

EXTENDS *skeen*

TypeOK \triangleq
 $\wedge \text{clock} \in [\text{Proc} \rightarrow \text{Time} \cup \{\text{TimeNull}\}]$
 $\wedge \text{localTS} \in [\text{Proc} \rightarrow [\text{McastID} \rightarrow \text{TimestampSet}]]$
 $\wedge \text{globalTS} \in [\text{Proc} \rightarrow [\text{McastID} \rightarrow \text{TimestampSet}]]$
 $\wedge \text{phase} \in [\text{Proc} \rightarrow [\text{McastID} \rightarrow \{\text{Start}, \text{Proposed}, \text{Committed}\}]]$
 $\wedge \text{rcvdMcastID} \in [\text{Proc} \rightarrow \text{SUBSET } \text{McastID}]$
 $\wedge \text{mcastedID} \in \text{SUBSET } \text{McastID}$
 $\wedge \text{inTransit} \in [\text{Proc} \rightarrow [\text{Proc} \rightarrow \text{SUBSET } \text{InTransitMsgSet}]]$
 $\wedge \text{delivered} \in [\text{Proc} \rightarrow [\text{McastID} \rightarrow \text{BOOLEAN}]]$
 $\wedge \text{proposeTS} \in [\text{Proc} \rightarrow [\text{McastID} \rightarrow \text{SUBSET } \text{ProposeMsgSet}]]$
 $\wedge \text{dCntr} \in [\text{Proc} \rightarrow [\text{McastID} \rightarrow \{0, 1\}]]$

Integrity \triangleq
 $\forall id \in \text{McastID} : \forall p \in \text{Proc} :$
 $\quad \wedge \text{delivered}[p][id] \equiv \text{dCntr}[p][id] = 1$
 $\quad \wedge \neg \text{delivered}[p][id] \equiv \text{dCntr}[p][id] = 0$

IndInv \triangleq
 $\wedge \text{TypeOK}$
 $\wedge \text{Integrity}$

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