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- 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,
   conn,
   target
 A record of per-target configurations
{\tt VARIABLE}\ \ configuration
TypeOK \; \stackrel{\scriptscriptstyle \Delta}{=} \;
   \land \ configuration.state \in Status
   \land \ configuration.term \in \mathit{Nat}
   \land configuration.committed.index \in Nat
   \land \ configuration.committed.revision \in \mathit{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 String
   \land configuration.applied.index \in Nat
   \land configuration.applied.revision \in Nat
   \land \ configuration.applied.target \in \mathit{Nat}
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\land \forall p \in 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
LOCAL CurrState \triangleq [
   configuration \mapsto configuration,
   mastership
                   \mapsto mastership,
   conn
                    \mapsto conn,
   target
                    \mapsto target
LOCAL SuccState \triangleq
    \langle \rangle @@
    (IF configuration' \neq configuration THEN [configuration \mapsto configuration'] ELSE \langle \rangle) @@
   (IF mastership' \neq mastership Then [mastership \mapsto mastership'] else \langle \rangle) @@
   (IF conn' \neq conn THEN [conn \mapsto conn'] ELSE \langle \rangle) @@
   (IF target' \neq target \text{ THEN } [target \mapsto target'] \text{ ELSE } \langle \rangle)
Test \stackrel{\triangle}{=} INSTANCE \ Test \ WITH
   File \leftarrow "Configuration.log"
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 conn[n].id = mastership.conn
          \land conn[n].connected
          \land target.running
          \land target' = [target \ EXCEPT \ !.values = configuration.applied.values]
          \land configuration' = [configuration EXCEPT !.state = Complete,
                                                               !.applied.target = target.id
       \lor \land configuration.term < mastership.term
          \land \ configuration' = [\textit{configuration} \ \ \texttt{EXCEPT} \ !.state = Pending,
                                                               !.term = mastership.term
          \land UNCHANGED \langle target \rangle
    \land UNCHANGED \langle mastership, conn \rangle
```