# Technical concept

## Connecting, handshake and detection of connection loss

After booting, the downstream machine starts cyclic connection attempts to the configured upstream machines. When a connection is established, the downstream machine starts sending a ServiceDescription message whereupon the upstream machine answers with its own ServiceDescription. This ServiceDescription message contains the lane ID of the sending machine related to this TCP connection. It also contains a list of features which are implemented by the client. The features of the Hermes specification 1.0 have to be supported by any implementation and shall not be included explicitly.

If a downstream machine is already connected to the lane, this connection will be retained. A Notification message shall be sent to the new connection before it is closed..

After exchanging the handshake messages, both machines may begin to send BoardAvailable/ MachineReady messages (see section 2.4).

# Message definition

## Notification

The Notification message is sent by both machines before a connection is terminated, e.g. after protocol errors or before shutdown. It could also be used for general notification purposes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Notification** | **Type** | **Range** | **Optional** | **Description** |
| nodeNotificationCode | int | 1 .. n | no | A notification code of the list below.  Notification codes above 1000 are not defined by this protocol and may be used by the application |
| nodeSeverity | int | 1 .. 4 | no | A severity of the list below |
| nodeDescription | string | any string | no | An English textual description of the notification. |

The following NotificationCodes are defined:

1. Protocol error (invalid transition in the state machine, see section 2.6)
2. Connection refused because of an established connection.
3. Connection reset because of changed configuration
4. Configuration error
5. Machine shutdown

Possible values for Severity:

1. Fatal error
2. Error
3. Warning
4. Info