What's New with OS/390 SNA ?

Nancy W. Gates
Advanced Technical Support
Networking Systems Center
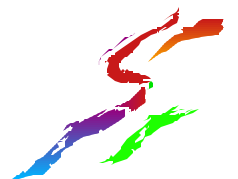Gaithersburg, MD

Abstract

In the last year or so, SNA Services in OS/390 (aka VTAM) has made available a lot of new features and functions. "What's New With OS/390 SNA" describes new functions, changes, recent performance information, and any other new VTAM items that have occurred recently.

VTAM, now part of OS/390, continues to enhance its functions, especially in the APPN/HPR area. This presentation describes SNA functions available since VTAM V4R4 (OS/390 V2R4, V2R5, V2R6, and V2R7). In addition to major new enhancements such as Enterprise Extender, many new enhancements have become available via maintenance, without formal announcement, which users may be unaware of. This presentation covers the new enhancements including information on which level of VTAM (and/or OS/390) they are available with.
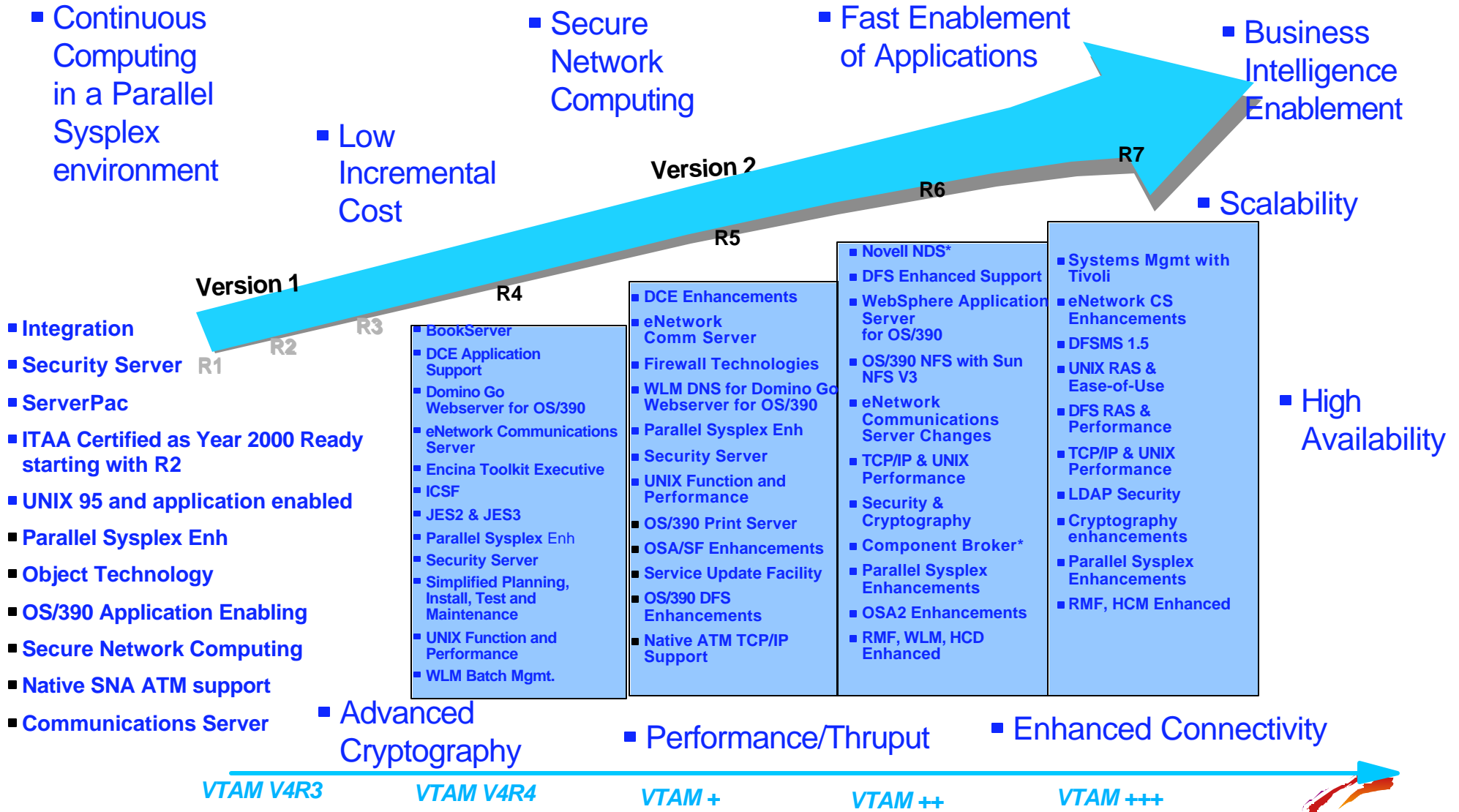
Agenda

- **OS/390 and VTAM V4R4**

- **VTAM with OS/390 V2R4**

- **VTAM with OS/390 V2R5**

- **VTAM with OS/390 V2R6**

- **VTAM with OS/390 V2R7**

- **VTAM with OS/390 V2R8**

- **Currency, compatibility, Y2K**

What is OS/390?

Software Technology Leadership

- Continuous Computing in a Parallel Sysplex environment
- Secure Network Computing
- Fast Enablement of Applications
- Business Intelligence Enablement
- Low Incremental Cost
- Scalability

Version 2

Version 1

R7

R6

R5

R4

R3

R2

R1

- **Integration**
- **Security Server**
- **ServerPac**
- **ITAA Certified as Year 2000 Ready starting with R2**
- **UNIX 95 and application enabled**
- **Parallel Sysplex Enh**
- **Object Technology**
- **OS/390 Application Enabling**
- **Secure Network Computing**
- **Native SNA ATM support**
- **Communications Server**

BookServer	**DCE Enhancements**	**Novell NDS***	**Systems Mgmt with Tivoli**
DCE Application Support	**eNetwork Comm Server**	**DFS Enhanced Support**	**eNetwork CS Enhancements**
Domino Go Webserver for OS/390	**Firewall Technologies**	**WebSphere Application Server for OS/390**	**DFSMS 1.5**
eNetwork Communications Server	**WLM DNS for Domino Go Webserver for OS/390**	**OS/390 NFS with Sun NFS V3**	**UNIX RAS & Ease-of-Use**
Encina Toolkit Executive	**Parallel Sysplex Enh**	**eNetwork Communications Server Changes**	**DFS RAS & Performance**
ICSF	**Security Server**	**TCP/IP & UNIX Performance**	**TCP/IP & UNIX Performance**
JES2 & JES3	**UNIX Function and Performance**	**Security & Cryptography**	**LDAP Security**
Parallel Sysplex Enh	**OS/390 Print Server**	**Component Broker***	**Cryptography enhancements**
Security Server	**OSA/SF Enhancements**	**Parallel Sysplex Enhancements**	**Parallel Sysplex Enhancements**
Simplified Planning, Install, Test and Maintenance	**Service Update Facility**	**OSA2 Enhancements**	**RMF, HCM Enhanced**
UNIX Function and Performance	**OS/390 DFS Enhancements**	**RMF, WLM, HCD Enhanced**	
WLM Batch Mgmt.	**Native ATM TCP/IP Support**		

- High Availability

- Advanced Cryptography
- Performance/Thruput
- Enhanced Connectivity

VTAM V4R3   *VTAM V4R4*   *VTAM +*   *VTAM ++*   *VTAM +++*

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OS/390 Planning

- Predictable planning cycle

- Planned 6 month release cycle

9/99 **OS/390 R8**

3/99 **OS/390 R7**

9/98 **OS/390 R6**

3/98 **OS/390 R5**
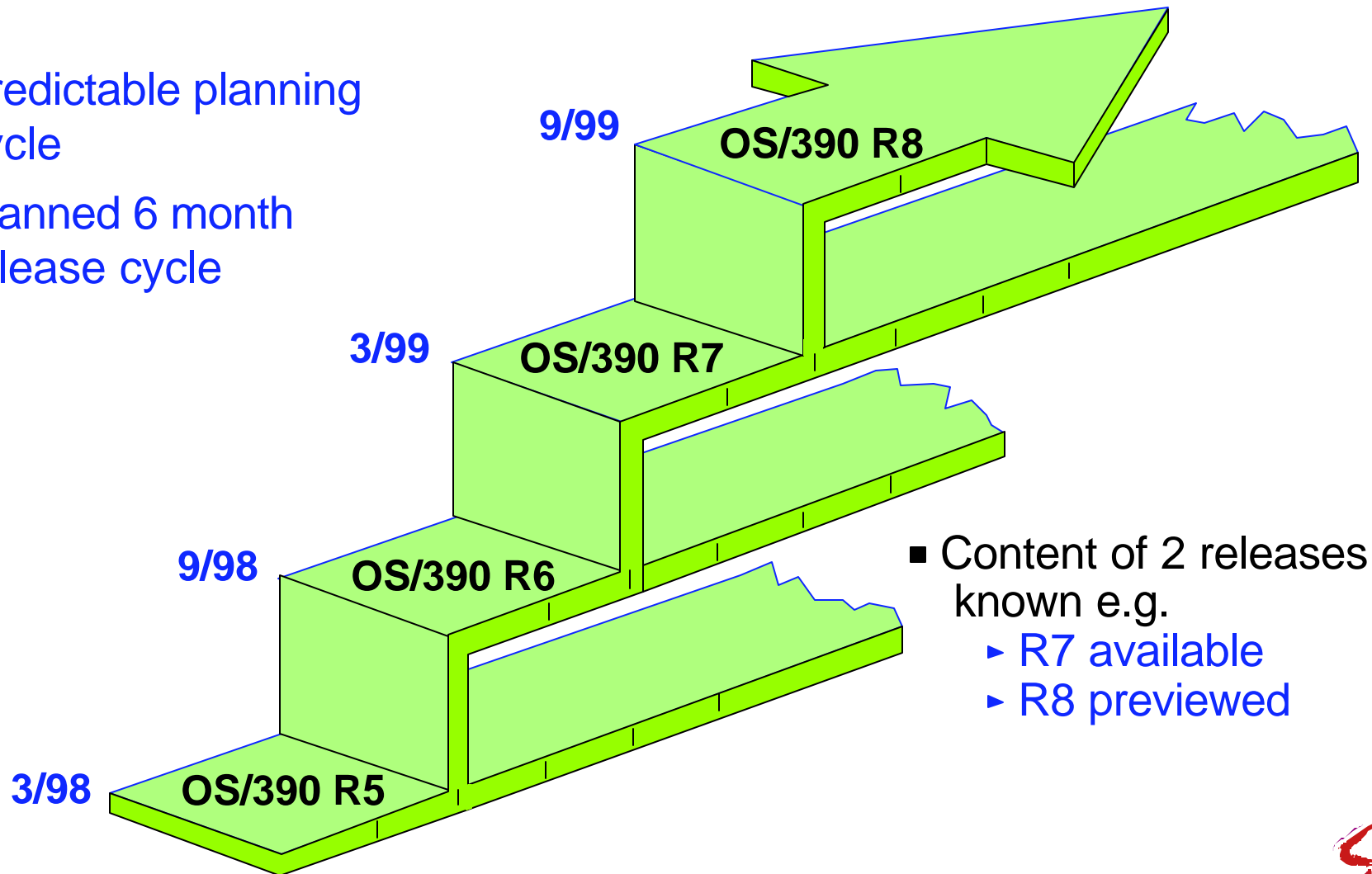
- Content of 2 releases known e.g.
  - ▶ R7 available
  - ▶ R8 previewed

OS/390 R6 Base Elements

System Services
- MVS/ESA BCP *
- JES2 *
- Base OS/390 UNIX System Services *
- MVS/BDT Base *
- DFSMSdfp 1.4.0
- ESCON Director Support *
- TSO/E *
- ISPF *
- HLASM 1.2.0
- MICR/OCR Support *
- EREP/MVS 3.5.0
- ICKDSF R16
- 3270 - PC FTP 1.1.1
- TIOC *
- FFST/MVS 1.2

Application Enablement Services
- C/C++ IBM Open Class Library *
- DCE AS*
- Encina Toolkit Executive *
- VisualLift Run Time *
- SOMobjects Run Time *
- Language Environment *
- OS/390 Application Enabling Technology *

UNIX System Services
- Application Services *
  - Shell & Utilities *
  - Debugger *

Systems Management Services
- HCD *
- ICSF *
- SMP/E *
- SystemView for MVS Base 1.1

Communications Services
- eNetwork Communications Server *
  - SNA/APPN Services (Includes VTAM) *
  - Multiprotocol/HPR Services (Includes AnyNet) *
  - TCP/IP Services (includes TCP/IP for MVS, CICS/IMS Sockets) *

LAN Services
- LANRES/MVS *
- LAN Server *
- OSA Support Facility 1.2

Network Computing Services
- WebSphere Application Server
  - HTTP Server
  - Servlet Express
- NetQuestion

Distributed Computing Services
- DCE Base Services (OSF 1.2) *
- DFS (OSF 1.2.2) *
- OS/390 NFS *

Softcopy Services
- BookManager Read R3
- OS/390 Softcopy Print *
- BookManager BookServer V2.1
- GDDM/MVS 3.2 (includes PCLK and OS/2 Link)

* OS/390 Unique Enhancements

6
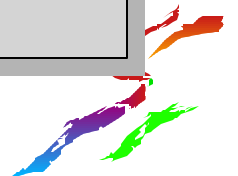
OS/390 R6 Optional Priced Features

System Services
- JES3 *
- BDT File to File *
- BDT JES3 SNA NJE*

Systems Management Services
- DFSMS 1.4 Features
  - dss
  - rmm
  - hsm
- HCM *
- RMF *
- SDSF *

Security Services
- OS/390 Security Server *
  - DCE Security Server at OSF 1.1 level *
  - RACF *
  - Firewall Technologies *
  - LDAP Server RC2/RC4 *

Application Enablement Services
- C/C++ (with & w/o debugger) *
- SOMobjects Application Development Environment (CORBA) *
- GDDM REXX 3.2
- GDDM PGF 2.1.3
- VisualLift Application Development Environment *
- DFSORT R13
- HLASM Toolkit 1.2.0

Distributed Computing Services
- OS/390 Print Server *
  - IP Printway *
  - Netspool *
  - OS/390 Print Interface *

Softcopy Services
- BookManager Build R3

* OS/390 Unique Enhancements
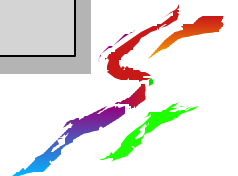
OS/390 R6 Optional No Charge Features

Distributed Computing Services
- DCE User Data Privacy at OSF 1.2 level *
  - DES and CDMF *
  - CDMF *

Application Enablement Services
- Language Environment Data Decryption (DES) *

Network Computing Services
- WebSphere Application Server
  - North American Security (Triple DES)
  - Export Security (DES)
  - France Security (CDMF)

Preconfigured OS/390 Base Image CD (available 11/98)
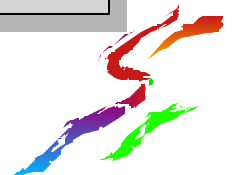- For PC Server System 390
- For RS/6000 S/390 Server-on-Board

Security Services
- Security Server LDAP Server *
  - LDAP Function DES/Triple DES *

Communication Services
- TCP/IP Kerberos DES *
- TCP/IP Kerberos Non-DES *
- TCP/IP Network Print Facility *
- IP Security - CDMF *
- IP Security - DES/CDMF *
- IP Security - TDES *

* OS/390 Unique Enhancements

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Communications Server with OS/390 V2R4

New TCP/IP stack for OS/390 UNIX System Services

- Performance improved
- Web server increased up to 4X connects/second in IBM tests

Network Station Support Integrated

New Domain Names Server (DNS) Kit

- Exploits Parallel Sysplex technology WLM for DNS Connection Balancing
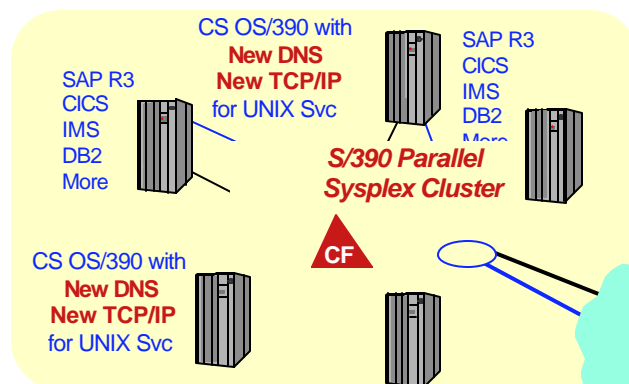- Orderable but not integration tested

High Performance Data Transfer UDP

- Increase performance for SAP R/3 appls accessing DB2 over TCP/IP

CICS Sockets Improved

- Improved performance and usability

IMS Sockets Improved

- OTMA allows IMS applications to be accessed from either TCP/IP, 3270 SNA, or APPC without change to applications

SAP R3
CICS
IMS
DB2
More

CS OS/390 with
New DNS
New TCP/IP
for UNIX Svc

SAP R3
CICS
IMS
DB2
More

S/390 Parallel Sysplex Cluster

CF

CS OS/390 with
New DNS
New TCP/IP
for UNIX Svc

WAN

Enterprise Networks/Intranets

APPN
HPR
TCP/IP
Subarea
SNA

ATM
Frame relay
SDLC
more

WAN

CS OS/390

LAN

LAN

OS/2
Windows
AIX/UNIX
etc...

Internet

SAP
R3
CICS
IMS
DB2
More

Easy access to 3270 applications on S/390 from JAVA enabled Web browsers

- "Host On-Demand" - click on URL
- JAVA based TN3270 solution - same security, multiple concurrent sessions
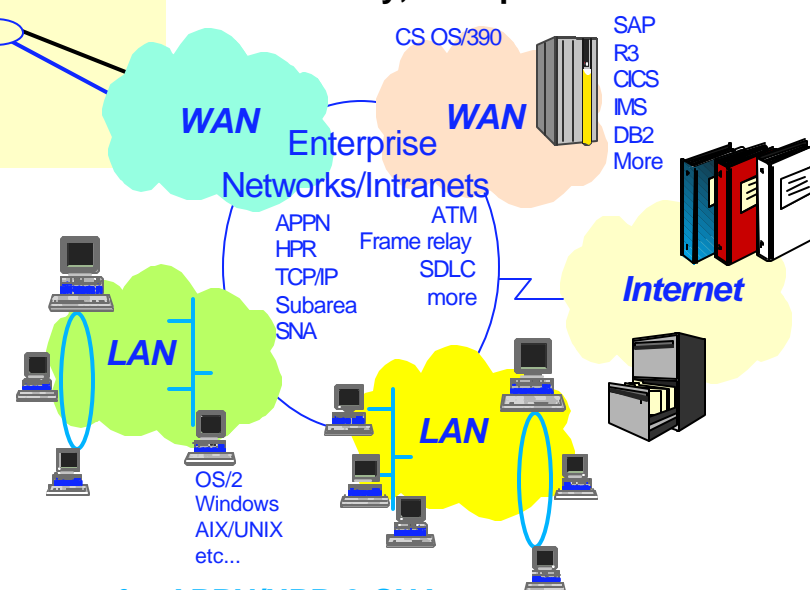
Improvements for APPN/HPR & SNA

- Sysdef reduced for switched resources
- Invigorated error detection for devices and channels
- Session awareness filtering reduces unneeded APPN/HPR NW traffic

RIP V2 for TCP/IP

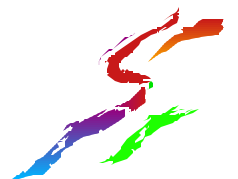- Improved network availability and reduced network maintenance

TLLB4040

VTAM V4R4 Functions

- **Enhanced Topology Database Garbage Collection**
- **Automatic HPR connection switching to optimal routes**
- **Locate Congestion Control**
- **QUIESCE for MODIFY TOPO Command**
- **Search Order Enhancement**
- **Asynchronous Transfer Mode Support**
- **High Performance Data Transfer for APPC**
- **High Performance Data Transfer MPC (MPC+)**
- **HPR Extensions for Border Node and CNN**

VTAM V4R4 Functions

- **APPCCMD Enhancements**
- **APPC Enhancements for the Distributed Computing Environment**
- **Conversations between Programs Located on the Same LU**
- **Deleting Unusable Entries from the LU-Mode Table**
- **Extended Security Sense Codes**
- **Password Substitution**
- **STOKEN for Workload Balancing**

VTAM V4R4 Functions

- **DELAY Operand Default Change**
- **Enhanced Adaptive Pacing Support**
- **New Component Recovery Area (CRA) Buffer Pools**
- **Multiple Statements in Start and Configuration Decks**
- **Verifying Communication and Cluster Controller and External Communication Adapter Connections**

VTAM V4R4 Functions

- **Dynamic LU Alias for CDRSCs**
- **Multiple Dynamic Switched Major Nodes**
- **Displaying Active Resources with Sessions**
- **Limiting Output from the DISPLAY STORUSE Command**
- **MODIFY EXIT Command Enhancement**
- **BUFF Entry for 8K External Buffer**
- **Buffer Tracing Enhancements for LU 6.2 Conversations**
- **Elimination of Duplicate VTAM Dumps**
- **IST605I Message Group Enhancement**
- **Tracing Resource States with Start List**
- **USS Message Text Enhancements**

VTAM V4R4 Functions

- Enhanced Cryptographic Authentication
- Message Authentication Support and Cryptographic Enhancements
- Central Directory Server Enhancement for Generic Resources
- Dynamic Definition of VTAM-to-VTAM Connections
- Enhancements to Dynamic Definition of VTAM Application Programs
- Generic Resource Name for Security Management Profile
- Generic Resources Enhancements
- Multinode Persistent Sessions
- TSO-Generic Resources

VTAM V4R4 Functions

- Applying VTAM Maintenance without Re-IPLing MVS
- Choice of Communication Network Management (CNM) Routing Tables
- Delayed Disconnection When No LU-LU Session Is Established
- Dynamic Reconfiguration of Switched Resources
- Filtering Initiation Failures From SAW Data
- Interpret Table Enhancement
- Reset LU Enhancement
- Search Retry After Dial-Out Failure
- Support for OS/390 Data Set Concatenation
- TCP/IP DLC Provision
- 31-Bit UCB Support

VTAM V4R4 Functions

- DISPLAY SRCHINFO Command

- DISPLAY VTAMSTOR Command

- Prevention of Subtask Detach

- XID Message Group Enhancement

- XNETALS Start Option Enhancements

- LU name "pushing" with SDDLU

- ISTVTCOS for CP-CP Sessions using VRTG

OS/390 V2R4 and VTAM

- **OS/390 V2R4 = VTAM V4R4 plus enhancements**
  - Enhancements are also available as PTFs on VTAM V4R4
- **HPR Enhancements**
  - Communications Adapter (XCA) HPR Connections
    - Works with OSA-2, 2216, 3746 MAE, Network Utility, OEM, and 3172
  - HPRNCPBF Start Option
    - Requires owning VTAM to function as RTP endpoint and for data to traverse NCP twice
  - HPR with VRTG using XCA Subarea Connections
  - MPC+ with VTAM RAPI programs
    - Prior MPC+ only worked with VTAM/APPC

VTAM with OS/390 V2R4

- **Enhancements for SNA, APPN, and HPR**
  - **VTAM allows resources to be defined on multiple hosts**
    - **Reduces definition/procedural complexity**
    - **Locates the active LU after a dial to a connectable LU fails - DIALRTRY Start Option**
    - **Although documented in VTAM V4R4 manuals, not available in base code until OS/390 V2R4**

Ordering VTAM V4R4

- **VTAM V4R4 was made available as one of the following:**
  - VTAM V4R4, product number 5695-117
  - Communications Server for MVS/ESA V1R2, product number 5655-A29
    - **Renamed to eNetwork Communications Server for S/390**
  - OS/390 V1R3, product number 5645-001
  - OS/390 V2R4, product number 5647-A01
- **Any enhancements to VTAM after this level are only available as part of OS/390 (or possibly as PTFs)**

VTAM V4R4 Performance Information

- **Extensive benchmarks performed in Research Triangle Park, NC**
  - **Includes:**
    - MPC+
    - Native ATM with OSA
    - Timings for large networks
  - **URL is:**
    - www.software.ibm.com/network/commserver/library/whitepapers/csos390.html
- **Presentation on HPR performance including above information can be found at:**
  - www.ibm.com/support/techdocs

VTAM Publications with OS/390 R4

- **Use standard VTAM V4R4 manuals - pubs were NOT republished with OS/390 V2R4**

  Softcopy Collection Kit CD-ROM (SK2T-6012)
  Release Guide (GC31-6545)
  Installation and Migration Guide (GC31-8367)
  Network Implementation Guide (SC31-8370)
  Resource Definition Reference (SC31-8377)
  Resource Definition Samples (SC31-8378)
  Operation (SC31-8372)
  Messages (GC31-8368)
  Codes (GC31-8369)
  Customization (LY43-0075)

VTAM Publications with OS/390 R4

- **Use standard VTAM V4R4 Pubs**

  Programming (SC31-8373)

  LU6.2 Programming (SC31-8374)

  LU6.2 Programming Reference (SC31-8375)

  Programming for CSM (SC31-8420)

  CMIP Services & Topology Agent Programming (SC31-8365)

  Diagnosis (LY43-0078)

  Data Areas (LY43-0076, LY40-077)

  AnyNet SNA over TCP/IP (SC31-8376)

  AnyNet Sockets over SNA (SC31-8371)

  APPC Application Suite User's Guide (SC31-6532)

  APPC Application Suite Administration (SC31-6533)

  APPC Application Suite Programming (SC31-6534)

Communications Server for OS/390 V2R5

- **TCP/IP for OS/390 UNIX System Services**
  Extended to full set of applications
  – High performance & RAS
  – Sockets supported:
    ▸ OS/390 UNIX System Services
    ▸ C
    ▸ REXX
    ▸ Macro
    ▸ CALL
    ▸ X/Open Transport
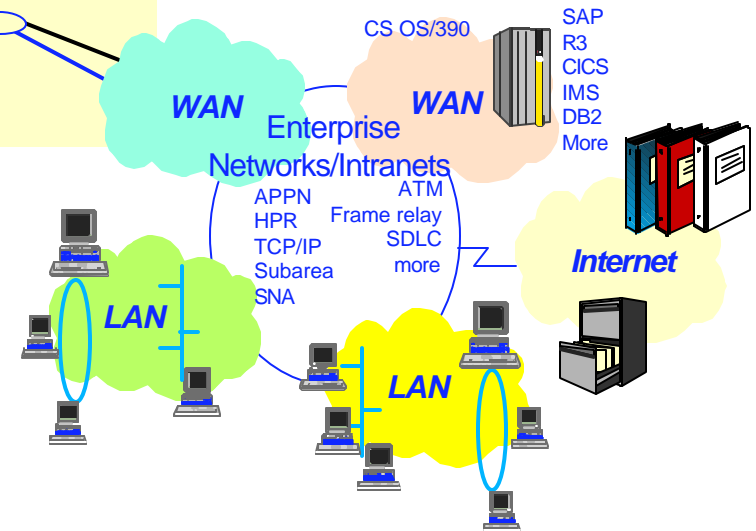   ▸ Pascal

- **High Speed Web Access**
  – 3500 Connects/Sec
  – HPDT, MPC and CSM tightly coupled to OS/390 UNIX System Services

- **New Telnet Server**
  – TN3270E
  – Dynamic configuration update
  – Improved performance
  – Connection load balancing

- **Integrated DNS Additional Parallel Sysplex Technology Workload Balancing**
  – Newly extended TCP/IP stack
  – New TN3270E server
  – FTP server
  – IMS/CICS sockets
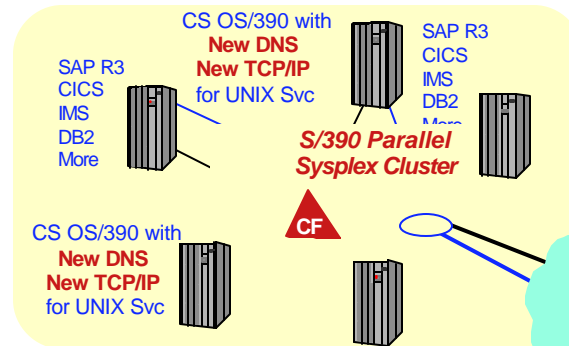
- **Firewall Technologies**
  – IP Packet filtering for controlled access
  – IPSec for secure pathway across the Inter/intranet
  – Network address translation to hide internal IP addr

CS OS/390 with
New DNS
New TCP/IP
for UNIX Svc

SAP R3
CICS
IMS
DB2
More

SAP R3
CICS
IMS
DB2
More

S/390 Parallel Sysplex Cluster

CS OS/390 with
New DNS
New TCP/IP
for UNIX Svc

CF

WAN

Enterprise
Networks/Intranets

WAN

CS OS/390

SAP
R3
CICS
IMS
DB2
More

APPN
HPR
TCP/IP
Subarea
SNA

ATM
Frame relay
SDLC
more

Internet

LAN

LAN

- **Initial Integration of SNA/APPN and TCP/IP Networking Services**
- **TCP/IP OSA-2 Native ATM Support**
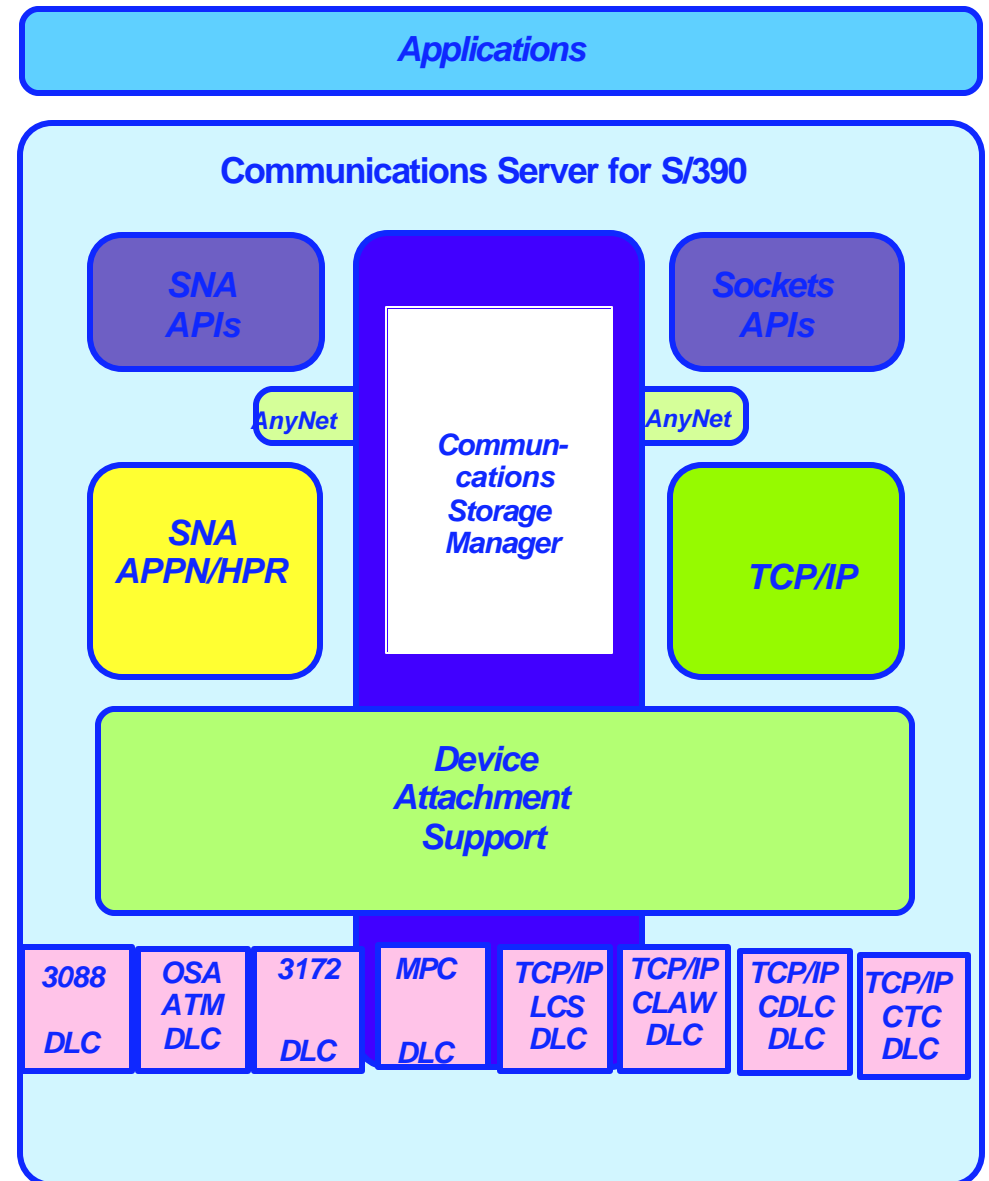- **Improved AnyNet Multiprotocol Performance**
- **Full Dynamic IP for Network Station and Other Clients**
  – Enables DHCP cooperation with DNS
  – Dynamically and directly registers name and address mappings to DNS
 – Can help reduce administrative overhead

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VTAM and TCP/IP Integration

- **Integrated Services**
  - **Provide common services**
    - **Storage Management**
    - **Shared Data Link Controls**
  - **TCP/IP and SNA integration (e.g. TN3270)**
- **Multiprotocol Solutions**
  - **Sockets Applications**
    - **Sockets interfaces offer wide range of applications over a TCP/IP or APPN/HPR network**
  - **SNA Applications**
   - **SNA applications supported over subarea, APPN/HPR and IP network**

Applications

Communications Server for S/390

SNA APIs

Sockets APIs

AnyNet

AnyNet

Commun- cations Storage Manager

SNA APPN/HPR

TCP/IP

Device Attachment Support

| **3088 DLC** | **OSA ATM DLC** | **3172 DLC** | **MPC DLC** | *TCP/IP LCS DLC* | *TCP/IP CLAW DLC* | *TCP/IP CDLC DLC* | *TCP/IP CTC DLC* |

V2R5 Parallel Sysplex Enhancements

- **Planned Takeover for Multinode Persistent Sessions Applications**
- **MPNS capability for VTAM/APPC applications**
- **NNs support MNPS applications**
  - **Requires HPR in network and use of Model APPL statements**
- **VARY CFS Command**
- **Generic Resource Exit Enhancements**
  - **Overcome local bias or deny session**
  - **See APAR OW30001 or test report for documentation**
- **MNPS Selective Data Tracking**
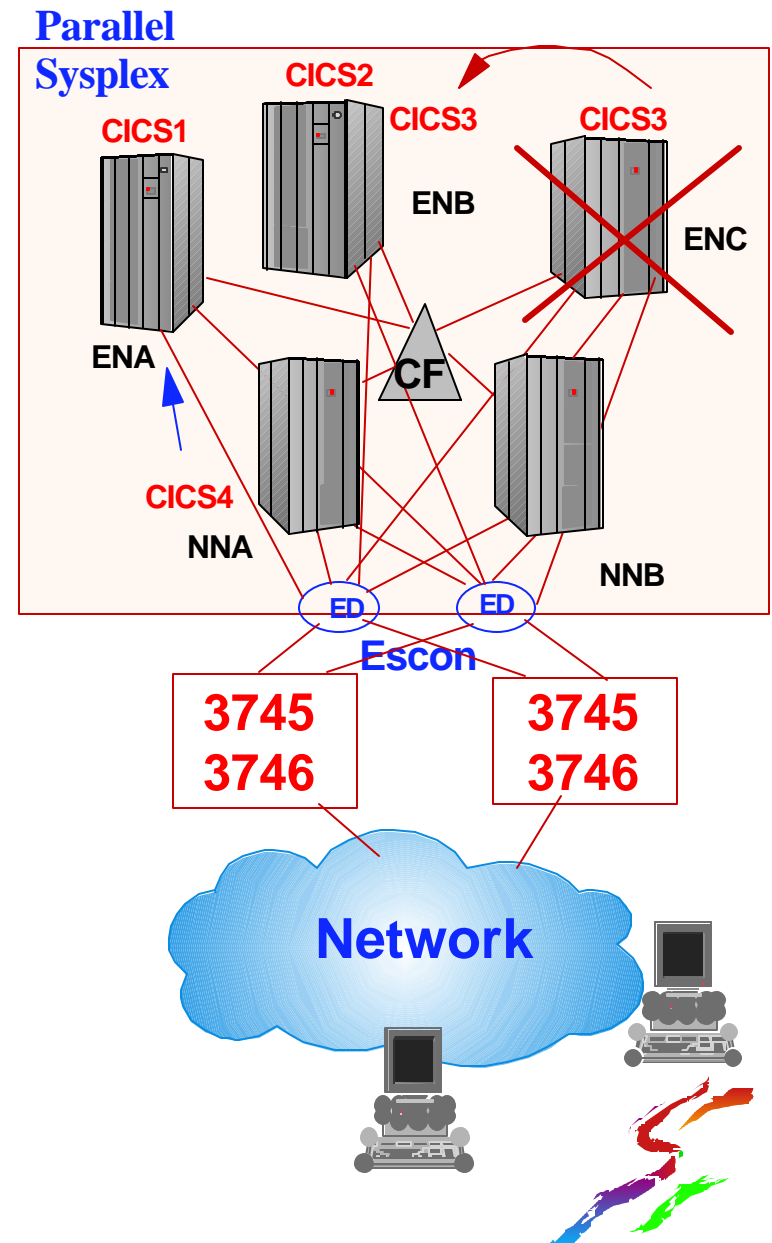
V2R5 New SNA Functions

- **Topology Agent Selective Resource Reporting**
  - VTAMTOPO= REPORT|NOREPORT|NOSWPUS|NOLLINES used to control reporting of selected LOCAL resources
  - Can be used on XCA, MODEL, NCP, SWNET Major nodes
  - OSITOPO=LLINE|NOLLINES Start Option no longer used
  - Benefits:
    - SNATM displays more useful
    - Network traffic and CPU utilization reduced
    - RODM storage on Manager system and peak temporary storage requirements reduced
- **CMIP Pacing**
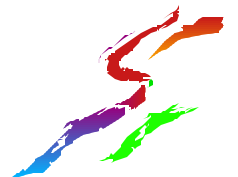
V2R5 CNN Routing Enhancements

- **Original VTAM V4 CNN routing allows End User 1 session to traverse only NCP SA22 to VTAM SA2**

- **VTAM V2R5 function allows subarea mapping table to favor some routes within CNN over others**
  - **For environments like End User 2 sessions with SA2**

- **Need single owning VTAM (single CNN) for effectiveness**

- **SAMAP can be used to specify GWNCP by NETID**
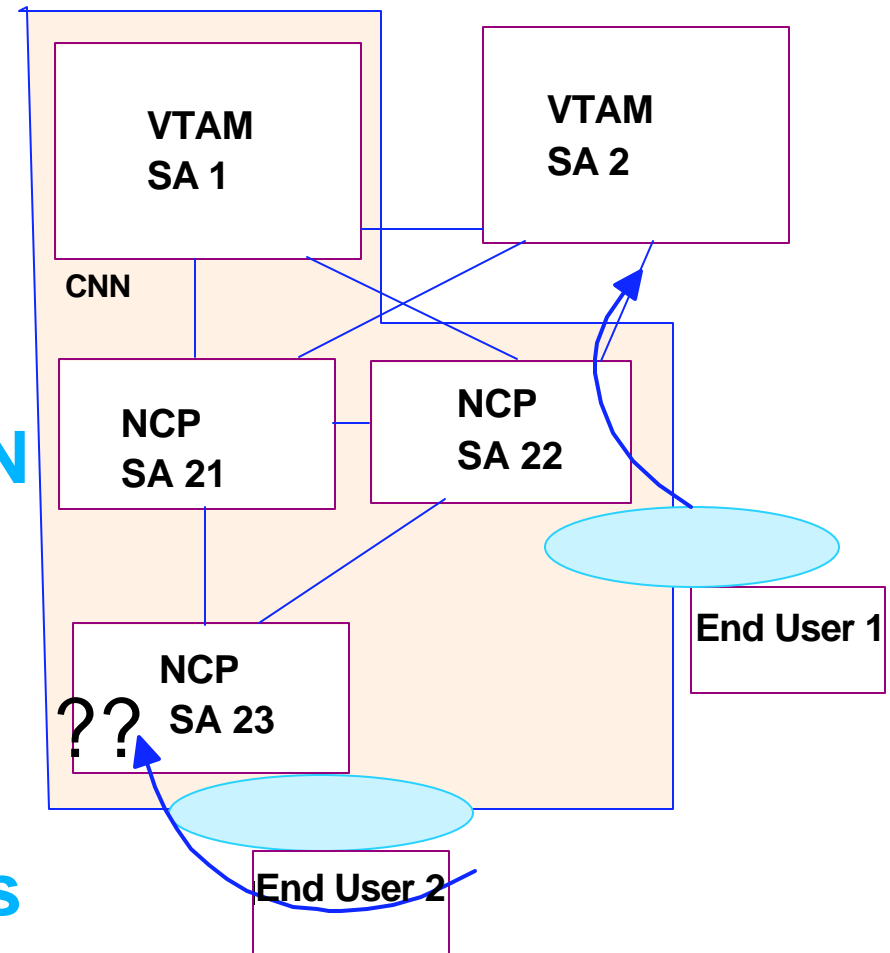
V2R5 New SNA Functions

- **AnyNet Enhancements**
  - **Sockets over SNA programs use OS/390 OpenEdition API**
    - **Performance improvements**
    - **Programs can use SNA transport for some partners, TCP/IP transport for others**
    - **Prior AnyNet C Socket API no longer shipped**
  - **Dynamic Client Mapping for Sockets over SNA**
    - **SNA IP-to-LU mapping table no longer needs to be configured for partners (clients) that initiate communication with mainframe Sockets program**
  - **SNA over TCP/IP Performance Improvements**
    - **V2R5 TCP is rewritten and no longer uses IUCV**
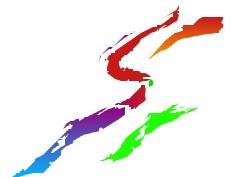   - **SNA over TCP/IP AnyNet uses improved TCP**
    - **Improved messages**

V2R5 New SNA Functions

- **DUPDEFS for duplicate definitions on multiple VTAMs**
- **DLOGMOD values can be dynamically updated for active Switched LUs and other dynamic changes can be made to CONCT resources**
- **VTAM provides I/O support for TCP/IP**
  - **TCP/IP can exploit MPC**
  - **VTAM dynamically creates definitions for other TCP/IP DLCs**

V2R5 New SNA Functions

- **Dataspace can be used for VTAM Internal Trace**
  - Allows tracing up to 50 MB (previous maximum was around 4MB)
  - Also called expanded VIT, controlled through use of MODIFY TRACE or start option
- **VIT PIUs can be traced by resource name**
  - Replaces IO trace function
- **MODIFY TRACE|NOTRACE and DISPLAY enhancements for CSX and DSME Exits**
  - Allows wide variety of exit functions to be traced

Enhanced Addressing for DLUR

- **APAR OW31455**
- **ENHADDR=YES allows DLUR resources to obtain high order (>64K) addresses from DLUS's address space**
- **Important for networks moving from NCPs to DLURs**
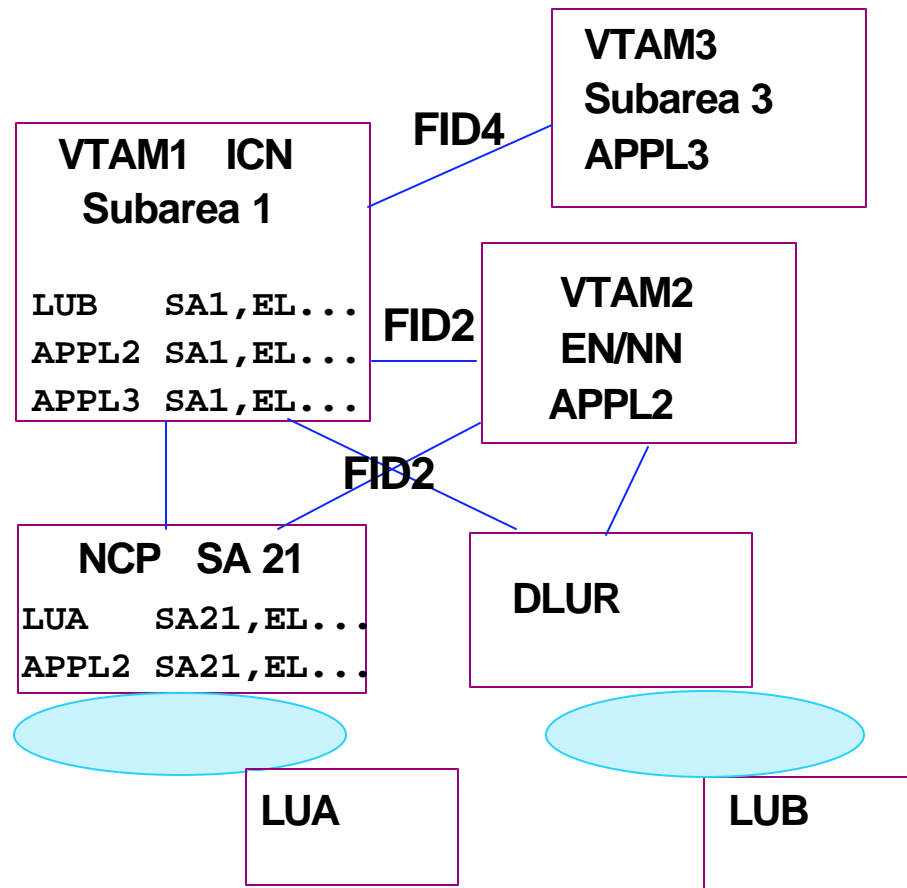
V2R5 New Function PTFs

- **IP Address transported in CV64 on ACTLU response -- works with CS/NT, 221X**
  - DISPLAY TN3270E Enhancement from V2R6
  - OW31454 (VTAM), and PQ12574 (TCP/IP)
- **DISJOINT for CDRMs**
  - Controls whether to route requests back into subarea when sent through APPN network
- **Provide PU and LU names to downstream devices on CV X'0E'**
  - V4R4 APAR OW25501
  - Use INCLUD0E=YES|NO keyword
- **VARY Dial PU T1 (for switched frame relay)**
  - APAR OW27985

New Function PTFs for V2R5

- **DLUR Giveback Command**
  - **V4R3 and V4R4 APAR OW25386**
  - **V NET,INACT,ID=dlurcpname, TYPE=GIVEBACK, FINAL=YES**
- **JLINE Quiescing**
  - **V4R4 APAR OW25754**
- **Names for HPR connections, Dynamic PUs, and Connection Network Connections**
  - **Start options DYNHPPFX, DYNPUPFX and DYNVNPFX**
- **DISPLAY Clusters on ISTATUS**
  - **OY25999**

New Function PTFs for V2R5

- **DISPLAY ROUTE,BLOCKED command**
  - **Displays blocked VRs**
- **DISPLAY RTPS command**
  - **Can specify for specific CPNAME, APPNCOS, or in path switch or congested state**
- **Support registration of DLUR nodes**

V2R5 Publications

- IBM Networking Softcopy Collection Kit (SK2T-6012)
- SNA Planning and Migration Guide (SC31-8622)
- IP Planning and Migration Guide (SC31-8512)
- IP Configuration (SC31-8513)
- SNA Network Implementation (SC31-8563)
- SNA Resource Definition Reference (SC31-8565)
- SNA Samples (SC31-8566)
- AnyNet SNA over TCP/IP (SC31-8578) *
- AnyNet Sockets over SNA (SC31-8577) *
- IP User's Guide (GC31-8514)
- SNA Operation (SC31-8567)
- Operation Quick Reference (SX75-0121)
- High Speed Access Services User's Guide (GC31-8676)
- SNA Customization (LY43-0110)
- IP Network Print Facility (SC31-8522) *
- CMIP Services & Topology Agent Guide (SC31-8576) *
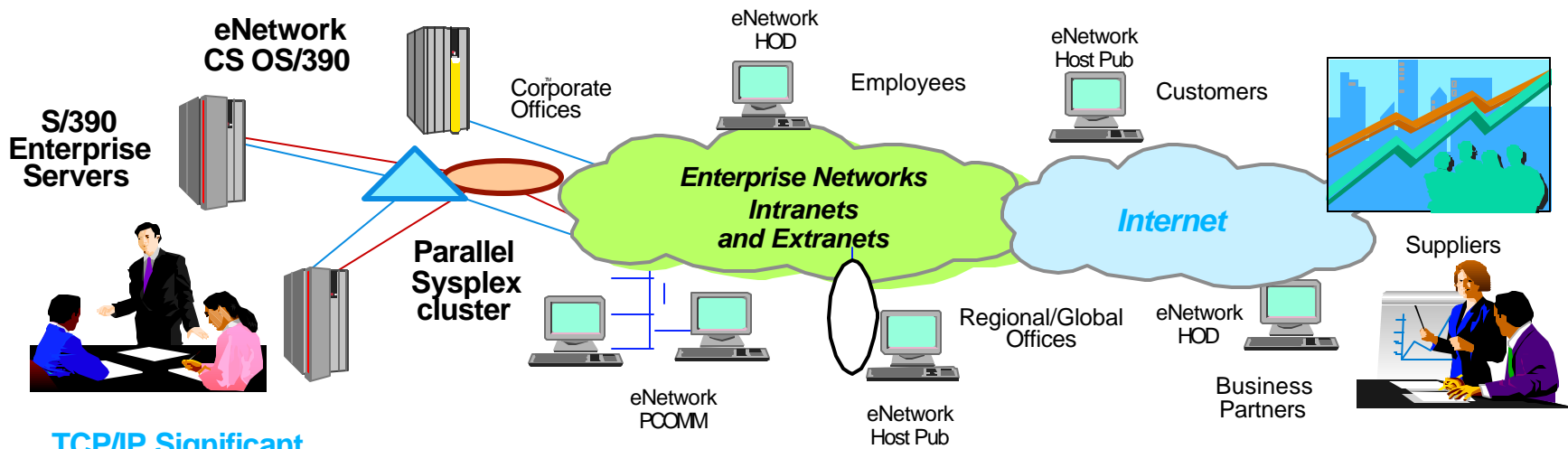
* indicates softcopy only

V2R5 Publications

- IP API Guide (SC31-8516) *
- IP CICS Sockets Guide (SC31-8521) *
- IP IMS Sockets Guide (SC31-8546) *
- IP Programmer's Reference (SC31-8515) *
- SNA Programming (SC31-8573) *
- SNA Programmers LU6.2 Reference (SC31-8568) *
- CSM Guide (SC31-8575) *
- Data Areas Volume I (LY43-0111) *
- Data Areas Volume II (LY43-0112) *
- SNA Messages (SC31-8569)
- IP Messages Volume I (SC31-8517)
- IP Messages Volume 2 (SC31-8570)
- IP Messages Volume 3 (SC31-8674)
- IP and SNA Codes (SC31-8571)
- APPC Application Suite User's Guide (GC31-8619) *
- APPC Application Suite Administration (SC31-8620) *
- APPC Application Suite Programming   (SC31-8621) *

* indicates softcopy only

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Communications Server for R6

eNetwork
CS OS/390

eNetwork
HOD

eNetwork
Host Pub

S/390
Enterprise
Servers

Corporate
Offices

Employees

Customers

**Enterprise Networks
Intranets
and Extranets**

Internet

Suppliers

**Parallel
Sysplex
cluster**

Regional/Global
Offices

eNetwork
HOD

eNetwork
PCOMM

eNetwork
Host Pub

Business
Partners

**TCP/IP Significant
Performance Gains**
- **Interactive +1400%**
- **Web +1300%**
- **File Tfr +400%**

SSL Enabled TN3270 Server
- **Security for SSL
  enabled TN3270 clients
  such as HOD V2**
- **single and multiport**

OSPF
- **Better utilization of network
  resources**
- **Improves IP routing
  performance**

UNIX Standard Sendmail
- **OS/390 UNIX Sendmail
  client support**
- **POP3 mail server**
- **SMPT system services**

Multicast support
- **Prevents broadcast storms**
- **Enables Web "push" &
  Web-casting**

Long Fat Pipes
- **Max performance for large
  data files over long
  distance high speed links,
  e.g., satellite, long distance
  fiber optics**

CSM OE Sockets/ CSM FTP
- **CSM OE Sockets can improve
  performance by reducing data
  movements and associated CPU
  cycle consumption**
- **CSM FTP leverages the CSM OE
  Sockets API extensions**

And more...
- **MNPS DLUS support**
- **APPN usability enhancements**
- **Improved debugging capability**
- **Improved external interface to NPM**
- **RSVP & IPv6 demonstrations**

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V2R6 New SNA Functions

- **NNSPREF Start Option**
  - Specifies that VTAM EN should switch to preferred NNS when it becomes available
- **MNPS DLUS Support**
  - VTAM can provide MNPS for sessions where it is both the DLUS and owns the MNPS application
- **D NET,ID=luname provides IP address**
- **D NET,IDTYPE=IPADDR,ID=ipaddress**
  - Lists LU(s) associated with IP address
- **DLRORDER Start Option**
- **SSCPORD Start Option Dynamically Modifiable**
- **Adaptive Session Pacing Changes**
- **TGCONF and MLTGPRI Keywords**
  - For subarea dial with NCP V7R7

V2R6 Enterprise Extender

- **Enterprise Extender available in 221X and Commserver family of products**

- **Allows IP network to become a "TG" in an HPR route**
  - **Available with V2R6 with APAR OW36113**

- **New ARB algorithm**
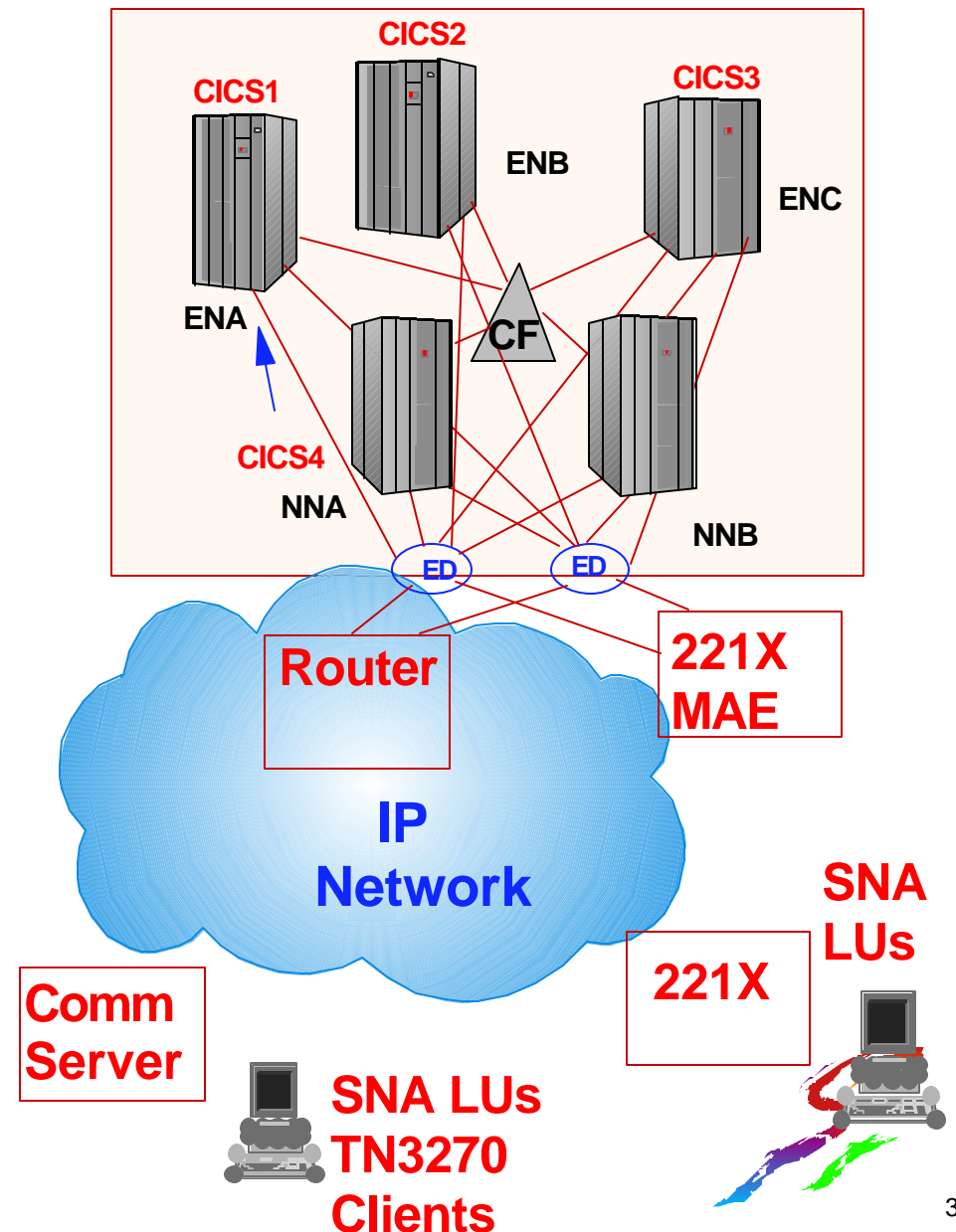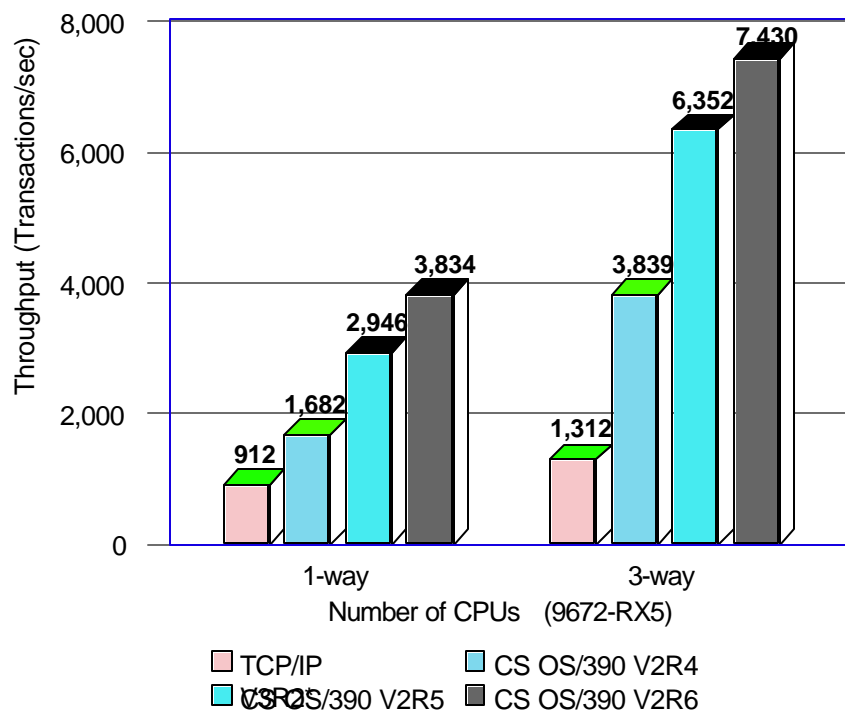
V2R6 Performance Information

9672-RX5 3-Way:

Workload	CS OS/390 V2R5	CS OS/390 V2R6
Interactive	4.84X	5.66X
Web	4.16X	7.40X
File Tfr	1.64X	2.35X

9672-RY5 10-Way:

Workload	OS/390 V2R5 Improvements	OS/390 V2R6 Improvements
Interactive	11.51X	14.97X
Web	9.72X	14.22X
File Tfr	2.89X	5.31X

Interactive Workload

Throughput (Transactions/sec)

1-way: 912, 1,682, 2,946, 3,834
3-way: 1,312, 3,839, 6,352, 7,430

Number of CPUs (9672-RX5)

- TCP/IP
- CS OS/390 V2R4
- CS OS/390 V2R5 (V3R2)
- CS OS/390 V2R6

*Note: TCP/IP V3R2 tests were with performance enhancement PTFs applied. The performance difference would have been even greater without them.

URL is http://www.software.ibm.com/network/commserver/about/csos390.html
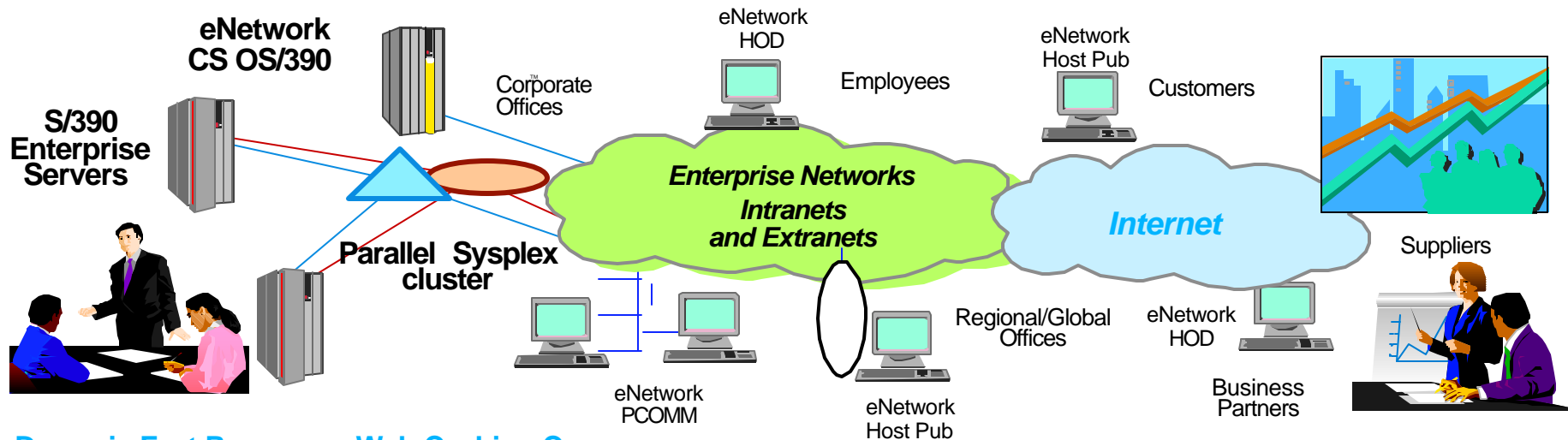
V2R6 VTAM Publications

- **Communications Server using OS/390 policy of updating only changed publications**
- **Use V2R5 pubs - these are updated:**
  - SNA Messages SC31-8569-01
  - SNA Network Implementation SC31-8563-01
  - SNA Operation SC31-8567-01
  - SNA Planning and Migration   SC31-8622-01
  - SNA Resource Definition Reference SC31-8565-01
  - SNA Diagnosis LY43-0079-01
  - SNA and IP Codes SC31-8571-01
  - CMIP Services and Topology Agent Guide SC31-8576-01 *
  - SNA Data Areas Volume 1 LY43-0111-01 *
  - SNA Data Areas Volume 2 LY43-0112-01 *

* indicates softcopy only

Communications Server for R7

eNetwork CS OS/390

S/390 Enterprise Servers

Corporate Offices

Parallel Sysplex cluster

eNetwork HOD — Employees

Enterprise Networks Intranets and Extranets

eNetwork Host Pub — Customers

Internet

eNetwork PCOMM

eNetwork Host Pub

Regional/Global Offices

eNetwork HOD — Business Partners

Suppliers

Dynamic Fast Response Web Caching Can Improve Web Serving Response Times

- Caches Web pages at TCP/IP stack level
- Faster response times for Web requests
- Can reduce workload for Web server
- Design estimates at up to 2X already impressive Web serving performance

Leading-edge Network Security

- Latest standards for IPsec (a.k.a. Virtual Private Networks)
  - ▶ Triple DES - exploits S/390 encryption H/W
  - ▶ HMAC-MD5 an HMAC-SHA authentication
  - ▶ Replay protection
- Latest standards for secure network management - SNMPv3
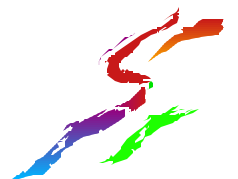 - ▶ includes message, user, and view based security

Add'l Benefits for TCP/IP in a Parallel Sysplex environment

- Transparent horizontal growth and reduced definitions
  - ▶ XCF Dynamics allows adding TCP/IP image with single definition at stack layer
  - ▶ System Symbolics reduces definition for TN3270
- Reduced overhead for applications within the sysplex
  - ▶ Sysplex Sockets can allow applications to easily learn when other of their images exist in the Parallel Sysplex cluster

Service Policy Agent for Priority IP Networking

- Used by IP routers to prioritize IP data traffic
- allows service differentiation based on:
  - ▶ Service level agreement
  - ▶ User classes
  - ▶ Appl needs (e.g., high speed link, mission critical)
 - ▶ Time of day

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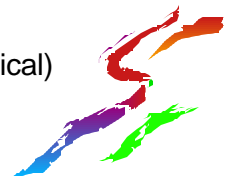
V2R7 New SNA Functions

- **Locate Length 1K Restriction Removed**
- **>64K Addressing for TN3270 applications**
- **Save and Display RSCV**
- **Provide subarea number on LOCATE**
- **CP-CP sessions HPR changes**
- **Automatic registration of DLUR-owned dependent SLUs**
- **SORDER on ADJSSCP Tables**
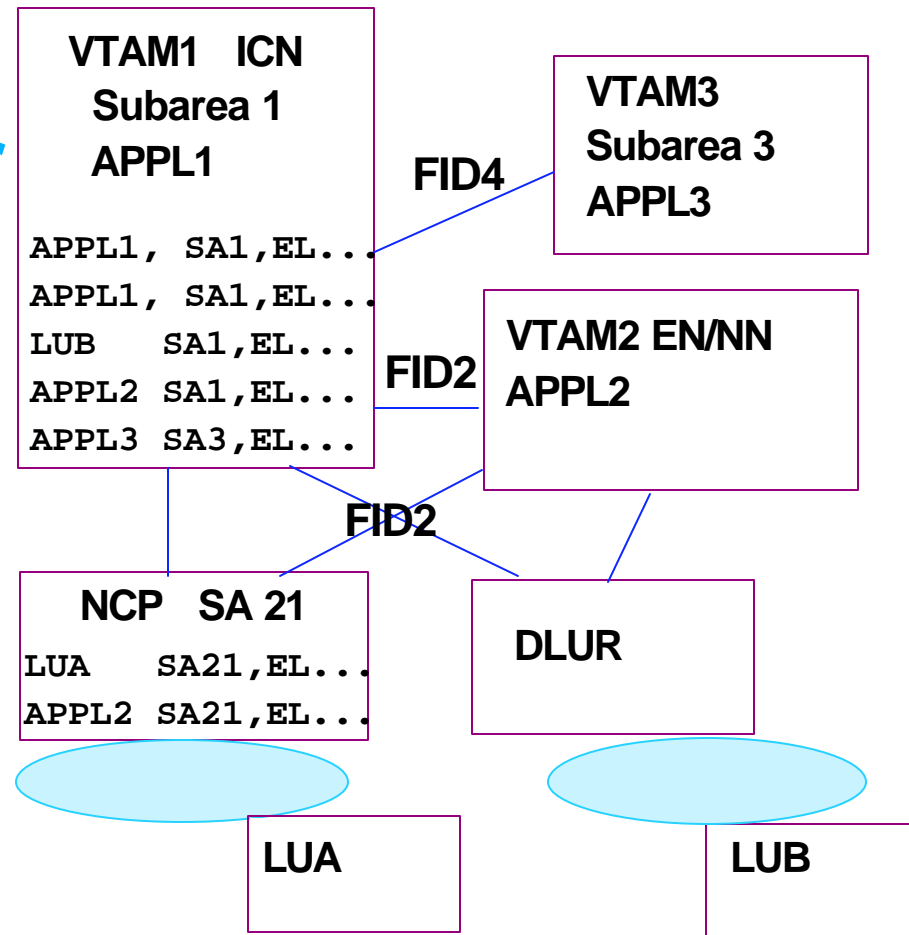- **Delayed Logical Link Activation**

V2R7 New SNA Functions

- Support for OSA-Express
- Display for Generic Resources
- Serviceability Enhancements
- PSWEIGHT Start Option
- Extending non-extended BINDs
- SACONNS Start Option
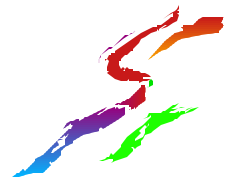
Enhanced Addressing for Applications

- **ENHADDR=YES allows high order (>64K) addresses for applications in VTAM's address space**

- **Low order address assigned only when needed (i.e. when session partner is across subarea connection**

```
VTAM1   ICN
  Subarea 1
  APPL1

APPL1, SA1,EL...
APPL1, SA1,EL...
LUB    SA1,EL...
APPL2  SA1,EL...
APPL3  SA3,EL...
```

```
VTAM3
Subarea 3
APPL3
```

```
VTAM2 EN/NN
APPL2
```

FID4

FID2

FID2

```
NCP   SA 21
LUA    SA21,EL...
APPL2  SA21,EL...
```

DLUR

LUA

LUB

V2R7 VTAM Publications

- **Communications Server using OS/390 policy of updating only changed publications**
- **Use V2R5 (or V2R6) pubs - these are updated:**
  - SNA Messages SC31-8569-02
  - SNA Network Implementation SC31-8563-02
  - SNA Operation SC31-8567-02
  - SNA Planning and Migration   SC31-8622-02
  - SNA Resource Definition Reference SC31-8565-02
  - SNA Diagnosis, Volume 1 LY43-0079-02
  - SNA Diagnosis, Volume 2 LY43-0080-01
  - SNA and IP Codes SC31-8571-02
  - SNA Data Areas Volume 1 LY43-0111-02 *
  - SNA Data Areas Volume 2 LY43-0112-02 *

* indicates softcopy only
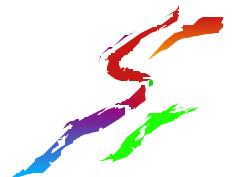
Communications Server for OS/390 V2R8

- **New name**
  - Secureway Communications Server
  - Was e-Network Communications Server
- **Many enhancements for TCP/IP**
  - Client Authentication support by the Telnet Server
  - Internet Key Exchange (IKE) support
  - Service Level Policy Enhancements
  - Integrated RSVP agent
  - SLA SNMP subagent for monitoring performance
  - Dynamic VIPA
  - OMPROUTE load balancing

V2R8 SNA Enhancements

- **NCP Token-Ring Nondisruptive Route Switch Command**
- **TN3270 DNS Client Name to VTAM Display**
- **SLOWVAL Start Option**
- **Triple-DES Session Level Encryption**
- **VIT Enhancements for ARB**
- **Phantom FFST**
- **Enhancements for VIT HPR Option and Topology Records**

V2R8 SNA Publications

- **Communications Server using OS/390 policy of updating only changed publications**
- **These pubs have been updated:**
  - SNA Messages SC31-8569-03
  - SNA Network Implementation Guide SC31-8563-03
  - SNA Operation SC31-8567-03
  - SNA Migration   SC31-8622-03
  - SNA Resource Definition Reference SC31-8565-03
  - SNA Diagnosis LY43-0079-03
  - SNA and IP Codes SC31-8571-03
  - SNA Data Areas Volume 1 LY43-0111-03 *
  - SNA Data Areas Volume 2 LY43-0112-03 *

* indicates softcopy only

Currency

- **OS/390 Service Policy**
  - **Release current for 3 years following GA**
  - **Year 2000 service policy deviation for:**
    - **OS/390 Version 1 Releases 1,2,3**
   - **OS/390 Version 2 Release 4**
      - These Releases will be considered current until at least January 31, 2001 with IBM providing maintenance during that period.
- **Other current VTAM Releases:**
  - **V4R4 and V4R3, V3R4.2 (MVS/ESA), V4R2, V3R4.1 (VM & VSE), V3R3 (MVS/XA)**
  - **Are all Year 2000 Ready although operating system may not be**
  - **VTAM/NCP/SSP currency flash located at:**
    - **http://www.ibm.com/support/techdocs -- flash N3195**

Compatibility
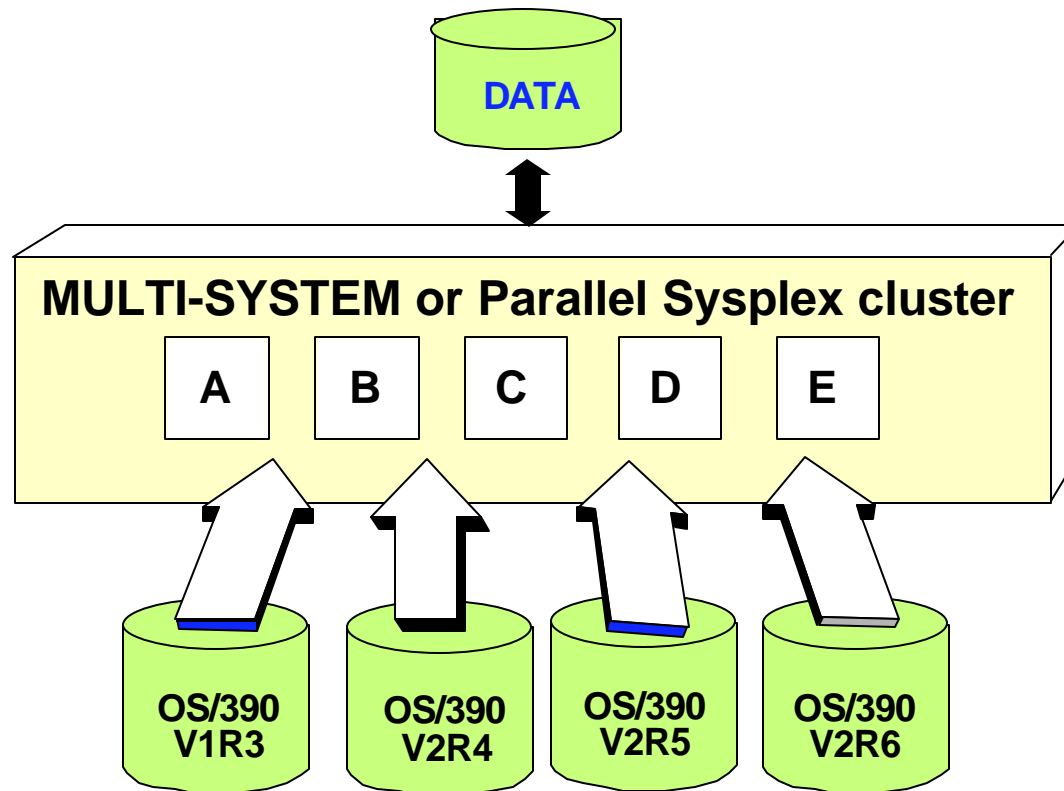
- **OS/390 supports coexistence of four consecutive OS/390 releases and coexistence with supported MVS systems**

- **IBM intends to no longer support the coexistence of MVS releases with OS/390 releases made available after Year End 1999**

- **http://www.s390.ibm.com/stories/year2000/coexist.html contains details**

Summary

- **OS/390 and VTAM V4R4**

- **VTAM with OS/390 V2R4**

- **VTAM with OS/390 V2R5**

- **VTAM with OS/390 V2R6**

- **VTAM with OS/390 V2R7**

- **VTAM with OS/390 V2R8**

- **Currency, compatibility, Y2K**