Anatomy of a Start Expression

RAL PPD Start Expression

```
START = (StartJobs =?= True) &&
        (NodeIsHealty =?= True) &&
        (DrainForReboot =!= True) &&
        $(OnlyMulticoreJobsAfterDrain) &&
        $(DrainForMulticore)
```

Quiz - What is the Ideal Start Expression?

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TRUE

NodeIsHealthy

```
STARTD_CRON_JOBLIST = $(STARTD_CRON_JOBLIST) WN_HEALTHCHECK

## Healthcheck

# Returns Boolean NODE_IS_HEALTHY

STARTD_CRON_WN_HEALTHCHECK_EXECUTABLE = /usr/local/bin/healthcheck_wn_condor

STARTD_CRON_WN_HEALTHCHECK_PERIOD = 10m

STARTD_CRON_WN_HEALTHCHECK_MODE = periodic

STARTD_CRON_WN_HEALTHCHECK_RECONFIG = false

STARTD_CRON_WN_HEALTHCHECK_KILL = true
```

DrainForReboot

```
STARTD_ATTRS = $(STARTD_ATTRS), KernelRebootStatus, DrainForReboot
STARTD.SETTABLE_ATTRS_ADMINISTRATOR = $(STARTD.SETTABLE_ATTRS_ADMINISTRATOR), KernelRebootStatus, DrainForReboot

STARTD_CRON_JOBLIST = $(STARTD_CRON_JOBLIST) KERNEL_UPDATE
## Kernel Updater
# Returns boolean DrainForReboot and Reason in RebootStatus
STARTD_CRON_KERNEL_UPDATE_EXECUTABLE = /usr/local/bin/kernel_updater
STARTD_CRON_KERNEL_UPDATE_PERIOD = 1h
STARTD_CRON_KERNEL_UPDATE_MODE = periodic
STARTD_CRON_KERNEL_UPDATE_RECONFIG = false
STARTD_CRON_KERNEL_UPDATE_KILL = true
```

OnlyMulticoreJobsAfterDrain

```
# Set OnlyMulticoreInterval to the number of seconds the startd should only allow multi-core jobs. Default to about 2 negotiation cycles.
OnlyMulticoreInterval = 2*$(NEGOTIATOR_INTERVAL:300)
# If this slot has more than 4 cores free, then insist on jobs that request at least 4 cores or more.
IsMulticore = RequestCpus >= IfThenElse(Cpus<4,1,4)
# We only want this policy to apply to partitionable slots (pslots)
IsntUnmatchedPSlot = PartitionableSlot=!=true || State=="Matched"
OnlyMulticoreJobsAfterDrain = $(IsntUnmatchedPSlot) || $(IsMulticore) || $(StateTimer) > $(OnlyMulticoreInterval)
```

DrainForMulticore

```
# If fallow has set the node to OnlyMulticore then only accept 8 core jobs
DrainForMulticore =
   ifThenElse(OnlyMulticore =?= True,
   ifThenElse(RequestCpus =?= 8, True, False), True)
```

DrainForMulticore

```
# If fallow has set the node to OnlyMulticore then
only accept 8 core jobs
DrainForMulticore =
   ifThenElse(OnlyMulticore =?= True,
   ifThenElse(RequestCpus =?= 8, True, False), True)
```

Fallow

- Local replacement for condor_defrag (possibly no longer necessary)
  - Has an (empirical) target share of the farm that “should” be running multicore.
  - Much more aggressive about draining machines if below that share.

And a note on GPUs

```
START = $(START) && ( (RequestGPUs >= 1) )
# START = $(START) && ( (RequestGPUs >= 1) ||
          ( (My.CPUs - Target.RequestCPUs) >
          (8 * My.GPUs) ) )
```