The new GlideinWMS credentials model and the new challenges it presents

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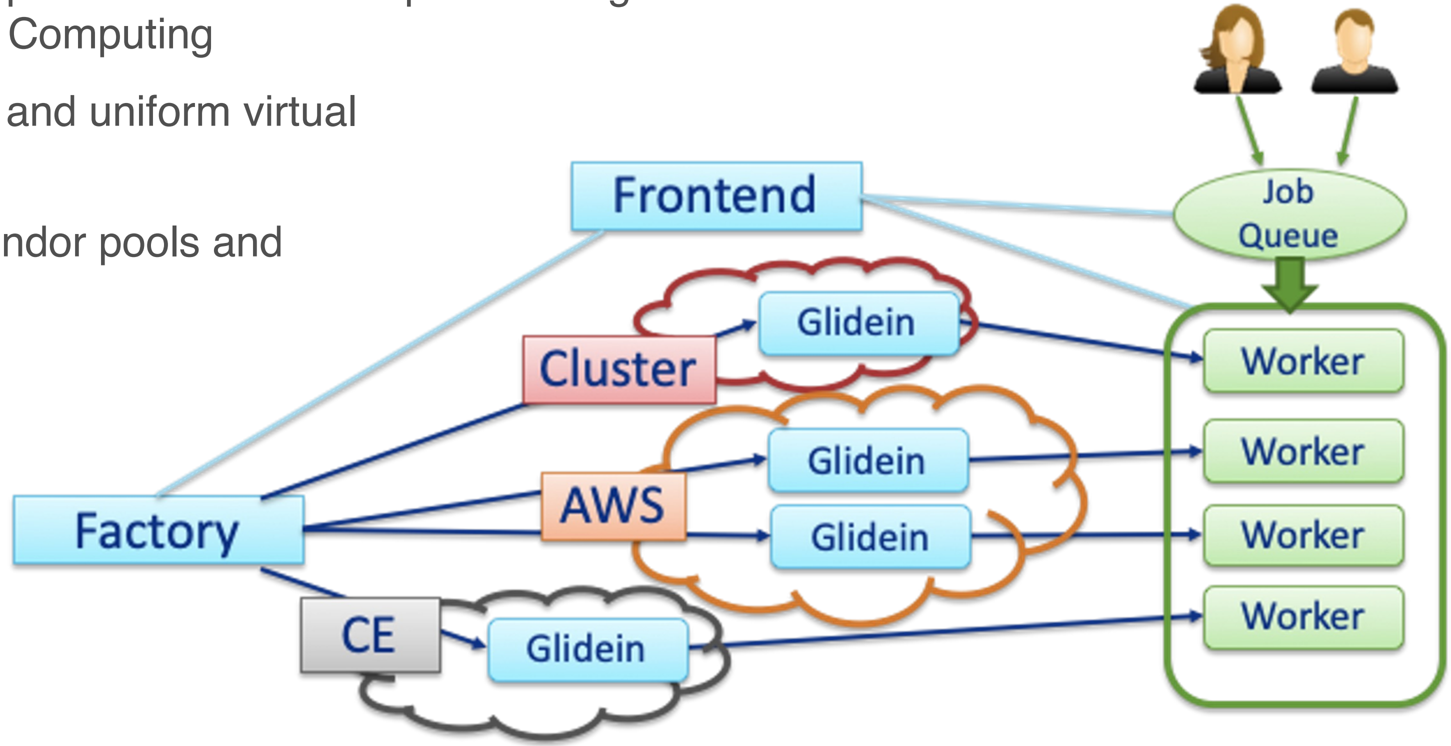
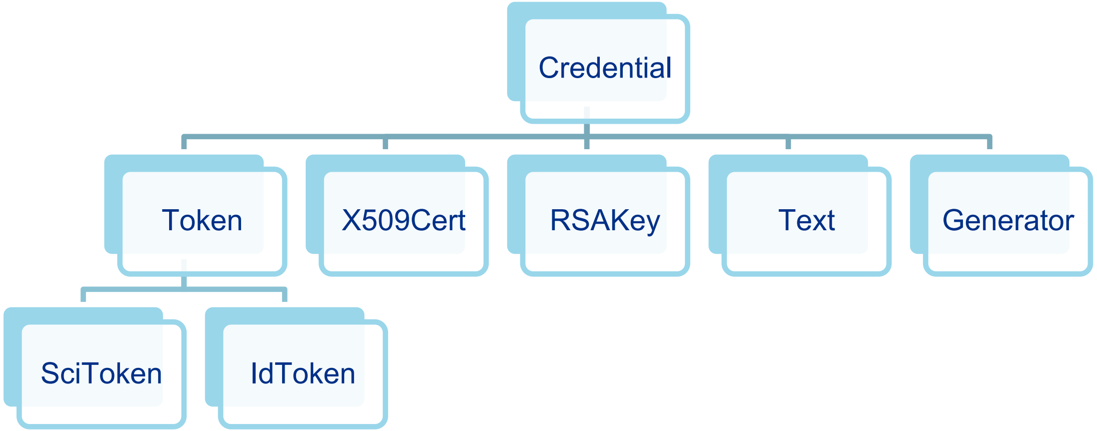
GlideinWMS

- GlideinWMS is a pilot-based resource provisioning tool for distributed High Throughput Computing
- Provides reliable and uniform virtual clusters
- Leverages HTCondor pools and capabilities



New GlideinWMS Credentials Model

- Hierarchical credential types
  - All credentials have a set of common methods and attributes
  - Factory and Frontend operations are agnostic to the credential type
  - Credential types can be inferred from a string or file



New GlideinWMS Credentials Model

- Credential Purposes
  - Determine how a credential is used (e.g. CE authentication)
  - Allow to create list of credentials to be sent along with the Glidein

- Credential Parameters
  - Credential qualifiers are now independent parameters (e.g. VMID, VMTYPE)

- New auth_method implementation

```
auth_method="scitoken,grid_proxy;vmid;vmtype"
```

New GlideinWMS Credentials Model

- Generators
  - A new generator framework extend the current functionality of credential generators
  - The same framework can be used to generate security parameters
  - Built-in generators can be used straight from a configuration file

```
<credential
      absfname="RoundRobinGenerator”
      context="{'items': ['cred1', 'cred2', 'cred3'], 'type': 'text'}"
      purpose="payload"
      security_class="frontend"
      trust_domain="grid"
      type="generator”
/>

<parameter
      name="VMId”
      value="RoundRobinGenerator"
      context="{'items': ['vm1', 'vm2', 'vm3'], 'type': 'string'}"
      type="generator"
/>
```

Challenge: identifying a token type

- Inferring credential types brings a new challenge when dealing with tokens
  - It’s easy to infer a credential is a token (JWT)
  - It’s not so easy to determine which token type (SciToken vs IDTOKEN)

- Some token attributes give us hints of its type
  - SciTokens and IDTOKENs use different encryption methods
  - “jti” along with the issuer might help us differentiate both formats
  - SciTokens usually define “ver” as “scitoken:2.0”

- It would be helpful to specify claims to help us identify these token types from generic JWTs
  - WLCG tokens require “wlcg.ver”

Challenge: providing fallback credentials to HTCondor CE

- The new auth_method allow for multiple credentials to be used to authenticate with CEs

- HTCondor CE accepts a list of authentication methods
  - Used only during the negotiation phase
  - The first accepted credential (and only the first) is used for authentication
  - The CE won’t try other credentials of the agreed type if the first one fails
  - The CE won’t try other authentication methods if the first one fails

- If some kind of authentication method fallback was implemented on the CE we could reduce the complexity of GlideinWMS submissions

Challenge: renewing tokens after submitting a job

- Ongoing discussion…

- Tokens live shorter than grid proxies
  - Payload tokens submitted with Glideins will often expire while the it's in queue

- A mechanism to renew tokens after Glideins are submitted is necessary
  - We could implement a solution on the GlideinWMS side
  - A native HTCondor implementation of this feature would be cleaner and address other use cases

Thank You!

- New challenges:
  - Identify token types
  - Implement credentials fallback on CEs
  - Renew SciTokens after jobs are submitted

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