$\dashv$ MODULE *Configuration* $\vdash$

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,
   conn,
   target

A record of per-target configurations
VARIABLE *configuration*

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

1

$\wedge \, \forall \, p \in \text{DOMAIN } configuration.applied.values :$
$\quad \wedge \, configuration.applied.values[p].index \in Nat$
$\quad \wedge \, configuration.applied.values[p].value \neq Nil \Rightarrow$
$\qquad configuration.applied.values[p].value \in \text{STRING}$

$Test \;\triangleq\; \text{INSTANCE } Test \text{ WITH}$
$\quad File \qquad\; \leftarrow \text{ "Configuration.log"},$
$\quad CurrState \leftarrow [$
$\qquad configuration \mapsto configuration,$
$\qquad mastership \quad \mapsto mastership,$
$\qquad conn \qquad\quad \mapsto conn,$
$\qquad target \qquad\; \mapsto target],$
$\quad SuccState \leftarrow [$
$\qquad configuration \mapsto configuration',$
$\qquad mastership \quad \mapsto mastership',$
$\qquad conn \qquad\quad \mapsto conn',$
$\qquad target \qquad\; \mapsto target']$

This section models the *Configuration* reconciler.

$ReconcileConfiguration(n) \;\triangleq\;$
$\quad \wedge \; \vee \; \wedge \, configuration.state = Pending$
$\qquad\quad \wedge \, configuration.term = mastership.term$
$\qquad\quad \wedge \, mastership.master = n$
$\qquad\quad \wedge \, configuration' = [configuration \text{ EXCEPT } !.state = InProgress]$
$\qquad\quad \wedge \, \text{UNCHANGED } \langle target \rangle$
$\qquad \vee \; \wedge \, configuration.state = InProgress$
$\qquad\quad \wedge \, configuration.term = mastership.term$
$\qquad\quad \wedge \, mastership.master = n$
$\qquad\quad \wedge \, conn[n].id = mastership.conn$
$\qquad\quad \wedge \, conn[n].connected$
$\qquad\quad \wedge \, target.running$
$\qquad\quad \wedge \, target' = [target \text{ EXCEPT } !.values = configuration.applied.values]$
$\qquad\quad \wedge \, configuration' = [configuration \text{ EXCEPT } !.state = Complete,$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad !.applied.target = target.id]$
$\qquad \vee \; \wedge \, configuration.term < mastership.term$
$\qquad\quad \wedge \, configuration' = [configuration \text{ EXCEPT } !.state = Pending,$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad !.term = mastership.term]$
$\qquad\quad \wedge \, \text{UNCHANGED } \langle target \rangle$
$\quad \wedge \, \text{UNCHANGED } \langle mastership, \; conn \rangle$