3746 provides e-business evolution

3745 / 3746 / NCP

- 1999 Enhancement Overview
- Long.. Medium.. Short Term Strategy
- What's coming in 2000....

3746 provides e-business evolution

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S/390 provides a seamless evolution

Year 2000 Initiatives

- IBM/Cisco Alliance
- Re-enforce the Vitality of 3745/3746 Solution
- Identify Long Term Outlook for S/390 Access
- What's on the horizon for the 3745, 3746 and NCP
- Capitalize on Investment for Short to Medium Term Solutions

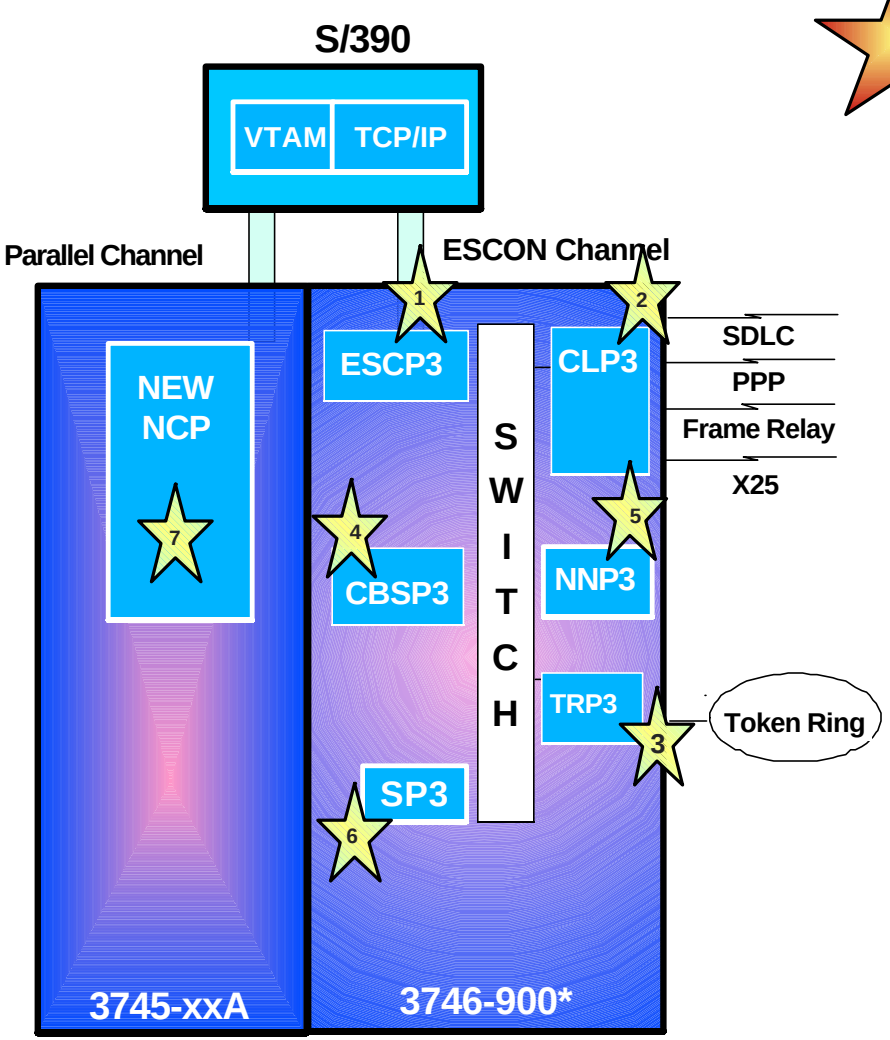
SNA to protocol & Business Evolution

IBM and Cisco Alliance

- **August 31, 1999 - IBM and Cisco Announce an Alliance**
  - **IBM sells Routing and Switching intellectual property to Cisco**
- **IBM 3745, 3746 and NCP Products were not included**
  - **3746 MAE was included as based on Router technology**
    - Available for sales for up to 1 year after US Government approval (Dec 14, 1999)
    - Supported for maintenance (hardware/microcode) as long as the 3746 will be supported
- **APPN components were NOT included:**

  HPR, ANR, Branch Extender, Enterprise Extender, Extended Border Node
- **IBM will continue to Enhance, Sell and Support SNA/APPN Solutions**

3746 Controllers - Growing with the Industry



Every Major component of the 3746 was enhanced in the second half of 1999

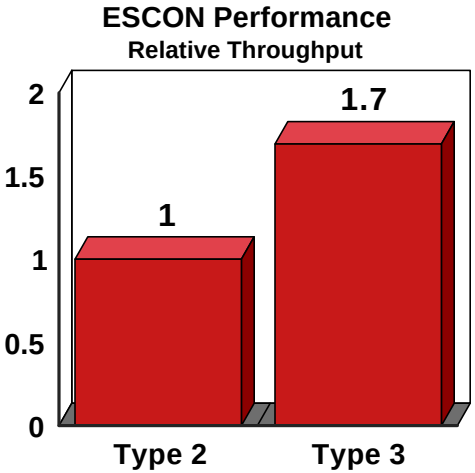
1. **ESCON Processor Type 3**
2. **Communication Line Processor Type 3**
3. **Token Ring Processor Type 3**
4. **Control Bus Service Processor Type 3**
5. **Network Node Processor Type 3**
6. **Service Processor Type 3**
7. **New NCP Release**

- **Protects user investment**
- **Scaleable and Secure**
- **Accommodates Increased Capacity demands**

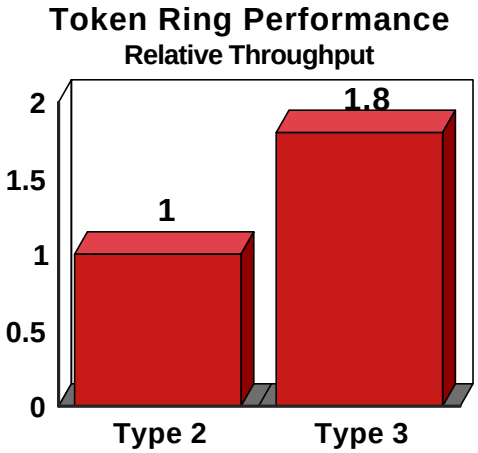
*** The enhancements listed for the 3746-900 also apply to the 3746-950**

3746 Function, Performance and Capacity Enhancements (7/99)

- **ESCON Processor Type 3**
  - OSPF V2 support
  - 100% increase in connectivity (16 to 32 LPARS)
  - Delivers up to 1.7 times throughput of ESCON Type 2

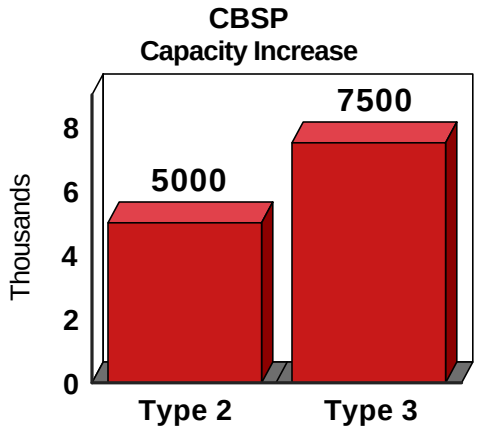


- **Token-Ring Processor Type 3**
  - Connection balancing between multiple TRP3's now provides improved traffic performance
  - 50% increase in connectivity (2,000 to 3,000 PUs)
  - Delivers up to 1.8 times throughput of TRP2

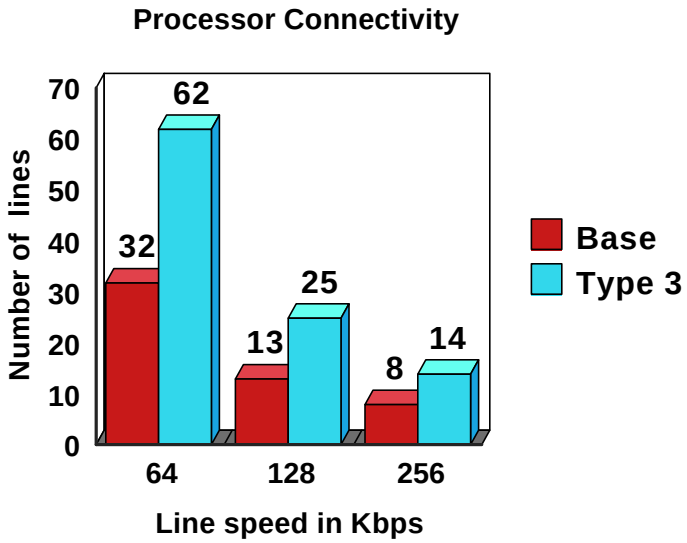


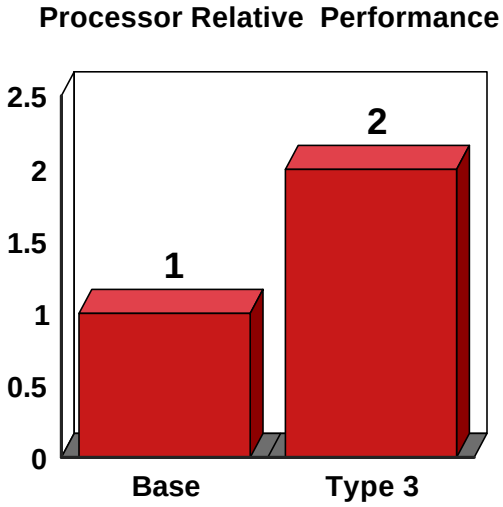
3746 Function, Performance and Capacity Enhancements (7/99)

- **Control Bus Service Processor Type 3**
  - 50% increase in IP routes (5,000 to 7,500)
  - 50% increase in OSPF external routes (5,000 to 7,500)



- **Communication Line Processor Type 3 (FR, SDLC, X.25, PPP)**
  - Frame Relay BAN Connection balancing between multiple CLP3s
  - Up to 100% increase in performance vs. base CLP
  - Near 100% increase in connectivity vs. base CLP





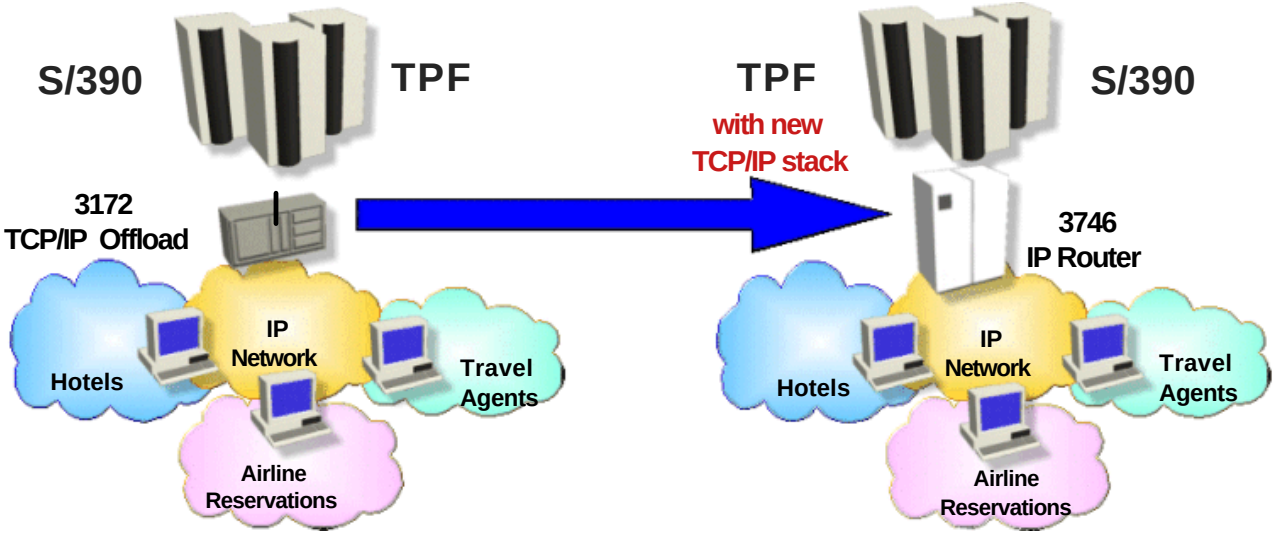
3746 Function, Performance and Capacity Enhancements (7/99)

- **APPN/HPR Network Management Enhancements**
  - Topology Garbage Collection
  - Session Services Extensions
  - RUNCMD from Netview screens (Act/inact/display ports, stations, sessions)
  - NNP Memory / CPU utilization reported to Service Processor
  - PUs and session counters reporting to Service Processor (via CCM)
  - TIC3 station count reported to NPM (for NCP and NNP controlled-stations))

- **3746 Multi-access Enclosure (MAE FC 3001)**
  - 300% increase in TN3270e & APPN/ISR sessions (4,000 to 15,000)
  - Plus TN3270e enhancements (LU pools, IP address mapping,...)
  - TCP/IP pass-through function, to replace your 3172s

3746 Offers Superior Access to TPF Applications (10/99)

TPF Introduces Native IP for 3746 ESCON Channels



- New native TCP/IP stack in TPF(PUT 11)
- Provides solution to replace TCP/IP Offload in data center
  - Previous TPF support for IP networks required TCP/IP Offload (3172 or Cisco 7500)
- TPF Native TCP/IP stack ONLY supports IP over CDLC
  - 3745 and 3746 is the ONLY controller that supports CDLC protocol over Channel
  - 3746 is now the Premier provider of IP Access to TPF host
    - Replaces 3172 and Cisco TCP/IP Offload function
  - Increased performance (up to 16x the performance vs TCP/IP offload)
  - CPU Utilization savings (up to 17x times less than TCP/IP offload)

NCP V7R8 Supports New 3745 and 3746 Functions (3Q99)

- **Support 32 ESCON stations for 3746 Model 900**
  - Increase Channel Connectivity by 100%
  - Available via PTF for NCP V7R6 & V7R7
- **Token Ring Connection balancing for 3746 Model 900**
  - Results in a more equitable distribution of peripheral connections across 3746 Model 900 TIC3s.
  - Available via PTF for NCP V7R6 &V7R7
- **Dynamic Windowing over 3745 Token-Ring ports**
  - Quicker recovery from network problems (after detection of frame loss)
  - More effective network utilization (after detection of network congestion)
- **Frame Relay Boundary Access Node (BAN) connection balancing for 3746 Model 900**
  - Allows balancing of peripheral BAN connections across DLCIs with the same MAC address
  - Available via PTF for NCP V7R7

NCP V7R8 Supports New 3745 and 3746 Functions (3Q99)

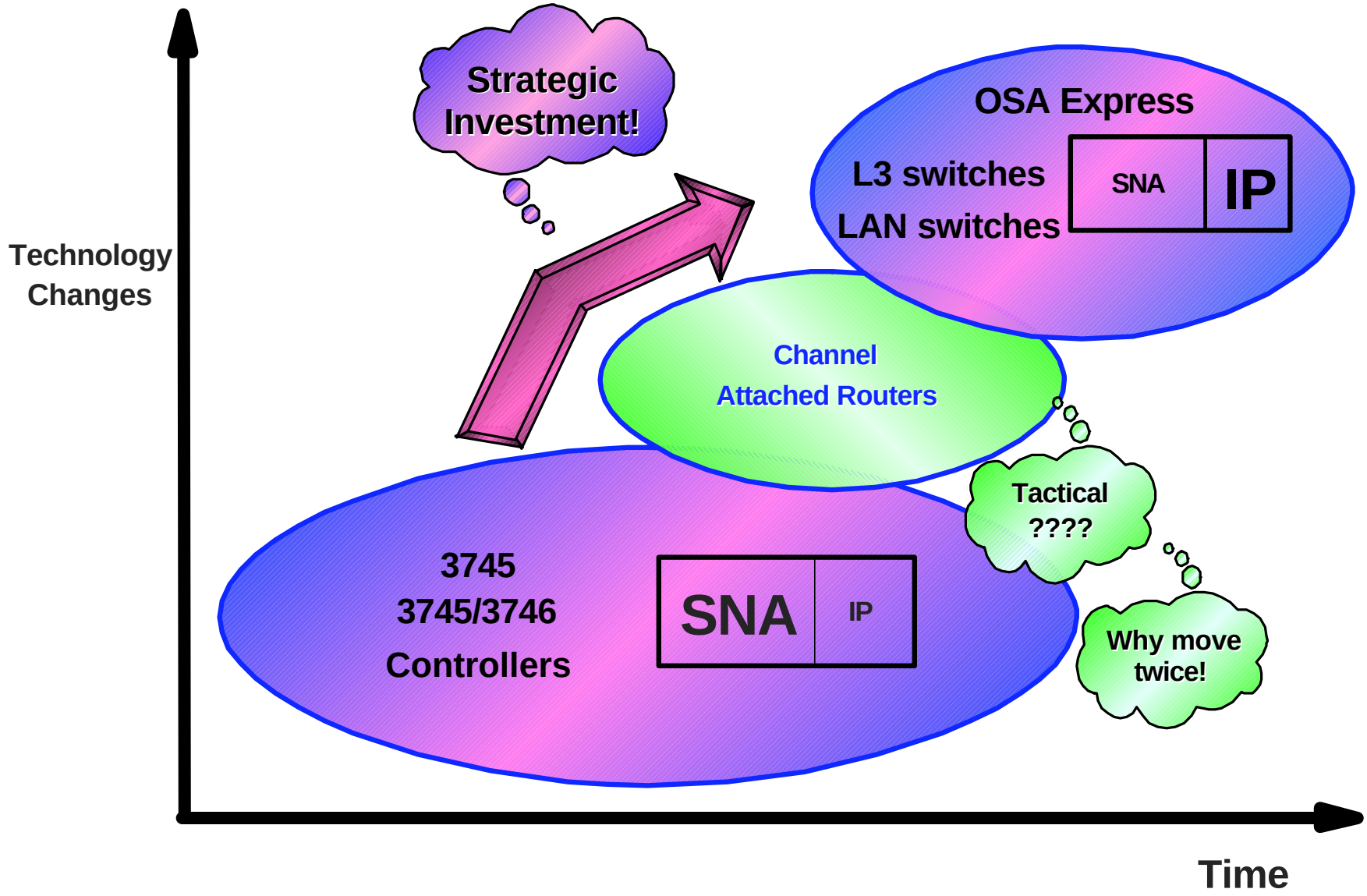
- **APPN Flow Control Enhancements**
  - Provides the ability to define a global limit to the maximum window size allowing NCP to maximize bandwidth management between inbound and outbound traffic.
  - Provides link metered pacing over 3745 peripheral channels, allowing session level pacing and virtual route pacing to regulate the data flow
- **Non-Disruptive Route Switch-Back via a new VTAM command**
  - Introduced in SNA Services feature of SecureWay Communications Server for OS/390 V2R8, allows non-disruptive switch back of 3745 subarea connections
- **New capability to reduce the "remote mini-load module size" used for a Remote Load Activate (RLA)**
  - Can reduce the mini-load module size by 10% to 12% preventing the load module from exceeding the 1.2 MB capacity of the diskette.
- **Other Enhancements**
  - Refer to NCP V7R8 Announcement at: http://www.networking.ibm.com/NCP

Some Facts about SNA

- **Will IP Replace SNA for Mission-Critical Applications?**
  - **Business Communications Review 10/99 by Tom Nolle**

- **Some key observations**
  - **Virtually no progress has been made in rewriting SNA applications since 1994**
    - **1994 user said would start rewriting SNA apps within 60 months . . . in 1999 they still say they'll start in 60 months!**
  - **"There are limits to the distributed computing model, and when you talk about applying it to mission-critical applications, you are flirting with major risks. That's not something most IT managers - or their bosses - have chosen to do."**
  - **Most of IP traffic growth has been in non mission-critical areas**
    - **SNA still growing with industry business growth**
  - **We estimate that there are nearly 10 million SNA specialized terminal devices being used in mission-critical applications**
  - **Still serious concerns over Quality & Security**
    - **'Suitability for mission' - SNA 94%, TCP/IP Private Nets 88%, Internet 58%**
    - **Adequate Security - SNA 90%, TCP/IP 69%**

S/390 Server Gateway Market Evolution



Available since February 8, 2000



- **Network Node Processor 4 (#5424, #5448)**
  - **Faster processor - 533 Mhz & 128 MB base memory (133 Mhz bus)**
    - ✓ **versus:**
      - **90 Mhz and 64 MB base memory (max 128 MB) for NNP Type 1**
      - **200 Mhz and 64 MB base memory (max 128 MB) for NNP Type 2**
      - **350/450 Mhz and 128 MB base memory (max 160 MB) for NNP Type 3**
    - ✓ ***Faster Network Restart***
      - **NNP4 benchmark versus NNP1: ratio 1.75**
      - **NNP4 benchmark versus NNP2: ratio 1.5**
  - **13.5 GB hard disk drive**
  - **Optional memory expansion to 256 MB providing increased connectivity**
    - ✓ **40,000 (SSCP- LU) control sessions (versus 15,000/30,000 for NNP Types 1/2) with 256 MB memory**
    - ✓ **30,000 LU-LU Sessions**
      - **up to 15,000 sessions controlled by NNP**
      - **rest of the 30,000 sessions controlled by other NNs**
    - ✓ **5,000 PUs of any type**

Available since February 8, 2000



Service Processor Type 4

- Faster Processor 533 Mhz & 128 MB memory (133 Mhz bus)
  - ✓ versus:
    - 33/66/90 Mhz and 64 MB base memory (max 96 MB) for SP Type 1
    - 200 Mhz and 96 MB memory for SP Type 2
    - 350/450 MHz and 96 MB memory for SP Types 3
  - ✓ ***Much faster operator interventions***
    - response time reduced by a factor of up to 5
- 13.5 GB hard disk capacity
- 15 inch monitor
- IBM 7858 modem for remote operator access to the 3745/3746
- CDROM allows Dual level of code support
  - ✓ Reduced installation time / reduced Down time

SNA provides a seamless evolution

What's on the horizon for the 3746 - 9/2000

Announced June 13, 2000... Available September 15, 2000

"3746 Extended Functions 5" (#5812)

- **Network Node Processor Updates (NNP3 & NNP4)**
  - ✓ **Increase SSCP-LU Control Sessions from 40,000 to 60,000**
    - **50% Increase in capacity**
    - **Allows migration of NCPs with large number of defined LUs**
  - ✓ **Increase LU-LU data sessions from 30,000 to 35,000**
    - **Sessions controlled by the NNP: 20,000**
      33% Increase in NNP capacity (from 15,000)
    - **Rest of 35,000 sessions established by other NNs**

What's on the horizon for the 3746 (cont) - 9/2000

- **Control Bus Service Processor Updates (CBSP3)**
  - ✓ Increase maximum number of IP routes from 7,500 up to 10,000
  - ✓ Increase maximum number of OSPF external routes from 7,500 up to 10,000
- **ESCON Processor Updates (ESCP3)**
  - ✓ Increase IP throughput (8000 vs. 4000 byte MTU)
    - Allows faster file transfers (ESCON-ESCON, TR LAN to ESCON)
- **Token Ring Processor Updates (TRP3)**
  - ✓ Implement new Dynamic Windowing Algorithm to regulate LAN-WAN traffic
    - More effective utilization of WAN bandwidth (after detection of network congestion)
    - Faster recovery of network problems (after detection of frame loss)
  - ✓ PU support increase from 3,000 up to 4,000
    - 33% increase in capacity

What's on the horizon for the 3746 (cont) - 9/2000

- **Communication Line Processor Updates (CLP3)**
  - ✓ **Support of Frame Relay lines carrying Voice traffic (under study)**
    - Voice and data consolidation over data network infrastructure
    - Cost savings (no separate leased lines for voice traffic)
    - Easy re-use of existing SDLC lines (redefined as Frame Relay lines)
  - ✓ **X.25 QLLC support for DDX-P lines controlled by NCP (Japan)**
    - Very significant reduction in 3745 CCU load (versus NPSI)
    - Very significant throughput increase (versus NPSI)
    - New options: NetType3 = Yes, Packet Level Piggybacking = No

What's on the horizon for the 3746 (cont) - 9/2000

- **Controller Configuration and Management (CCM)**
  - **Dynamic Discovery of LENs (& NNs without control sessions)**
    - LEN node: no PU definition in CCM
    - LEN-initiated sessions: no LU definition in CCM
    - VTAM-initiated sessions: LEN LUs defined in CCM
  - **Dynamic change of maximum number of PUs per TIC3 port**
    - Non-disruptive adjustment of max number of PUs per 3746/NNP
    - Users already connected not affected
  - **More dynamic capabilities for MAE users**
    - MAE no longer restarted when not affected by IP configuration changes
    - Users connected to the MAE not affected
  - **CCM "Batch" : Version allowing use of Windows, OS/2...**
    - Faster than using the standard graphical CCM interface
    - FTP used to download CCM config files to an OS/2 station
    - Text editor used to complete/update CCM configs (ASCII files)
      - Either on OS/2 station or another station (Windows...)

What's on the horizon for the 3746 (cont) - 9/2000

NetView for OS/390

- Enhanced 3746 management via NetView (new RUNCMDs)
  - Support IP resources (act/inact ports...)
  - Display 3746 NN counters of active PUs and sessions (LU-LU, SSCP-LU)
  - Enhance current display/activation/inactivation (APPN/HPR)
  - Initiate NNP dump

Operations

- Java Console : concurrent operator access to 3745 & 3746
  - Up to 4 operators for faster response to end users (helpdesk...)
- Java Console over switched network: customizable login
  - Allows operators to use a single login for all the 3745 & 3746s
- Telnet: flexibility in password definition for Telnet/CCM
  - Allows 3746 users to extend existing Telnet password to 3746 Telnet/CCM
  - Single password for all routers in the network

More in "3746 - Extended Functions 5" announcement

- http://www.networking.ibm.com/3746 (click on "Announce")

What's on the horizon for the NCP - 7/2000

Announced June 13, 2000... Available July 28, 2000

NCP Performance and Network Management Enhancements

- **New Dynamic Windowing Algorithm for 3746-900 Token-Ring**
  - Available for 3745 ports (TIC1/TIC2), now extended to 3746 ports (TIC3)
  - Detection of Frame loss
    - Prior to NCP V7R8, when NCP detected frame loss, the working window was reduced to 1
    - NCP V7R8 is enhanced to react less severely when frame loss is detected
    - Now, 3746 users can specify how much to reduce the working window when frame loss occurs
    - Reduction of the working window provides more effective network utilization in case of network problem
    - Implemented on the **dw** suboperand of DYNWIND keyword
  - Detection of Congestion
    - Prior to NCP V7R8, when NCP received RNR (Receive Not Ready) from a station, it stopped sending frames until RR (Receive Ready) was received, but the working window was not reduced
    - NCP V7R8 is enhanced not to resume transmission at the same pace as before station congestion
    - Now, 3746 users can specify how much to reduce the working window after congestion (RNR/RR)
    - Reduction of the working window provides improved flow control capability for Token-Ring stations
    - Implemented on the **dwc** suboperand of DYNWIND keyword
  - Requires 3746 Microcode feature 5812 with appropriate NCP/SSP APARs

What's on the horizon for the NCP (Cont) - 7/2000

- **Expanded X.25 QLLC Support for 3746 lines**
  - NCP X.25 QLLC support now extended to DDX-P networks (Japan)
    - Benefits versus NPSI QLLC support: reduced 3745 CCU load, throughput increase
  - Support of networks that do not allow delayed packet acknowledgments
    - New definition option: Packet Level Piggy Backing = No (immediate acknowledgment)
  - Support of networks with NetType3 behaviour
    - On congestion notification ('07'), retry transmission (instead of disconnecting VC)
  - Requires 3746 Microcode feature 5812 with appropriate NCP/SSP APARs
- **LU Alert Threshold Enhancement**
  - Greater visibility of actual LU Pool Usage
- **Extended Scanner Trace for 3746 Frame Relay BAN links**
  - More data available for frame relay frame contents analysis
- **Additional Diagnostic Codes added for 3746 ports**
  - Faster protocol error discovery
- **Other NCP V7R8 enhancements**
  - Refer to NCP V7R8 announcement letter at http://www.networking.ibm.com/NCP

What's on the horizon for the NTuneMON - 7/2000

Announced June 13, 2000... Available July 28, 2000

NTuneMON Updates - Extend 3746 Management Capabilities

- **Dynamic Tuning of the Dynamic Windowing parameters (Token-Ring)**
  - **Available for 3745 ports (TIC1/TIC2), now extended to 3746 ports (TIC3)**
- **Dynamic tuning capabilities for Token-Ring**
  - **Fine tuning of performance (MAXOUT and N3GEN keywords) without NCP regen**
  - **Available for 3745 ports (TIC1/TIC2), now extended to 3746 ports (TIC3)**
- **Performance Monitoring for Token-Ring**
  - **Data queue length for subarea stations, to help in performance tuning**
  - **Available for 3745 ports (TIC1/TIC2), now extended to 3746 ports (TIC3)**
- **New Version 3 includes the NCP tuning feature at no additional charge**
  - **Allows tuning of NCP's in any quantity**
- **Other NTuneMON Enhancements**
  - Refer to NTuneMON V3 announcement letter at http://www.networking.ibm.com/NCP

Data Centre - Business Trends

Retain 3746 for Stability and Growth

- **APPN/HPR Sysplex Solutions**
  - Requirement for High Availability systems
  - NNP Type 4 for improved performance
  - Remote 3746-950's for HPR functions
- **IP Routing Solutions**
  - 3746s can be upgraded to implement IP routing
    - SNA and IP convergence or coexistence
  - SNA transport over IP up to S/390s running
    - TN3270 Server
    - Enterprise Extender (HPR over IP)
  - Access to new e-business applications
- **Increase Capacity via 3745/3746 Upgrades**
  - Company Mergers & Acquisitions
  - Convert existing 3745's to 'A' models and attach 3746-900
  - ESCP3, TRP3, CLP3, NNP4 & SP4 processors accomodate need for capacity and performance enhancements

Data Centre - Business Trends

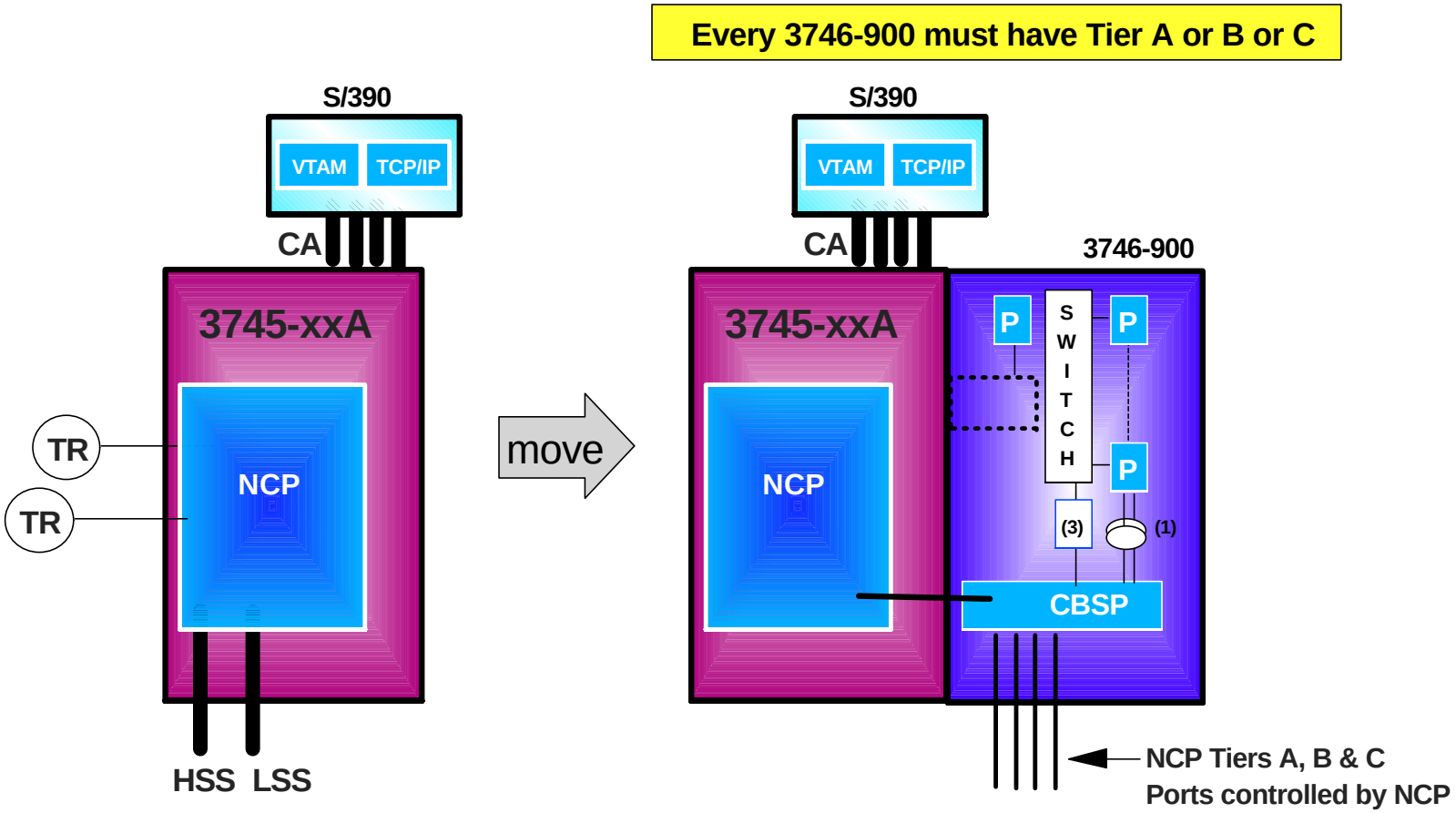
New IP Solution for TPF Host Access

- 3746 offers superior Performance and CCU Utilization savings
- Carry IP via WAN links, Token-Ring LANs and ESCON channels
- "TPF & 3746 Prerequisites & Presentation" presentation at:
  http://www.networking.ibm.com/3746

3725/3720 Replacements

- 372x being withdrawn from Service
  (January 31, 2001 in Europe, Midle East and Africa countries)
- Many functions of the 372x can not be replaced
  - Subarea type functions (SNI, MLTG)
  - NCP Extended Options (NEO): X.25 NPSI, EP, ALCI, NRF, NTO, XI
- Replace with small 3745-170s or 3745-17A's

Consolidate on 3746 and Reduce NCP Charges



- ✓NCP Tiers 1 - 5 are based on number of adapters on 3745
- ✓NCP Tiers A, B & C are based on number of adapter-processors on 3746
  - ➡ Tier A allows up to five 3746 adapters ($450 U.S. per Month)
  - ➡ Tier B allows maximum number of 3746 adapters ($450 U.S. per Month)
  - ➡ Tier B users must also have Tier A = Total $900 U.S. per month
  - ➡ Tier C allows maximum number of 3746 adapters = waives price of Tier A&B (requires new NNP4)

Consolidate on 3746 and Reduce NCP Charges

- 3746 Model 900 attachment to 3745 Communication Controller
  - ★ **Moving all lines to the 3746-900 could lower NCP Licensing charges**

3745 user moves all lines to the 3746-900 and keeps Parallel Channels!

Usage Tier	Usage Limits	Monthly License Fee	New Savings
1	1 LSS/HSS + 1 TRA/EA + 2 CA	$415	57%
New	0 LSS/HSS + 0 TRA/EA + 4 CA		
2	2 LSS/HSS + 1 TRA/EA + 2 CA	$ 620	47%
New	0 LSS/HSS + 0 TRA/EA + 6 CA		
2.5	6 LSS/HSS + 0 TRA/EA + 4 CA	$ 961	18%
	2 LSS/HSS + 2 TRA/EA + 4 CA		
New	0 LSS/HSS + 0 TRA/EA + 8 CA		
3	8 LSS/HSS + 0 TRA/EA + 8 CA	$1173	43%
	4 LSS/HSS + 4 TRA/EA + 8 CA		
New	0 LSS/HSS + 0 TRA/EA + 16 CA		
4	24 LSS/HSS + 0 TRA/EA + 16 CA	$1796	
	20 LSS/HSS + 4 TRA/EA + 16 CA		
	16 LSS/HSS + 8 TRA/EA + 16 CA		
5	32 LSS/HSS + 0 TRA/EA + 16 CA	$2072	
	28 LSS/HSS + 4 TRA/EA + 16 CA		
	24 LSS/HSS + 8 TRA/EA + 16 CA		

Buy NNP4 and Reduce NCP Charges

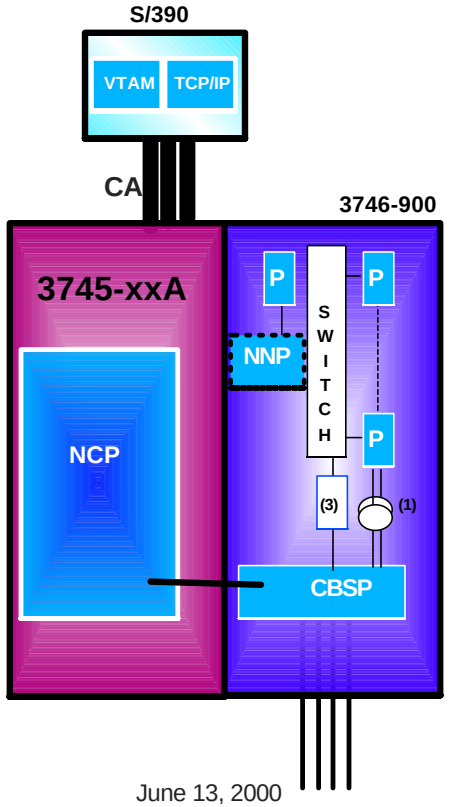
NCP Tier "C" Option for NCP Controlled 3746-900 lines

'No charge' NCP Tier C

- 3746-900 Owners who purchase a new NNP4 are authorized to order NCPTier C.
- Tier C waives the price of Tier A & Tier B
- ~~Tier A~~, ~~Tier B~~ → Tier C

$450 + $450 = **SAVINGS = $900 per month**

- Tier C provides the same connectivity authorization as Tier B
- Network Node Processor (NNP4) required ($15K U.S.)
- NNP provides the 3746 with support for :
  - APPN/HPR, SNA/DLUR and IP
- Tier C applicable to ALL 3746-900 adapters
- Tier C is also applicable to all NCP Version 7 users



NCP Licensing charges..... Configuration examples

- User "A" has the following configuration:

OLD

3745 Model 21A with a 3746 Model 900 attached (No NNP)

Tier 2.5	2 LSS + 2 TRA + 4 CA	=	$961/month
Tier A & B	6 adapters	=	$900/month
Total.....			$1861/month

- User "A" buys a new Network Node Processor, moves his NCP lines to the 3746 Model 900 and uses the NEW NCP Tier options

Tier 1	0 LSS + 0 TRA + 4 CA	=	$415/month
Tier C	6 adapters	=	Free
Total.....			$415/month

New
78% SAVINGS

Summary & Key Messages

- **Industry Facts pertaining to 37xx Investment**
  - ✓ SNA Applications will remain for many years
  - ✓ Migration to "all IP" (desktop to Host Application) will take time
  - ✓ No easy alternative for SNI, EP, BiSynch, NPSI.....
- **3745 & 3746 with NCP continue to add Value to your Network**
- **3745/6 provide smooth evolution strategy to emerging technologies**
  - ✓ Capacity improvements
  - ✓ Performance improvements
  - ✓ Ease of Use enhancements
  - ✓ Growth enablement
  - ✓ Investment Protection
  - ✓ DataCenter Availability & QOS
  - ✓ Security

Web Sites of Interest

IBM Networking Hardware Home Page

- http://www.networking.ibm.com

S/390 Server Access Solutions - 3745/3746

- http://www.networking.ibm.com/nethard.html

IBM 3745

- http://www.networking.ibm.com/3745

IBM 3746

- http://www.networking.ibm.com/3746

NCP

- http://www.networking.ibm.com/NCP

S/390 OSA Information

- http://www.ibm.com/s390/networking