

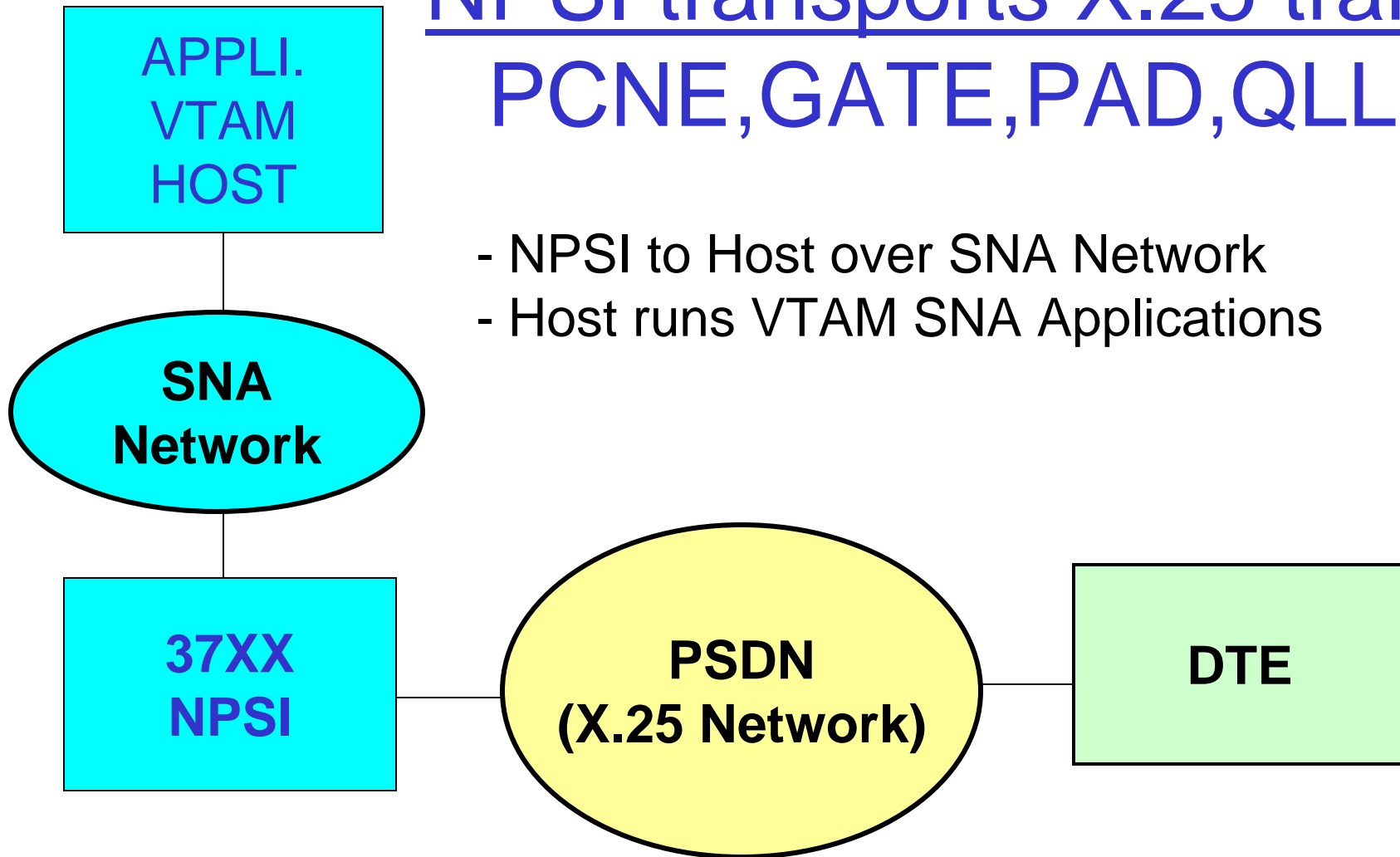
# X.25 HOST Networking Access Support (**HNAS**)

Transports "NPSI non SNA and QLLC  
PU2 X.25" traffic over TCP/IP



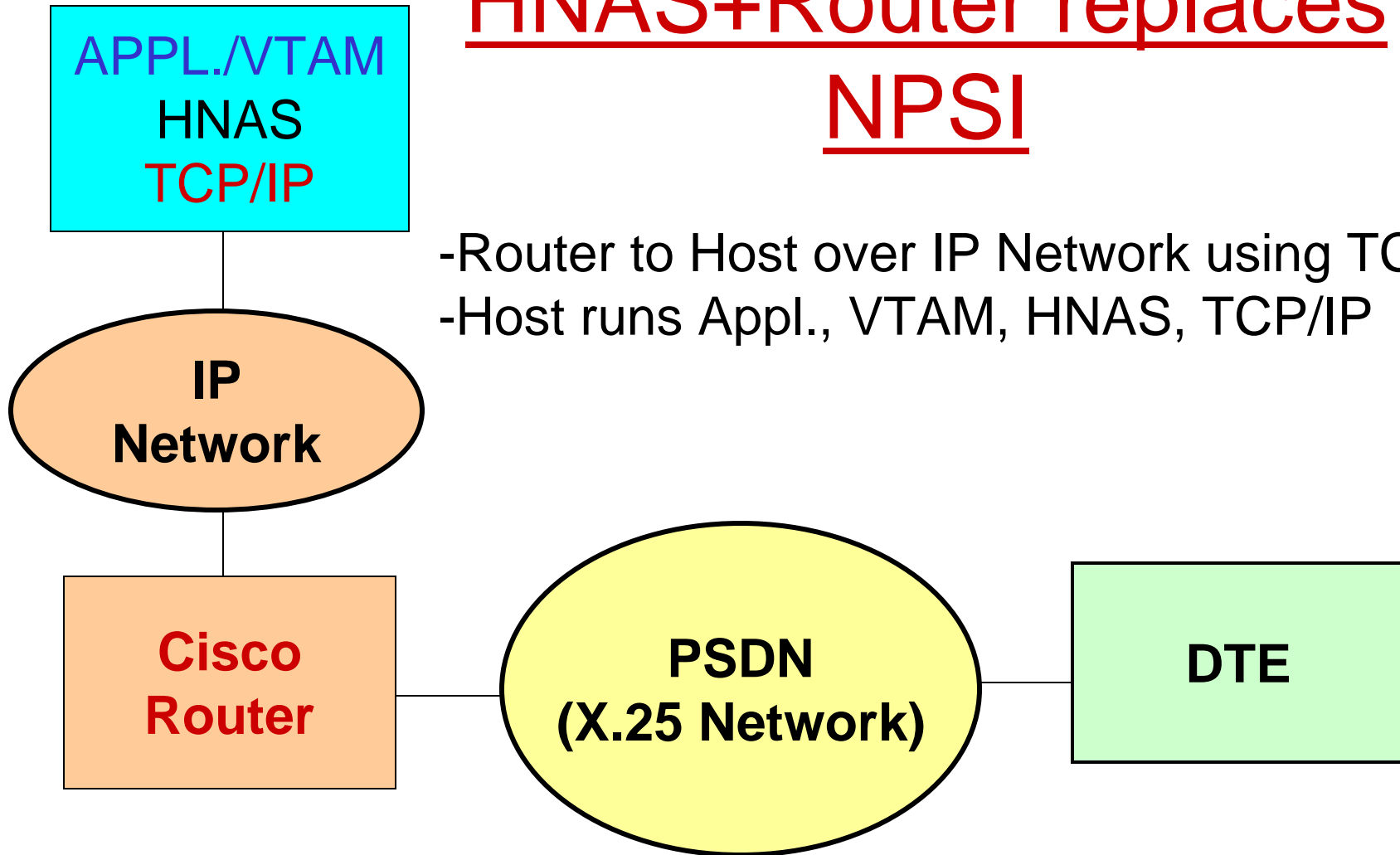
# NPSI transports X.25 traffic: PCNE,GATE,PAD,QLLC

- NPSI to Host over SNA Network
- Host runs VTAM SNA Applications



# HNAS+Router replaces NPSI

- Router to Host over IP Network using TCP
- Host runs Appl., VTAM, HNAS, TCP/IP



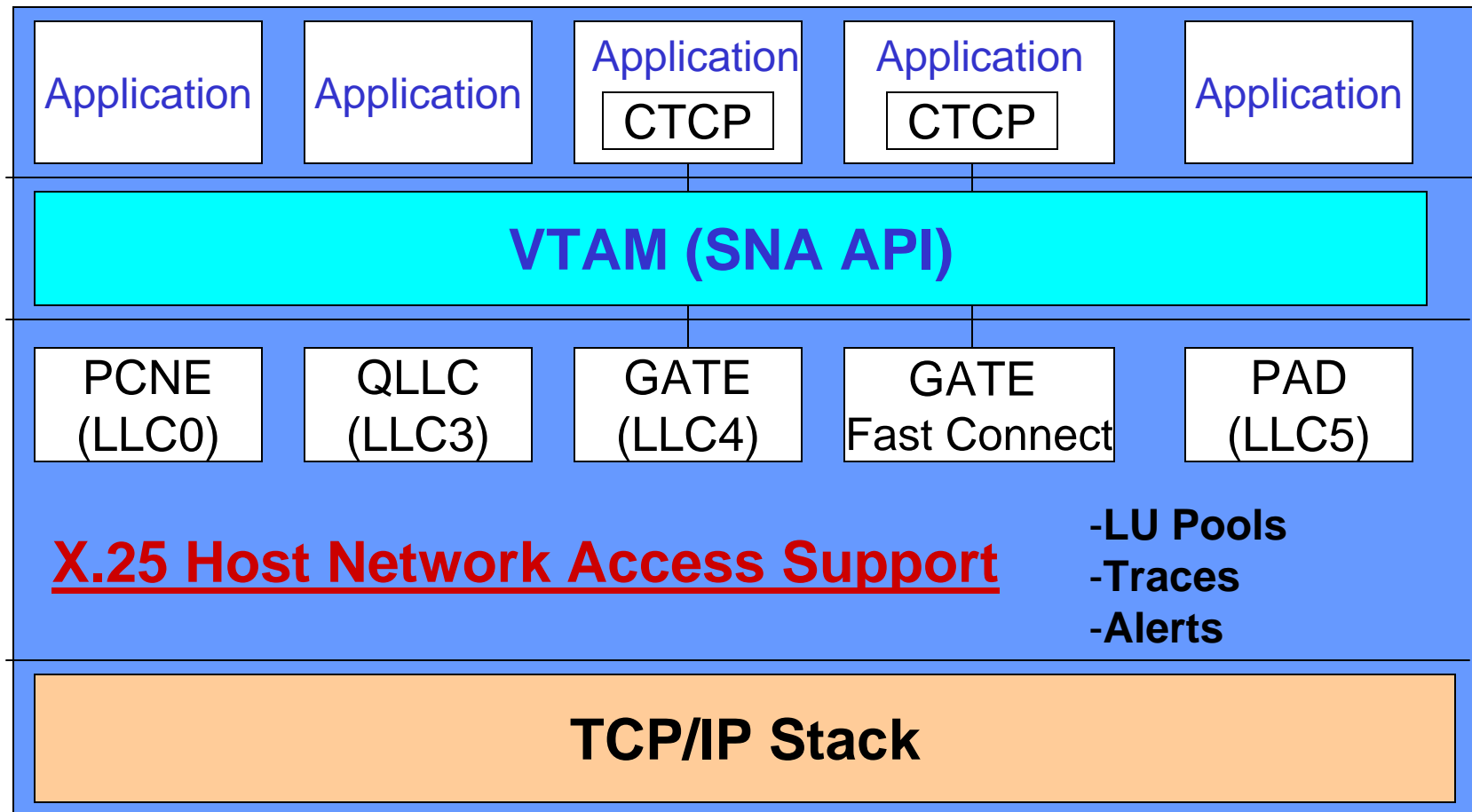
# HNAS

- Runs on OS/390 MVS and z/OS
- Interconnects IBM TCP/IP stack and VTAM API
- NPSI Applications unchanged: CFT, CSFI, Pelican/Interpel, TOM/Connect Express, Virtel, IMS, CICS,... to support:
  - PCNE (LLC0)
  - QLLC (LLC3) for PU 2.0 (Subarea Peripheral)
  - GATE (LLC4) and GATE Fast Connect
  - PAD (LLC5)
    - Integrated PAD (IPAD)
    - Transparent XPAD (XPAD)

# X.25

- X.25 Layers 1, 2, and 3 in Cisco Router
  - Layer 3 calls controlled by HNAS for PCNE, PAD and QLLC
  - Layer 3 calls controlled by CTCP Application (e.g. CFT, CSFI, Interpel, Editran,...) for GATE
- Router to HOST over TCP/IP
  - XTP for IBM Routers (historical)
    - Multiplex all VCs over one TCP/IP session
  - XOT RFC1613 for Cisco Routers
    - end to end or two stage flow controls
    - one TCP/IP session per VC

# Host Software Architecture with HNAS



# HNAS Installation

- Source & object libraries delivered via [email](#), CD, ftp.
- SMPE or non SMPE format.
- 8 HNAS Modules assembled onsite (VTAM and TCP/IP dependent) then linkedited with object.
- One load module to start HNAS as a job or a task.
- HNAS Configuration (CDF) read at each start up.
- Dynamic modification of multiple parameters: X.25 address, facilities, call user data field, LU names,...
- TRACES : TRCALL, TRCLU, TRCMCH, TRCVC,...
- Maintenance : APARs and refresh releases

# HNAS Configuration

- Paths to/from Routers (IP address), TAP mechanism
- HNAS Application LUs replace Switched NPSI LUs
- Call in:
  - MCH selection based on called or calling address
  - Subaddress or CUD0 used for LLC Type selection
  - LU selection by IDNUM(PCNE) or calling address.
  - parameters identical to NPSI:CUD0,CTCP,LLCn,PAD,...
  - PCNE, GATE, PAD, QLLC: application selection by Subaddress first then CUD first byte (CUD0=, SUBD=, CTCP=)
  - DLOGMOD, MODETAB supported by VTAM
  - QLLC: PU is selected by IDBLK/IDNUM or calling address
  - USSTAB, LOGTAB supported by HNAS code
- Call out: up to 3 called addresses, facilities, CUD



# Router Configuration

- Enable X.25 Switching: `x25 routing` command
- Serial interface: `x25 encapsulation DTE` or `DCE`
  - LAPB parameters: modulo, window, timers, etc...
  - Packet level parameters: PVC, SVC ranges, packet/window sizes, facilities, version, ...
- Create X.25 Routing Table: `x25 route` command
  - X.25 inbound traffic switched to Host IP Address
  - XOT outbound traffic switched to X.25 port
- Monitoring:
  - `show x25 route, xot, vc, interface,...`
  - `debug x25 events, all,...`

# NPSI to HNAS migration

## **NPSI**

X25 protocol support in 3745

MCH =Physical line of the 3745  
1 switched PU/LU by Virtual Circuit

Protocol and SLU selection by  
Subaddress or CUD0, or IDNUM(PCNE)  
IDNUM/IDBLK of a PU in a SWMN

1 SNA session per VC

LOGON parameters:  
LOGAPPL= PLUname  
VTAM:USSTAB,LOGTAB  
VTAM:MODETAB,DLOGMODE

CTCP selection (GATE) by CUD0

Call out: SLU + Dial Digit in SWM

## **HNAS**

X25 protocol support in router

MCH = Logical line in HNAS  
1 application(ACB) LU by VC

Protocol and SLU selection by  
Subaddress or CUD0, or IDNUM,  
SLU in an application major node

1 SNA session & 1 TCPIP session per VC

LOGON parameters:  
APPLNAME = PLUname  
HNAS supports USSTAB, LOGTAB  
VTAM: MODETAB,DLOGMODE

CTCP selection (GATE) by CUD0 or subaddress

SLU + Called address + Facilities + CUD

# Comm-Pro Associates

- <http://www.comm-pro.com/>
- Background in Communication Controllers
  - X.25 and TCP/IP products for IBM 37xx
- Worldwide support and installation
  - Reactive to customer queries
  - Servicing clients worldwide since 1973
- Comm-Pro solution for X.25 NPSI Traffic:
  - 37xx NPSI replaced by routers
  - Transports to Host over TC/IP
  - Host NAS code transforms TCP/IP into SNA
  - NPSI Applications unmodified