

# State of Dynamic Availability

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# What is Dynamic Availability

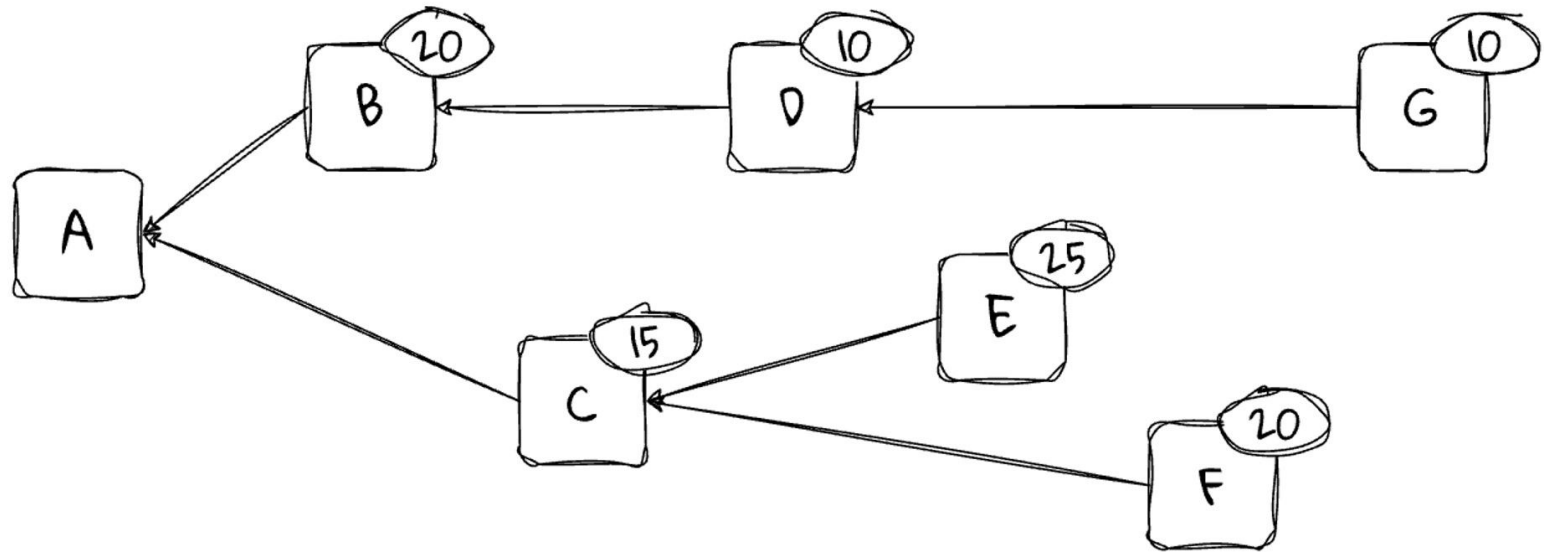
- Dynamically Available protocols are live under dynamic participation

Examples:

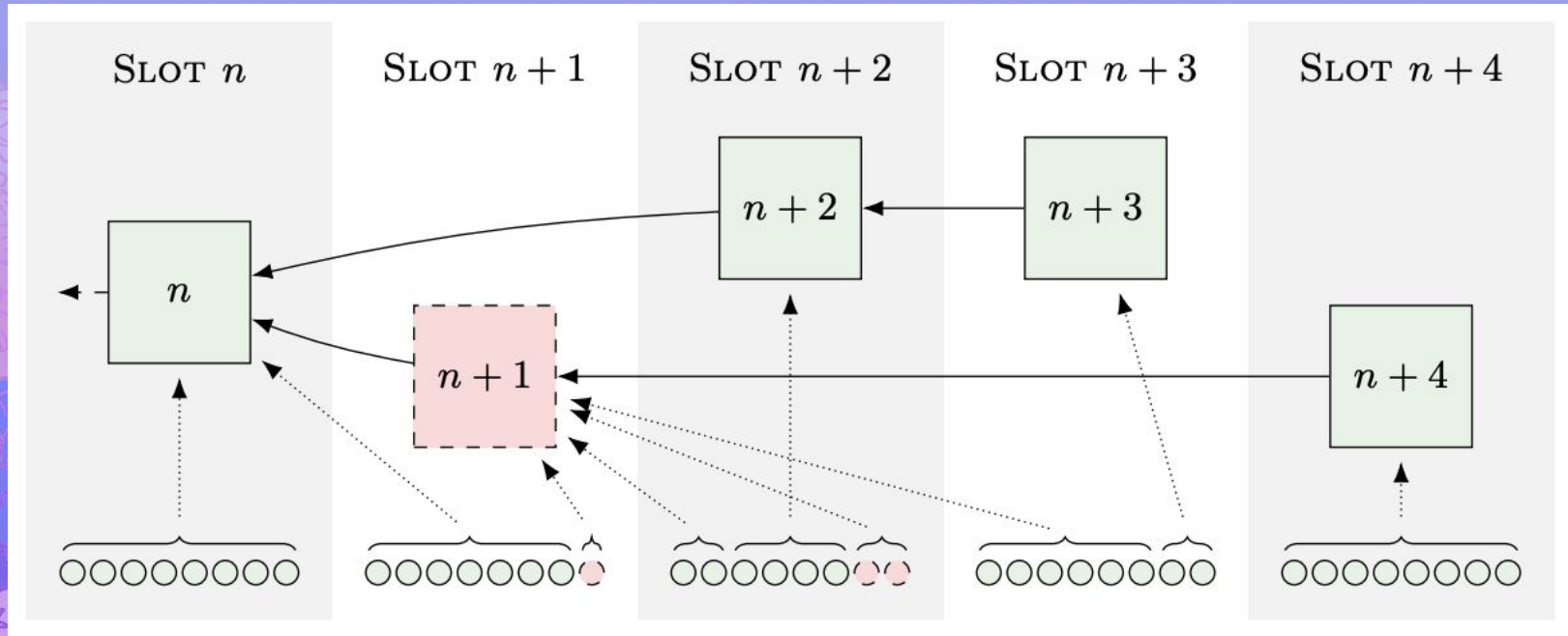
- Nakamoto Consensus
- LMD-GHOST
- GoldFish
- RLMD-GHOST

# LMD - GHOST

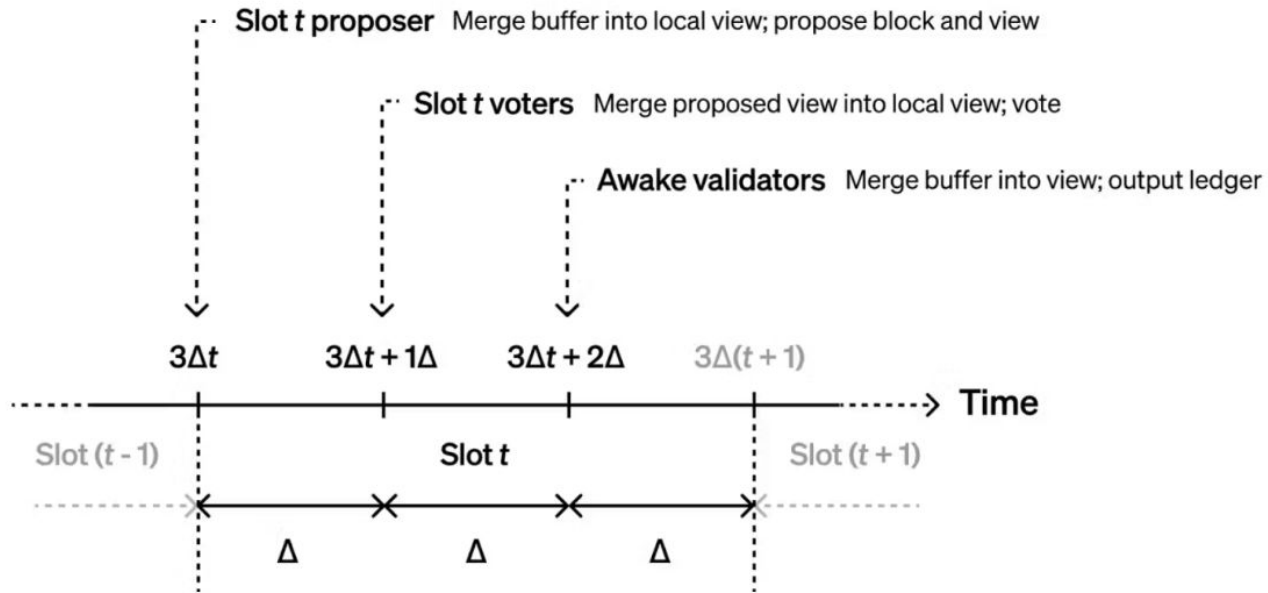
Latest Message Driven - Greedy Heaviest Observed SubTree



# Ex-ante Attack



# GoldFish





# GoldFish

## → **Vote Buffering**

Buffering of votes received from the network and merging it in validators local view

## → **Vote Expiry**

votes from preceding time slot expire so malicious actors can't withheld messages

## → **Challenges for Asynchrony**

if network delay increases larger than slot time then votes will not be decisive

# RLMD-GHOST

- Subsampling is crucial in success of the ex-ante reorg attack
- Without subsampling, adversary cannot overcome weight of all honest validators in one slot
- RLMD introduces relaxed vote expiry
- Votes from most recent  $n$  slots are considered

# Impossibility ?





# Best of both worlds ?

- Use goldfish as default fork choice rule
- Set a deterministic way to define periods of asynchrony
- Dissolves committees and vote based on relaxed vote expiry
- Re-establish committees when synchrony is achieved



# Thank you!

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@0xpanicError