  - Eliminates source production of unique patches
  - Eliminates end user need to apply unique patches
- ESYNC server and client manages patch/apply process
  - Server creates and caches frequently used patches
  - Server dynamically creates any required patch
  - Client manages obfuscated requests for patches
  - Client automatically applies patches for end user
- ESYNC addresses bandwidth and mission concerns
  - Reduces bandwidth requirement to maintain charts
  - Eliminates limitation of traversing boundaries (i.e. release of new DNC Edition or new Base ENC Cell)

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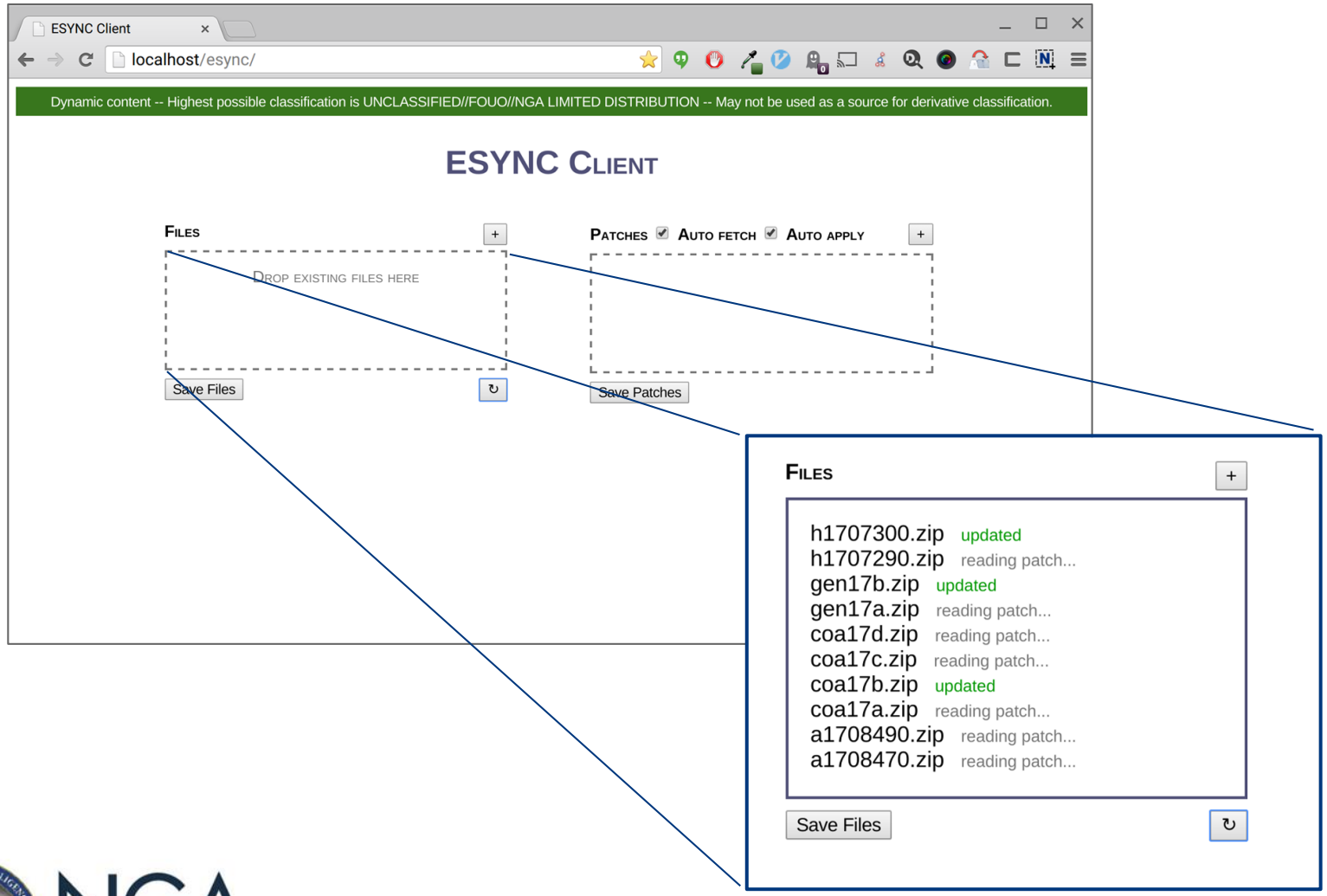
ESYNC Client



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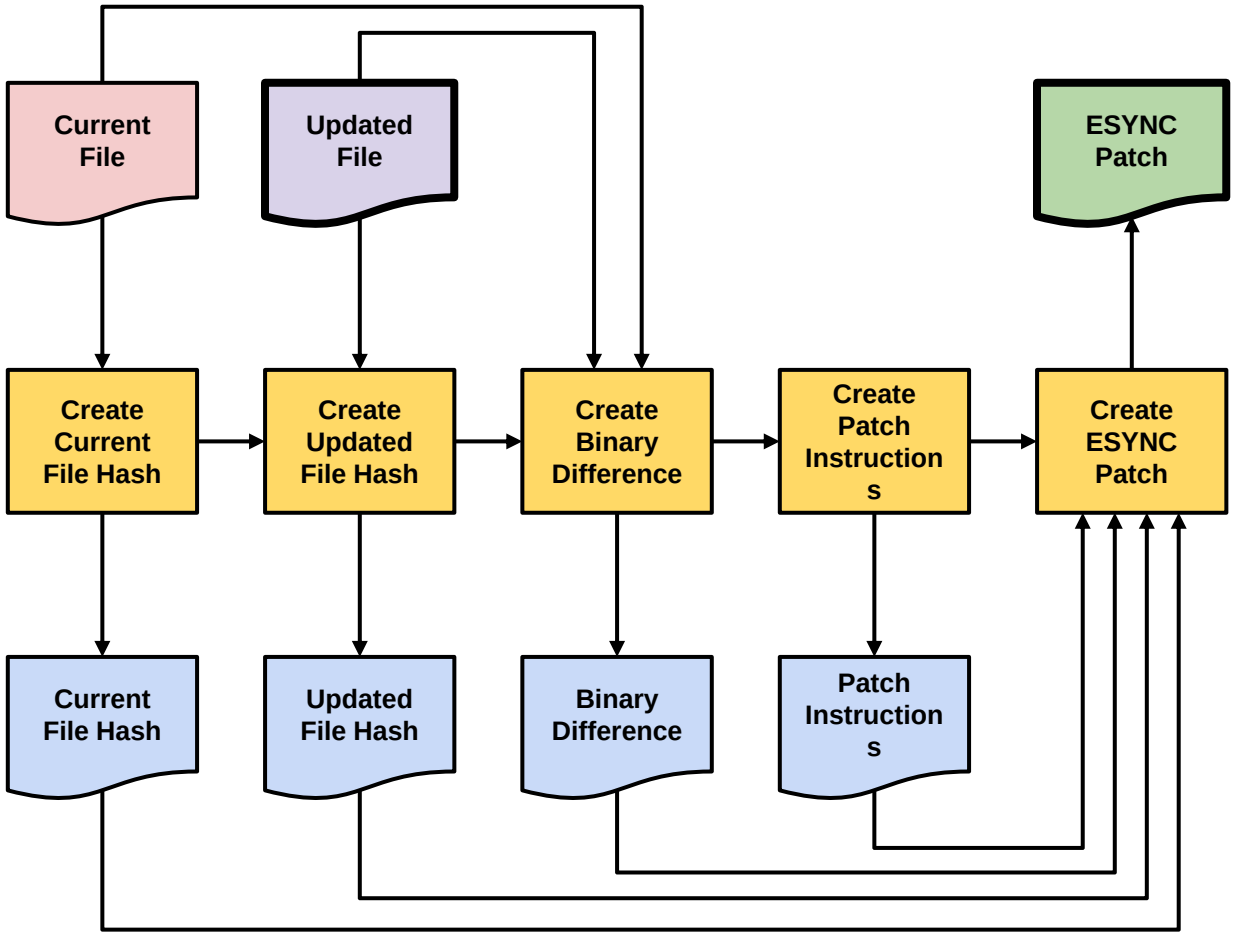
ESYNC Patch Creation



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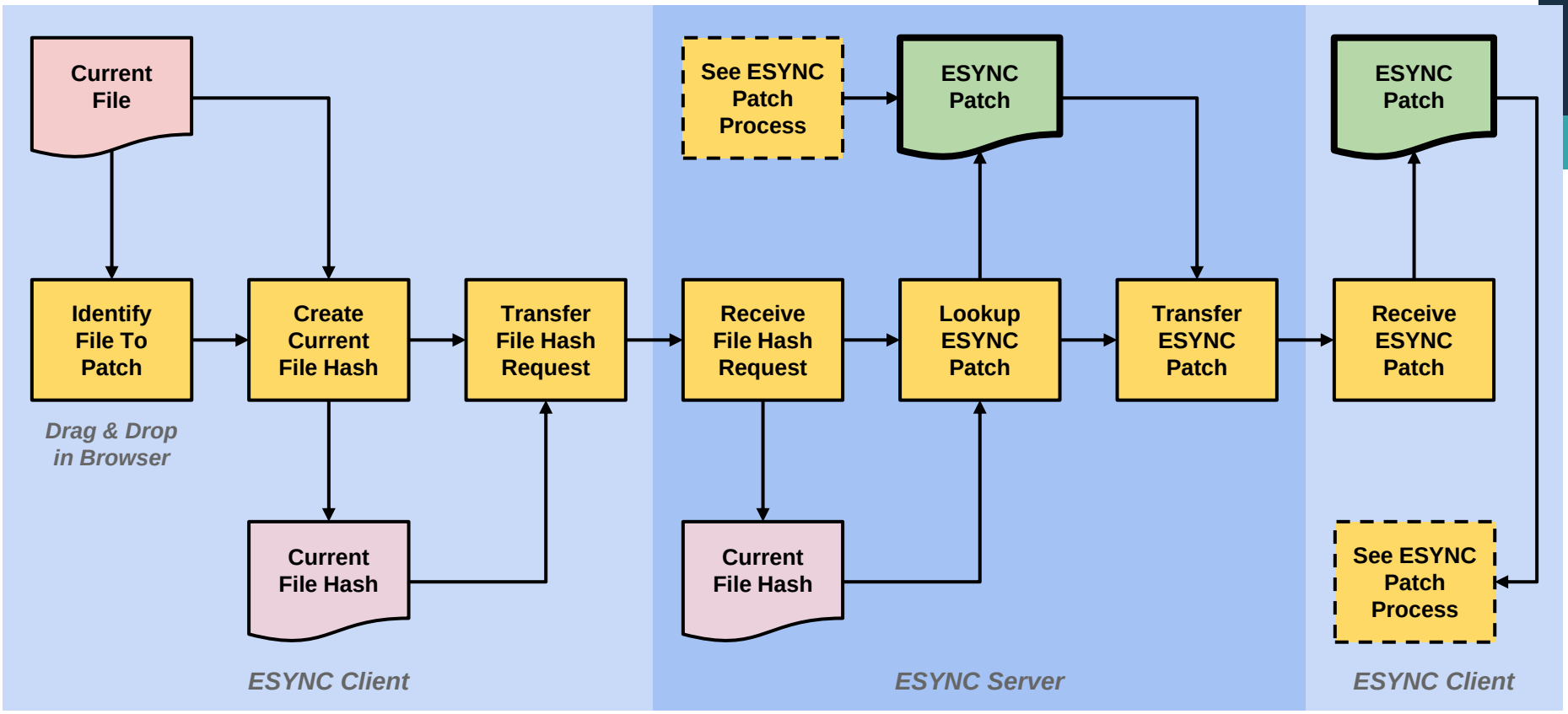
Patch Request/Transfer



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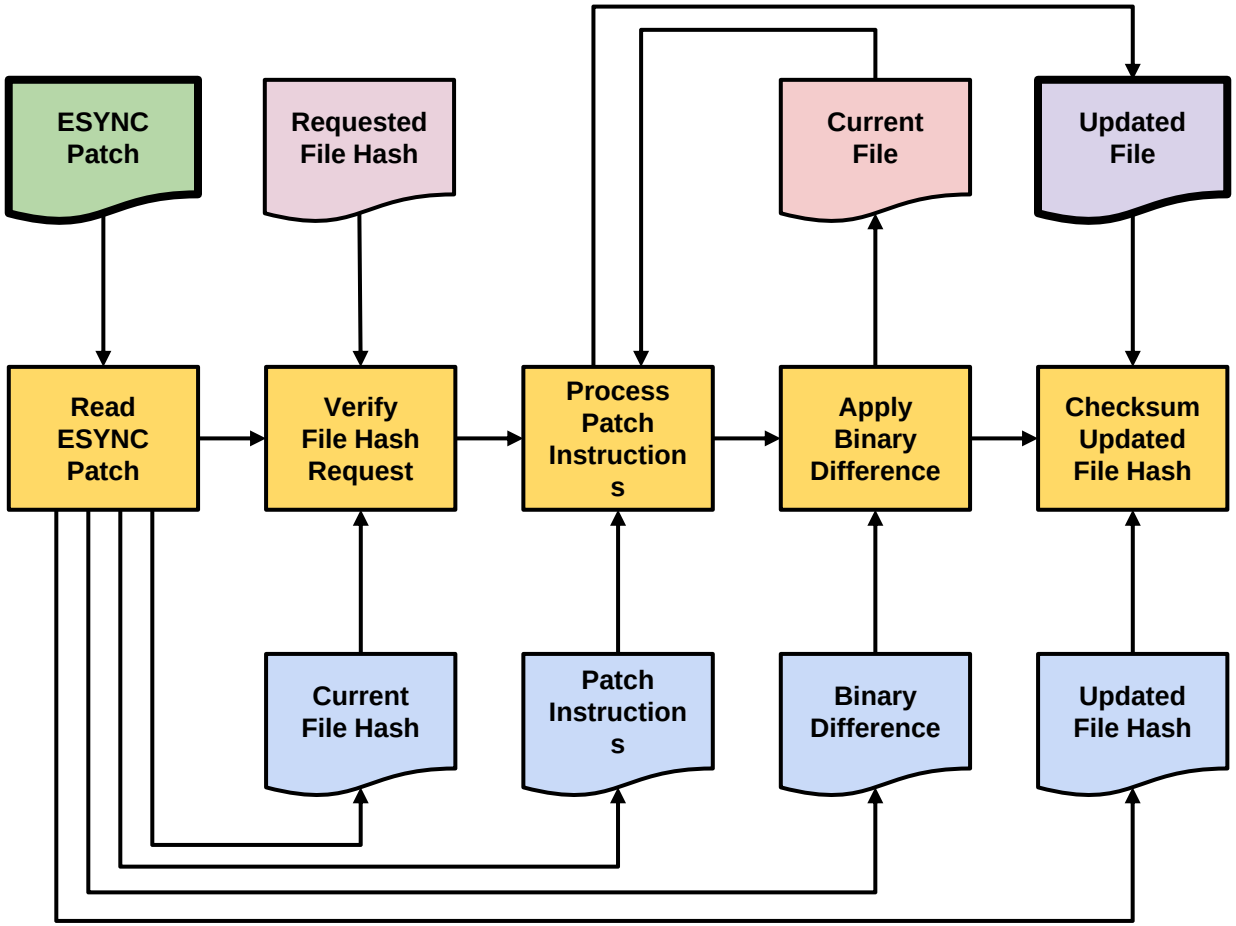
ESYNC Patch Apply



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Benefits of ESYNC

- ESYNC is product agnostic
  - Works with any file type
  - Works with compressed or uncompressed files
- ESYNC Client requires no software installation
  - Executes on secure browser (IE, Edge, Chrome, Firefox)
  - Works on desktop computers and mobile devices
- ESYNC improves product security
  - Obfuscates update requests to protect user intent
  - Ensures integrity of data throughout update process

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Summary

- ESYNC offers a dramatic shift in production and distribution of NGA and NOAA product updates
- ESYNC offers a dramatic reduction in labor-intensive chart maintenance by navigation teams
- Potential to synchronize any data that is periodically updated and distributed to one or more end users
- ESYNC fulfills a vital need today for intelligent and secure synchronization of information

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