MODULE *Configuration*

INSTANCE *Naturals*

INSTANCE *FiniteSets*

INSTANCE *Sequences*

INSTANCE *TLC*

An empty constant
CONSTANT *Nil*

Status constants
CONSTANTS
Pending,
InProgress,
Complete

$Status \triangleq$
$\{Pending,$
$InProgress,$
$Complete\}$

Variables defined by other modules.
VARIABLES
mastership,
target

A record of per-target configurations
VARIABLE *configuration*

$TypeOK \triangleq$
$\land\ configuration.state \in Status$
$\land\ configuration.term \in Nat$
$\land\ configuration.committed.index \in Nat$
$\land\ configuration.committed.revision \in Nat$
$\land\ \forall\, p \in \text{DOMAIN } configuration.committed.values :$
$\land\ configuration.committed.values[p].index \in Nat$
$\land\ configuration.committed.values[p].value \neq Nil \Rightarrow$
$configuration.committed.values[p].value \in \text{STRING}$
$\land\ configuration.applied.index \in Nat$
$\land\ configuration.applied.revision \in Nat$
$\land\ \forall\, p \in \text{DOMAIN } configuration.applied.values :$
$\land\ configuration.applied.values[p].index \in Nat$

$\land$ *configuration.applied.values*[*p*].*value* $\neq$ *Nil* $\Rightarrow$
configuration.applied.values[*p*].*value* $\in$ STRING

Test $\triangleq$ INSTANCE *Test* WITH
File $\leftarrow$ "Configuration.log",
CurrState $\leftarrow$ [
configuration $\mapsto$ *configuration*,
mastership $\mapsto$ *mastership*,
target $\mapsto$ *target*],
SuccState $\leftarrow$ [
configuration $\mapsto$ *configuration*$'$,
mastership $\mapsto$ *mastership*$'$,
target $\mapsto$ *target*$'$]

This section models the *Configuration* reconciler.

ReconcileConfiguration(n) $\triangleq$
$\land$ $\lor$ $\land$ *configuration.state* = *Pending*
$\land$ *configuration.term* = *mastership.term*
$\land$ *mastership.master* = n
$\land$ *configuration*$'$ = [*configuration* EXCEPT !.*state* = *InProgress*]
$\land$ UNCHANGED $\langle$*target*$\rangle$
$\lor$ $\land$ *configuration.state* = *InProgress*
$\land$ *configuration.term* = *mastership.term*
$\land$ *mastership.master* = n
$\land$ *target*$'$ = [*target* EXCEPT !.*values* = *configuration.applied.values*]
$\land$ *configuration*$'$ = [*configuration* EXCEPT !.*state* = *Complete*]
$\lor$ $\land$ *configuration.term* < *mastership.term*
$\land$ *configuration*$'$ = [*configuration* EXCEPT !.*state* = *Pending*,
!.*term* = *mastership.term*]
$\land$ UNCHANGED $\langle$*target*$\rangle$
$\land$ UNCHANGED $\langle$*mastership*$\rangle$