

# State Behavior & Control Messaging

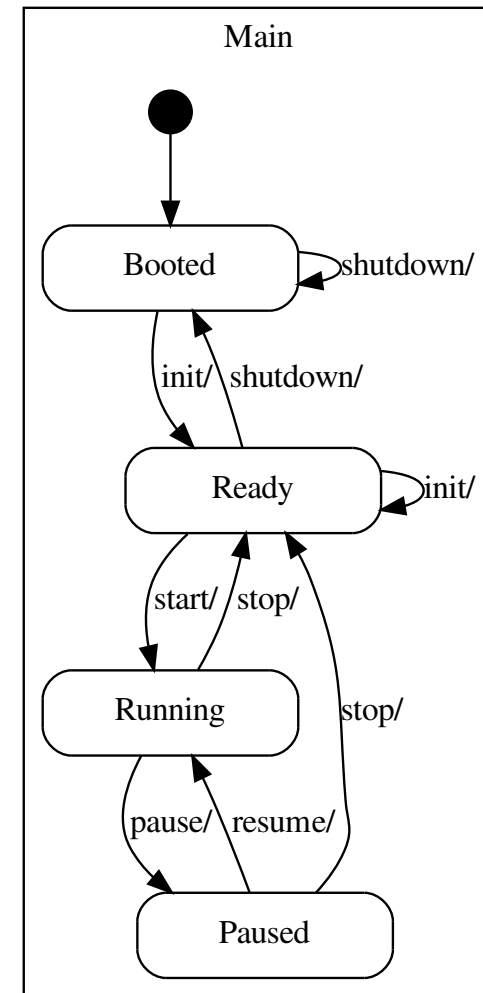


## State behavior part of *artdaq* core

- Standard states:
  - Booted, Ready (configured), Running, Paused
- Standard transitions:
  - `init(cfgString)`, `start(runNum)`, `stop`, `pause`, `resume`, `shutdown`
- State Machine Compiler tools are used in *artdaq*

## Control messaging infrastructure also included

- Standard commands:
  - State transitions & status queries
  - `init(cfgString)`, `start(runNum)`, `stop`, `pause`, `resume`, `shutdown`, `status`, `report`
- Uses XMLRPC
- Command-line control scripts provided in *artdaq*



Simplified state diagram

# Configuration Management



Configuration infrastructure part of core *artdaq*

- Single structured text string sent at “init” transition
  - hardware, software, system, and *art* configuration
- Interpretation of software and system parameters provided in core *artdaq*
- Hardware parameters handled by experiment-specific code
- Experiment-specific parameters could be included inline (as shown here) or provided in a separate document (file). In the latter case, the filename would be sent in the *init* command.

```
daq: { # red = group identifiers
  max_fragment_size_words: 2097152
  fragment_receiver: {
    mpi_buffer_count: 40
    generator_ds50: {
      fragment_id: 2
    } # green = software params
    generator: V1495Driver
    first_event_builder_rank: 3
    event_builder_count: 5
    rt_priority: 2 # system params
    link_type: PCIE
    link_number: 0 # hardware params
    vme_base: 0x01000000
    pulser_frequency: 0.0
    laser_frequency: 0.0
    random_triggers: false
    acquisition_gate_us: 400.0
    low_threshold: 5
  }
}
```

Sample BoardReader configuration string