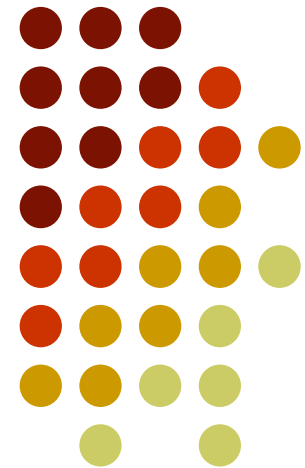
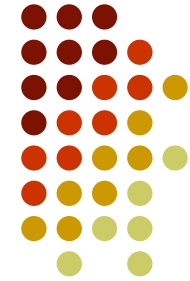


The Proxy-based Mobile Grid

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Mobileware 2010 July 1st

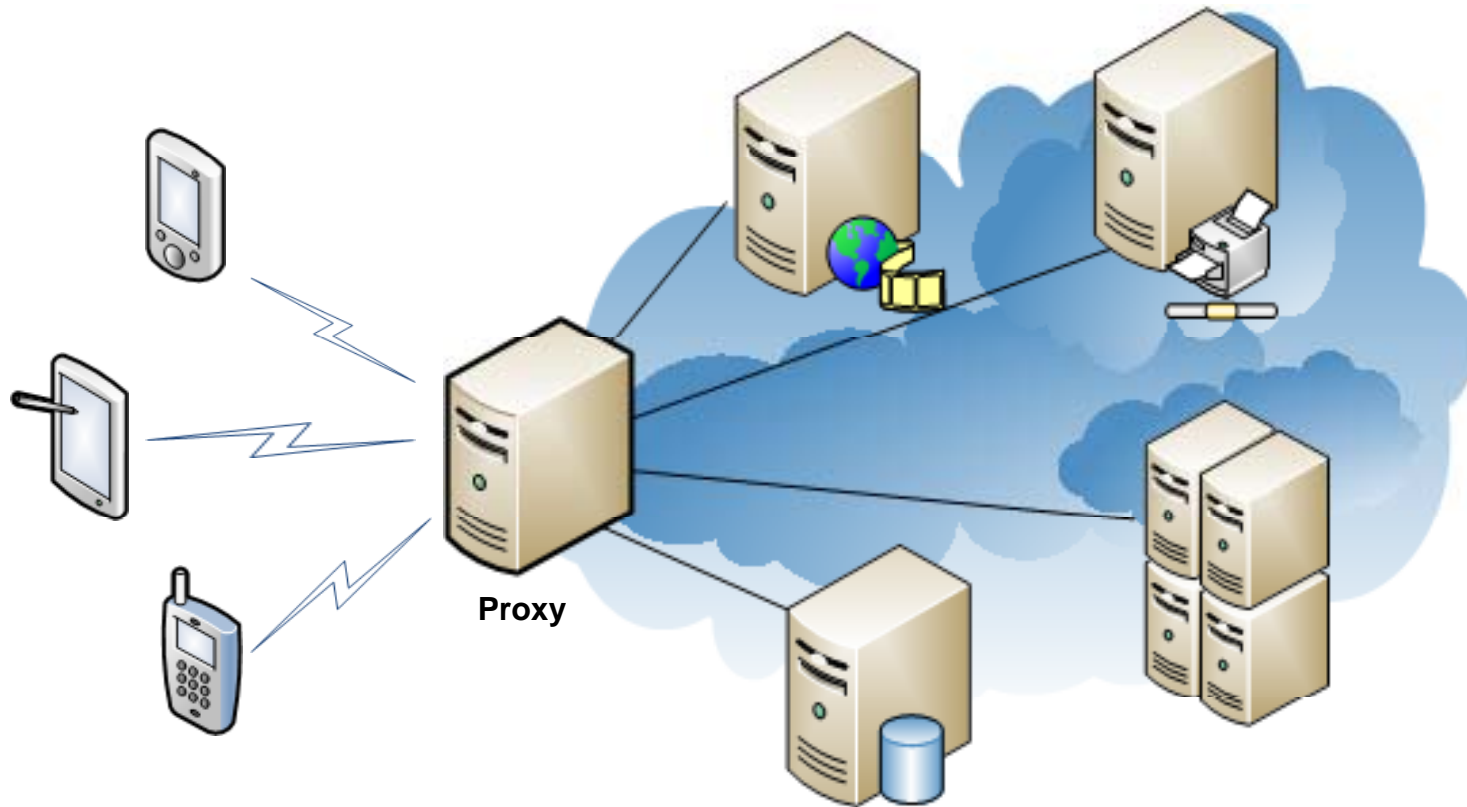


The Mobile Grid



- Demand to run resource-intensive applications on mobile devices
- Limited resources available on mobile devices
- A solution: Grid Computing
- Challenges
 - Disconnections
 - Mobility
 - Unreliable wireless links
 - Limited processing, storage capacity
 - The Mobile Grid: integrate mobile devices to the Grid by handling challenges

The Proxy-based Architecture



The Roles of Proxy



- Handling disconnections
- Downscaling and transcoding the multimedia stream
- Executing tasks on behalf of mobile device
 - Keeping checkpoints

The Proxy-based Mobile Grid: Components



- Adaptive Proxies
 - Proxy roles: implemented as independent *Proxy Services (PSs)*
 - PSs are deployed and un-deployed when needed
- *Proxy Finder Server (PFS)* finds a proxy for the requesting mobile device

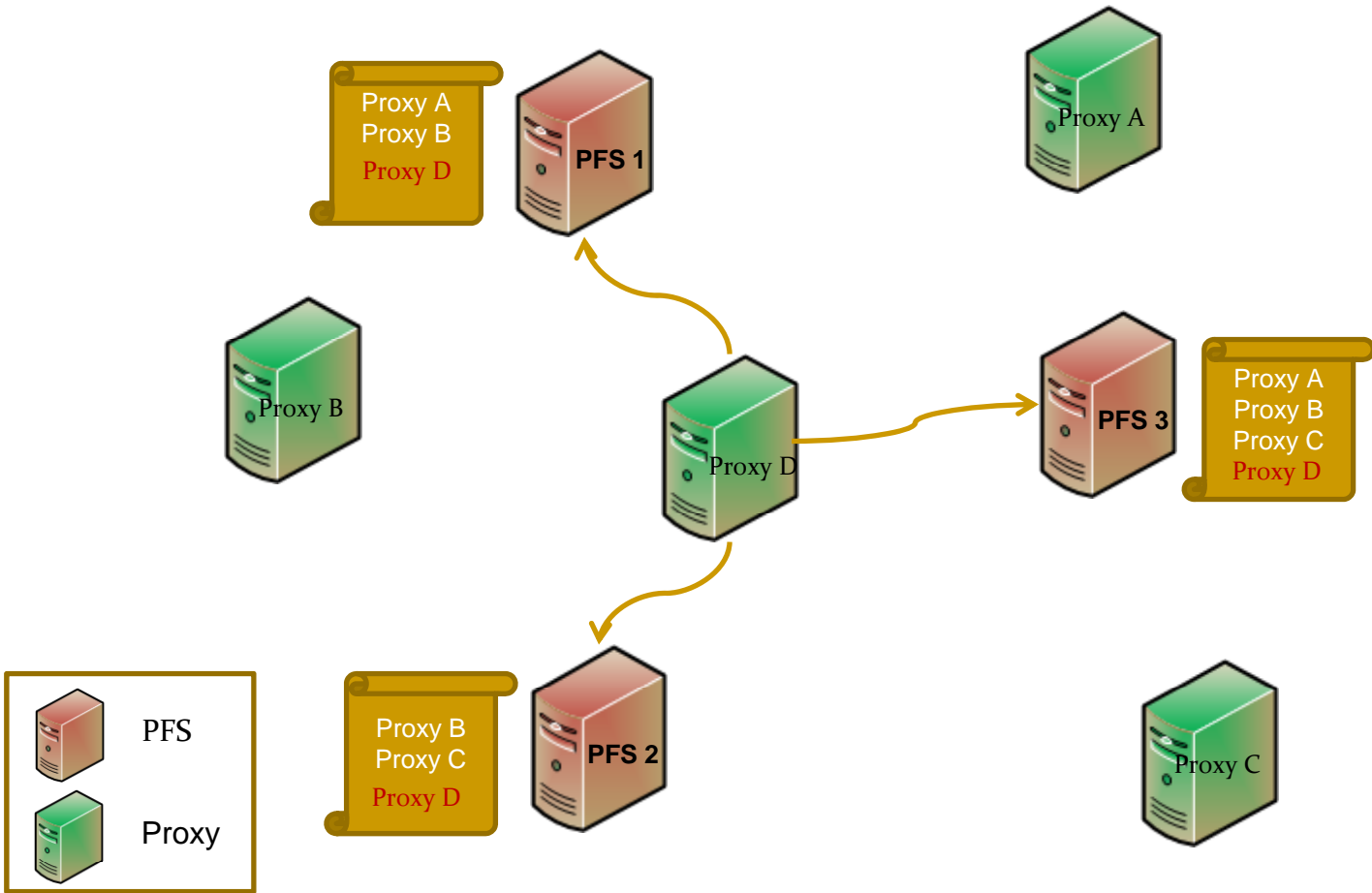
Components Interactions



- Proxy Registration at PFSs
- Finding a Proxy
- Changing the Proxy: Handoff



Proxy Registration at PFSs

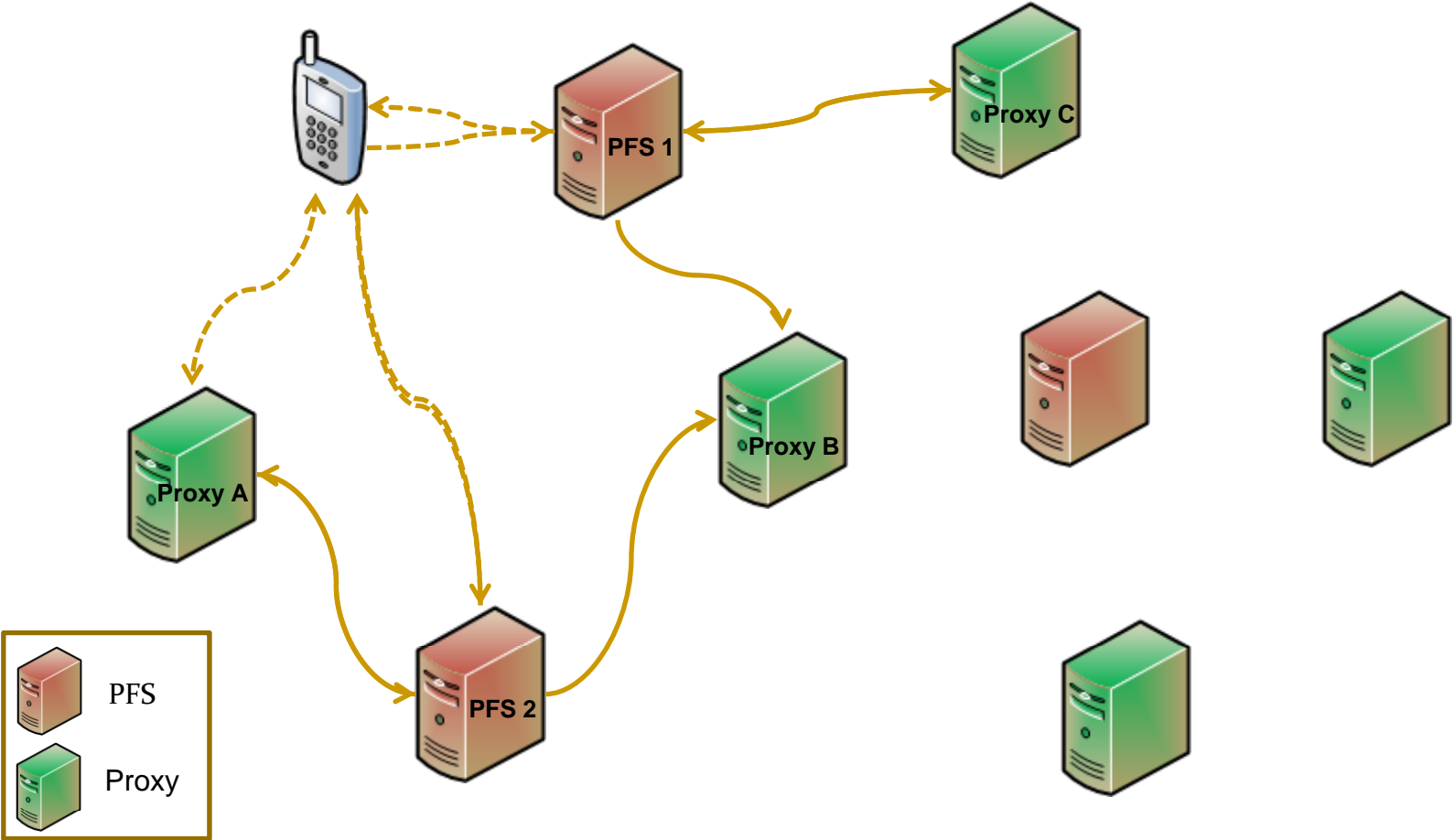




Finding a Proxy

- The address of at least one PFS should be known
- Client application request
 - Current location of device
 - List of needed PSs
- The PFS chooses proxies based on
 - The proximity to the mobile device
 - The available PSs on the proxy
- The proxy can accept or reject the request based on
 - Its current load

Finding a Proxy

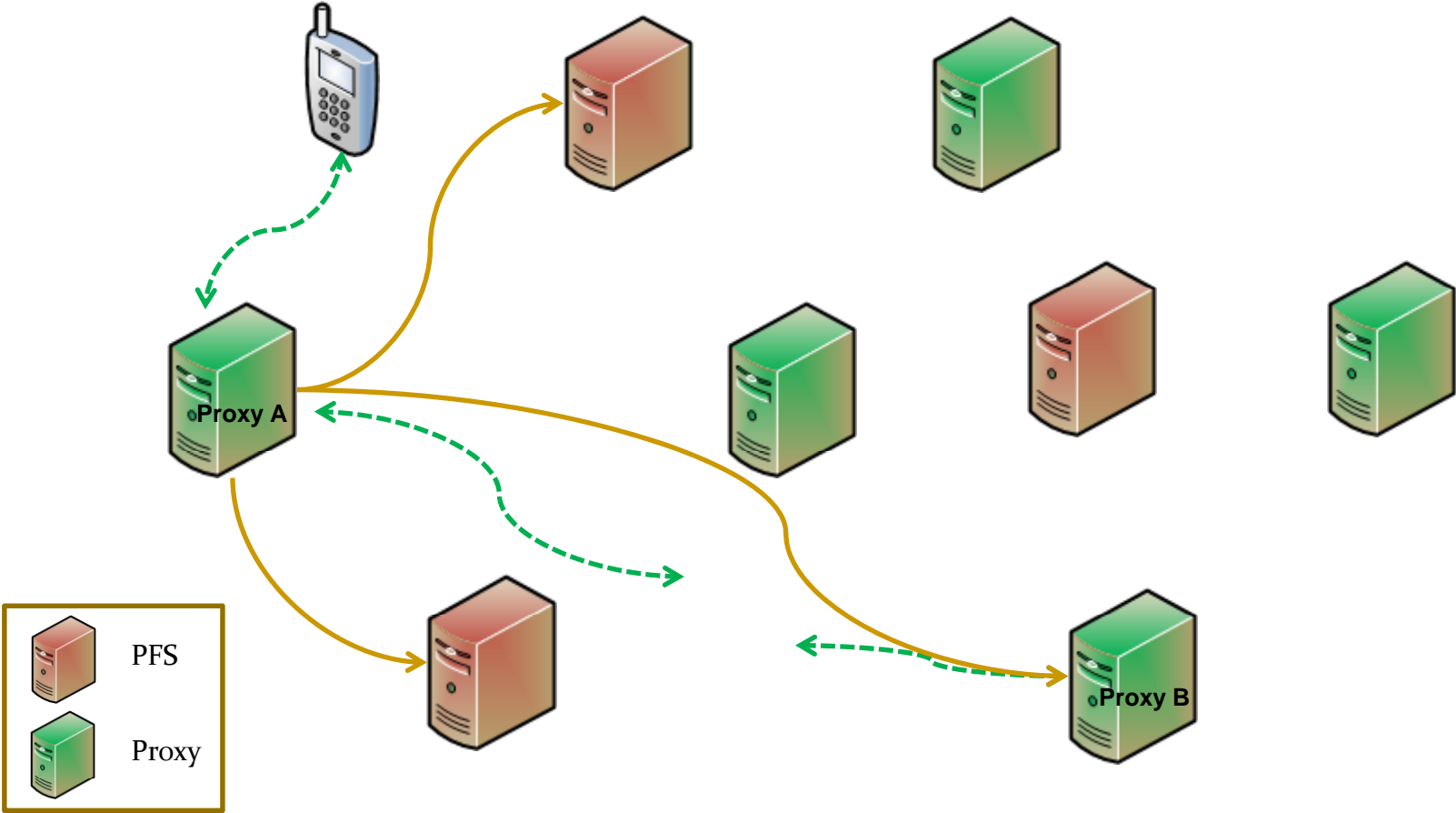


Changing the Proxy: Handoff



- A proxy decides to handoff a mobile device to another proxy, if
 - The proxy is overloaded
 - The mobile device has moved to a location far from the proxy

Changing the Proxy: Handoff



Prototype



- A prototype is implemented
 - Finding the proxy process
 - Proxy Service
 - Disconnection handler
- A client application
 - Printer finder in a campus
 - Android phone
- Web service technology



Future Work

- Recognize and implement other PSs
- Implement client applications
- Performance measurement
- Handle failures at
 - PFS
 - Proxy



Question?