

Data Analysis Applications Group

Friday Science Meeting Update: Certificates & Proxies

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Questions...

- **What's all this certificate stuff?**
- **What happens when I sign in to the grid?**

Certificates solve the identification problem

- **The Internet is an anonymous place, but there exists a need to identify users when sharing resources**
- **One method is host-based**
 - username@hostname
- **Problems:**
 - Hostname can be forged (spoofed)
 - Hostname may be hidden or may change
- **Solution: certificates**

Certificates identify the *person*, not the host

- **With certificates, individuals are identified regardless of their username or hostname**
- **Makes it easier to work from home, on travel**
- **Used with FusionGrid**
- **Certificates are files that can be put on any host**

Certificate + Private Key = Credential

- **Start with a private key/public key pair**
 - Text files
- **Certificate Authority digitally signs your public key, making it a *certificate***
- **Taken together, your private key and certificate form your *credentials***
 - Used to establish identity
- **Private key is kept secret and typically is an encrypted file**
 - You type your password in to use it

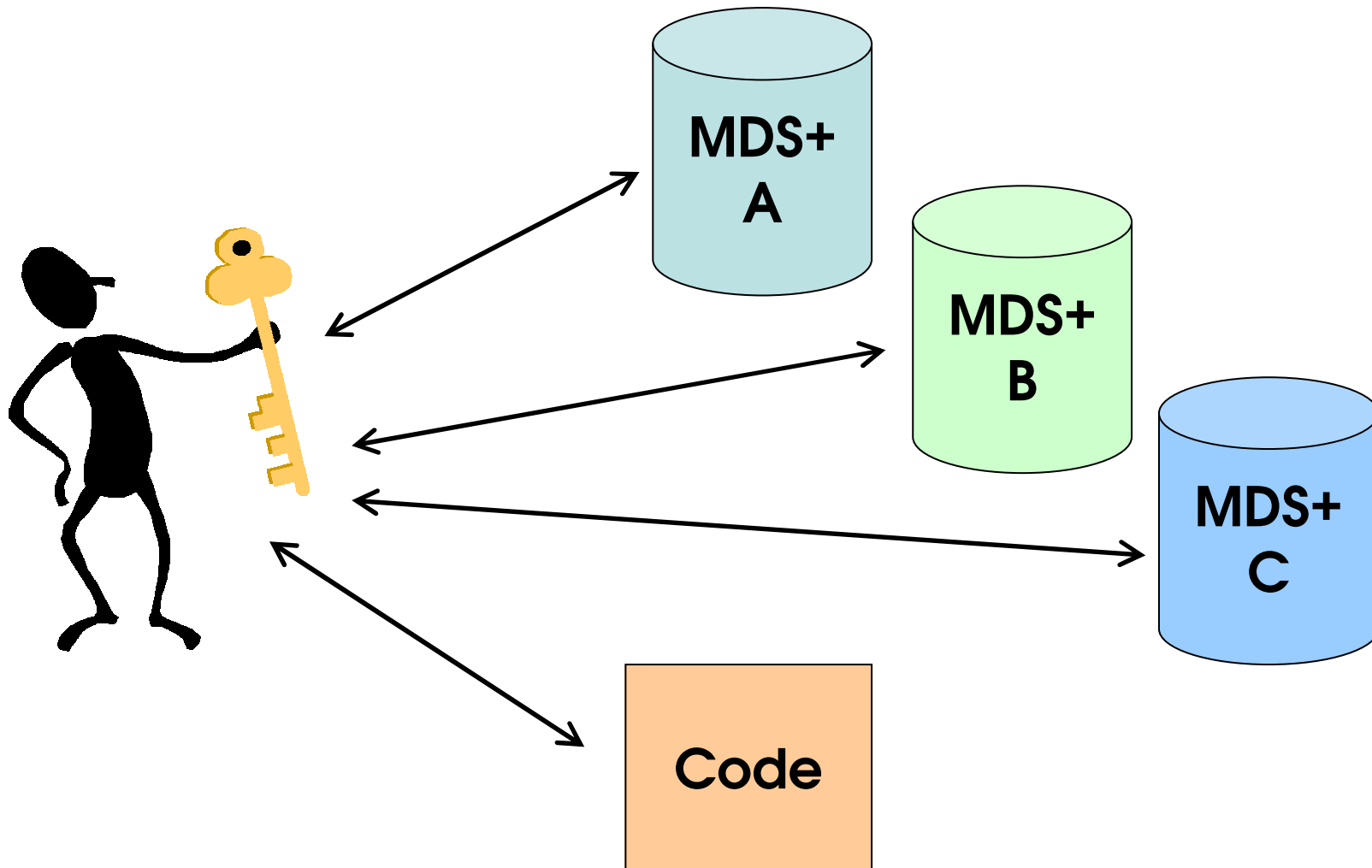
FusionGrid uses a credential server

- **Credential management is annoying**
 - Must copy your files around
- **FusionGrid has a server that stores your credentials**
 - To retrieve, enter a username/password
 - You get a *delegated proxy certificate*
 - A temporary file

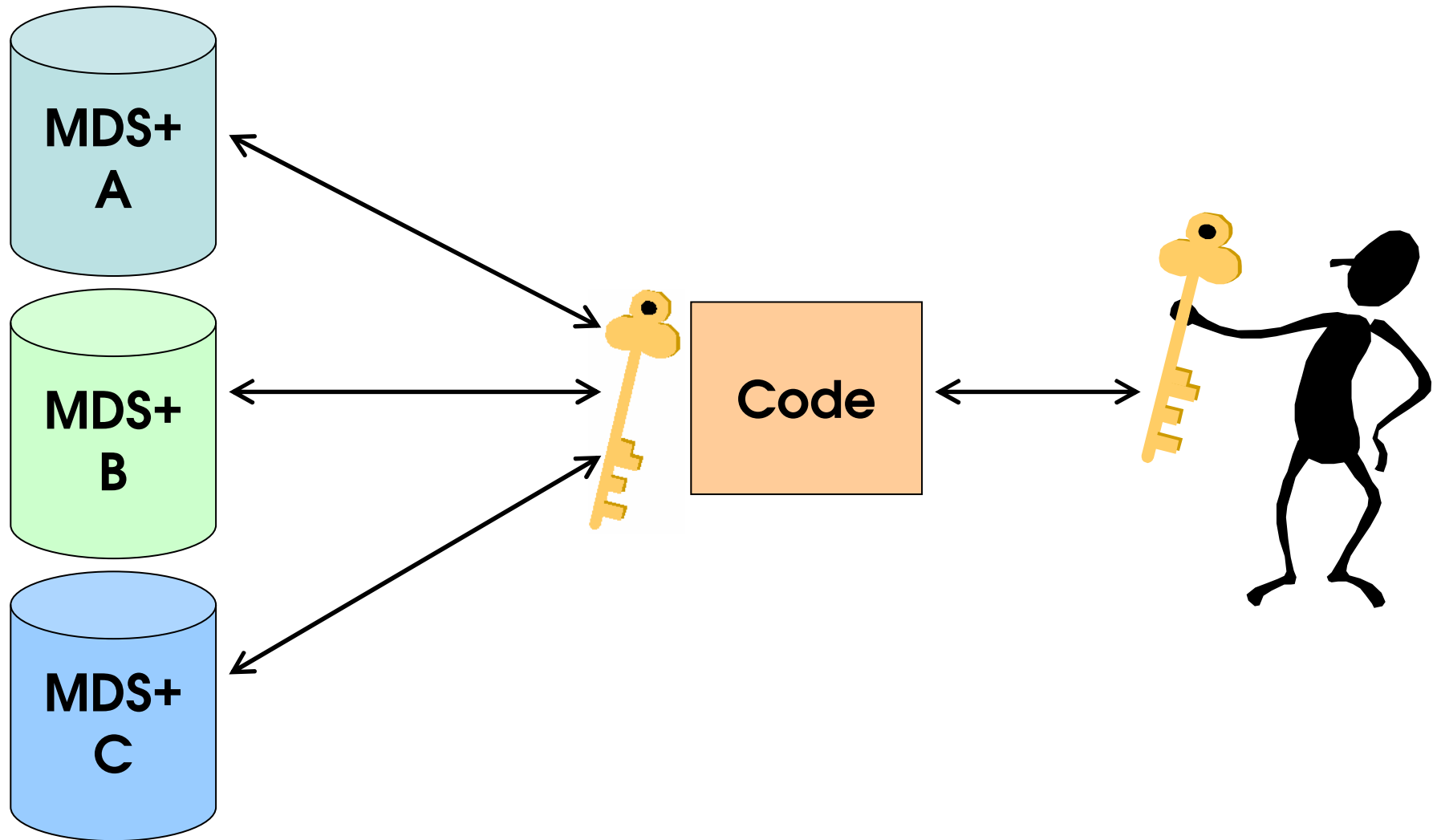
The proxy lets your programs act on your behalf

- **With FusionGrid infrastructure, your programs can use your proxy to act on your behalf**
 - Example: your program connects to a database and gets data
- **Without this you would need to log in to each resource yourself**
- **This is what is meant by *single sign-on***
 - You sign on only once and everything else uses your proxy to sign in for you

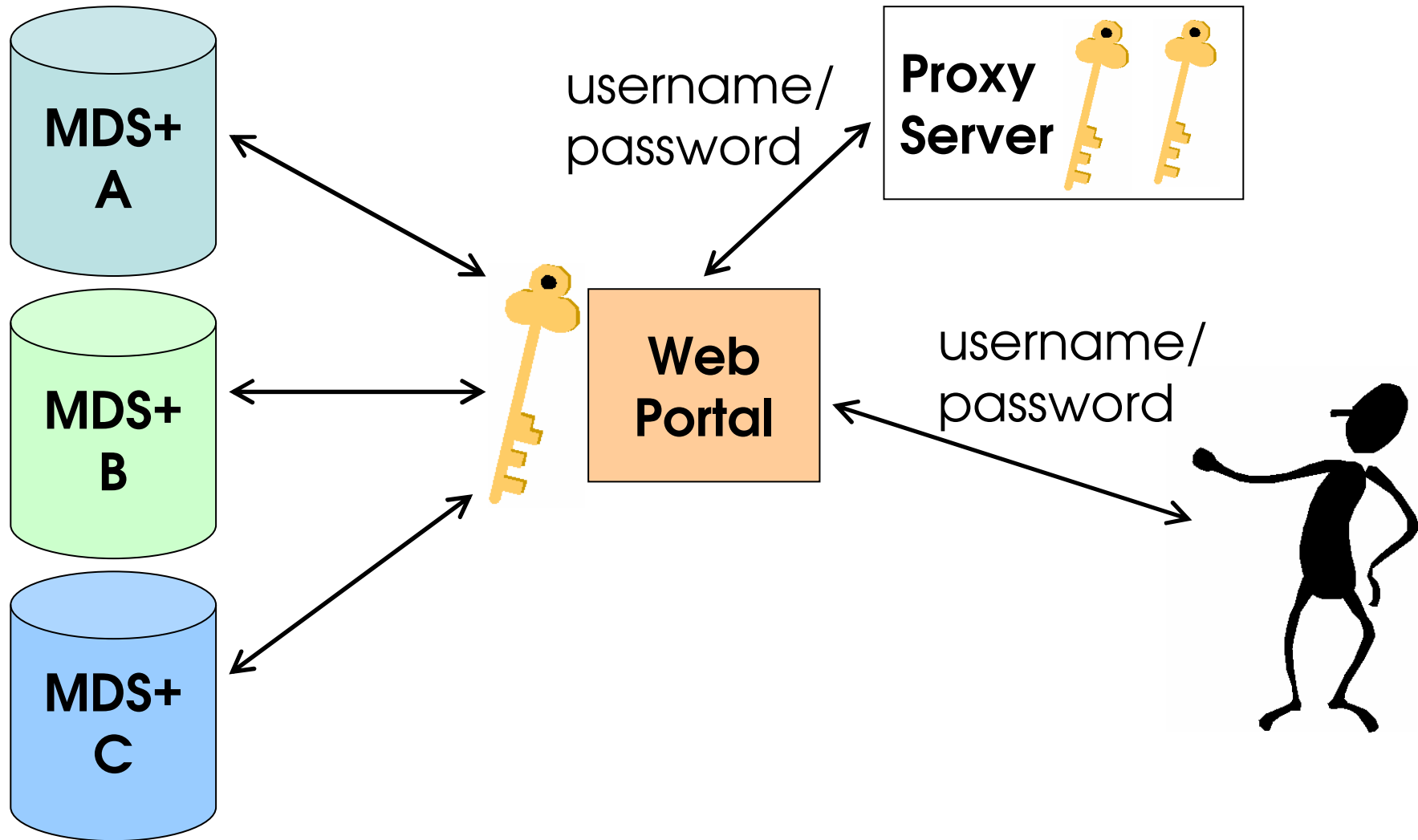
Before delegation: do the work yourself



After delegation: your codes do the work



Proxy server allows for Web Portals



These developments make distributed computing easier

- **Host-based...**
 - **Certificates...**
 - **Delegation...**
 - **Proxy Servers.**
- **Success will be when resources are secure and the technology works behind the scenes**
 - I just type a password and it works...