─────────────── MODULE *Configuration* ───────────────

INSTANCE *Naturals*

INSTANCE *FiniteSets*

INSTANCE *Sequences*

INSTANCE *TLC*

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An empty constant
CONSTANT *Nil*

Status constants
CONSTANTS
   Pending,
   InProgress,
   Complete

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

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Variables defined by other modules.
VARIABLES
   mastership,
   conn,
   target

A record of per-target configurations
VARIABLE *configuration*

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

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

$\text{LOCAL } State \triangleq [$
$\quad configuration \mapsto configuration,$
$\quad mastership \quad \mapsto mastership,$
$\quad conns \qquad \mapsto conn,$
$\quad target \qquad \mapsto target]$

$\text{LOCAL } Transitions \triangleq$
$\quad \langle\rangle @@$
$\quad (\text{IF } configuration' \neq configuration \text{ THEN } [configuration \mapsto configuration'] \text{ ELSE } \langle\rangle) @@$
$\quad (\text{IF } target' \neq target \text{ THEN } [target \mapsto target'] \text{ ELSE } \langle\rangle)$

$Test \triangleq \text{INSTANCE } Test \text{ WITH}$
$\quad File \leftarrow \text{"Configuration.log"}$

This section models the *Configuration* reconciler.

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