NAME
ng_pred1 - Predictor-1 PPP compression (RFC 1978) netgraph node type

SYNOPSIS
#include <sys/types.h>
#include <netgraph/ng_pred1.h>

DESCRIPTION
The **pred1** node type implements the Predictor-1 sub-protocols of the Compression Control Protocol (CCP).

The node has two hooks, *comp* for compression and *decomp* for decompression. Only one of them can be connected at the same time, specifying node's operation mode. Typically that hooks would be connected to the ng_ppp(4) node type hook of the same name.

HOOKS
This node type supports the following hooks:

comp   Connection to ng_ppp(4) *compress* hook. Incoming frames are compressed and sent back out the same hook.

decomp Connection to ng_ppp(4) *decompress* hook. Incoming frames are decompressed and sent back out the same hook.

Only one hook can be connected at the same time, specifying node's operation mode.

CONTROL MESSAGES
This node type supports the generic control messages, plus the following:

NGM_PRED1_CONFIG (**config**)
    This command resets and configures the node for a session (i.e., for compression or decompression). This command takes a *struct ng_pred1_config* as an argument:

    struct ng_pred1_config {
            u_char   enable;   /* node enabled */
    };
    The *enable* field enables traffic flow through the node.

NGM_PRED1_RESETREQ (**resetreq**)
    This message contains no arguments, and is bi-directional. If an error is detected during decompression, this message is sent by the node to the originator of the NGM_PRED1_CONFIG

message that initiated the session. The receiver should respond by sending a PPP CCP Reset-Request to the peer.

This message may also be received by this node type when a CCP Reset-Request or Reset-Ack is received by the local PPP entity. The node will respond by flushing its compression state so the sides can resynchronize.

NGM_PRED1_GET_STATS (**getstats**)
   This control message obtains statistics for a given hook. The statistics are returned in *struct ng_pred1_stats*:

   struct ng_pred1_stats {
           uint64_t FramesPlain;
           uint64_t FramesComp;
           uint64_t FramesUncomp;
           uint64_t InOctets;
           uint64_t OutOctets;
           uint64_t Errors;
   };

NGM_PRED1_CLR_STATS (**clrstats**)
   This control message clears statistics for a given hook.

NGM_PRED1_GETCLR_STATS (**getclrstats**)
   This control message obtains and clears statistics for a given hook.

SHUTDOWN
This node shuts down upon receipt of a NGM_SHUTDOWN control message, or when hook have been disconnected.

SEE ALSO
netgraph(4), ng_ppp(4), ngctl(8)

D. Rand, *PPP Predictor Compression Protocol*, RFC 1978.

W. Simpson, *The Point-to-Point Protocol (PPP)*, RFC 1661.

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BUGS

Due to nature of netgraph PPP implementation there are possible race conditions between data packet and ResetAck CCP packet in case of packet loss. As result, packet loss can produce bigger performance degradation than supposed by protocol.