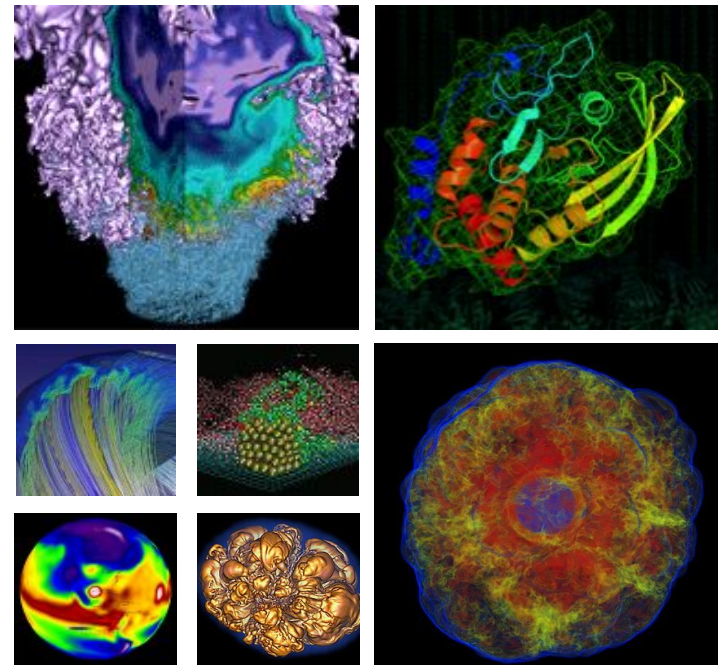


XALT, OGRT and Related Technologies: Job-Level Usage Data on Today's Supercomputers



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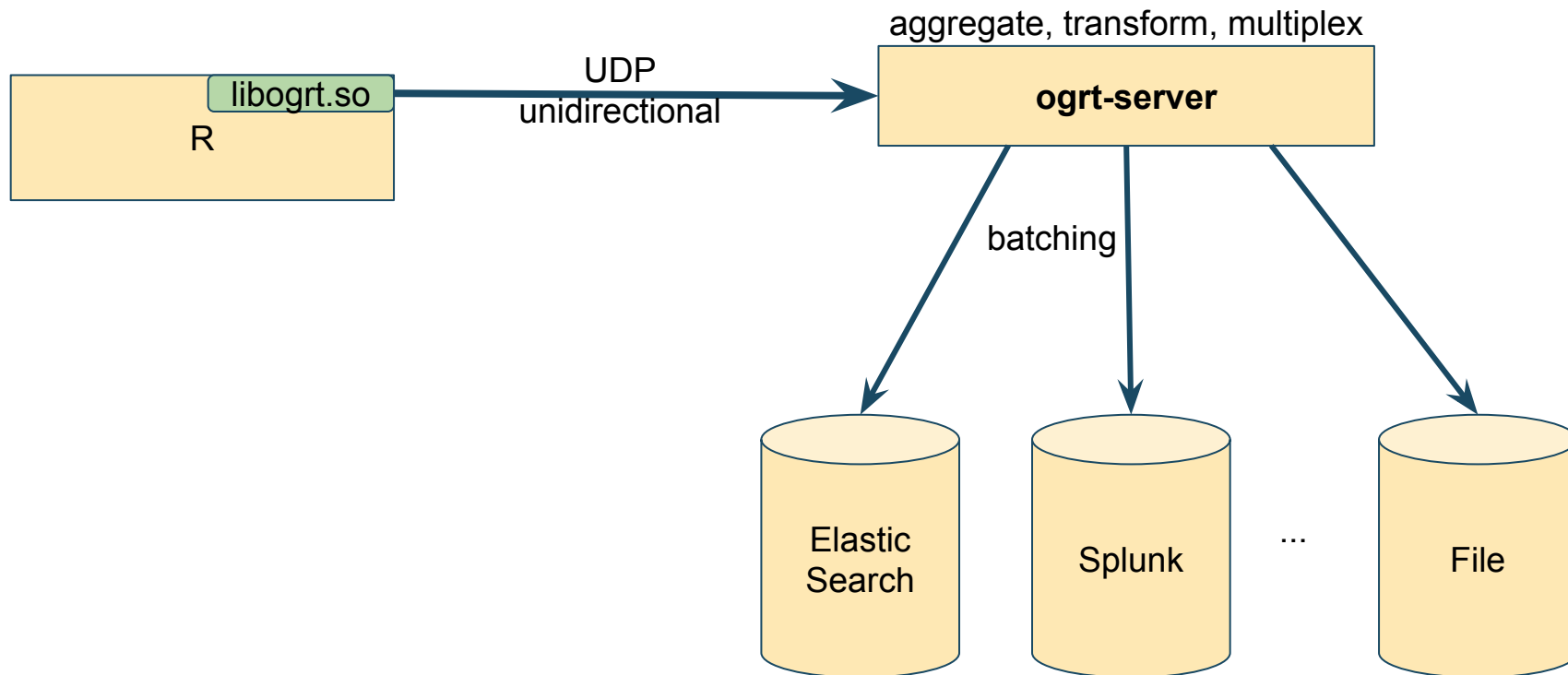
- It was the year 2015...
 - Life science cluster with diverse workloads
 - What is our workload?
- XALT!
 - This is what I need...
 - ...but designed for big jobs

Requirements



- No wrapper
- Tracking
 - User built binaries
 - high frequency
 - Shared libraries
 - Environment
 - Loaded Modules
 - Realtime
- No external dependencies
- Easy to deploy

Architecture



- LD_PRELOAD tricks
- No external dependencies
- Highly configurable
 - Modules
 - Environment with whitelist
 - Filter out paths
- Reads loaded shared object out of process space

- Receive and decode
- Forward to configurable outputs
 - Aggregation
 - Batching
- Buffers data
- Embedded web-server for metrics

The Data



```
{  
  "binpath": "/usr/bin/gcc-4.8",  
  "cmdline": "/usr/bin/gcc --help",  
  "hostname": "ogrtest",  
  "job_id": "TESTJOB",  
  "loaded_modules": [ { "name": "gcc/4.6.2" } ],  
  "parent_pid": 3342,  
  "pid": 12089,  
  "shared_objects": [  
    { "path": "/tmp/install/lib/libogrt.so", "signature": "708e1ffd-4ced-45d3-81f3-52e059ea3128" },  
    { "path": "/lib/x86_64-linux-gnu/libc-2.19.so" } ],  
  "time": 1475062870,  
  "username": "georg.rath"  
}
```

Analytics - The Hard Part



- ElasticSearch ecosystem
 - Kibana/Grafana
 - Explorative analysis
- Integration of OGRT data with
 - Job accounting
 - Job profiling
 - User facing dashboards

Analytics - The Why



- Targeted outreach
 - Intel broke your BLAS?
 - Point user to optimized version of library
- Reduce the number of maintained applications
- Check for “sane” environment
- Story time
 - GNU tools and the locale

Conclusion



- OGRT is a tool in the toolbox
- Needs integration into your environment
- Can power very useful insights



Thank You

<https://github.com/georg-rath/ogrt>
<https://github.com/Fahey-McLay/xalt>



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