

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



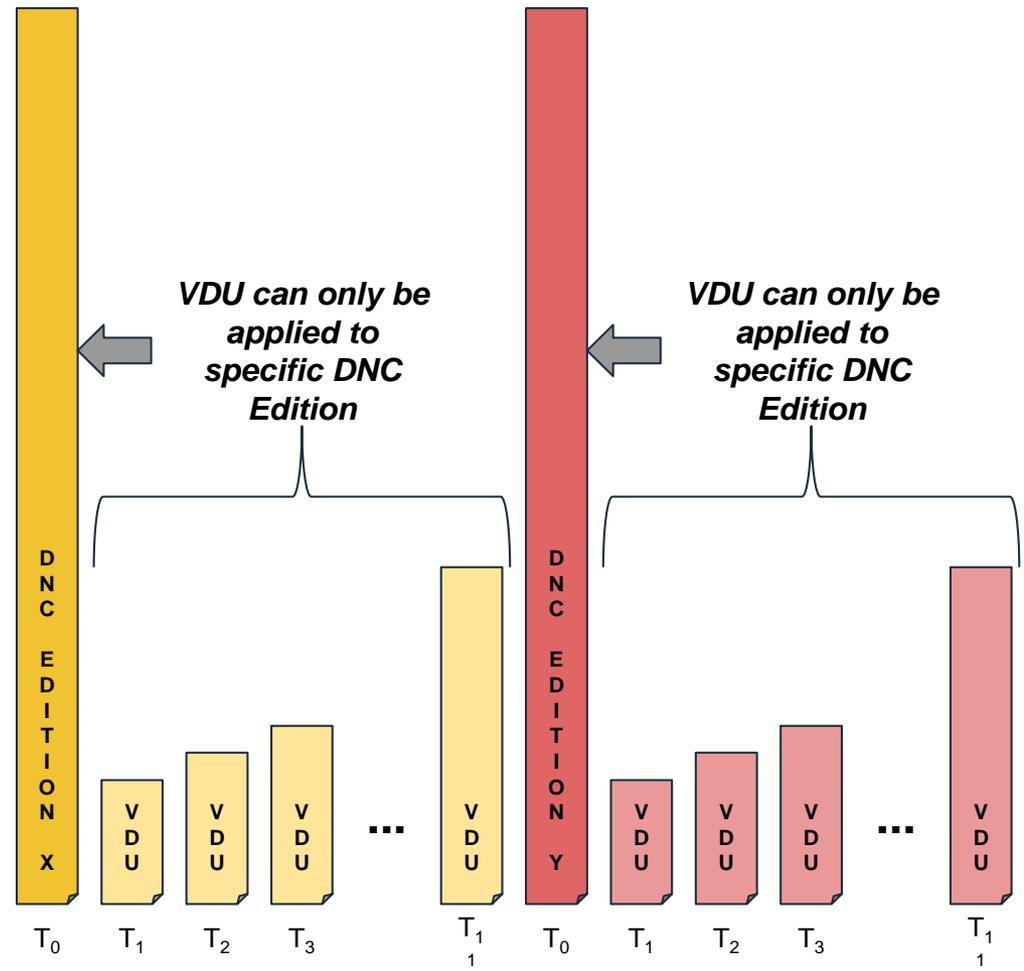
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NGA DNC Updating Today

Requires NGA production of cumulative VDU

Large file size limits download in low bandwidth

Labor-intensive production of unique patches



Requires applying VDU to specific DNC Edition

Limits updating until new DNC Edition download

Labor-intensive apply processing by end user



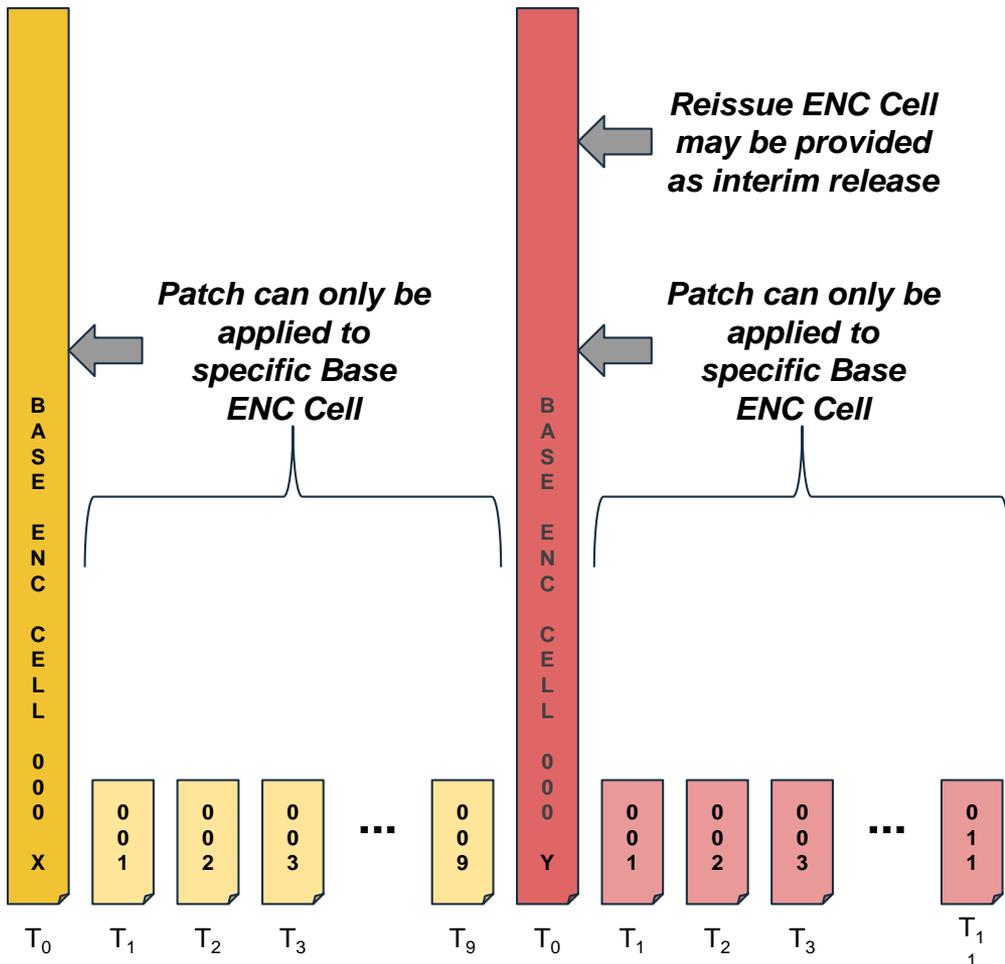
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NOAA ENC Updating Today

Requires NOAA production of sequential patch

Large file size limits download in low bandwidth

Labor-intensive production of unique patches



Requires applying patch to specific Base ENC Cell

Limits updating until Base ENC Cell download

Labor-intensive apply processing by end user



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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

The screenshot shows a web browser window titled "ESYNC Client" at the URL "localhost/esync/". A green banner at the top contains the text: "Dynamic content -- Highest possible classification is UNCLASSIFIED//FOUO//NGA LIMITED DISTRIBUTION -- May not be used as a source for derivative classification." Below this, the main heading "ESYNC CLIENT" is centered. The interface is divided into two main sections: "FILES" and "PATCHES".

The "FILES" section includes a dashed box with the text "DROP EXISTING FILES HERE", a "Save Files" button, and a refresh icon. The "PATCHES" section includes checkboxes for "PATCHES", "AUTO FETCH", and "AUTO APPLY", a "Save Patches" button, and a refresh icon. A callout box provides a detailed view of the "FILES" section, listing the following files and their status:

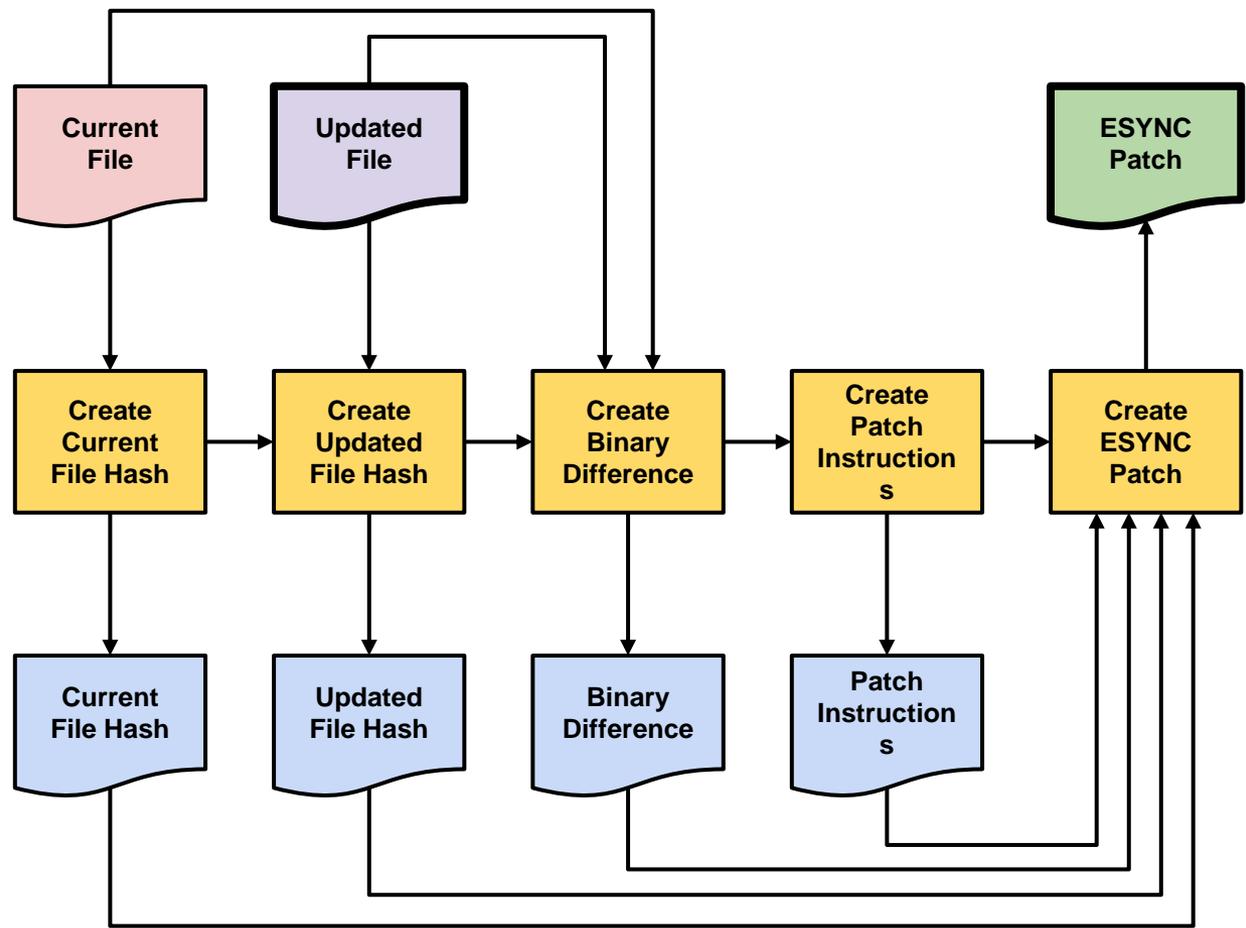
- h1707300.zip updated
- h1707290.zip reading patch...
- gen17b.zip updated
- gen17a.zip reading patch...
- coa17d.zip reading patch...
- coa17c.zip reading patch...
- coa17b.zip updated
- coa17a.zip reading patch...
- a1708490.zip reading patch...
- a1708470.zip reading patch...

At the bottom of the callout box are a "Save Files" button and a refresh icon.



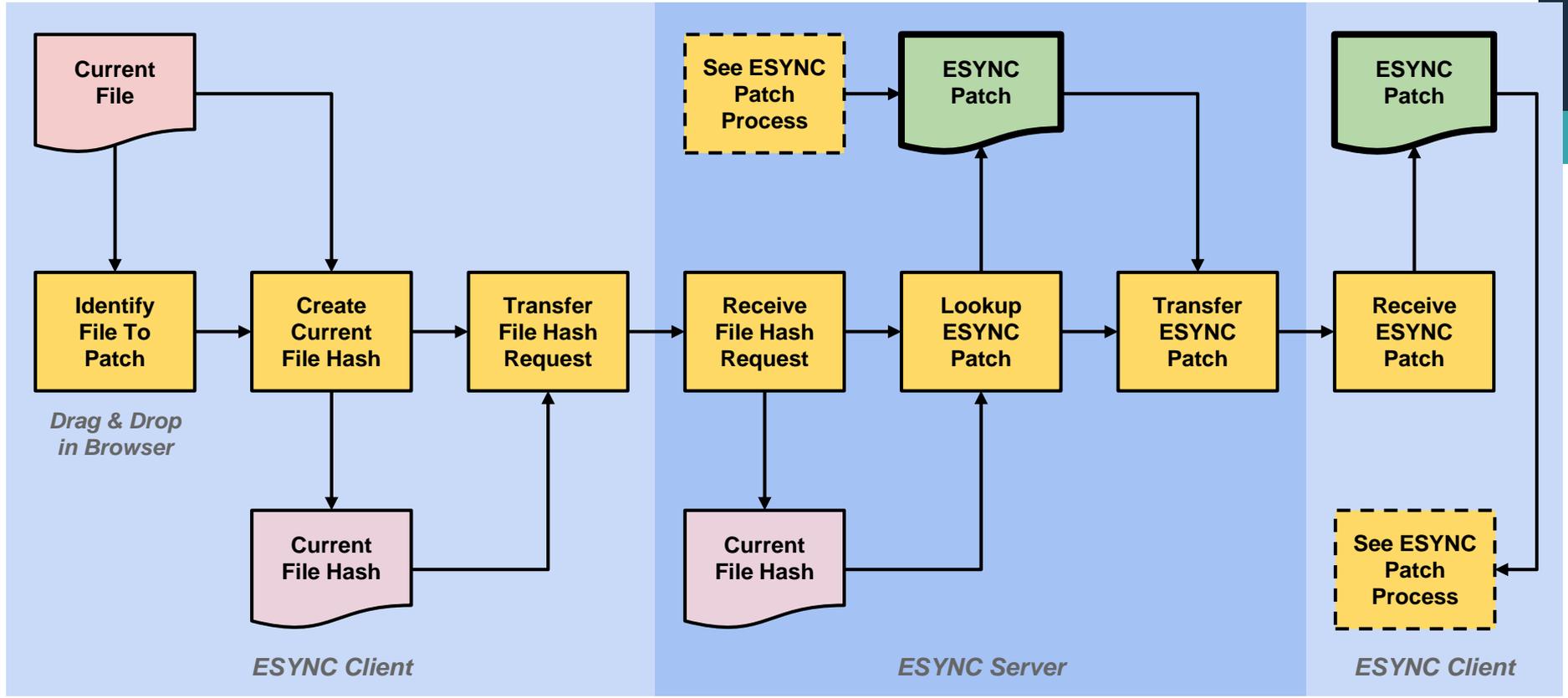
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ESYNC Patch Creation



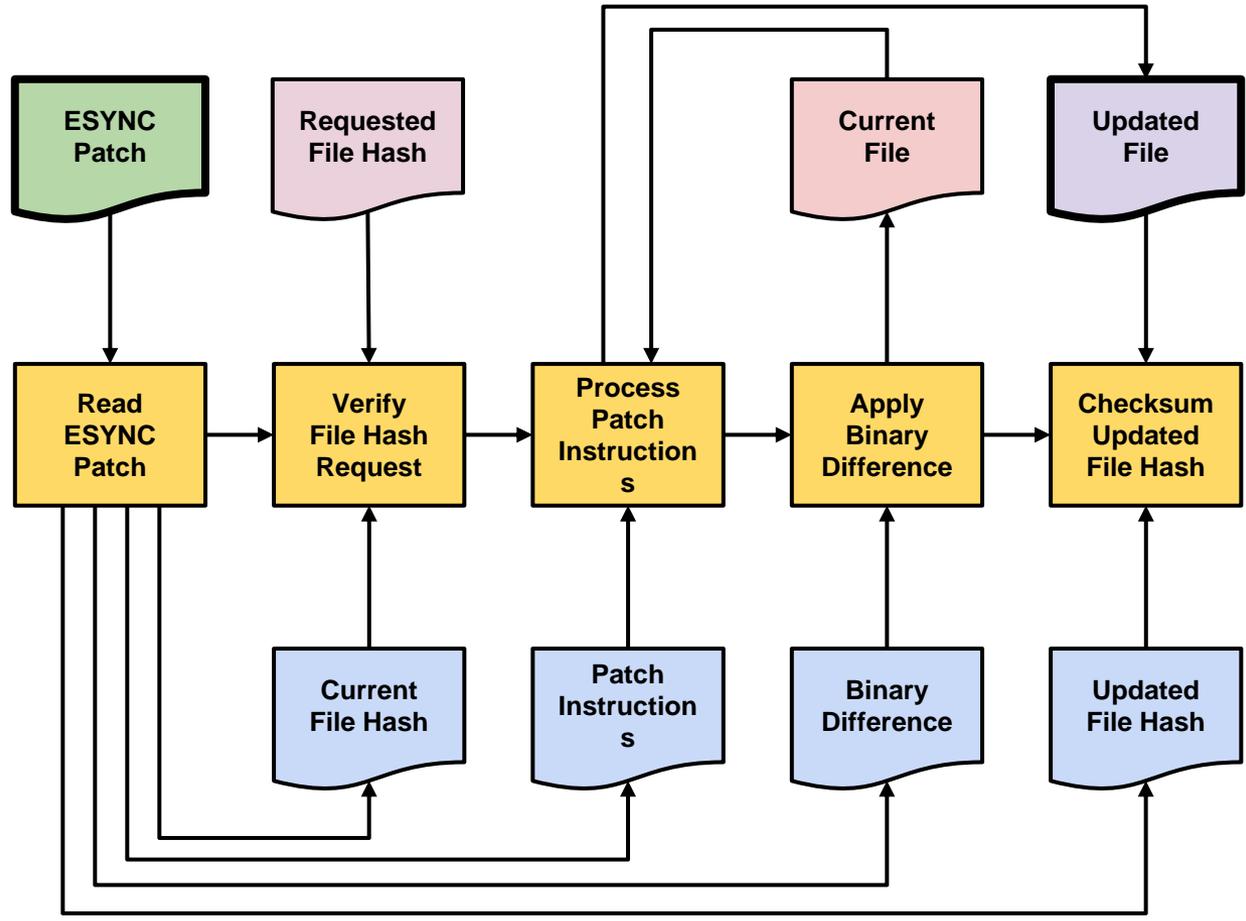
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Patch Request/Transfer



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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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