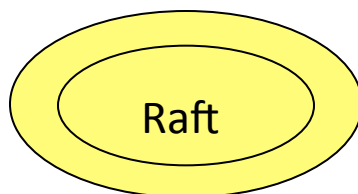
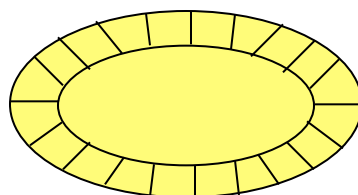


# TWC: Medium: HARDWARE-ASSISTED LIGHTWEIGHT CAPABILITY OPTIMIZATION (HALCYON)



Privilege Separated  
Compartments limit  
Opportunity and  
impact of breach.



## Challenge:

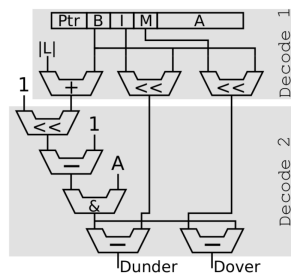
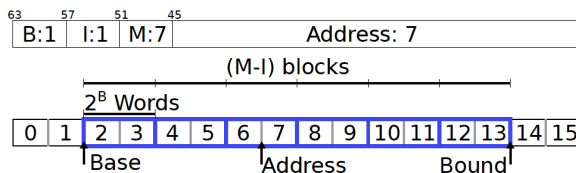
- Current systems make it prohibitively expensive to follow good security practices including the Principal of Least Privilege and Separation of Privileges

## Scientific Impact:

- Reduce exploitable vulnerabilities
- Contain impact of breaches
- Characterize value of privilege management
- Deliver palette of mechanisms to make practical

## Solution:

- Add hardware strategically to support inexpensive privilege separation
  - Low-fat pointers
  - Lightweight IPC streams
  - Privilege changing gates



Low-fat Pointer  
for lightweight  
capabilities

## Broader Impact:

- Reduce performance-security tradeoff
- Reduce cybervulnerability
- Reduce impact of cyberattacks