
MODULE *Southbound*

EXTENDS *Target*

INSTANCE *Naturals*

INSTANCE *FiniteSets*

LOCAL INSTANCE *TLC*

A connected state
 CONSTANT *Connected*

A disconnected state
 CONSTANT *Disconnected*

The state of the connection to the target
 VARIABLE *conn*

This section models target states.

Connect \triangleq
 $\wedge \text{conn.state} \neq \text{Connected}$
 $\wedge \text{target.state} = \text{Alive}$
 $\wedge \text{conn}' = [\text{conn} \text{ EXCEPT } \text{!.id} = \text{conn.id} + 1,$
 $\hspace{15em} \text{!.state} = \text{Connected}]$
 $\wedge \text{UNCHANGED } \langle \text{target} \rangle$

Disconnect \triangleq
 $\wedge \text{conn.state} = \text{Connected}$
 $\wedge \text{conn}' = [\text{conn} \text{ EXCEPT } \text{!.state} = \text{Disconnected}]$
 $\wedge \text{UNCHANGED } \langle \text{target} \rangle$

InitSouthbound \triangleq
 $\wedge \text{conn} = [\text{id} \mapsto 0, \text{state} \mapsto \text{Disconnected}]$

NextSouthbound \triangleq
 $\vee \text{Connect}$
 $\vee \text{Disconnect}$

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