

SAM-MIS

An event based monitoring system for SAM



Talk outline

- SAM Monitoring in the old days
- The new SAM Monitoring system
- Software Architecture
- Deployment
- Performance
- Future Work

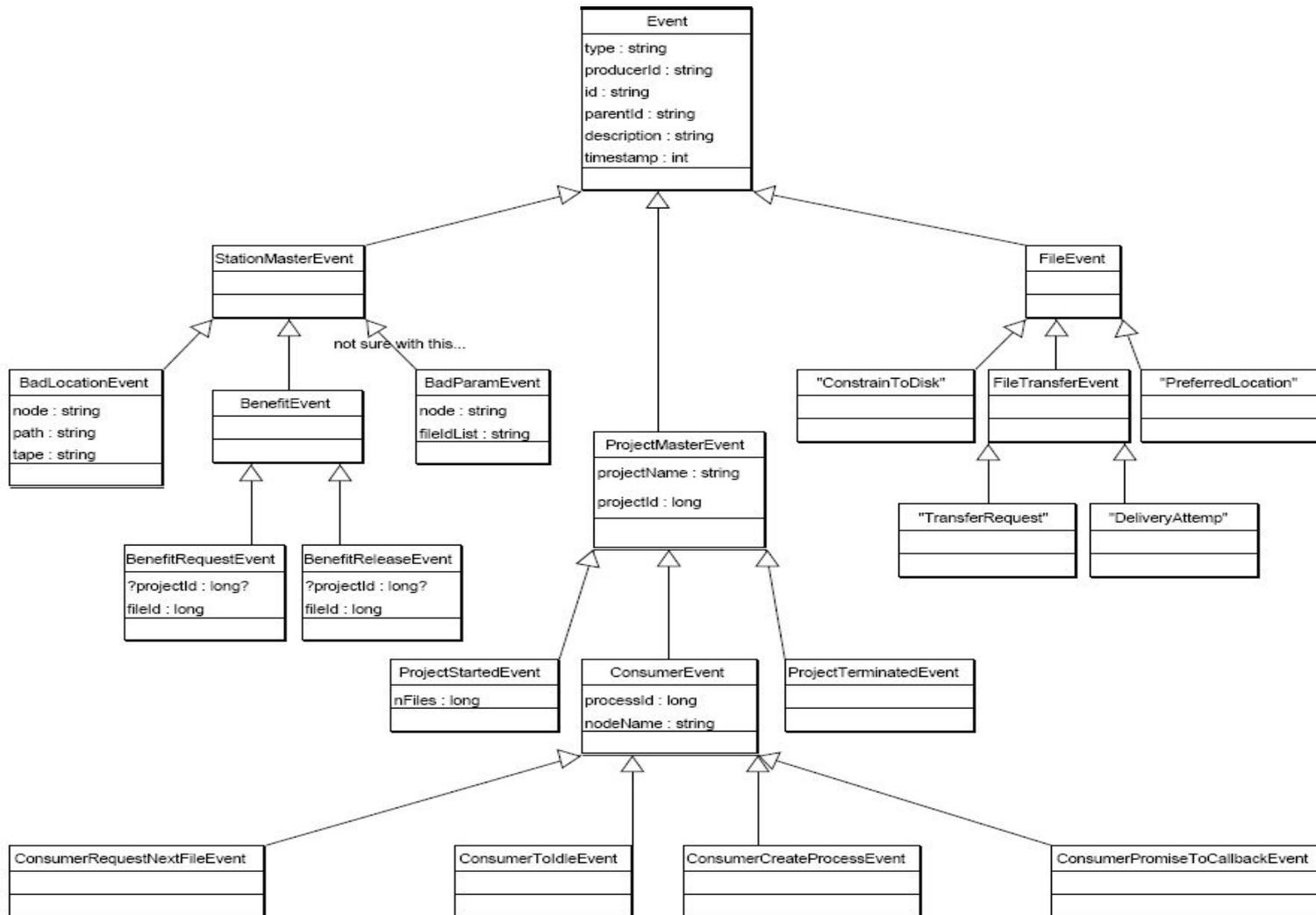
The old system

- Log messages sent by UDP to logging server
- Parse log messages with regular expressions
 - Hard to maintain
 - Slow, not scalable
- Not searchable – need to scan entire logfile to find any item of information
- No true realtime monitoring
- Fundamentally different approach to grid monitoring tools

The new system

- Monitoring Events sent by CORBA to server
- Fast unobstusive client side API
- Dictionary data structure – no parsing required
- Scalable modular server architecture
- Fast extensible multithreaded design
- Events logged in database
- Server can pull and Clients can push
- Can export monitoring information to MonALISA

Events the SAM station sends



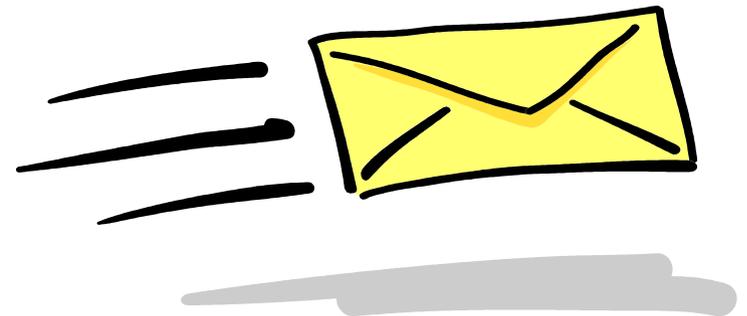
The life of an event...

- Clients

- Send monitoring information as Events
- Events are dictionaries of keyword/value pairs.
- Values can also be dictionaries
- Sent with API in either C++ or python

- Event Producers

- 'Pull' rather than 'Push'
- Regularly polled by server



The life of an event...

- The server
 - Can receive many messages concurrently,
 - Fast receive method, puts event in a queue
 - Queue Manager
 - Unpacks the CORBA messages one at a time
 - Filters them and passes them on to...
 - Message Handlers
 - Message Processors
 - Moves on to next message.



Two ways of handling messages

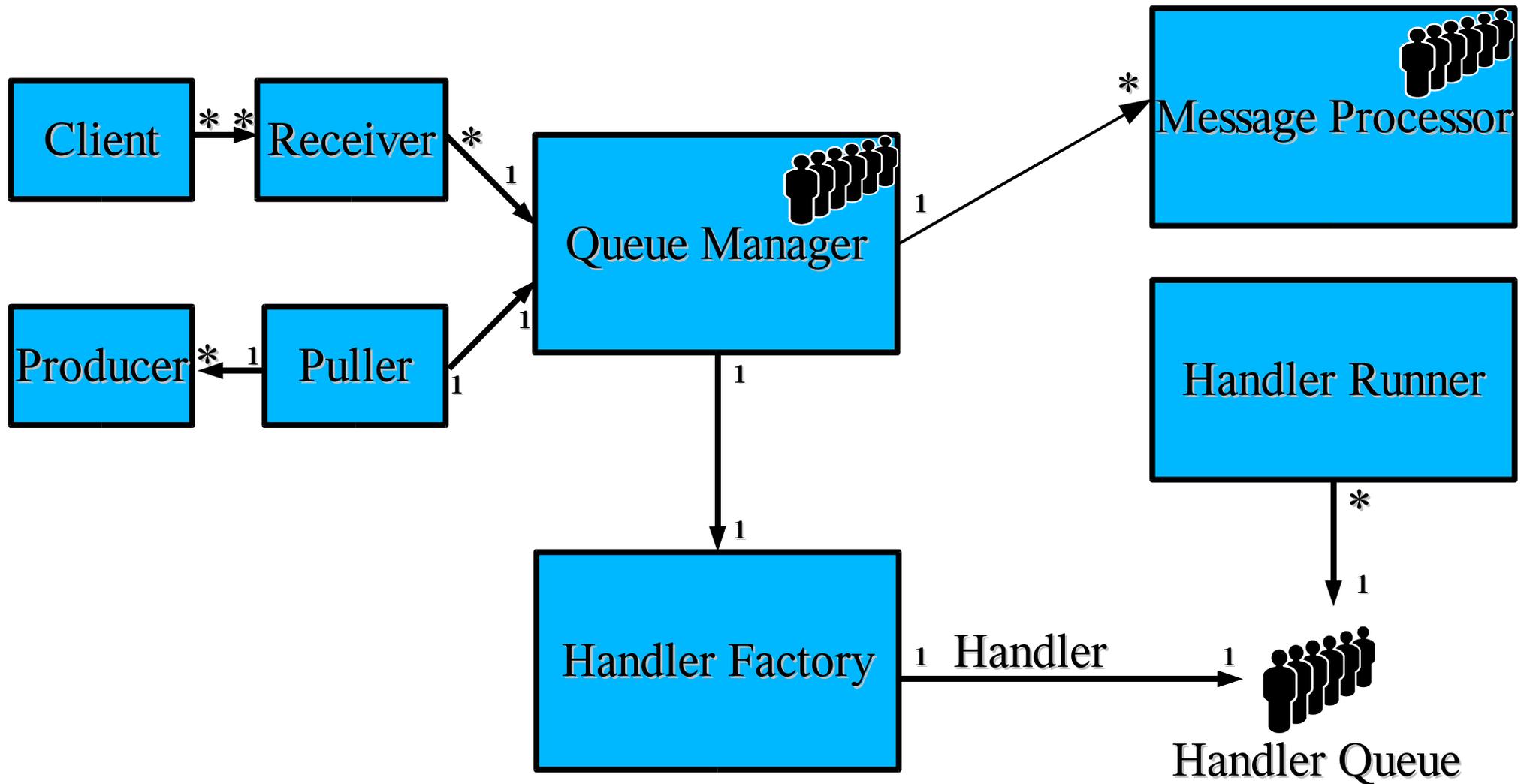
- Message Processors

- Have their own thread
- Own event queue
- Run all the time
- Used for
 - Database Export
 - MonaLisa Export
 - Forwarder
 - Load balancer

- Message Handlers

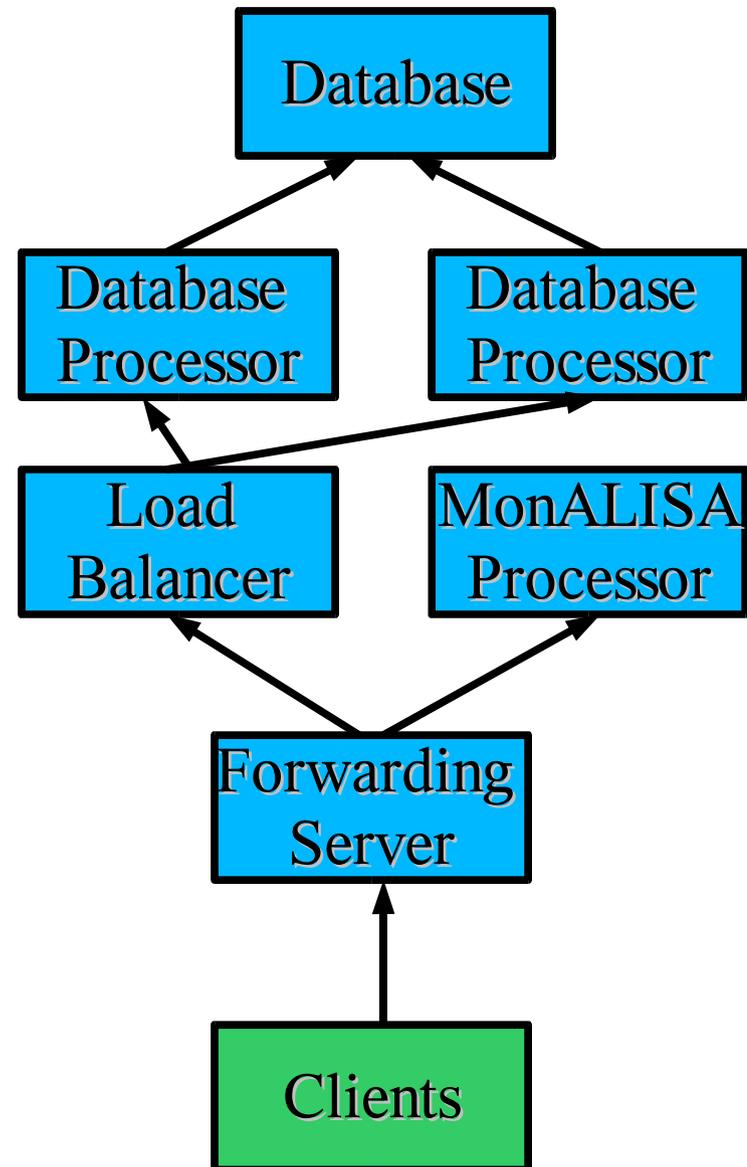
- Are created as they are needed
- A set number of threads execute all handlers
- Less resource hungry than a Processor
- For code that runs relatively rairly

Inside the server



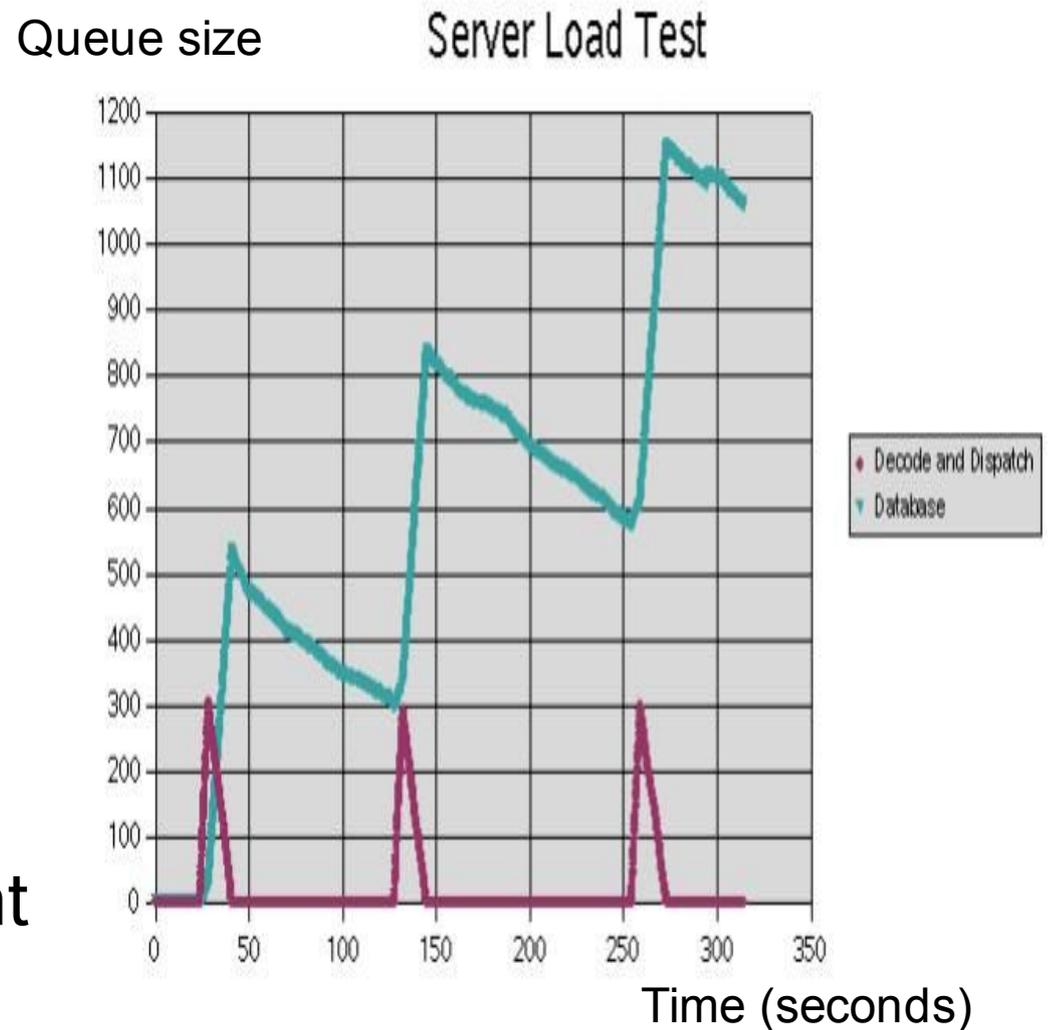
Modular Architecture

- Many deployment options
 - Server and database can run on a single machine.
 - Load balancing and forwarding options provide scalability
 - Possible deployment diagram opposite.



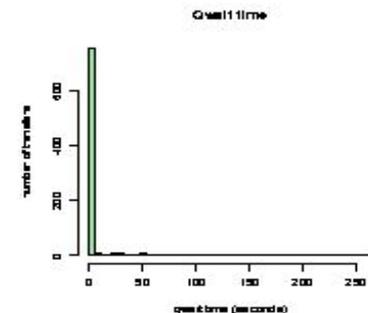
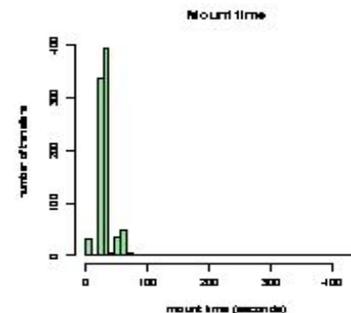
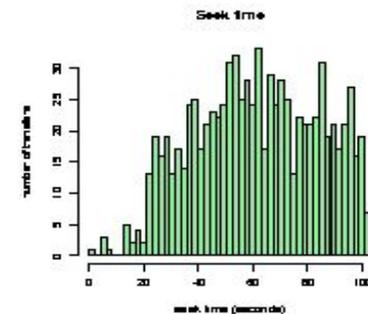
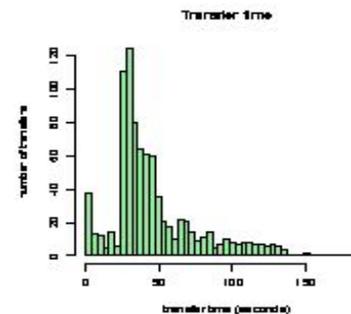
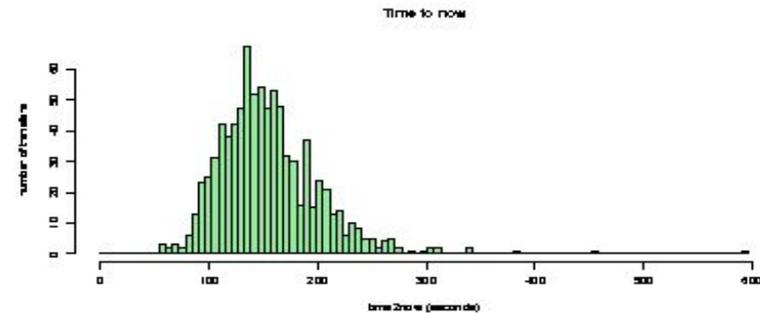
Performance

- Performance profiling
 - Tests on dual 800Mhz machine
 - 45 events per second steady load
 - 100 events per second 2 second spikes
 - Even under constant load, Spikes are eventually dealt with



What we do with the data

- Database
 - Events stored in MySQL
- SamHDTV
 - Faster new version uses database
 - File delivery plot opposite
- MonALISA
 - Can also display some information
 - Not easy to customize for SAM



Future work

- Finish SamHDTV
- More database speed (Indexing over arbitrary dictionary keys)
- Try and plot more data from within MonALISA
- Alarm handler to send email
- Desktop realtime monitoring client
- Server sends events to itself
- Support for more databases