The Instant Glidein
A generic approach for the late-binding of jobs to various resource types

• High-Throughput Computing
  • Focuses on the throughput over time of many jobs
    • Rather than performance of an individual jobs
  • Batch systems enables jobs to be executed on computing resources
    • The algorithms implemented optimises the utilisation of those resources
  • Metaschedulers optimise the utilization of geographically-separated computing resources based on state information provided by the local batch system managing those resources
With the metascheduling, the decision of where the job is to be executed is made quite in advance.

Late-binding uses a place-holder job that when executes requests the most appropriate real job from a central job queue.

- Allows scheduling decisions to be delayed until the last possible
- Can also perform basic sanity checks of the environment
- The result is that a private or application specific batch system is overlaid on the original resources
- A lesson learned from the experience of metascheduling is that resource allocation should be decoupled from job execution and the order respected

The HTCondor Glidein is an example implementation

- The placeholder job starts a HTCondor daemon process
- The result is a private HTCondor pool created out of dispersed computing resources by gliding-in HTCondor daemons
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Virtual Machines delivered by Infrastructure as a Service (IaaS) has brought a new dimension to HTC.

- Computing resources can now be dynamically provisioned on demand using resource leases which are typically defined in terms of wall time when using a pay-as-you-go model.
- The late-binding approach is appropriate in this scenario to ensure that job execution occurs after the resource has been allocated.
- The solution is therefore to overlay a batch system upon those dynamically provisioned computing resources.
- The alternative to the VAC model is where the lifecycle management is done via the user or application themselves.
  - We will define this model as Throughput Amplification by the Stimulated Emission of Resources (TASER)
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