$\overline{\quad\quad\quad\quad\quad\quad\quad\quad\quad}$ MODULE $E2T$ $\overline{\quad\quad\quad\quad\quad\quad\quad\quad\quad}$

LOCAL INSTANCE $Naturals$

LOCAL INSTANCE $Sequences$

LOCAL INSTANCE TLC

CONSTANT $E2TNode$

Message type constants
CONSTANT
    $SubscribeRequest$,
    $SubscribeResponse$
CONSTANTS
    $UnsubscribeRequest$,
    $UnsubscribeResponse$

VARIABLES $e2tNbConn$

$E2TNB \triangleq$ INSTANCE $Messaging$ WITH $Nil \leftarrow$ "<nil>", $conn \leftarrow e2tNbConn$

Message type constants
CONSTANT
    $E2Setup$,
    $E2SetupResponse$,
    $E2SetupFailure$
CONSTANT
    $ResetRequest$,
    $ResetResponse$
CONSTANT
    $RICSubscriptionRequest$,
    $RICSubscriptionResponse$,
    $RICSubscriptionFailure$
CONSTANT
    $RICSubscriptionDeleteRequest$,
    $RICSubscriptionDeleteResponse$,
    $RICSubscriptionDeleteFailure$
CONSTANT
    $RICControlRequest$,
    $RICControlResponse$,
    $RICControlFailure$,
    $RICServiceUpdate$
CONSTANT

$E2ConnectionUpdate,$
$E2ConnectionUpdateAcknowledge,$
$E2ConnectionUpdateFailure$

CONSTANT
$E2NodeConfigurationUpdate,$
$E2NodeConfigurationUpdateAcknowledge,$
$E2NodeConfigurationUpdateFailure$

Failure cause constants

CONSTANT
$MiscFailureUnspecified,$
$MiscFailureControlProcessingOverload,$
$MiscFailureHardwareFailure,$
$MiscFailureOMIntervention$

CONSTANT
$ProtocolFailureUnspecified,$
$ProtocolFailureTransferSyntaxError,$
$ProtocolFailureAbstractSyntaxErrorReject,$
$ProtocolFailureAbstractSyntaxErrorIgnoreAndNotify,$
$ProtocolFailureMessageNotCompatibleWithReceiverState,$
$ProtocolFailureSemanticError,$
$ProtocolFailureAbstractSyntaxErrorFalselyConstructedMessage$

CONSTANT
$RICFailureUnspecified,$
$RICFailureRANFunctionIDInvalid,$
$RICFailureActionNotSupported,$
$RICFailureExcessiveActions,$
$RICFailureDuplicateAction,$
$RICFailureDuplicateEvent,$
$RICFailureFunctionResourceLimit,$
$RICFailureRequestIDUnknown,$
$RICFailureInconsistentActionSubsequentActionSequence,$
$RICFailureControlMessageInvalid,$
$RICFailureCallProcessIDInvalid$

CONSTANT
$RICServiceFailureUnspecified,$
$RICServiceFailureFunctionNotRequired,$
$RICServiceFailureExcessiveFunctions,$
$RICServiceFailureRICResourceLimit$

CONSTANT
$TransportFailureUnspecified,$
$TransportFailureTransportResourceUnavailable$

VARIABLES $e2tSbConn$

$E2TSB \triangleq$ INSTANCE $Messaging$ WITH $Nil \leftarrow$ "<nil>", $conn \leftarrow e2tSbConn$

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$E2TNBHandleSubscribe(c,\ m)\ \triangleq$
    $\wedge\ E2TNB\,!\,Reply(c,\ [type \mapsto SubscribeResponse])$
    $\wedge$ UNCHANGED $\langle\rangle$

$E2TNBHandleUnsubscribe(c,\ m)\ \triangleq$
    $\wedge\ E2TNB\,!\,Reply(c,\ [type \mapsto UnsubscribeResponse])$
    $\wedge$ UNCHANGED $\langle\rangle$

$E2TNBHandleMessage(c,\ m)\ \triangleq$
    $\wedge\ \vee\ \wedge\ m.type = SubscribeRequest$
          $\wedge\ E2TNBHandleSubscribe(c,\ m)$
    $\wedge\ \vee\ \wedge\ m.type = UnsubscribeRequest$
          $\wedge\ E2TNBHandleSubscribe(c,\ m)$
    $\wedge$ UNCHANGED $\langle\rangle$

$E2TSBHandleE2Setup(c,\ m)\ \triangleq$
    $\wedge\ E2TSB\,!\,Reply(c,\ [type \mapsto E2SetupResponse])$
    $\wedge$ UNCHANGED $\langle\rangle$

$E2TSBHandleMessage(c,\ m)\ \triangleq$
    $\wedge\ \vee\ \wedge\ m.type = E2Setup$
          $\wedge\ E2TSBHandleE2Setup(c,\ m)$
    $\wedge$ UNCHANGED $\langle\rangle$

$E2TInit\ \triangleq$
    $\wedge\ E2TNB\,!\,Init$
    $\wedge\ E2TSB\,!\,Init$

$E2TNext\ \triangleq$
    $\vee\ \exists\,c \in E2TNB\,!\,Connections : E2TNB\,!\,Disconnect(c)$
    $\vee\ \exists\,c \in E2TSB\,!\,Connections\ : E2TSB\,!\,Disconnect(c)$
    $\vee\ \exists\,c \in E2TNB\,!\,Connections : E2TNB\,!\,Handle(c,\ E2TNBHandleMessage)$
    $\vee\ \exists\,c \in E2TSB\,!\,Connections\ : E2TSB\,!\,Handle(c,\ E2TSBHandleMessage)$