

IBM 3746 Nways Multiprotocol Controllers Models 900 and 950

December 2, 1997
(Revision 4)



S/390 Server Access Solutions Positioning

Agenda



- ★ **Positioning Summary**
 - Strategic recommendations for WAN and LAN access to S/390
 - Summary of gateway considerations

- ★ **Positioning Scenarios**
 - 11 scenarios with multiple options, demonstrating the preferred choice of gateway to the S/390 server and the factors to be considered

- ★ **Additional Positioning Information**
 - Comparison matrices of S/390 access product positioning alternatives
 - Product detail comparisons

Positioning Overview



★ Positioning depends on

- Current environment - installed equipment
- Traffic type (subarea SNA, TCP/IP etc)
- Network transport protocol (APPN, IP, IP/DLSw etc)

★ Methodology

- Consider the environment information for recommendation depending on network size, number of hosts, presence of Parallel Sysplex etc
- Then consider the traffic type
 - Chart lists solution for a single protocol
 - For multiple protocols, a combination of the individual recommendations should be selected
- Finally view the growth path summary to consolidate gateway choice selection

Positioning Summary - By Environment Size



ENVIRONMENT			RECOMMENDATION *	DECISION FACTORS **	
WAN	Medium to large connectivity	Parallel Sysplex	3746-900/950	<ul style="list-style-type: none"> - APPN/HPR - Connectivity and throughput - NCP unique functions (boundary function, SNI, BSC3270 etc) - Powerful IP support 	
		No Parallel Sysplex			
	Small to medium connectivity	Parallel Sysplex	2216	<ul style="list-style-type: none"> - Low cost WAN ports - Host impact (storage and CPU cycles) 	
		No Parallel Sysplex			
LAN	Parallel Sysplex	Medium to large connectivity	3746-900/950	<ul style="list-style-type: none"> - APPN/HPR - Connectivity and throughput - NCP unique features - Number of SNA PUs 	
		Small to medium connectivity	2216	<ul style="list-style-type: none"> - Low cost ports - Number of SNA PUs - Host impact 	
	No parallel Sysplex	Multiple S/390 Servers		3746-900/950 2216	<ul style="list-style-type: none"> - Connectivity and throughput - NCP unique features - Host impact
		Single or few S/390 Servers	Bipolar	2216	<ul style="list-style-type: none"> - Connectivity and throughput - Host impact
			CMOS	OSA-2	<ul style="list-style-type: none"> - Low cost ports - Host impact - Multiple channel connections

* Main recommendation for each environment - list of all possible options is shown later

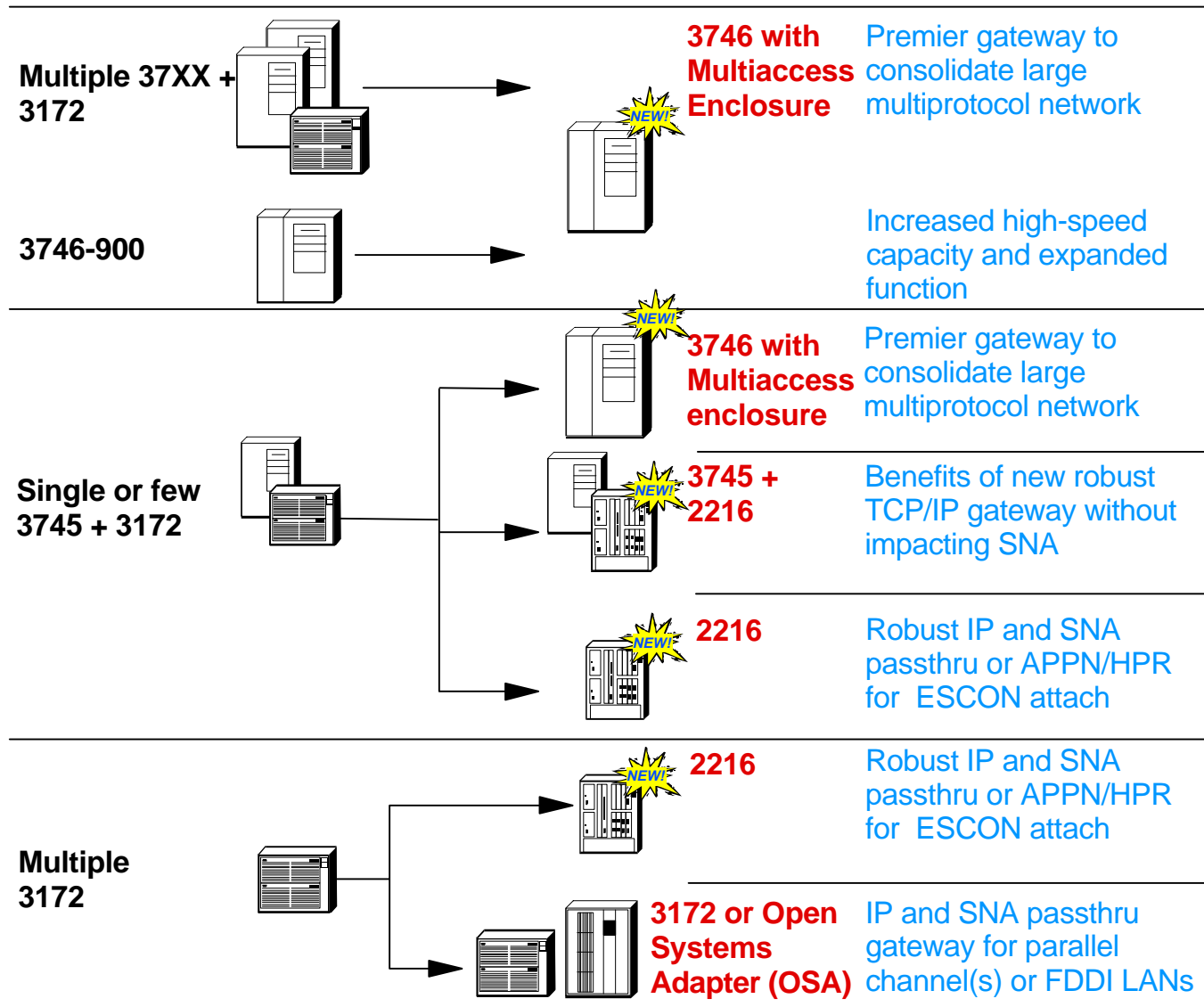
** Other decision factors include the current installed equipment, the network infrastructure etc

Positioning Summary by Traffic Type

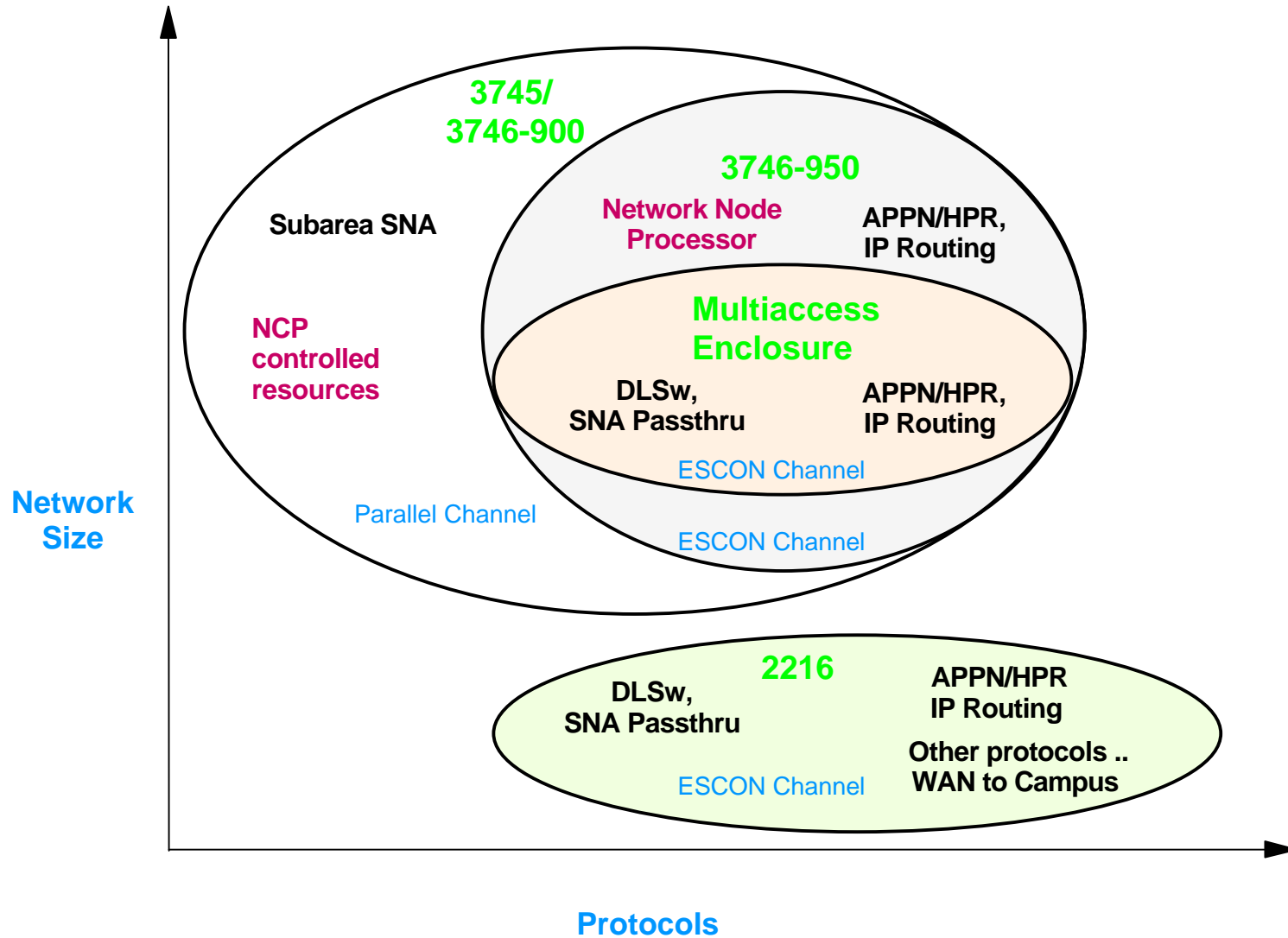


ENVIRONMENT	TRAFFIC	RECOMMENDATION	DECISION FACTORS
Medium to large WAN /LAN network	Subarea SNA	3745/6-900 NCP	<ul style="list-style-type: none"> - Connectivity and throughput - Economics of 3746 consolidation
	APPN/HPR	3746-900/950 NNP	<ul style="list-style-type: none"> - Host APPN and MPC+ - Parallel/ESCON channel - Connectivity and throughput - Number of SNA PUs - Co-existence with subarea network - Consider Multiaccess Enclosure for consolidation and new connectivity
	IP traffic	3746-900/950 NNP 2216	<ul style="list-style-type: none"> - Parallel/ESCON channel - Connectivity and throughput - Co-existence and type of SNA traffic - Consider Multiaccess Enclosure for consolidation and new connectivity
	SNA traffic over IP network	3746-900/950 NNP With Multiaccess Enclosure features	<ul style="list-style-type: none"> - Parallel/ESCON channel - Use of DLSw at remote site - Choice of TCP/IP client (TN3270)
Small to medium WAN/LAN network	Subarea SNA	3745/NCP	<ul style="list-style-type: none"> - Connectivity
	APPN/HPR	3746-900 NCP/NNP 2216	<ul style="list-style-type: none"> - Host APPN and MPC+ - Connectivity and throughput - Parallel/ESCON channel - Cost of ports - Economics of 3746 consolidation
	IP traffic	2216	<ul style="list-style-type: none"> - Parallel/ESCON channel - Cost of ports
	SNA traffic over IP network	2216	<ul style="list-style-type: none"> - Parallel/ESCON channel - Use of DLSw at remote site - Choice of TCP/IP client (TN3270)

Positioning - Growth Path Summary



Positioning Summary 3745/3746 and 2216



Product Considerations Summary



	S/390 Channels (LPARs)	CONNECTIVITY SNA/APPN PUs	ROUTED PROTOCOLS	SUBNETWORKING
3745/NCP	16(16)	5000+	SNA, APPN, HPR/ANR, IP	Token-Ring, Ethernet SDLC, BSC, SS, Frame Relay, X.25
3746-900/NCP	16(256)	5000 (5000+ P)	SNA, APPN, HPR/ANR, IP	Token-Ring, Ethernet SDLC, BSC, SS, Frame Relay, X.25, ISDN
3746-900/950 NNP	16(256)	5000 (5000+ P)	SNA(DLUR), APPN, HPR/ANR, IP	Token-Ring, Ethernet SDLC, Frame Relay, X.25, PPP
3746 Multiaccess Enclosure	4(128)	1500	SNA(DLUR), APPN, HPR/ANR, IP, DLSw, IPX	Token-Ring, Ethernet, FDDI(P), Fast Ethernet(P), SDLC, Frame Relay, X.25, PPP, ISDN, ATM, HSSI(P)
2216	4(128)	1500	SNA(DLUR), APPN, HPR/ANR, IP, DLSw, IPX	Token-Ring, Ethernet, FDDI(P), Fast Ethernet(P), SDLC, Frame Relay, X.25, PPP, ISDN, ATM, HSSI(P)
OSA-2	1(16)	4094	Done by S/390 server	Token-Ring, Ethernet, FDDI ATM
3172 ICP	2(40)	1020	Done by S/390 server	Token-Ring, Ethernet, FDDI
3172 OS/2	2(16)	1500	SNA(DLUR), APPN, HPR/ANR, IP	Token-Ring, Ethernet, FDDI SDLC, Frame Relay, X.25, ATM
RS/6000	2(16)	5000+	SNA(DLUR), APPN, HPR/ANR, IP	Token-Ring, Ethernet SDLC, X.25, ATM

(P) Preview

Positioning Scenarios - Objectives



- ★ **Demonstrate a number of scenarios that the majority of customers will identify with**
- ★ **For each scenario, the following sections are included:**
 - **Environment**
Description of the scenario
 - **Requirements**
One or more possible requirements that the customer may have of the network
 - **Solutions**
One solution chart for each customer requirement option, showing the solution and describing the benefits
 - **Decision Factors**
Some of the criteria used when deciding between gateway options

Positioning Scenarios



- **SNA Applications Only**

1. Small to medium SNA WAN transport network
2. Medium to large SNA WAN transport network

- **SNA and TCP Applications**

1. Small to medium separate WAN transport networks
2. Medium to large separate WAN transport networks
3. Small to medium WAN transport networks, migrating to an IP infrastructure
4. Medium to large WAN transport networks, migrating to an IP infrastructure
5. Small campus network
6. Large campus network

- **TCP Applications Only**

1. Small to medium WAN transport network
2. Medium to large WAN transport network
3. Access to Service provider

Scenario 1 - Today

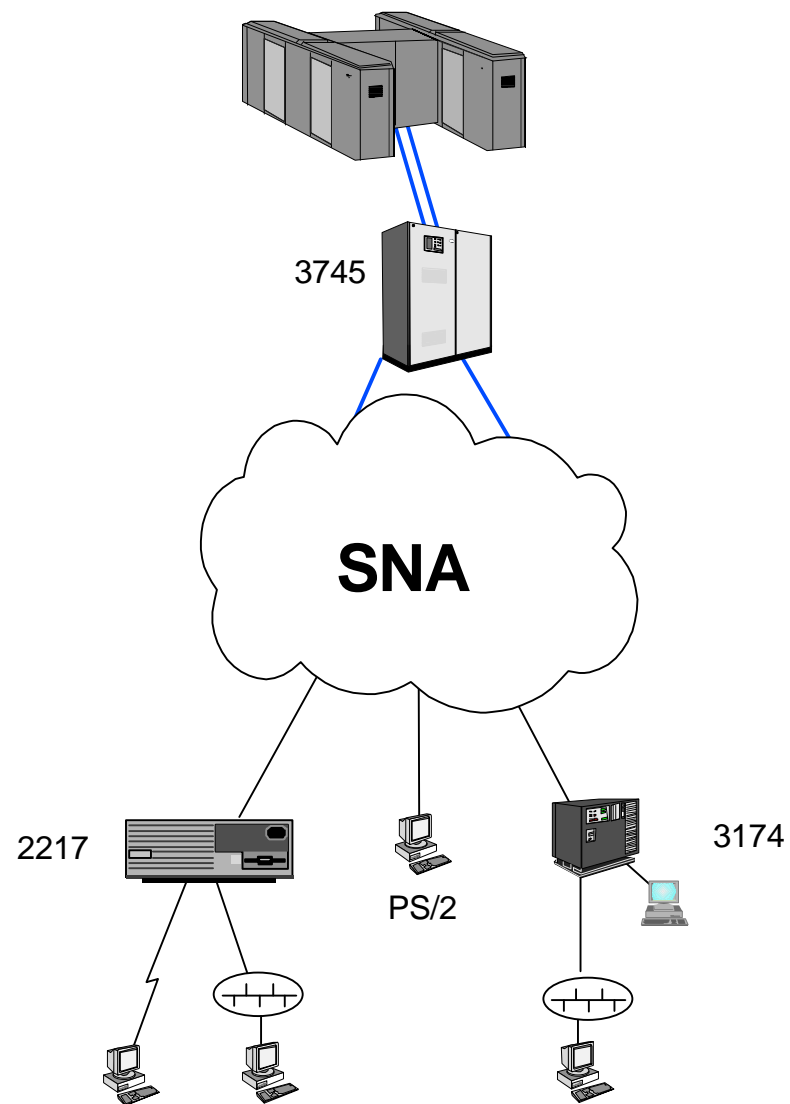


Environment

- ★ Small to medium SNA transport network
- ★ Mainly SNA applications on S/390 server
- ★ Using single 3745/NCP as server gateway
- ★ Single or very few S/390 servers

Requirements (alternatives)

1. Addition of TCP/IP applications with subarea SNA transport remaining intact
2. Reduce costs of existing transport network assuming little or no growth



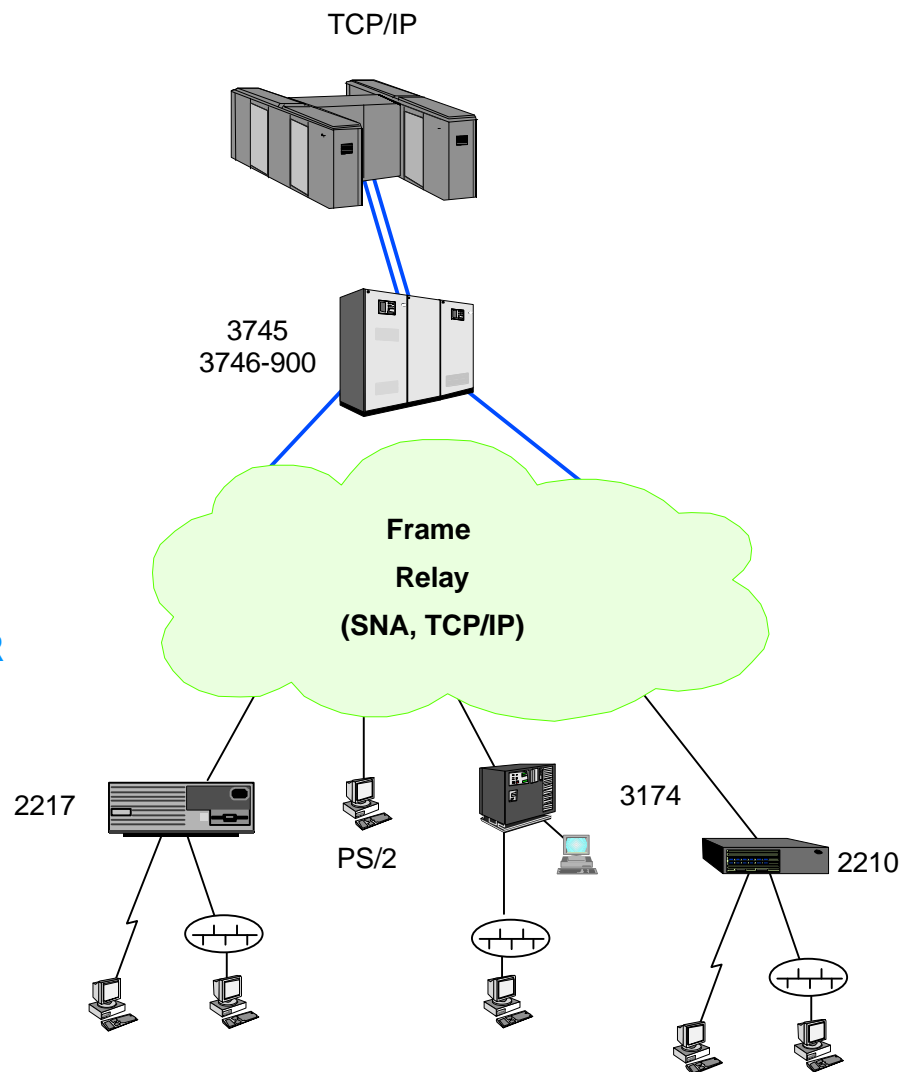
Scenario 1 - Future

Solution 1

- ★ Frame Relay network supports SNA and new TCP applications
 - Benefits of Frame Relay BAN for existing subarea SNA transport
 - IP traffic sharing common infrastructure
- ★ Add 3746-900 for native IP routing and additional growth IF size of network justifies 3746-900 upgrade
- ★ Otherwise retain 3745 NCP for subarea benefits and install 2216 for IP
- ★ Consider evolving network to APPN/HPR to upgrade SNA service to end users

Decision Factors

- ★ Justification of 3746-900
- ★ NCP unique features such as subarea boundary function, SNI, BSC3270
- ★ Frame Relay vs SDLC infrastructure
 - No polling, no link ERP
- ★ Growth in network connections
- ★ SNA skills to make APPN/HPR move



Scenario 1 - Future

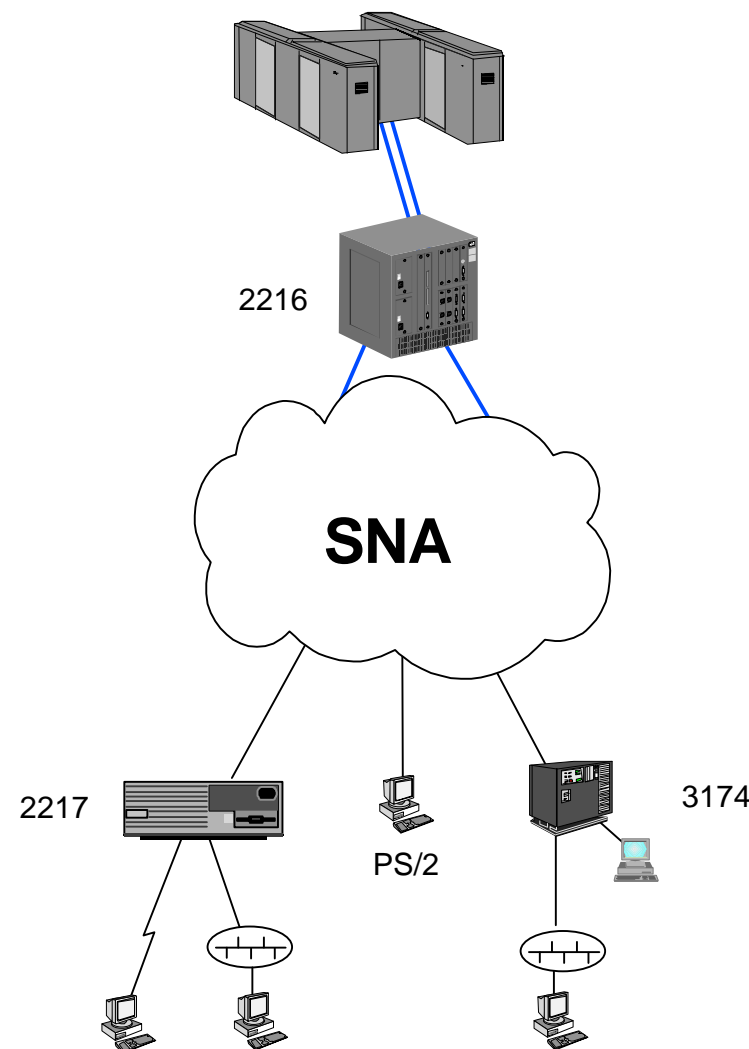


Solution 2

- ★ 3745 replaced by 2216 with ESCON channel adapter for S/390 server access
 - Elimination of NCP charges
 - Use APPN/DLUR on 2216 to support existing dependent devices
 - Use APPN/HPR in conjunction with remote 2210 or 2217
- ★ Consider Frame Relay instead of SDLC for minimised link overhead (no polling, no link ERP)

Decision Factors

- ★ Impact on host
 - Storage and CPU cycles
- ★ Number of SNA PUs and sessions
 - 2216 supports 1500 adjacent nodes or up to 6400 sessions
- ★ Growth in router transport network
 - Eg 2210 in remote branches - same software platform as 2216
- ★ Parallel/ESCON channel support
 - 2216 supports ESCON only



Scenario 2 - Today

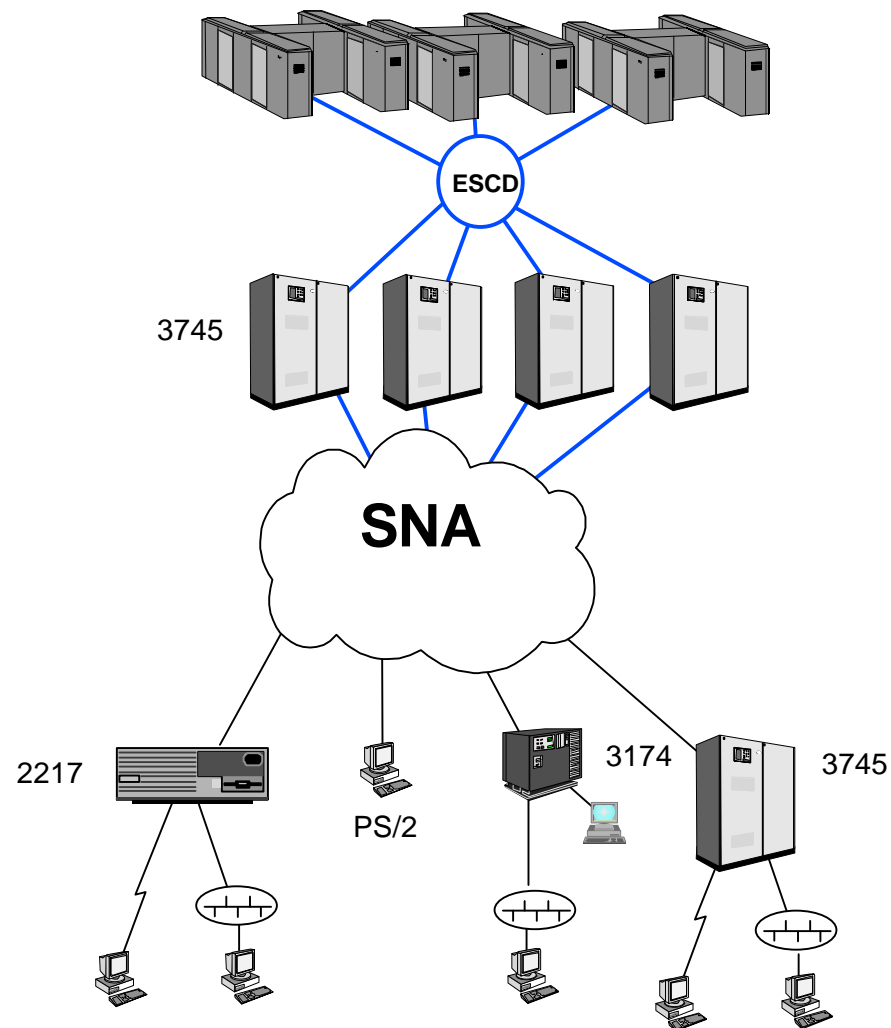


Environment

- ★ Medium to large SNA transport network
- ★ Mainly SNA applications on S/390 servers, no TCP/IP today
- ★ Using multiple 3745/NCPs as server gateways
- ★ Many S/390 servers

Requirements (alternatives)

1. Consolidate network infrastructure using Frame Relay
2. Growth in new TCP/IP applications and IP infrastructure
3. Migration to Parallel Sysplex and use of APPN/HPR



Scenario 2 - Future

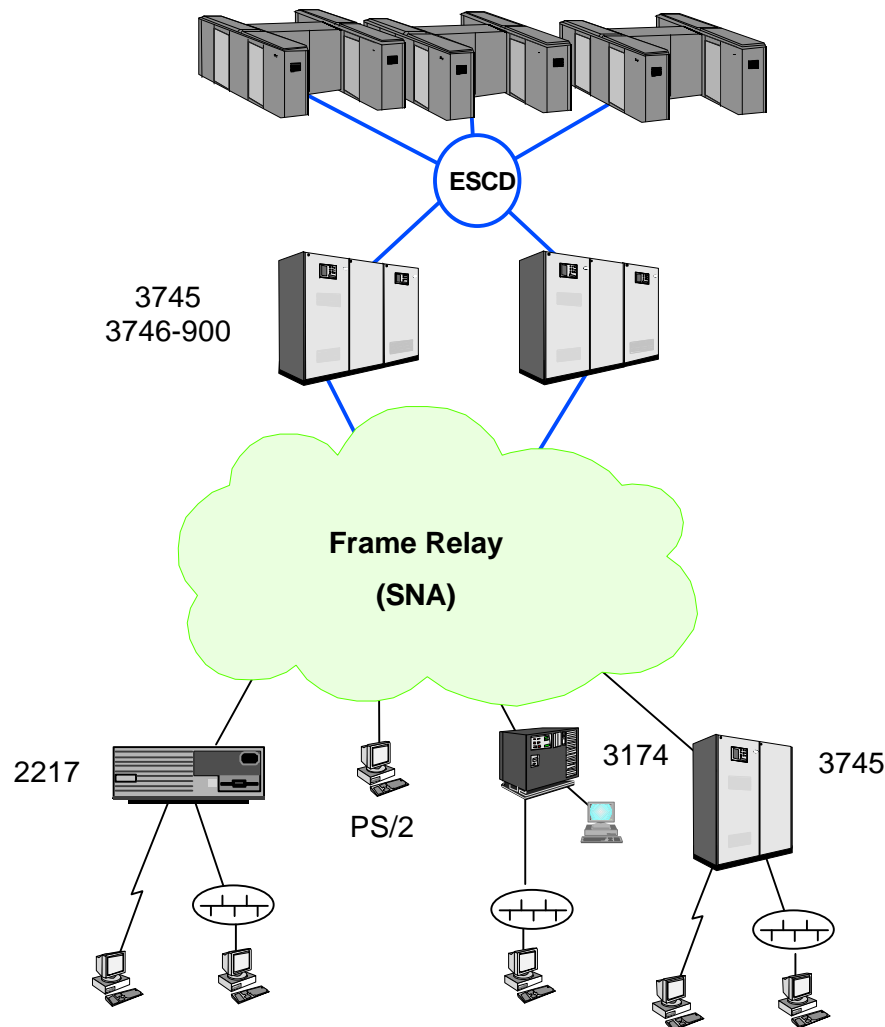


Solution 1

- ★ Consolidate existing network using 3746-900
 - Reduce NCP costs using Tier C and new NCP usage tier options
 - Better price performance with NCP controlled 3746 lines as growth occurs
- ★ Add Multiaccess Enclosure for additional high speed connectivity and function
 - Frame Relay

Decision Factors

- ★ 3746-900 supports large subarea SNA connectivity
- ★ Scalability
 - Smooth upgrades from installed 3745/6 platform to preserve high availability
- ★ Connectivity
 - Numbers of WAN connections
 - Numbers of SNA PUs and sessions



Scenario 2 - Future

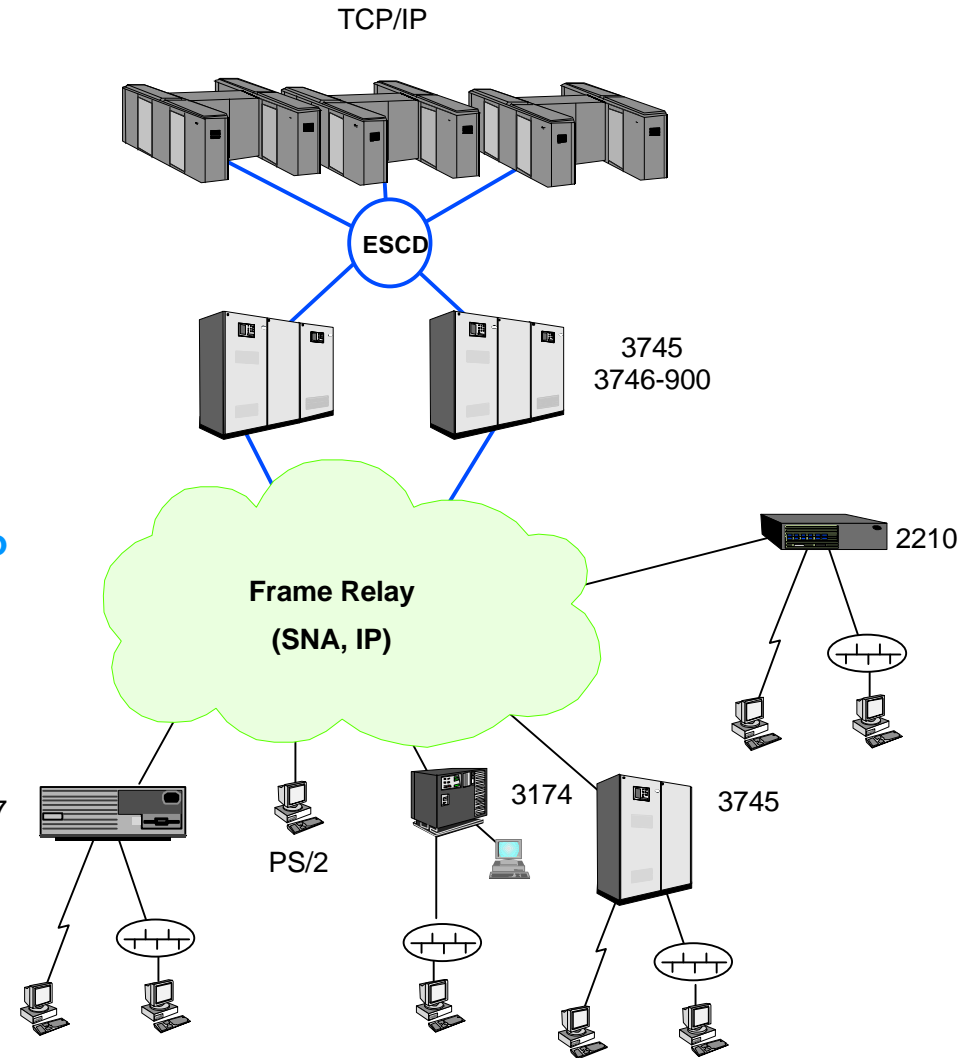


Solution 2

- ★ Consolidate existing network using 3746-900 with NNP
 - Reduce NCP costs using Tier C and new NCP usage tier options
 - Better price/performance with NCP controlled 3746 lines as growth occurs
 - Positioned for evolution to APPN/HPR
- ★ Native IP routing on 3746 for access to new TCP/IP applications
- ★ Add Multiaccess Enclosure
 - High speed ATM and world wide ISDN PRI
 - More T1/E1/J1 capacity at 6 times less price per port for IP and APPN/HPR traffic

Decision Factors

- ★ Full range of SNA connectivity in addition to IP routing



Scenario 2 - Future



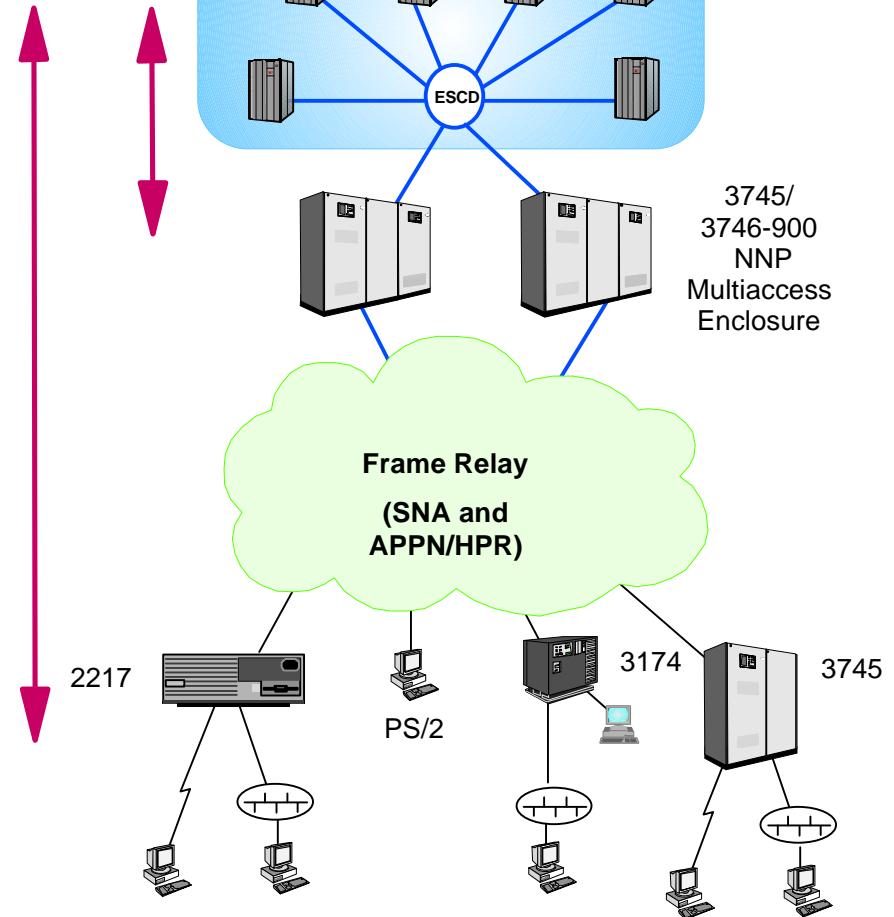
Solution 3

- ★ Install 3746 and Multiaccess enclosure to provide high speed connectivity and HPR over ESCON MPC+ support with up to 60% VTAM CPU cycles
- Reduce NCP costs using Tier C and new NCP usage tier options
- Availability and performance for Parallel Sysplex, using HPR over MPC+
- APPN/HPR in network positions network for 7x24x365 availability

Decision Factors

- ★ APPN support for large subarea network
- Consider number of supported PUs in DLUR.
- ★ Connectivity
- ★ Subarea SNA support for remote NCPs, until replaced by HPR capable concentrator (Eg 3746-950 or 2216)

HPR VTAM-3746
or further out
into network
for optimum
availability



Scenario 3 - Today

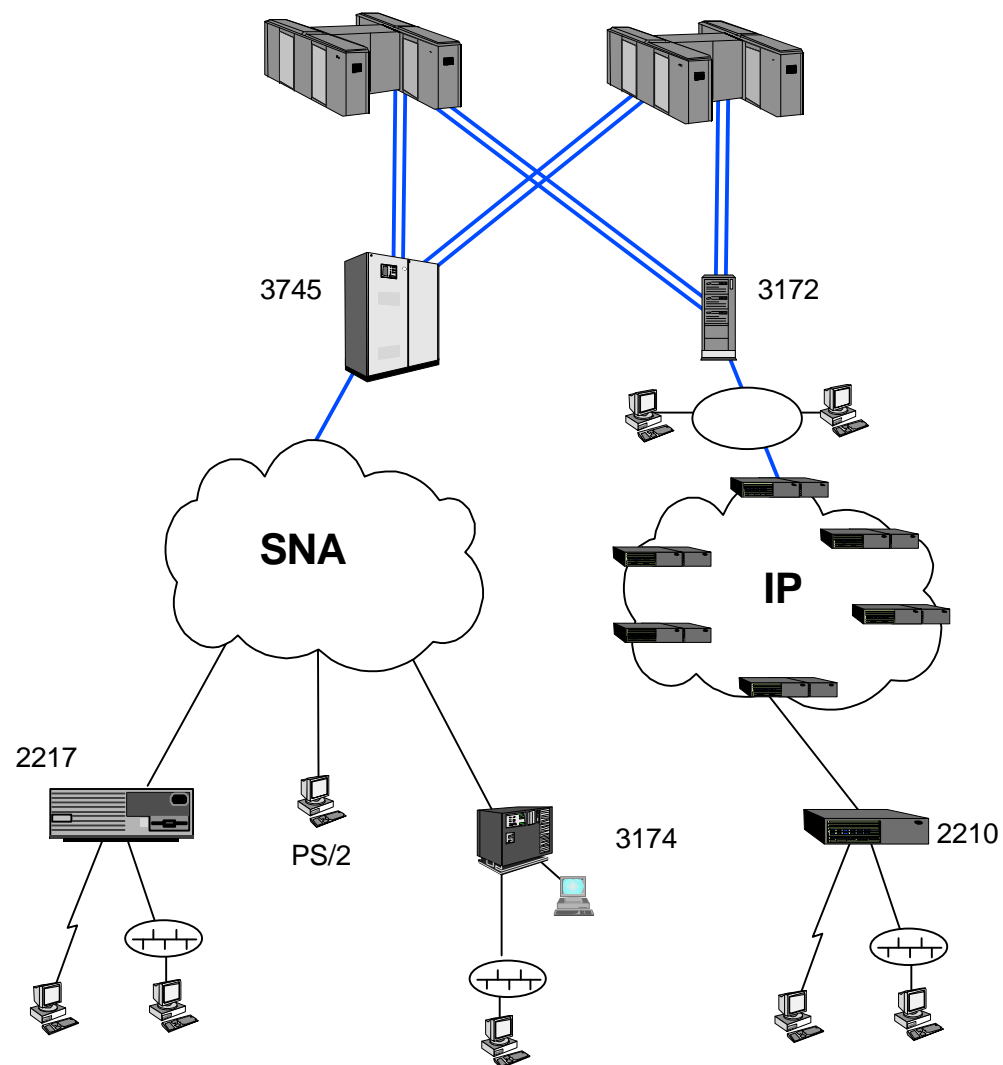


Environment

- ★ Small to medium SNA and IP networks
- ★ Separate S/390 gateways
3745/NCP for SNA
3172 for IP (or OSA)
- ★ Single or few S/390 servers
- ★ Performance of legacy SNA applications is crucial

Requirements (alternatives)

1. Keep IP and SNA WAN transport networks separate with separate gateways for each protocol
2. Consolidate network WAN infrastructure with native transport for each protocol



Scenario 3 - Future

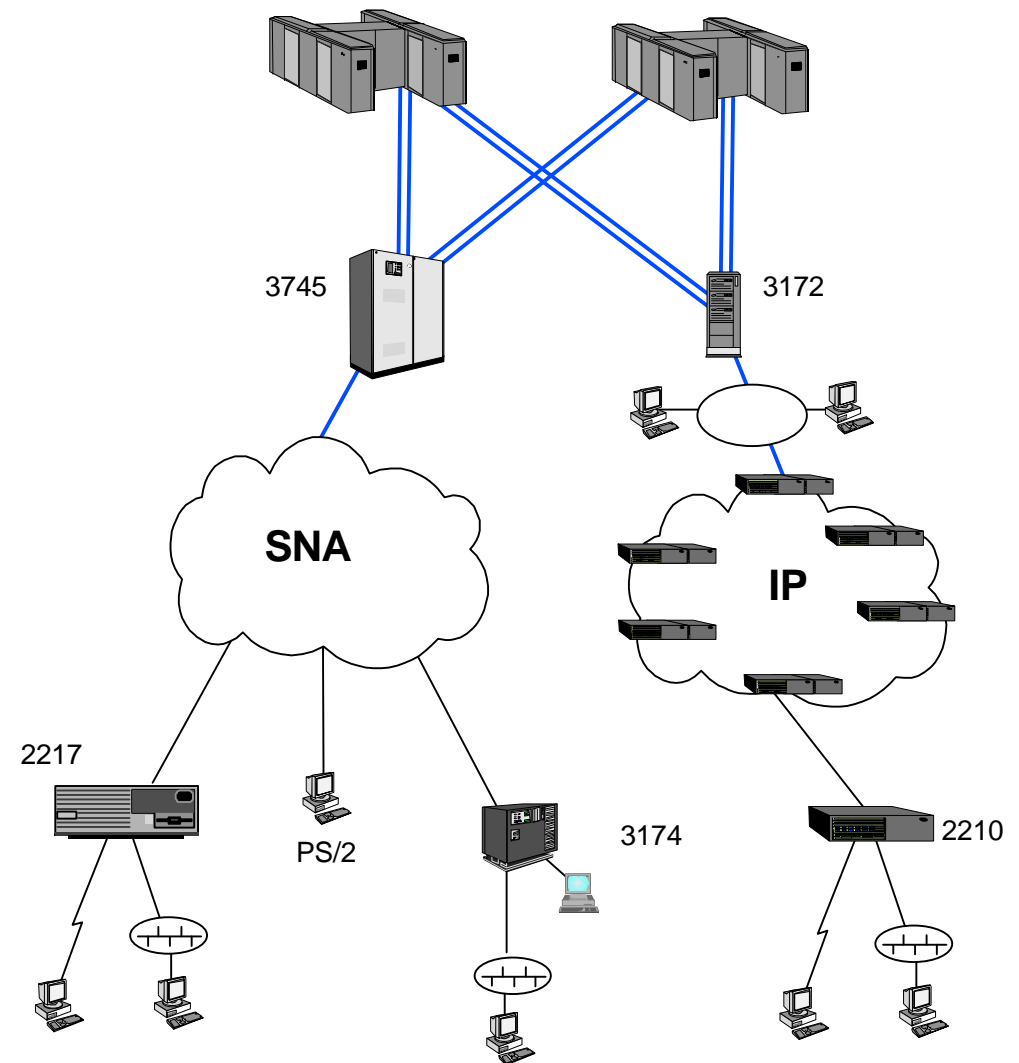


Solution 1

- ★ Retain 3745/NCP for SNA subarea benefits
- ★ Replace 3172 with 2216
 - Higher channel performance
 - More WAN connectivity options including SNA transport over IP (DLSw), more E1/T1, etc
- ★ Both protocols carried natively - better performance for both

Decision Factors

- ★ WAN transport options for IP
- ★ Parallel/ESCON channel support
- ★ FDDI attachment (keep 3172 or OSA)



Scenario 3 - Future

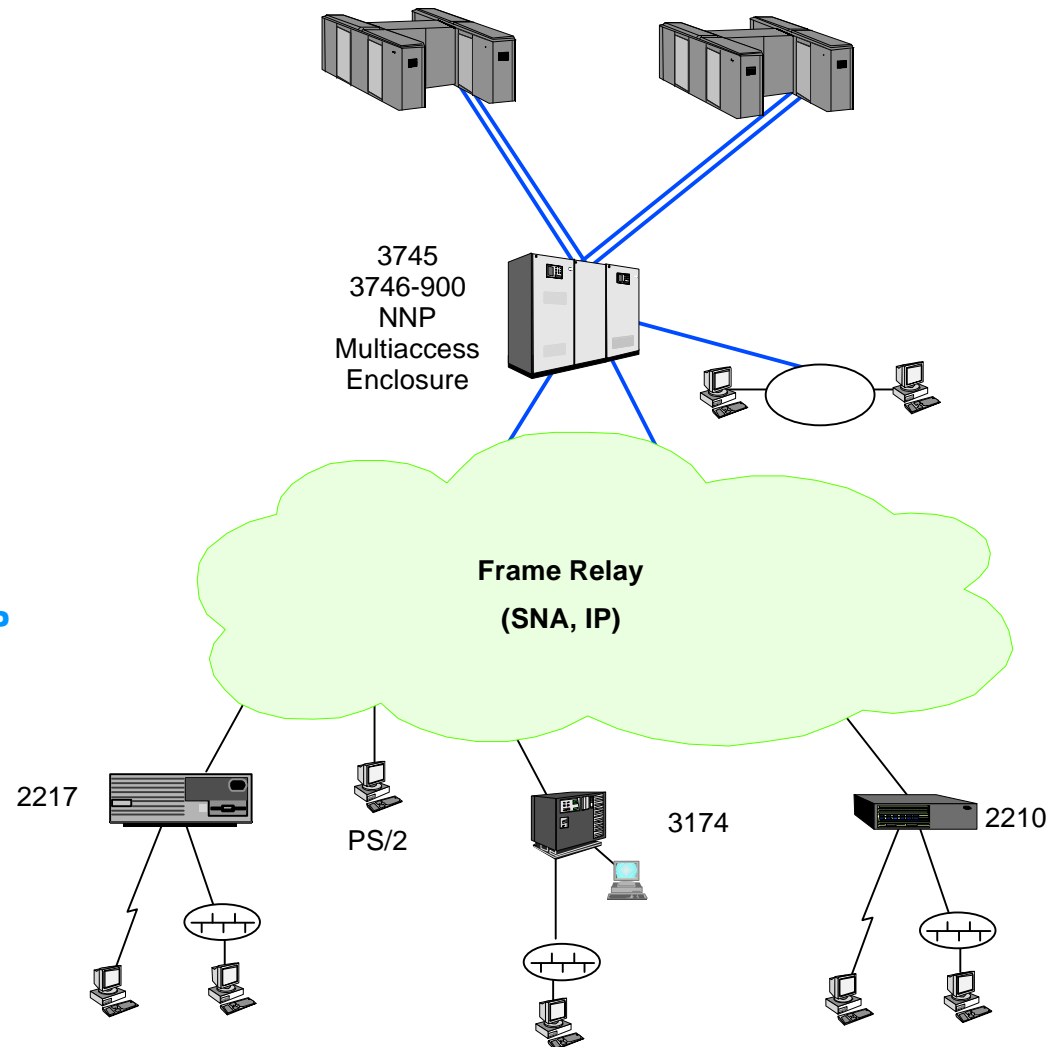


Solution 2a

- ★ Retain subarea SNA and IP networks
 - Both protocols carried natively
- ★ Use 3745/6 and Multiaccess Enclosure for consolidated network gateway
- ★ Frame Relay transport for both SNA and IP
- ★ Benefits of single platform to support all subarea SNA and IP traffic
 - Simpler management
- ★ Positioned for large scale APPN/HPR migration

Decision Factors

- ★ Single platform
- ★ Greater connectivity options of 3745/6 and Multiaccess Enclosure



Scenario 3 - Future

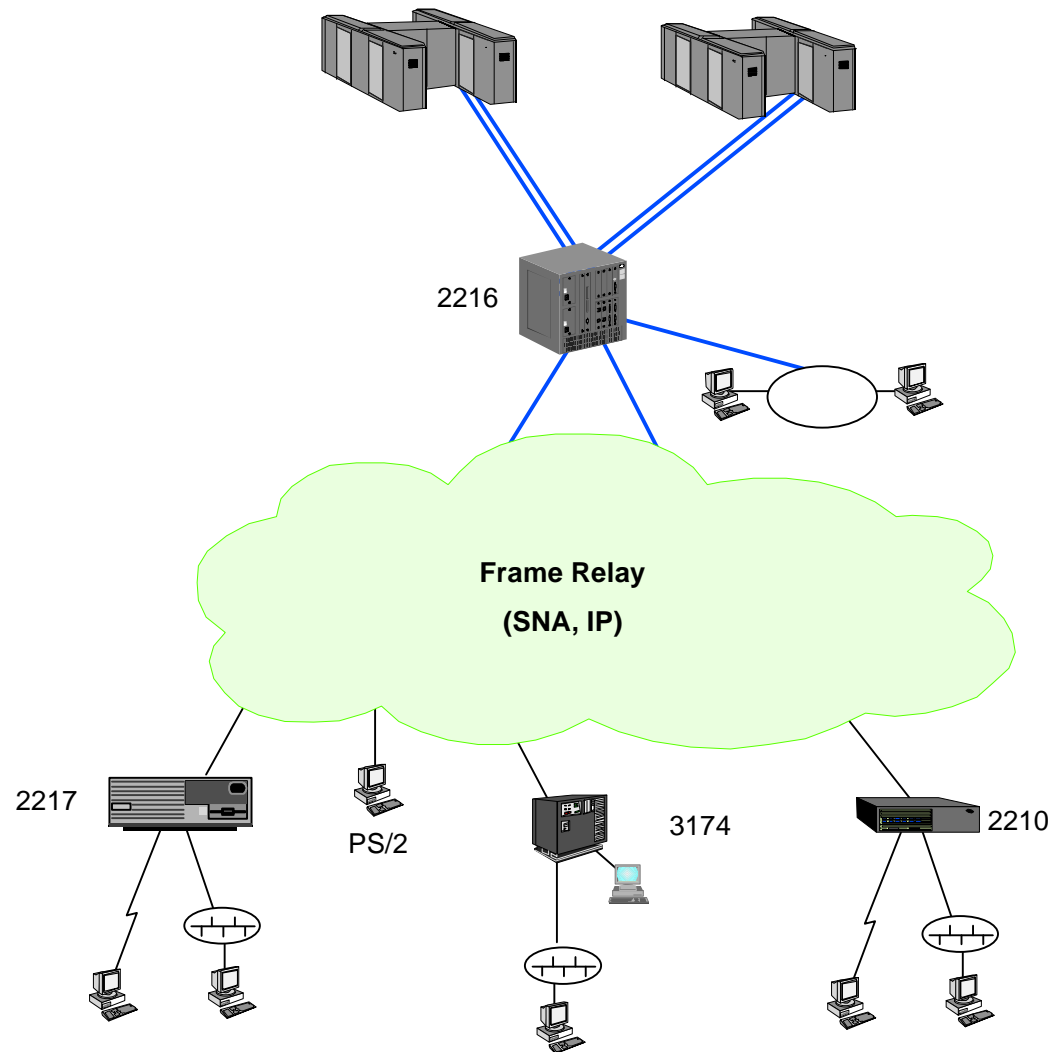


Solution 2b

- ★ Migrate subarea SNA network to APPN/HPR, using DLUR
 - Cannot justify 3746 upgrade
 - Both protocols carried natively
- ★ Use 2216 for consolidated network gateway
- ★ Frame Relay transport for both SNA and IP
- ★ Benefits of single platform to support all subarea SNA (using DLUR) and IP traffic
- ★ Simpler management

Decision Factors

- ★ Single platform for small scale APPN/HPR network
- ★ Number of SNA PUs and sessions
 - 2216 supports 1500 adjacent nodes



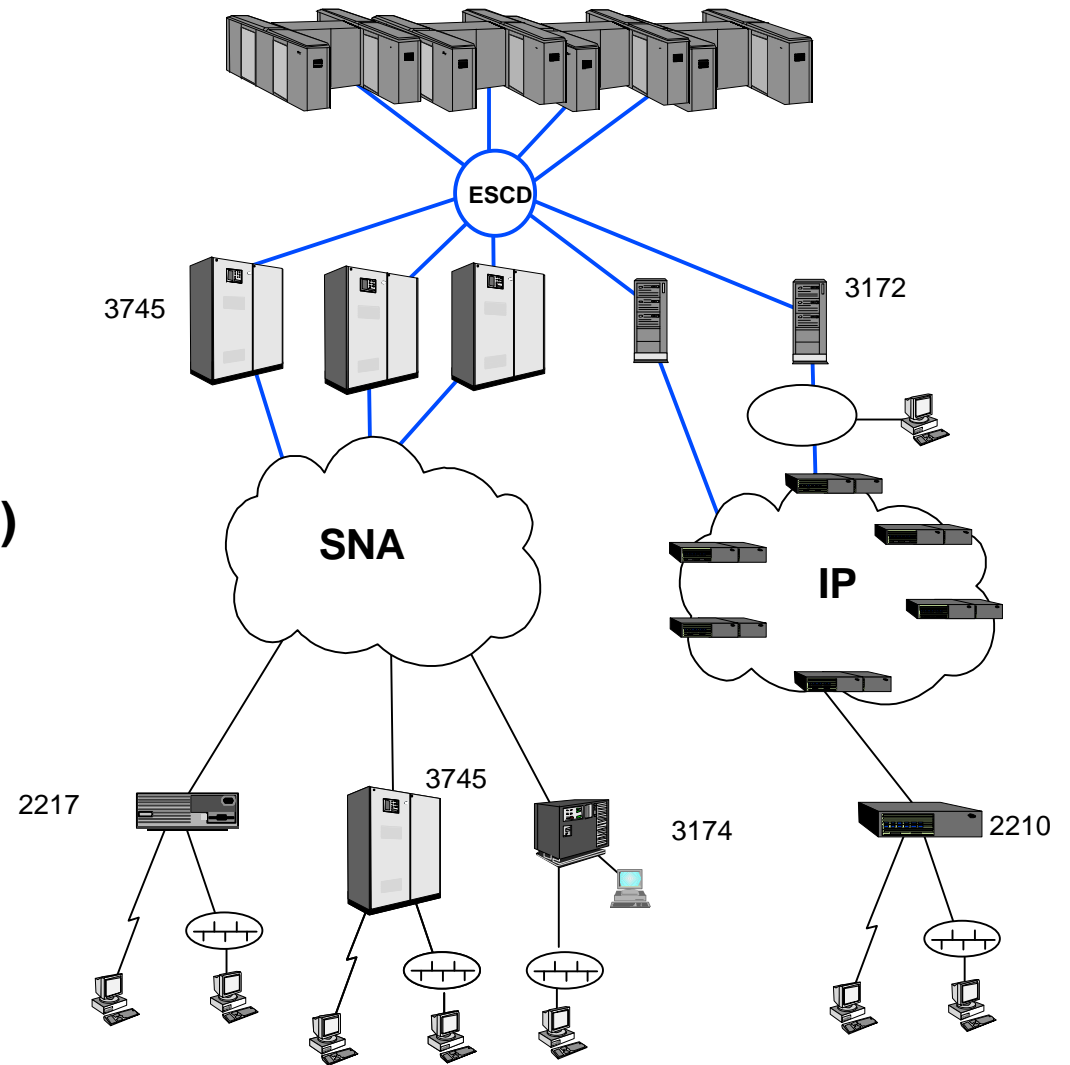
Scenario 4 - Today

Environment

- ★ Medium to large SNA and IP networks
- ★ Separate S/390 gateways
3745/NCP for SNA
3172 for IP
- ★ Multiple S/390 servers

Requirements (alternatives)

1. Consolidation of SNA and IP gateways
2. APPN/HPR migration to support Parallel Sysplex



Scenario 4 - Today

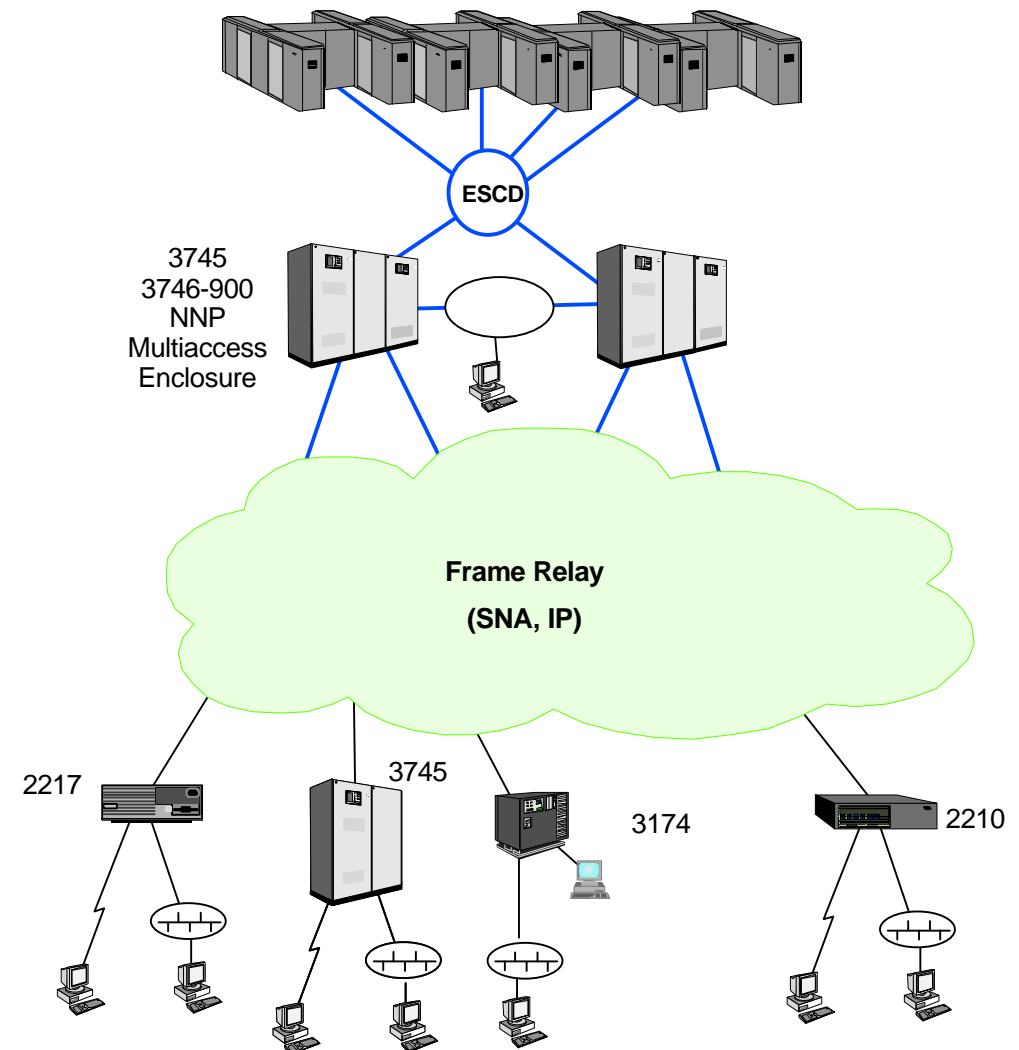


Solution 1

- ★ 3746-900 with NNP for SNA and IP consolidation
- ★ Add Multiaccess Enclosure for high speed connectivity
- ★ Frame Relay
- ★ Switching infrastructure for SNA and IP
- ★ Both protocols carried natively - better performance

Decision Factors

- ★ High speed connectivity
- ★ Number of SNA PUs and sessions
- This scenario assumes large numbers of SNA resources



Scenario 4 - Today

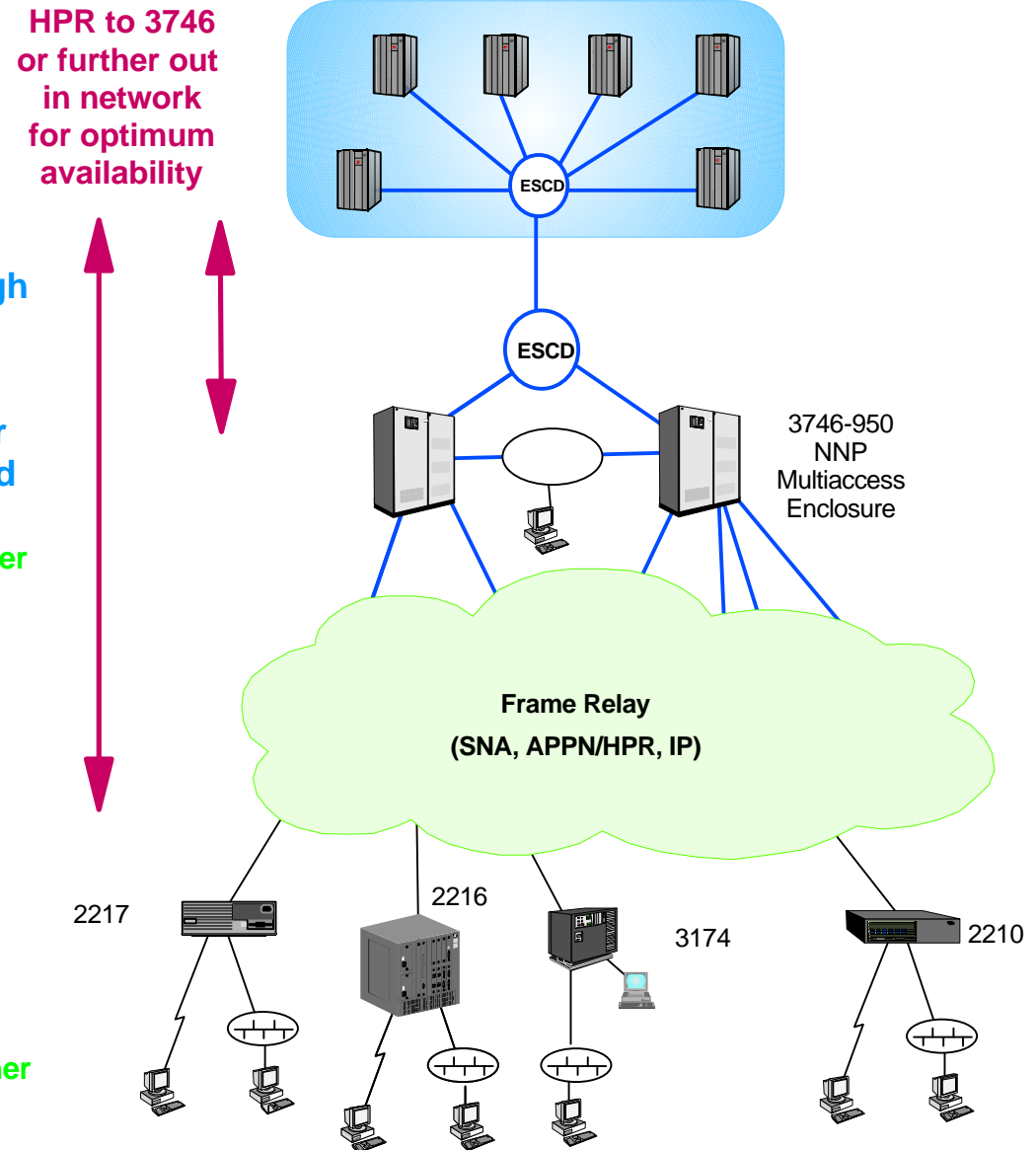


Solution 2

- ★ 3746-950 for SNA and IP consolidation
- ★ Add Multiaccess Enclosure for high speed connectivity and T1/E1/J1 price/port of IP and HPR traffic
- ★ APPN/HPR and MPC+ support for Parallel Sysplex performance and availability
 - APPN/HPR in network to give even better availability
- ★ Support for native protocols over Frame Relay to give best performance
 - No need for DLSw over IP
- ★ 2216 replaces remote 3745/NCP

Decision Factors

- ★ APPN support for large subarea network using DLUR
 - Moving APPN/HPR/DLUR function further out into network improves 3746-950 performance
- ★ Loss of remote NCP



Scenario 5 - Today

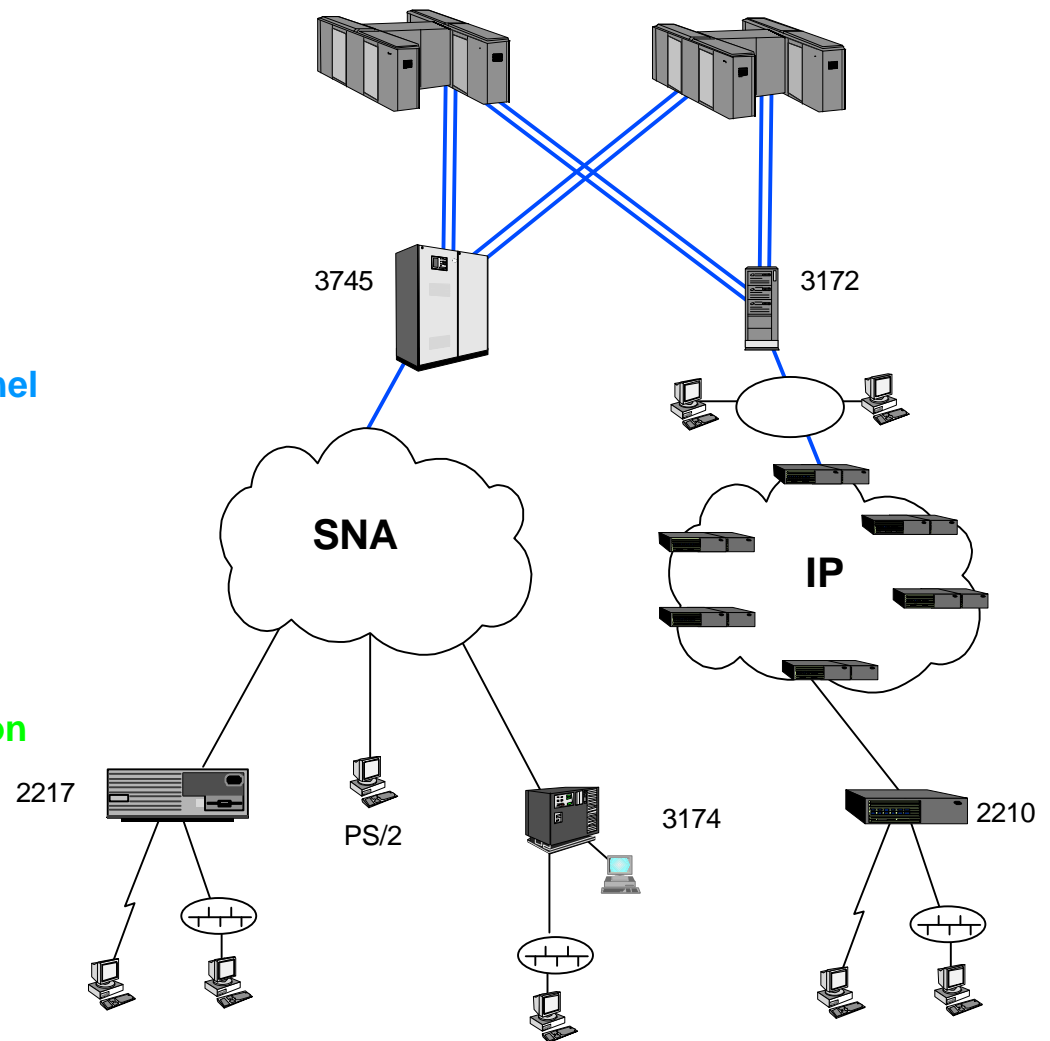


Environment

- ★ Small to medium SNA and IP networks
- ★ Separate S/390 gateways
3745/NCP for SNA
3172 for IP (or possible channel attached router for IP)
- ★ Single or few S/390 servers
- ★ TCP/IP traffic growing quickly

Requirement

1. Consolidation of SNA and IP gateways, evolving to a common IP WAN infrastructure



Scenario 5 - Future

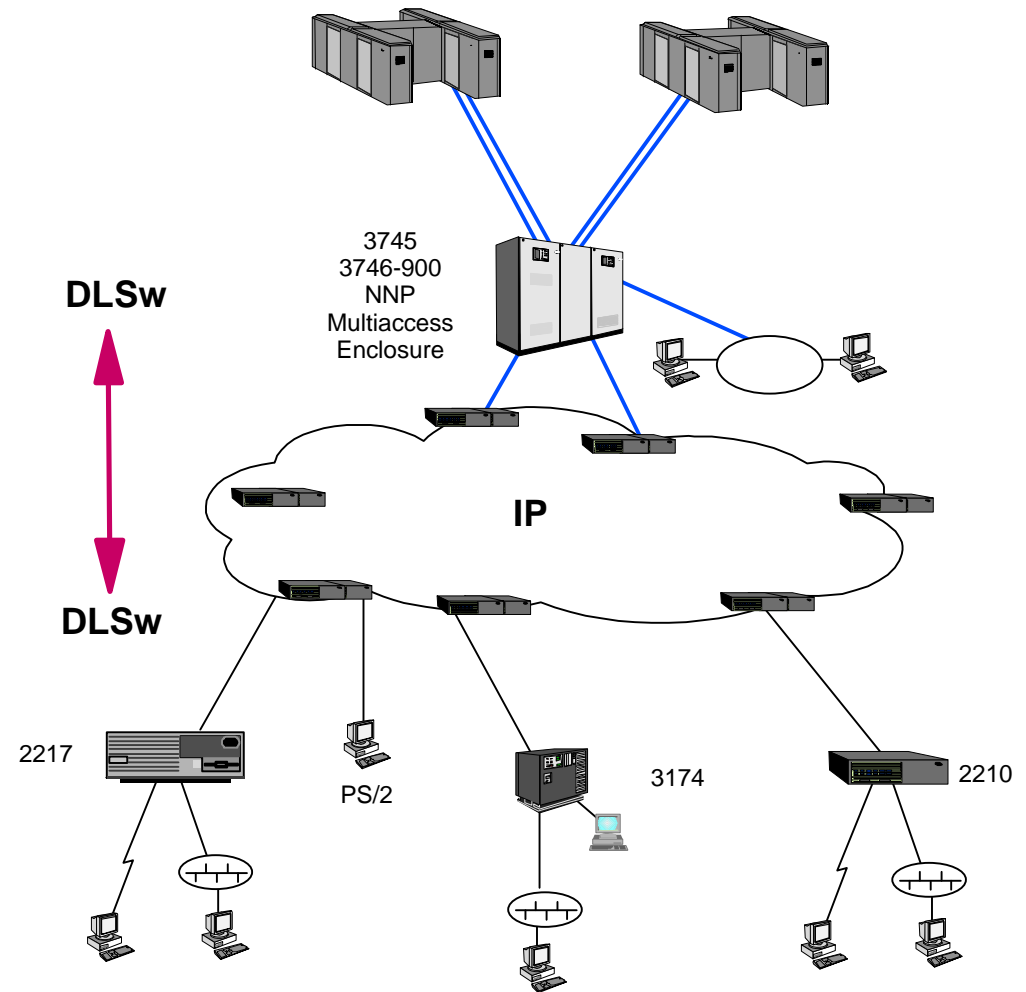


Solution 1a

- ★ Consolidate subarea, DLSw and TCP/IP router traffic onto 3746 with Multiaccess enclosure if economically feasible
- ★ Use DLSw for SNA transport

Decision Factors

- ★ Requires remote router with DLSw
 - Assumes migration of SNA WAN network to router infrastructure
- ★ Connectivity and scalability



Scenario 5 - Future

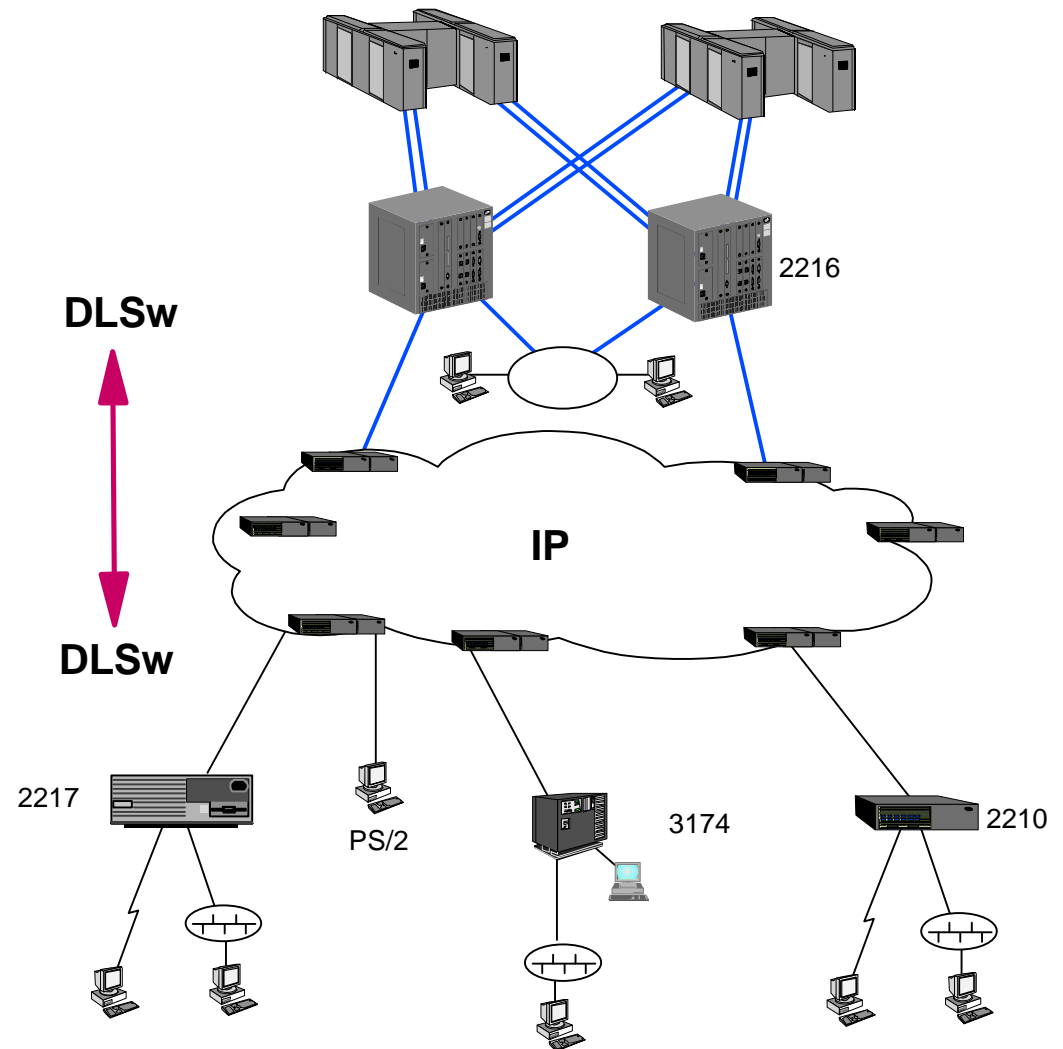


Solution 1b

- ★ Consolidate SNA and IP using 2216(s)
- ★ Use DLSw for SNA transport
- ★ Use SNA passthrough

Decision Factors

- ★ Host impact (storage and CPU cycles)
- ★ Number of SNA PUs and sessions
 - 2216 supports 1500 adjacent nodes
- ★ Connectivity and scalability
- ★ Parallel/ESCON channel support



Scenario 6 - Today

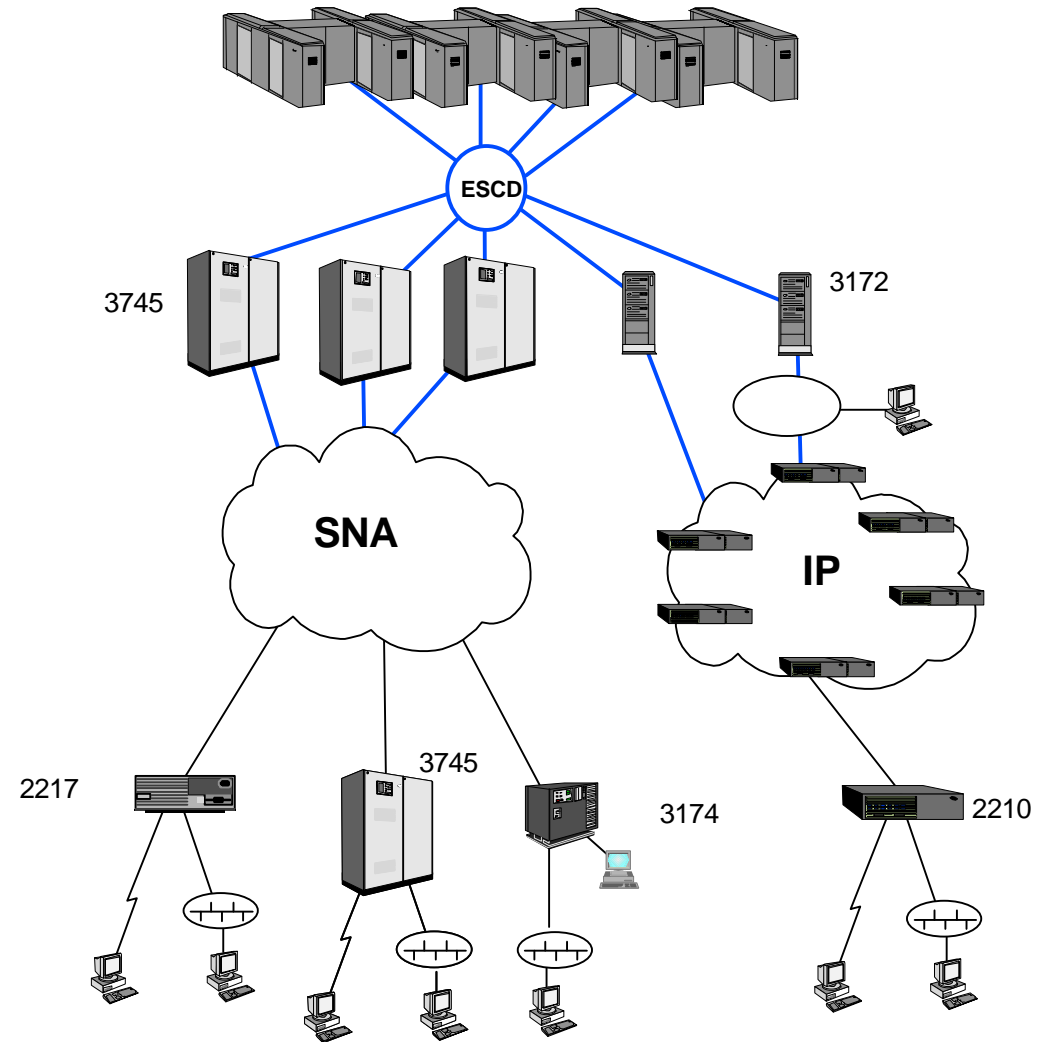


Environment

- ★ Medium to large SNA and IP networks
- ★ Separate S/390 gateways
3745/NCP for SNA
3172 for IP
- ★ Multiple S/390 servers

Requirements (alternatives)

1. Consolidation of SNA and IP gateways, evolving to a common IP WAN infrastructure, keeping existing SNA access platforms
2. As above, but migrating to new workstation platforms supporting only IP access to the network



Scenario 6 - Today

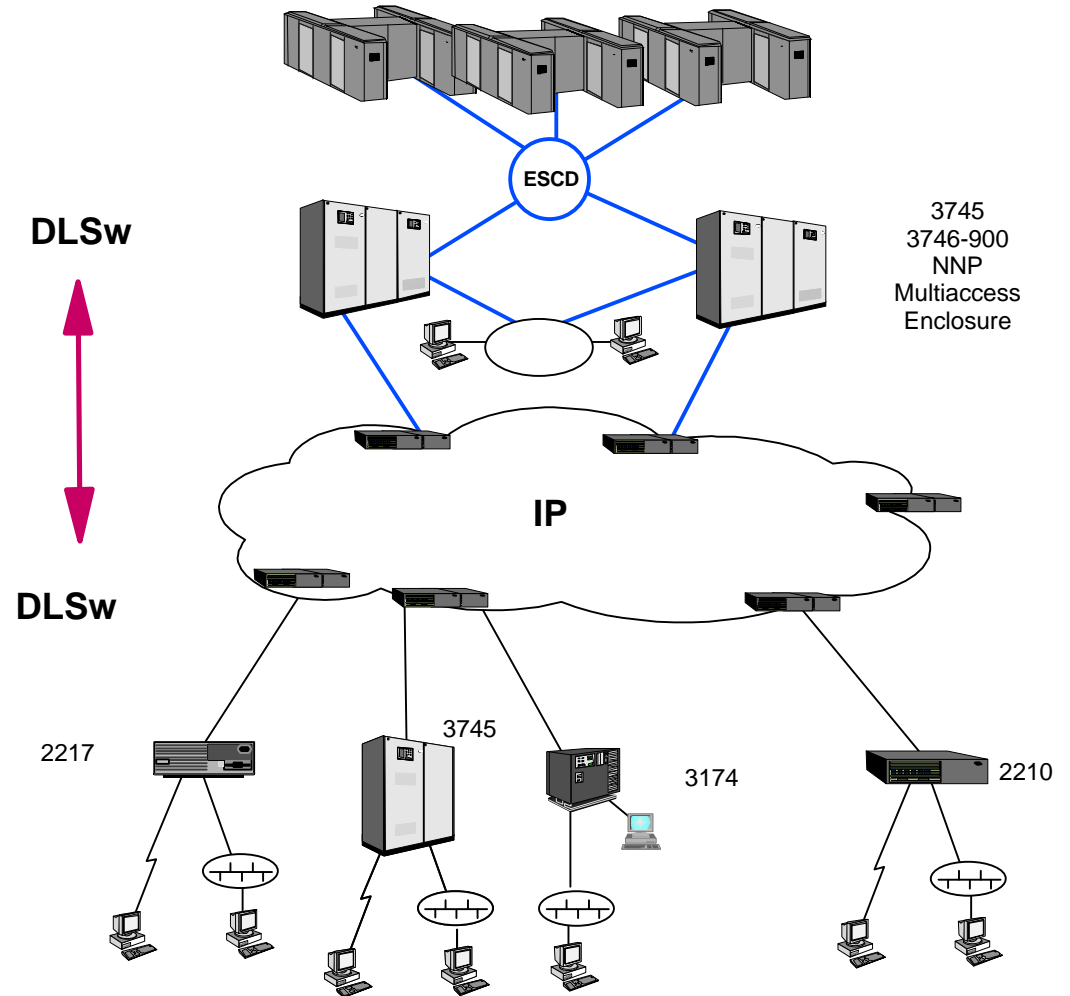


Solution 1

- ★ Consolidate SNA and IP using 3746 M900
- Add Multiaccess enclosure for DLSw, new connectivity and improved TCP/IP channel performance
- Positioned for high speed MPC+ HPR over the channel to extend high availability and improve SNA performance
- ★ Subarea SNA can still be supported if required

Decision Factors

- ★ Connectivity and scalability
- ★ Subarea SNA support
- ★ Choice of platform in remote branch and gateway



Scenario 6 - Today

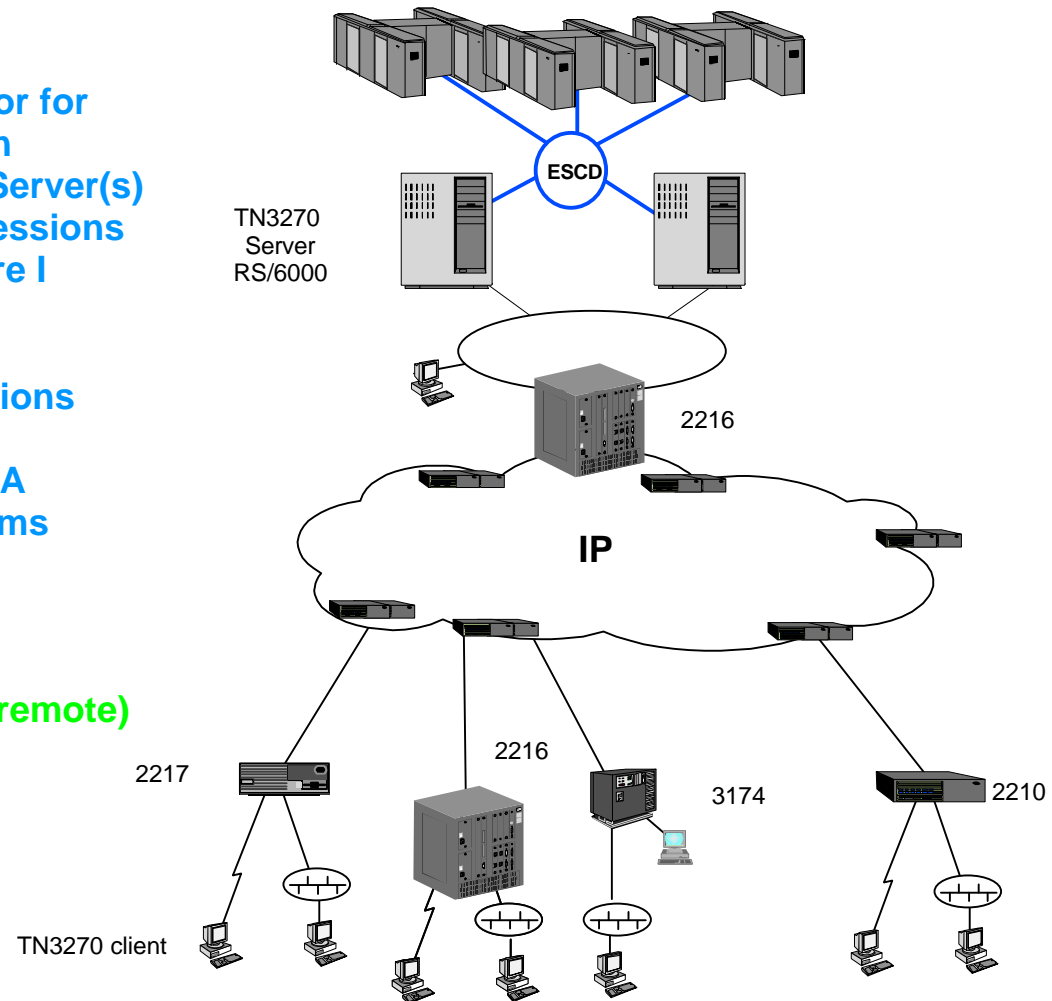


Solution 2

- ★ 2216 Multiaccess Connector for router WAN concentration
- ★ RS/6000 for large TN3270 Server(s)
- ★ TN3270 support for SNA sessions over large IP infrastructure I

Decision Factors

- ★ Number of supported sessions
- ★ LAN/WAN connectivity
- ★ No support for subarea SNA
- ★ Low cost branch IP platforms
- ★ Choice of TN3270 servers
 - RS/6000
 - TCP/IP MVS
 - Communications Server (remote)
 - 2216 (Preview)
 - 3746 (Preview)



Scenario 7 - Today

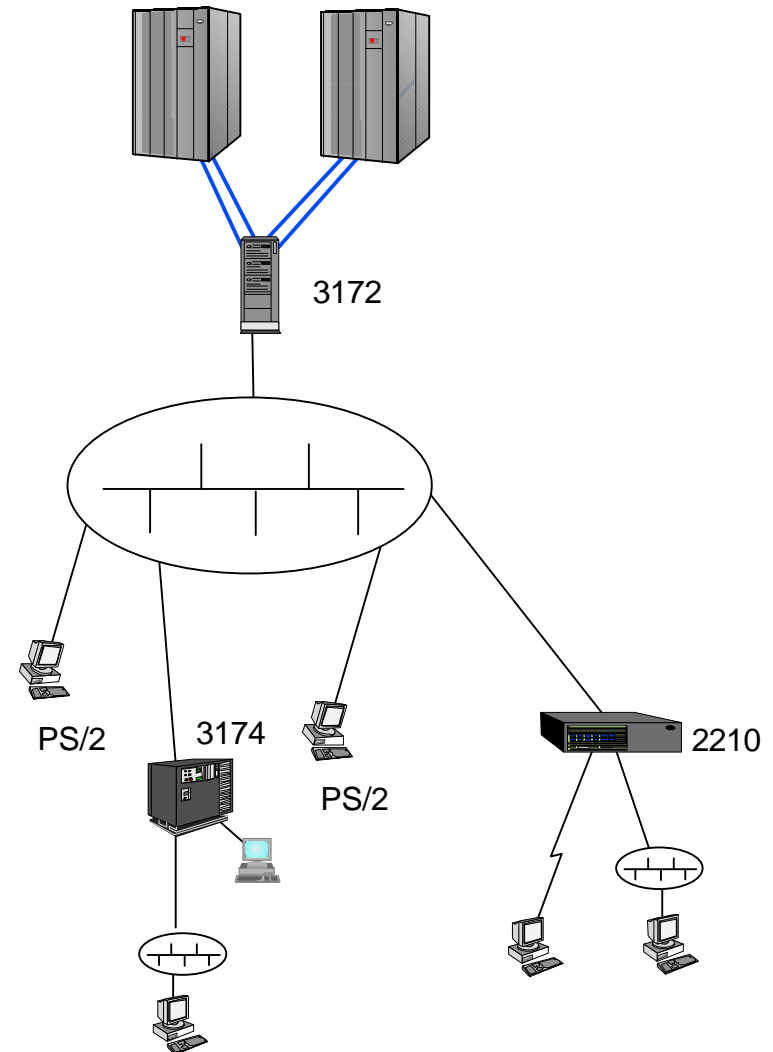


Environment

- ★ Campus LAN infrastructure
- ★ Using IP and SNA passthrough channel access
- ★ Single or few 3172 LAN gateways
- ★ Single or few S/390 servers - CMOS

Requirement

1. Migrating towards campus ATM SVN infrastructure



Scenario 7 - Future

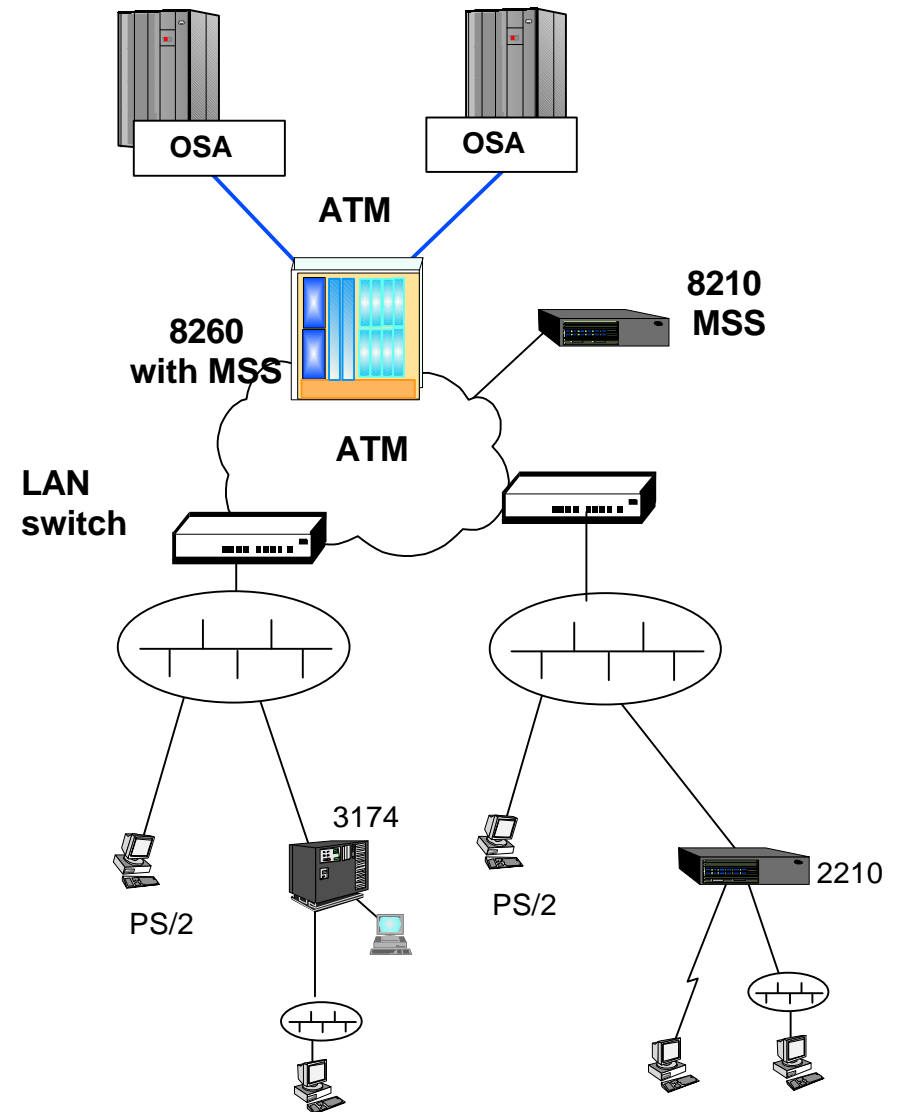


Solution 1a

- ★ Use Open Systems Adapter (OSA-2) on CMOS server
- ★ Use LAN Emulation across ATM port
- ★ Use Multiprotocol Switched Services (MSS) for SVN ATM campus

Decision Factors

- ★ Number of SNA PUs
- ★ Number of S/390 servers
 - SNA boundary function is provided by one VTAM - have to route through that VTAM to get to other servers
- ★ Connectivity
 - OSA-2 only supports LAN and ATM (no WAN ports)



Scenario 7 - Future

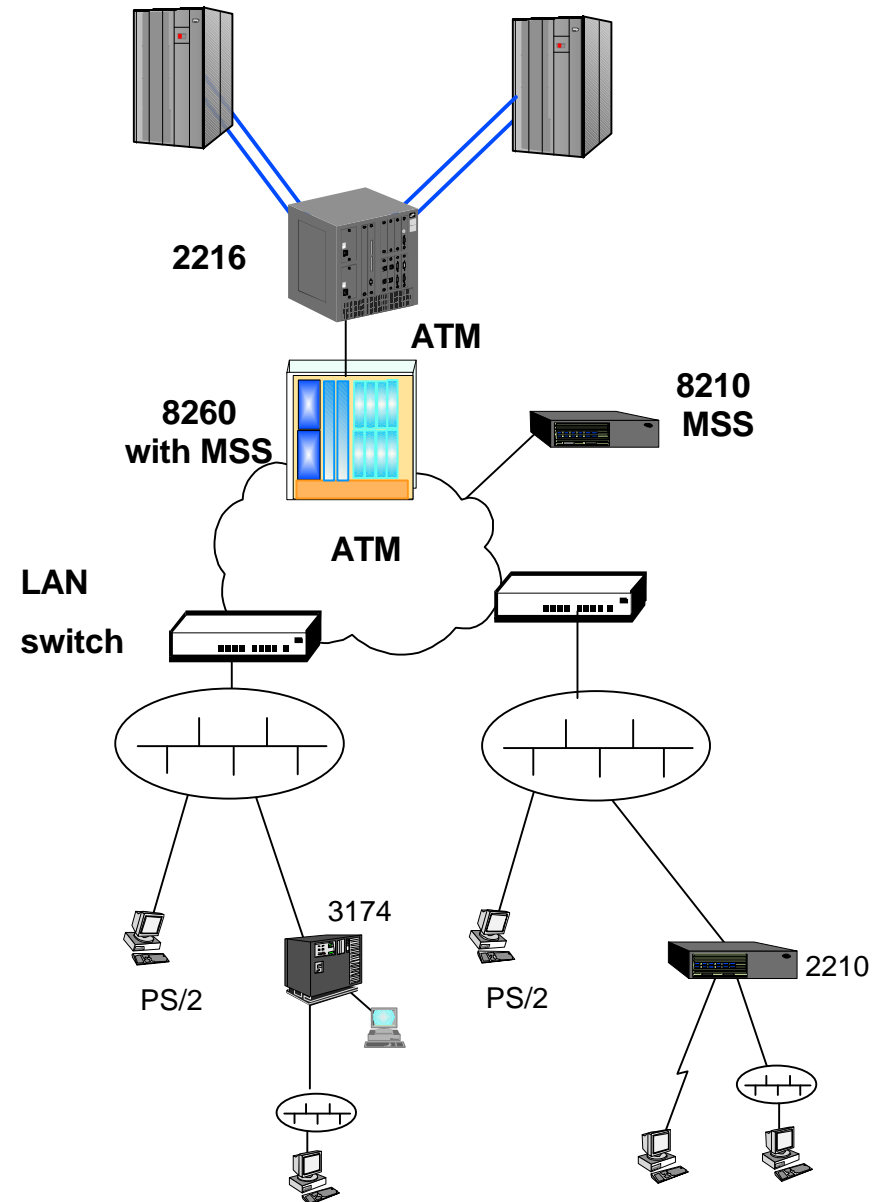


Solution 1b

- ★ Use 2216 for non-CMOS machines or for channel attachments to multiple hosts
- ★ Use Multiprotocol Switched Services for SVN ATM campus

Decision Factors

- ★ Number of SNA PUs
- ★ Access to multiple CPUs from same LAN



Scenario 8 - Today

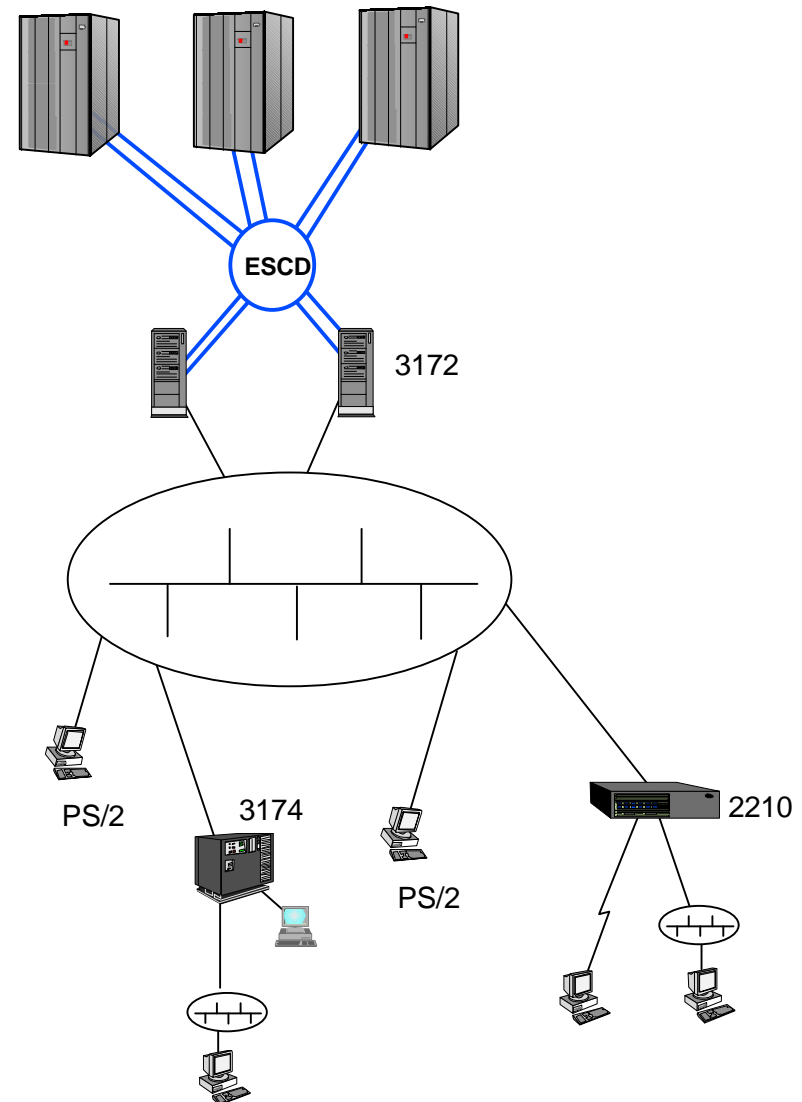


Environment

- ★ Large campus LAN supporting SNA and IP applications
- ★ Using IP and SNA passthrough channel access
- ★ Multiple 3172 LAN gateways
- ★ Multiple S/390 servers

Requirements

1. Migration to campus ATM SVN infrastructure
2. Migration to APPN/HPR over ATM



Scenario 8 - Future

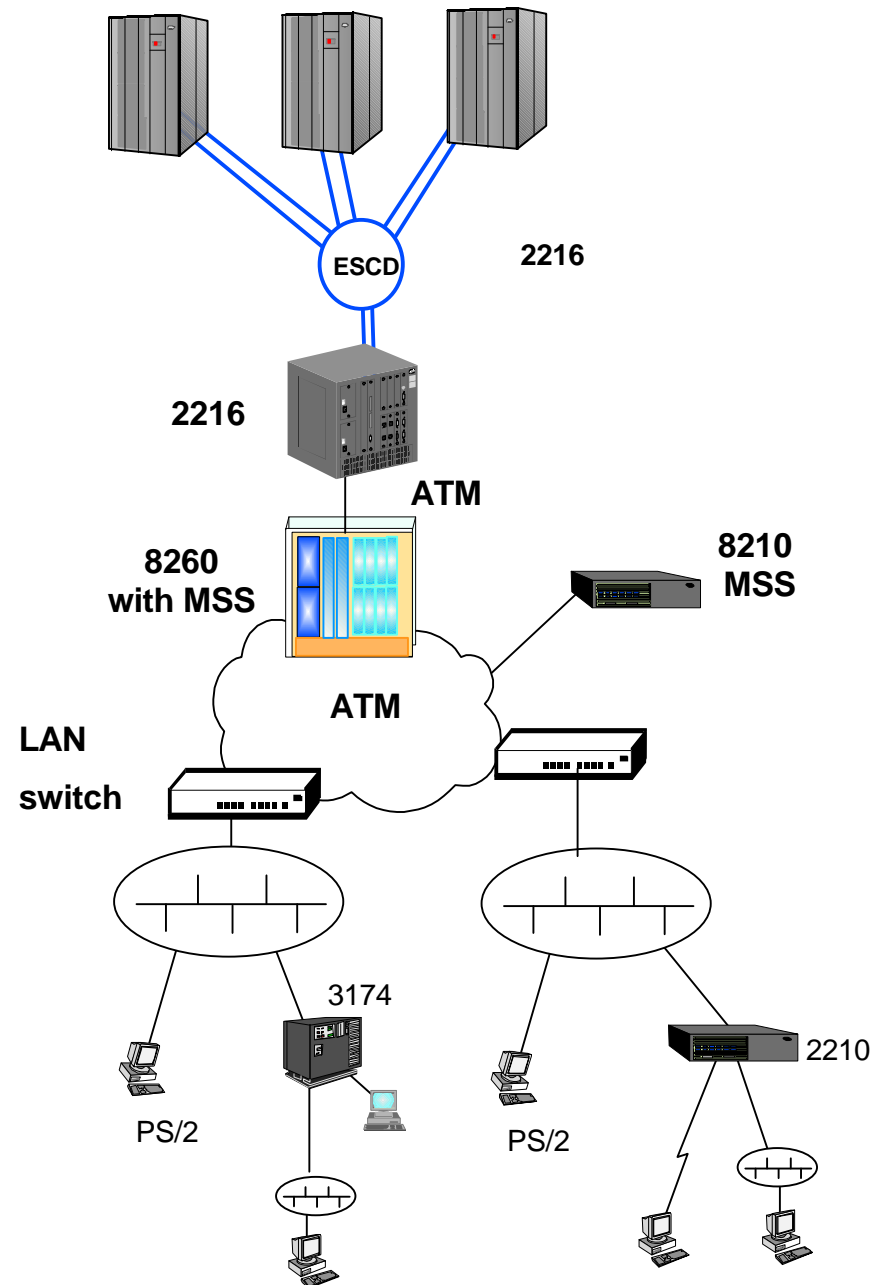


Solution 1

- ★ Use channel 2216 to provide new ATM connectivity
- ★ Use Multiprotocol Switched Services for SVN ATM campus

Decision Factors

- ★ Number of SNA PUs
- ★ Connectivity to multiple hosts
- ★ ESCON/Parallel channels



Scenario 8 - Future

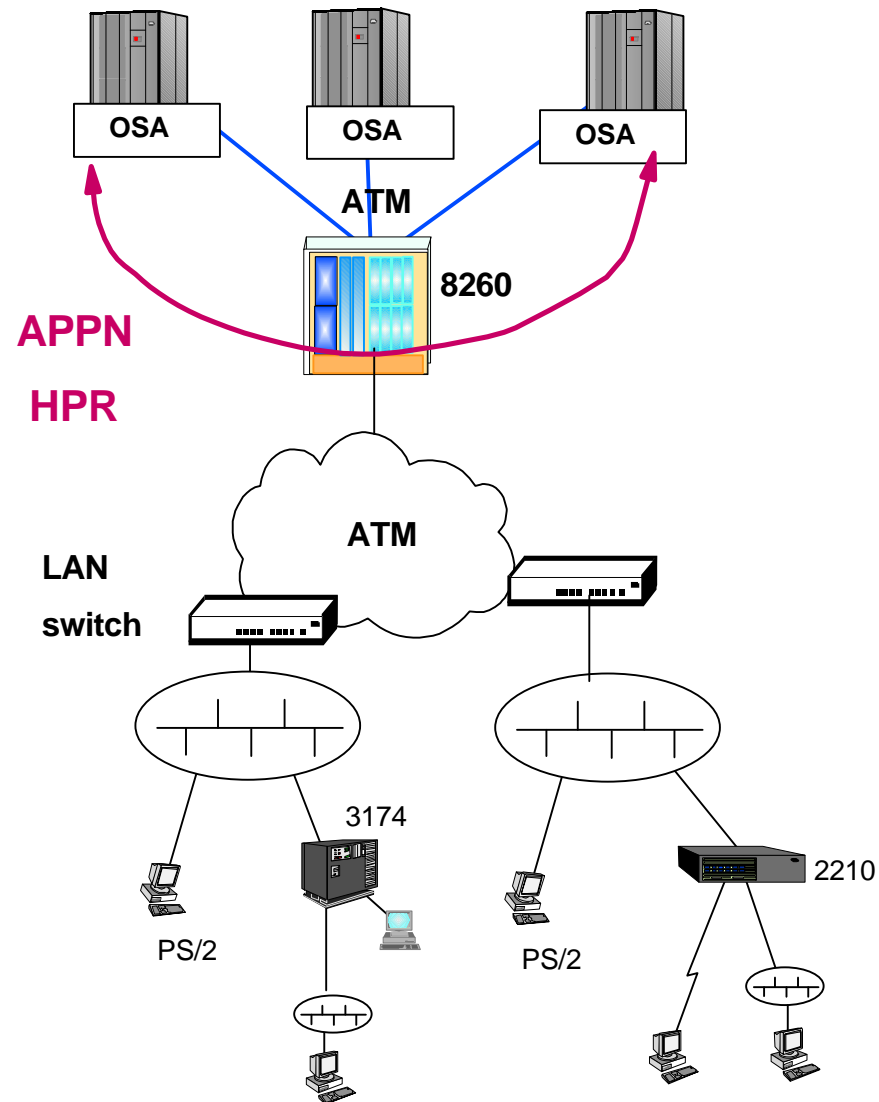


Solution 2

- ★ Use Open Systems Adapter (OSA-2) on CMOS server
- ★ VTAM V4R4 provides native HPR support for SNA over ATM

Decision Factors

- ★ Cost (OSA-2)
- ★ HPR performance using MPC+ with OSA-2
- ★ Connectivity
 - Native HPR support over ATM only supported for VTAM-VTAM today
 - OSA-2 only supports LAN and ATM (no WAN ports)



Scenario 9 - Today

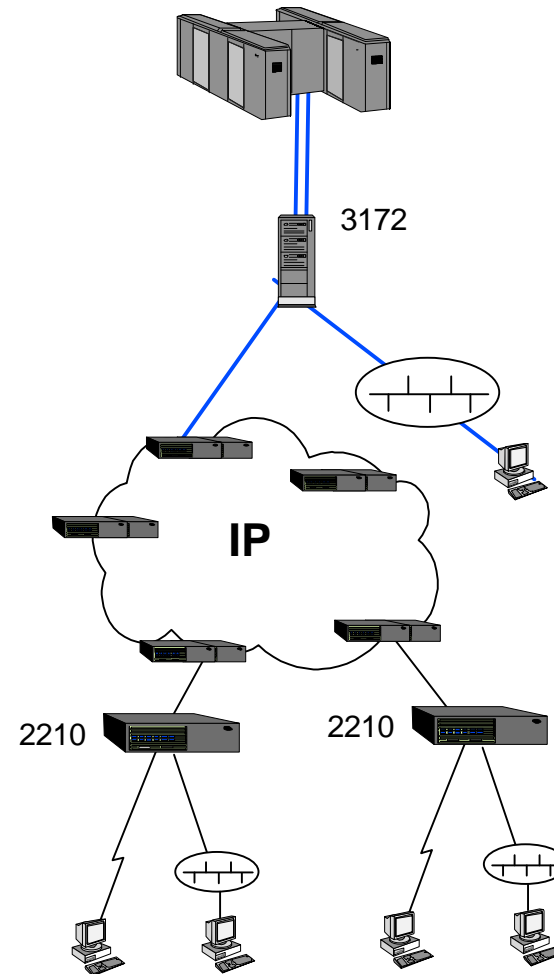


Environment

- ★ Small to medium IP transport network
- ★ TCP applications
- ★ Single or few 3172 gateways
- ★ Single or few S/930 servers

Requirements

1. Growing IP network, with new WAN connectivity



Scenario 9 - Future

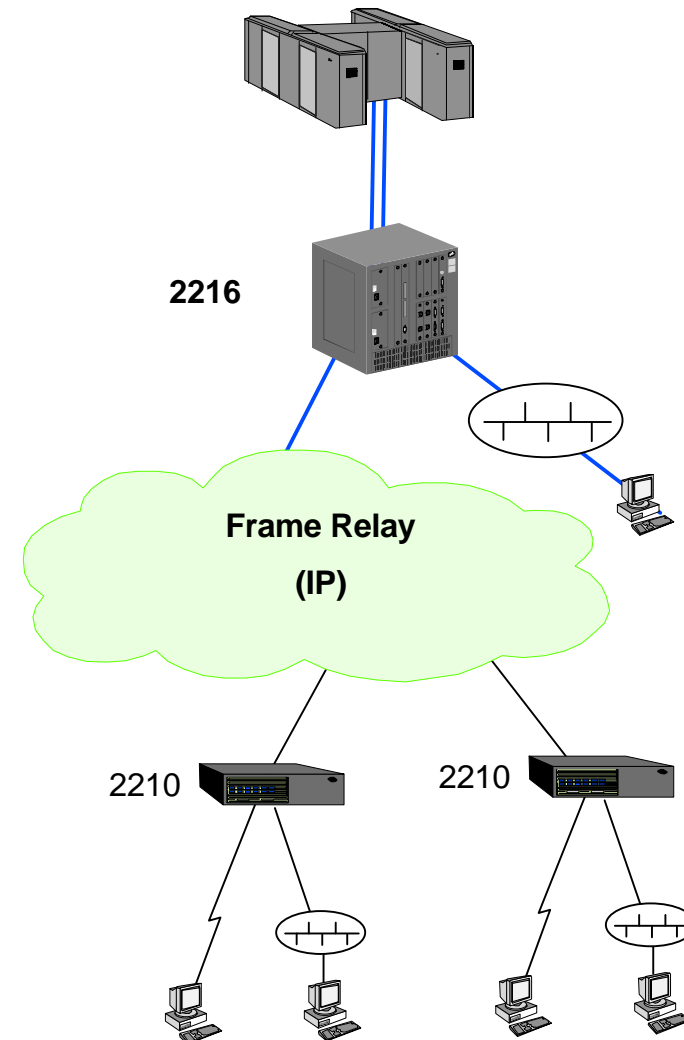


Solution

- ★ 2216 as 3172 replacement
 - Higher performance channel gateway
 - Option of SNA consolidation from other parts of network in the future
- ★ Router to router WAN connection
- ★ ISDN backup of Frame Relay

Decision Factors

- ★ High speed connectivity
 - -Frame Relay / ATM
- ★ ESCON/Parallel channel support



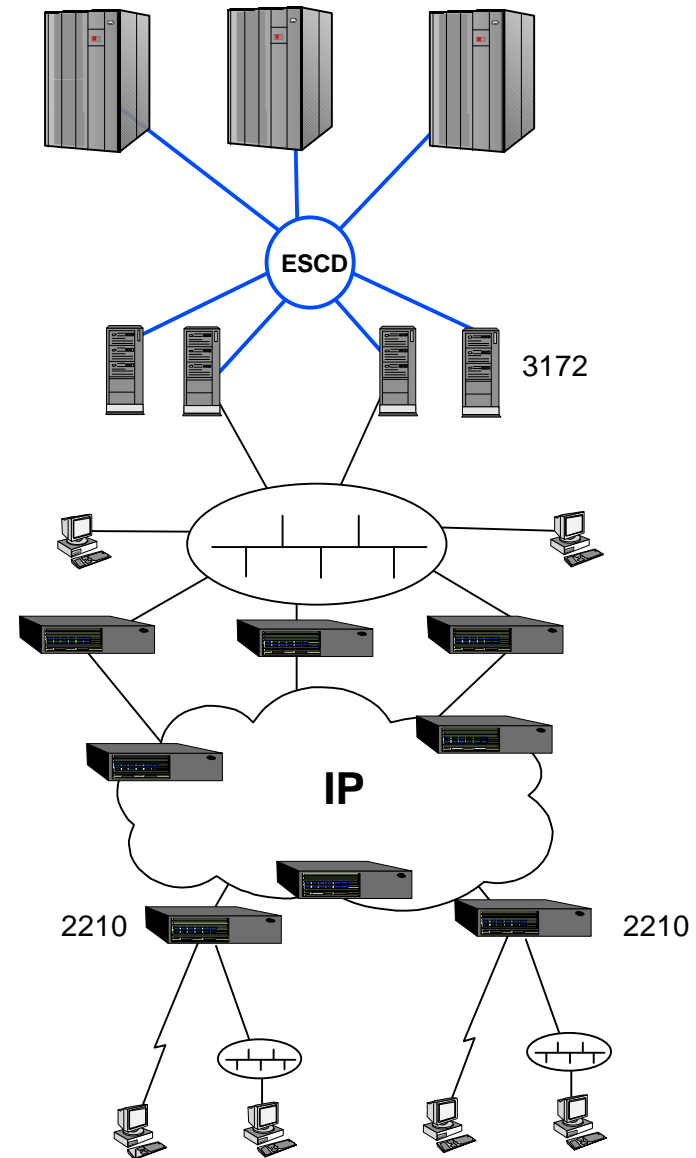
Scenario 10 - Today

Environment

- ★ Large WAN/LAN network using IP transport
- ★ All applications now using TCP/IP services
- ★ Multiple 3172 LAN gateways WAN traffic bridged into 3172
- ★ Many S/390 servers

Requirement

1. Growth in IP traffic, new high speed WAN connectivity and consolidation of 3172 footprints with improved management,



Scenario 10 - Future 1a

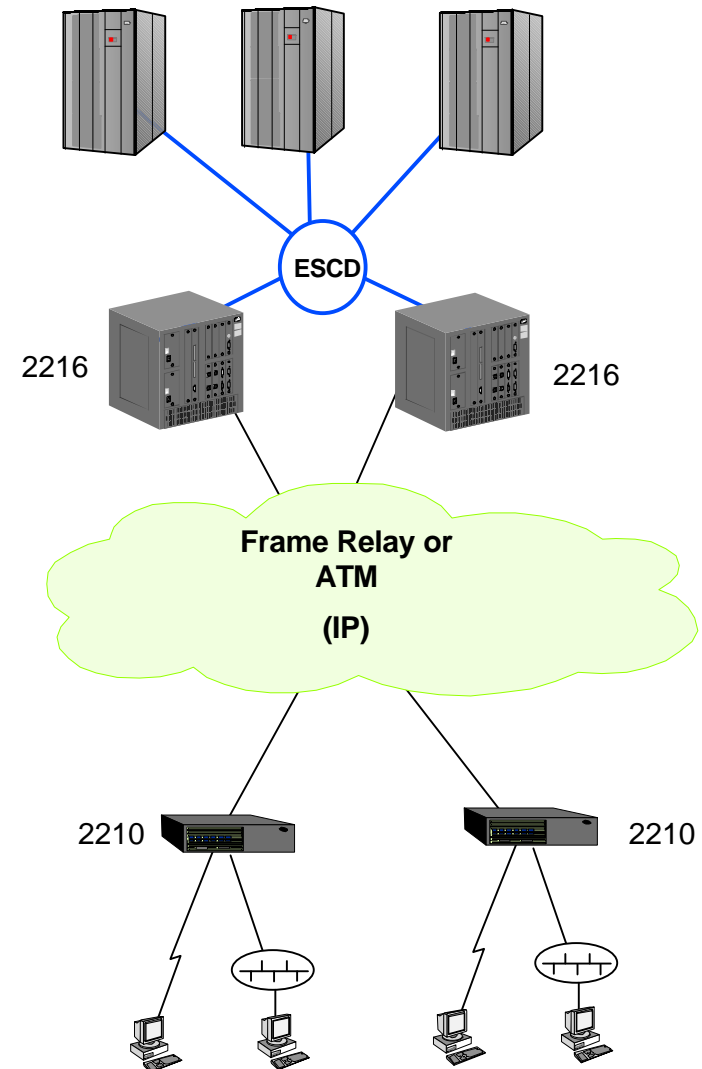


Solution 1a

- ★ Install 2216 for native IP WAN and server gateway
- ★ Connectivity and scalability benefits for growing IP network

Decision Factors

- ★ Connectivity WAN/LAN options
- ★ Increased throughput
- ★ Parallel/ESCON channel support



Scenario 10 - Future 1b

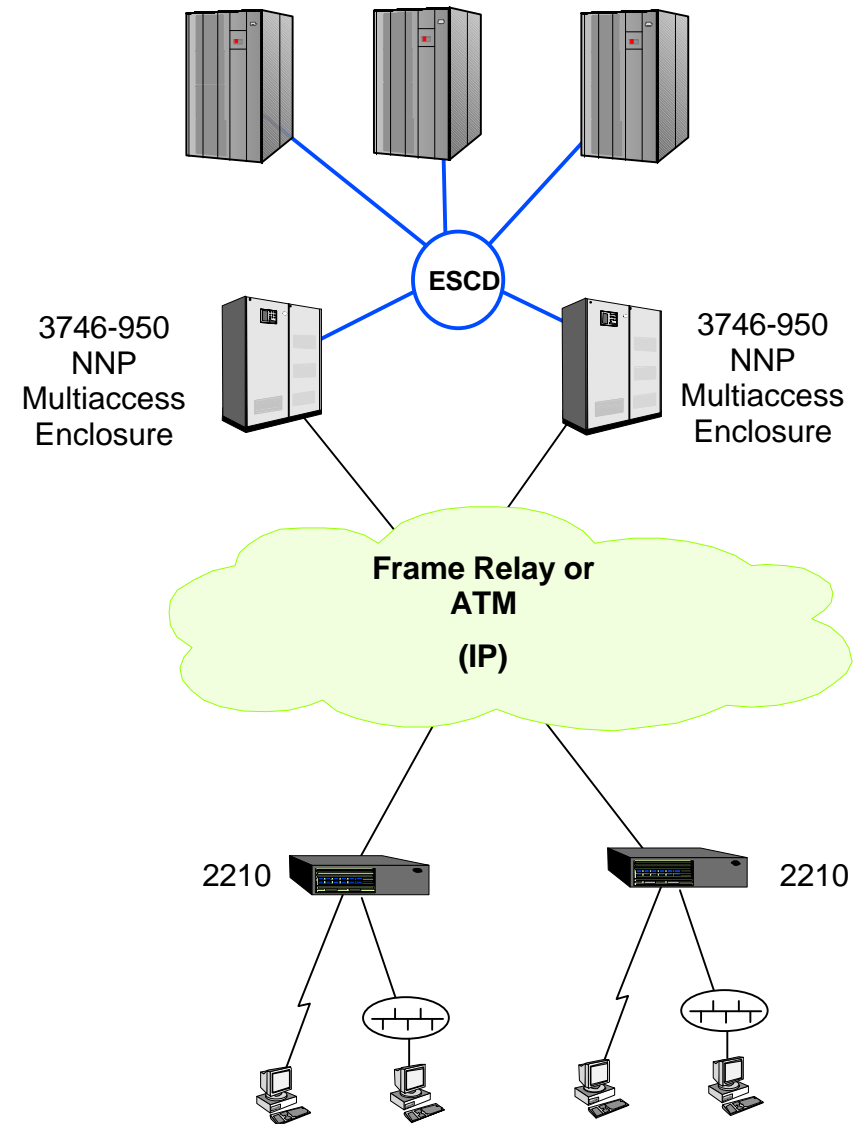


Solution 1b

- ★ Install 3746-950 for high performance IP WAN and server gateway
- ★ Connectivity and scalability benefits for growing IP network
- Solution for very large networks with many WAN/LAN connections

Decision Factors

- ★ Connectivity - WAN/LAN options
- ★ Increased throughput



Scenario 11 - Future

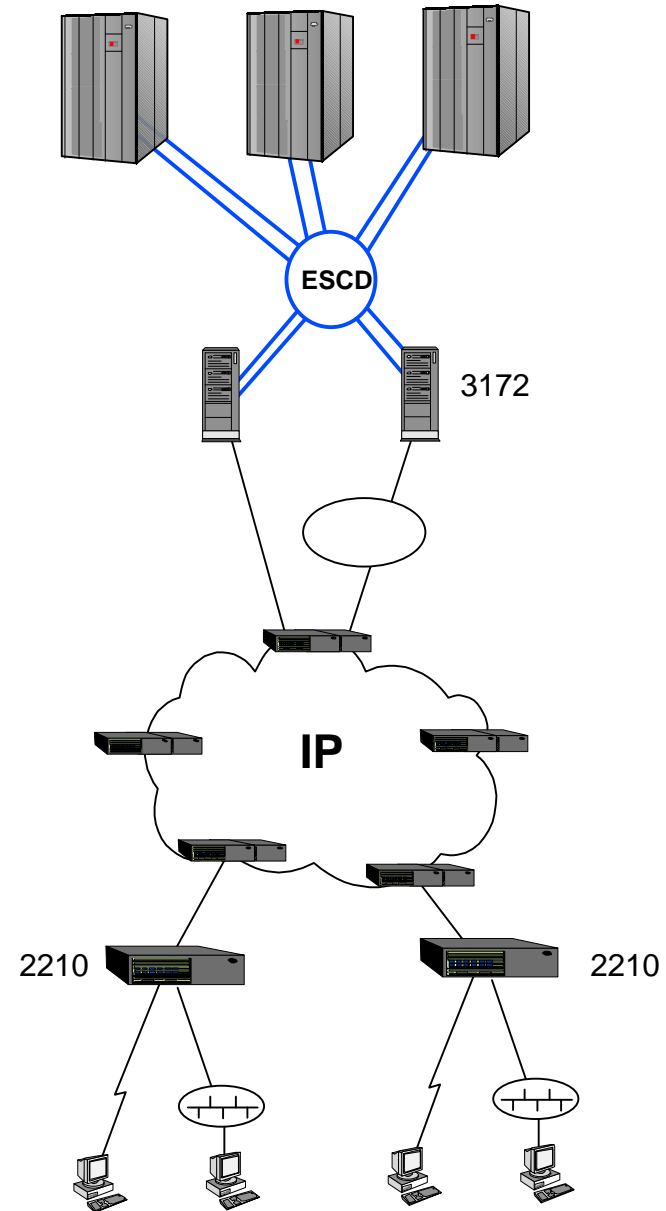


Environment

- ★ Medium to large LAN and WAN network
- ★ IP applications
- ★ Multiple 3172 LAN gateways
- ★ Multiple S/390 servers

Requirements

1. ATM connectivity to Internet Service Provider or private Frame Relay network



Scenario 11 - Future

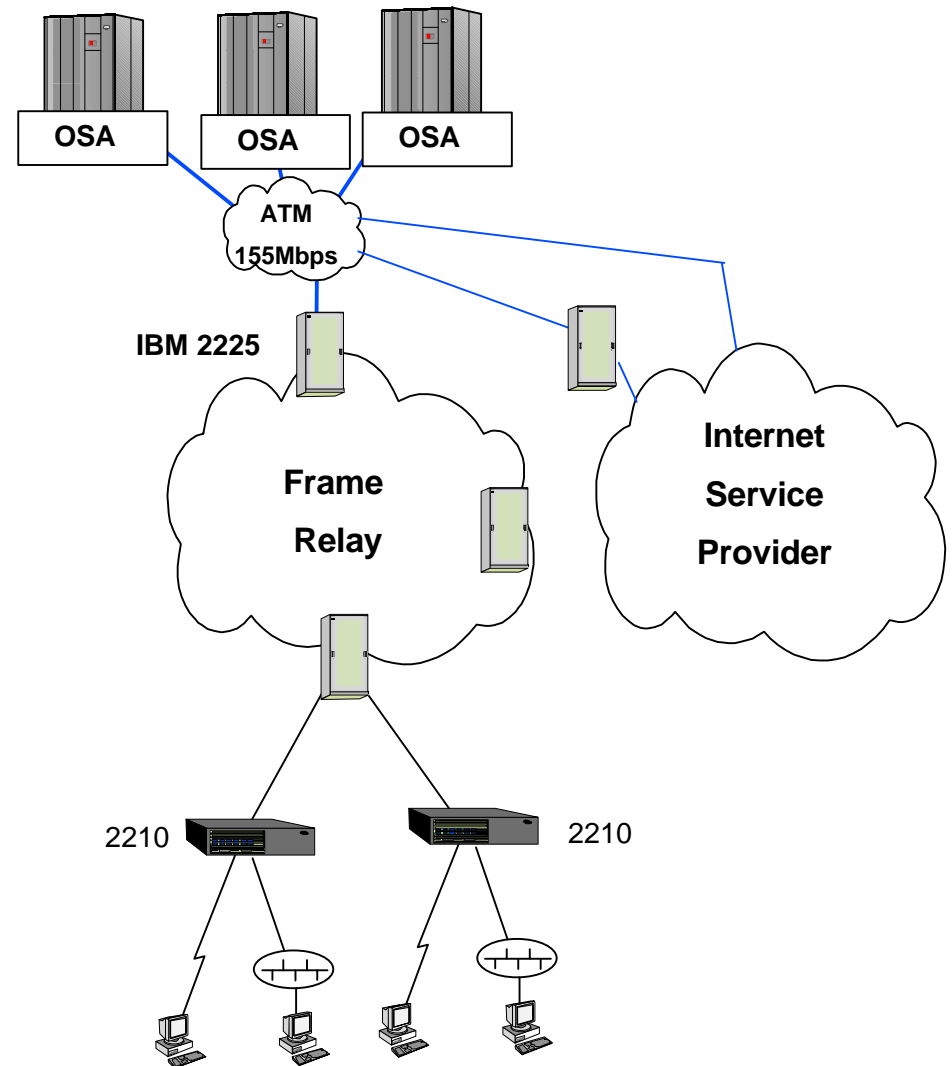


Solution

- ★ **Direction statement for OSA-2**
 - Use IBM 2225 with OSA-2 for ATM access from S/390 server to Frame Relay Service

Decision Factors

- ★ **WAN connectivity options**
 - Frame Relay / SMDS / ISDN
- ★ **ATM connection cannot be shared with SNA traffic (if any exists)**



Additional Positioning Information



★ Full Lists of Product Positioning Alternatives

1. **By Environment - WAN**
2. **By Environment - LAN**
3. **By Traffic Type - WAN**
4. **By Traffic Type - LAN**

★ Product Detail Comparisons

1. **3745/NCP, 3746-900/NCP, 3746-900/950 NNP**
2. **3746 Multiaccess Enclosure, 2216, OSA-2**
3. **3172 ICP, 3172 OS/2, RS/6000**

Positioning Alternatives by Environment - WAN



ENVIRONMENT		OPTIONS	DECISION FACTORS
Medium to large connectivity	Parallel Sysplex	3745/6 900 NCP 3746-900/950 NNP 3746-900/950 NNP and Multiaccess Enclosure 2216 RS/6000	<ul style="list-style-type: none"> - APPN/HPR support - MPC+/ATM support - Parallel/ESCON channel - Connectivity and throughput - NCP unique features (subarea SNA, SNI, BSC 3270 etc) - Host impact (storage and CPU cycles) - Number of SNA PUs - Extent of IP and DLSw in WAN - TN3270 server - timing of requirement
	No Parallel Sysplex	3745/6-900 NCP 3746-900/950 NNP 3746-900/950 NNP and Multiaccess Enclosure 2216 RS/6000	<ul style="list-style-type: none"> - Parallel/ESCON channel - Connectivity and throughput - NCP unique features - Host impact (storage and cycles) - Extent of IP and DLSw in WAN - TN3270 server - timing decision
Small to medium connectivity	Parallel Sysplex	3745/6 900 NCP 3746 900/950 NNP 2216 3172	<ul style="list-style-type: none"> - APPN/HPR support - Justification of 3746/SNA handling - Number of SNA PUs - Extent of IP and DLSw in WAN - Parallel/ESCON channel - NCP unique features - Host impact
	No Parallel Sysplex	3745/6 900 NCP 2216 3172	<ul style="list-style-type: none"> - Justification of 3746 and SNA handling - Parallel/ESCON channel - NCP unique features - Host impact

Positioning Alternatives by Environment - LAN



ENVIRONMENT		OPTIONS	DECISION FACTORS
Parallel Sysplex	Medium to large connectivity	3745/6 NCP 3746-900/950 NNP 3746-900/950 NNP and Multiaccess Enclosure 2216 3172 RS/60000	<ul style="list-style-type: none"> - APPN/HPR support - Parallel/ESCON channel - Connectivity and throughput - NCP unique features (subarea SNA, SNI, BSC 3270 etc) - MPC+/ATM support - Host impact (storage and CPU cycles) - FDDI - TN3270 server decision
	Small to medium connectivity	3745/6 NCP 3746-900/950 NNP 2216 3172	<ul style="list-style-type: none"> - APPN/HPR support - Parallel/ESCON channel - NCP unique features - Host impact / number of SNA PUs - MPC+/ATM support - FDDI
No Parallel Sysplex	Multiple S/390 Servers		<ul style="list-style-type: none"> - Parallel/ESCON channel - NCP unique features - Connectivity and throughput - FDDI, ATM - TN3270 server decision
	Single or few S/390 Servers	Bipolar	<ul style="list-style-type: none"> - Parallel/ESCON channel - FDDI - Host impact
		CMOS	<ul style="list-style-type: none"> - Parallel/ESCON channel - FDDI - Host impact - Multiple channel attachments

Positioning Alternatives by Traffic Type - WAN

ENVIRONMENT	TRAFFIC	OPTIONS	DECISION FACTORS
Medium to large WAN network	Subarea SNA	3745/6-900 NCP	- Connectivity and throughput
	APPN/HPR	3745/6-900 NCP 3746-900/950 NNP/DLUR 2216 / DLUR	- Host APPN/HPR support - Parallel/ESCON channel - Connectivity and throughput - Consider Multiaccess Enclosure for new connectivity
	IP traffic	3745/6-900 NCP 3746-900/950 NNP 2216 3172	- Parallel/ESCON channel - Throughput and connectivity - Consider Multiaccess Enclosure for new connectivity
	SNA traffic over IP network	3746 900/950 NNP and Multiaccess Enclosure 2216 RS/6000	- Parallel/ESCON channel - Connectivity and throughput - Use of DLSw at remote site - TN3270 server decision
Small to medium WAN network	Subarea SNA	37456 /NCP	- Connectivity
	APPN/HPR	3745/NCP 3746 900/950 NNP/ DLUR 2216 / DLUR OSA-2 3172 OS/2	- Host APPN/HPR and number of SNA PUs - Parallel/ESCON channel - ATM (native) connectivity - Host impact (storage and CPU cycles) - Cost of ports
	IP traffic	3745/NCP 3746 900/950 NNP 2216 OSA-2 3172	- Parallel/ESCON channel - Current installed equipment - ATM connectivity - Cost of ports - UNIX platform decision
	SNA traffic over IP network	2216 OSA-2 RS/6000	- Parallel/ESCON channel - Use of DLSw at remote site - UNIX platform decision

Positioning Alternatives by Traffic Type - LAN

ENVIRONMENT	TRAFFIC	OPTIONS	DECISION FACTORS
Medium to large LAN network	Subarea SNA	3745/6 900 NCP	- Connectivity and throughput
	APPN/HPR	3745/6 900 NCP 3746 900/950 NNP/ DLUR 2216 / DLUR OSA-2 3172	- Host APPN /HPR support - Parallel/ESCON channel - Connectivity and throughput - ATM connectivity - Consider Multiaccess Enclosure for new connectivity
	IP traffic	3745/6 900 NCP 3746 900/950 NNP 2216 OSA-2 3172	- Parallel/ESCON channel - Throughput and connectivity - ATM connectivity
	SNA traffic over IP network	3746 900/950 NNP and Multiaccess Enclosure 2216 OSA-2 3172 RS/6000	- Parallel/ESCON channel - Connectivity and throughput - Use of DLSw at remote site - TN3270 server decision
Small to medium LAN network	Subarea SNA	3745/6 NCP	- Connectivity
	APPN/HPR	3745/NCP 3746 900/950 NNP/ DLUR 2216 / DLUR OSA-2 3172	- Host APPN /HPR support - Parallel/ESCON channel - ATM (native) connectivity - Host impact (storage and CPU cycles) - Cost of ports
	IP traffic	3745/NCP 3746 900/950 NNP 2216 OSA-2 3172	- Parallel/ESCON channel - Current installed equipment - ATM connectivity - Cost of ports - UNIX platform decision
	SNA traffic over IP network	2216 OSA-2 3172 RS/6000	- Parallel/ESCON channel - Use of DLSw at remote site - UNIX platform decision

Comparison of S/390 Server Access Gateways

1

	3745/NCP	3746-900/NCP	3746-900/950 NNP
Primary Role ♦ Secondary roles ♦ Perceived as:	WAN Gateway ♦ LAN gateway Remote concentrator Host-host FR Frame Handler ♦ Front end processor	WAN Gateway ♦ LAN gateway Remote concentrator Host-host FR Frame Handler ♦ 3745 enhancement	WAN Gateway ♦ LAN gateway Remote concentrator Host-host FR Frame Handler ♦ 3745 follow-on
Attachment (Max) - Channel ♦ Servers ♦ Host Operating Systems ♦ Channel adapters ♦ Channel protocols ♦ LPARs	♦ Multiple S/390 ♦ MVS, VM, VSE ♦ Parallel (16) ♦ CDLC ♦ LPARs (16)	♦ Multiple S/390, RS/6000 ♦ MVS, VM, VSE, AIX ♦ ESCON (16)* ♦ CDLC ♦ LPARs (256*)	♦ Multiple S/390, RS/6000 ♦ MVS, VM, VSE, AIX ♦ ESCON (16) ♦ CDLC ♦ LPARs (256)
Attachment (Max) - Network ♦ LANs ♦ WANs ♦ Key WAN protocols ♦ ATM	♦ TR (8), Enet (16) ♦ RVX (896), E1/T1 (8) ♦ SS, BSC, SDLC, FR, X.25 ♦ None	♦ TR (31*), Enet (8*) ♦ RVX (600*), E1/T1 (32*), ISDN-PRI(32) ♦ SDLC, FR, X.25, Euro-ISDN ♦ On Multiaccess enclosure	♦ TR (31), Enet (8) ♦ RVX (120 - 240 ^P), E1/T1 (32) ♦ SDLC, FR, X.25, PPP ♦ On Multiaccess enclosure
SNA Support ♦ Subarea ♦ APPN/HPR ♦ Adjacent nodes / sessions (Sessions over HPR are in addition to these numbers) ♦ Software Support	♦ PU T4 ♦ Composite Network Node controlled by VTAM, EBN, HPR ANR ♦ Configuration dependent Eg 2,000 nodes and 40,000 sessions or 5,000 nodes and 30,000 sessions ♦ NCP	♦ NCP owned ♦ As 3745/NCP ♦ Somewhat lower than 3745/NCP ♦ NCP	♦ Bridged or DLUR ♦ Network Node, EBN(^P), HPR RTP/ANR ♦ 5,000 nodes** and 5,000** sessions (5,000+ and 50,000 ^P) ♦ Network Node Processor
TCP/IP Support ♦ Routing ♦ Bridging ♦ DLSw encapsulation ♦ MSS Server ♦ TN3270e	♦ RIP (TR, Ethernet, FR, Channel) ♦ None ♦ No ♦ No ♦ No	♦ RIP (ESCON only) ♦ None ♦ No ♦ No ♦ Preview on Multiaccess enclosure	♦ RIP, OSPF, BGP(4) (TR, Ethernet, FR, PPP, X.25, ESCON) ♦ None ♦ No ♦ No ♦ Preview on Multiaccess enclosure
Network Management	♦ NetView/390	♦ NetView/390, Nways Enterprise Manager	♦ NetView/390, Nways Enterprise Manager

* These maxima are for the 3746-900 only . The total for a 3745 with attached M900 is the sum of the values in Columns 1 and 2

^P Preview

** For a 3746-900, the total number of adjacent nodes and sessions is the sum of the NCP and NNP maxima

Comparison of S/390 Server Access Gateways

2

	3746 Multiaccess Enclosure (*)	2216	OSA-2
Primary Role <ul style="list-style-type: none"> Secondary roles Perceived as: 	WAN Gateway <ul style="list-style-type: none"> LAN gateway Remote Concentrator Host-host New technology platform for 3745/6 (connectivity expansion) 	WAN/LAN Gateway <ul style="list-style-type: none"> Remote concentrator Channel attached router 	LAN IP Gateway <ul style="list-style-type: none"> LAN SNA gateway ATM gateway Integrated adapter
Attachment (Max) - Channel <ul style="list-style-type: none"> Servers Host Operating Systems Channel adapters Channel protocols LPARs 	<ul style="list-style-type: none"> Multiple S/390, RS/6000 MVS, VM, VSE, AIX ESCON (4) MPC+, LSA, LCS LPARs (128) 	<ul style="list-style-type: none"> Multiple S/390, RS/6000 MVS, VM, VSE, AIX ESCON (4) MPC+, LSA, LCS LPARs (128) 	<ul style="list-style-type: none"> Single 9672 S/390 server MVS, VM, VSE N/A LSA, LCS, MPC+ (internal) LPARs (16)
Attachment (Max) - Network <ul style="list-style-type: none"> LANs WANs Key WAN protocols ATM 	<ul style="list-style-type: none"> TR (10), Enet (10), Fast Enet(P), FDDI(P) RVX (56), E1/T1 (56), ISDN-PRI(4), HSSI(P) SDLC, FR, X.25, PPP, WW-ISDN 155Mbps (2), LANE, Classical IP, native ATM using HPR (P) 	<ul style="list-style-type: none"> TR (12), Enet (12), Fast Enet(P), FDDI(P) RVX (64), E1/T1 (64), ISDN-PRI(4), HSSI(P) SDLC, FR, X.25, PPP, WW-ISDN ATM 155Mbps (2), LANE, Classical IP 	<ul style="list-style-type: none"> TR (2), Enet (2), FDDI(1) (**) N/A N/A ATM 155Mbps (1), ** LANE, native using HPR
SNA Support <ul style="list-style-type: none"> Subarea APPN/HPR Adjacent nodes / sessions (Sessions over HPR are in addition to these numbers) Software Support 	<ul style="list-style-type: none"> Passthrough (bridged), DLUR Network Node, HPR/RTP and ANR 1,500 nodes or 6,400 sessions 3746 feature 	<ul style="list-style-type: none"> Passthrough (bridged), DLUR Network Node, HPR/RTP and ANR 1,500 nodes or 6,400 sessions Multiprotocol Access Services 	<ul style="list-style-type: none"> Passthrough No (appears as part of VTAM NN/EN) 4094 nodes OSA/SF
TCP/IP Support <ul style="list-style-type: none"> Routing Bridging DLSw encapsulation MSS Server TN3270e 	<ul style="list-style-type: none"> RIP, OSPF, BGP-4, MOSPF SRB, TB, SRT, SR-TB Yes Compatible Preview 	<ul style="list-style-type: none"> RIP, OSPF, BGP-4, MOSPF SRB, TB, SRT, SR-TB Yes Compatible Preview 	<ul style="list-style-type: none"> Passthrough None No No No
Network Management	<ul style="list-style-type: none"> SNMP 	<ul style="list-style-type: none"> SNMP / Nways Enterprise Manager 	<ul style="list-style-type: none"> NetView/390

* The figures for the Multiaccess Enclosure are in addition to limits on the 3745 and 3746

P Preview

** The figures for OSA-2 are for a single adapter card. Depending on S/390 model, it is possible to attach up to 12 OSA-2 cards

Comparison of S/390 Server Access Gateways

3

	3172 ICP	3172 OS/2	RS/6000
Primary Role <ul style="list-style-type: none"> Secondary roles 	LAN Gateway <ul style="list-style-type: none"> No secondary role LAN gateway 	LAN Gateway <ul style="list-style-type: none"> WAN gateway LAN gateway 	IP Gateway <ul style="list-style-type: none"> WAN gateway LAN gateway UNIX platform gateway
<ul style="list-style-type: none"> Perceived as: 			
Attachment (Max) - Channel <ul style="list-style-type: none"> Servers Host Operating Systems Channel adapters Channel protocols LPARs 	<ul style="list-style-type: none"> Multiple S/390 MVS, VM, VSE Parallel (2), ESCON (2) LSA, LCS LPARs (40) 	<ul style="list-style-type: none"> Multiple S/390, RS/6000 MVS, VM, VSE, AIX Parallel (2), ESCON (1) MPC, LSA, LCS LPARs (16) 	<ul style="list-style-type: none"> Multiple S/390, RS/6000 MVS, VM, VSE, AIX Parallel(2), ESCON (2) CDLC LPARs (16)
Attachment (Max) - Network <ul style="list-style-type: none"> LANs WANs Key WAN protocols ATM 	<ul style="list-style-type: none"> TR (4), Enet (4), FDDI(2) None N/A None 	<ul style="list-style-type: none"> TR (4), Enet (4), FDDI(1) RVX (32), E1/T1 (4) SDLC, FR, X.25 ATM 155Mbps(1), LANE 	<ul style="list-style-type: none"> TR (12), Enet (12), FDDI(12) RVX(48) SDLC, X.25 ATM 155Mbps (2), Classical IP
SNA Support <ul style="list-style-type: none"> Subarea APPN/HPR Adjacent nodes / sessions (Sessions over HPR are in addition to these numbers) Software Support 	<ul style="list-style-type: none"> Passthrough No (appears as part of VTAM NN/EN) 1,020 nodes ICP 	<ul style="list-style-type: none"> Passthrough (bridged), DLUR Network Node, HPR/RTP and ANR 1,500 nodes, 6,400 sessions HPR Channel Connectivity Program 	<ul style="list-style-type: none"> Passthrough, DLUR Network Node or End Node, HPR/ANR 5000+ nodes, 40,000 sessions (theoretical limits) Communications Server/AIX
TCP/IP Support <ul style="list-style-type: none"> Routing Bridging DLSw encapsulation MSS Server TN3270e 	<ul style="list-style-type: none"> Limited (routing via S/390 TCP) None No No No 	<ul style="list-style-type: none"> RIP None No No No 	<ul style="list-style-type: none"> RIP, EGP, BGP, OSPF None No No Yes (10,000+ sessions)
Network Management	<ul style="list-style-type: none"> NetView/390 	<ul style="list-style-type: none"> SNMP 	<ul style="list-style-type: none"> SNMP

P Preview

Summary



★ 3745 and 3746 Nways Controllers

- Premier gateway for access to S/390 server for
 - Networks carrying both SNA and TCP/IP traffic
 - Medium to large networks
- Only product supporting subarea SNA, APPN/HPR, IP, DLSw, and SNA Passthrough
- Connectivity options include SDLC, BSC, Frame Relay, X.25, ISDN, Token Ring, Ethernet, and ATM
(Previews for Fast Ethernet, FDDI, HSSI and TN3270E server)
- Latest ESCON MPC+ support for optimum HPR channel performance

★ 2216 Multiaccess Connector

- Gateway of choice for access to S/390 server for
 - IP transport network carrying TCP/IP traffic to S/390 server
 - Small to medium networks which retain 3745/NCP for SNA support
 - Small to medium networks who decide on SNA Passthrough or APPN/HPR
- Does not support subarea SNA
- Latest ESCON MPC+ support for optimum HPR channel performance

★ OSA-2 Adapter

- Single or few S/390 CMOS servers, where impact on host cycles is not an issue
- Native HPR over ATM

★ 3172 Interconnect Controller

- Small to medium LAN network gateway carrying TCP/IP traffic and SNA Passthrough on parallel channel and/or FDDI connectivity

★ RS/6000

- SNA access to S/390 from large IP networks using TN3270