IP to PSTN call
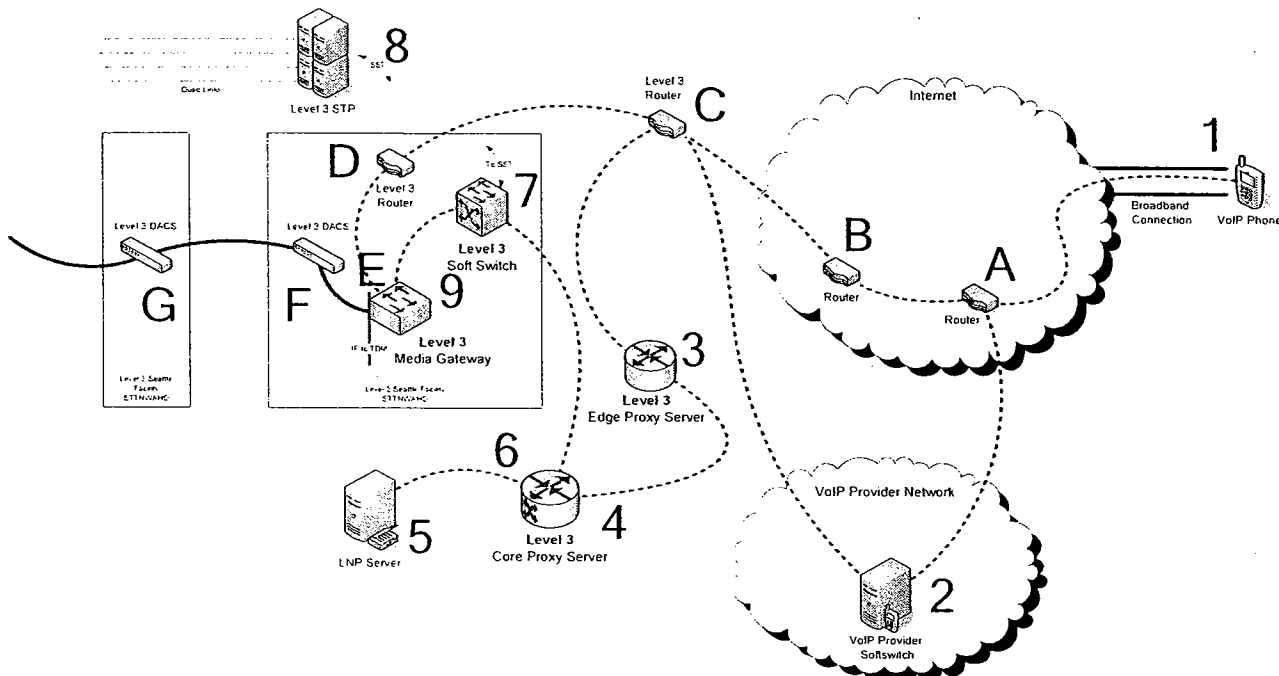

❶ VoIP End User Dials phone number of PSTN subscriber;

❷ VoIP End User's CPE signals via SIP or other protocol their VoIP providers Soft Switch with call info;

❸ VoIP providers Soft Switch sends call setup request in SIP format to Level 3 via Edge Proxy server which is provisioned with VoIP provider's info. Edge Proxy Server tags call as enhanced;

❹ Call Signaling Routes to Core Proxy Server for connection path info;

❺ Core Proxy server queries Local Number Portability (LNP) Server for phone number owner info;

❻ Core Proxy Server looks up route on routing table answer returned – Route to Qwest End Office

❼ Core Proxy Server signals Level 3 Soft Switch;

❽ Soft Switch Signals Level 3 SS7 Signal Transfer Point which communicates to Qwest Network; Qwest network signals that path is available to terminate call;

❾ Level 3 Soft Switch signals media gateway to seize trunk;

Ⓑ Media Gateway provides means for packets, which make up the bearer path of the call, to get converted to and from IP and pass across the Level 3 network router hops ❹❸❸❹ to the Qwest Network;

Ⓕ Bearer path of call is transmitted across the Level 3 Network TDM network through Ⓖ to Level 3 POI.

PSTN TO IP CALL
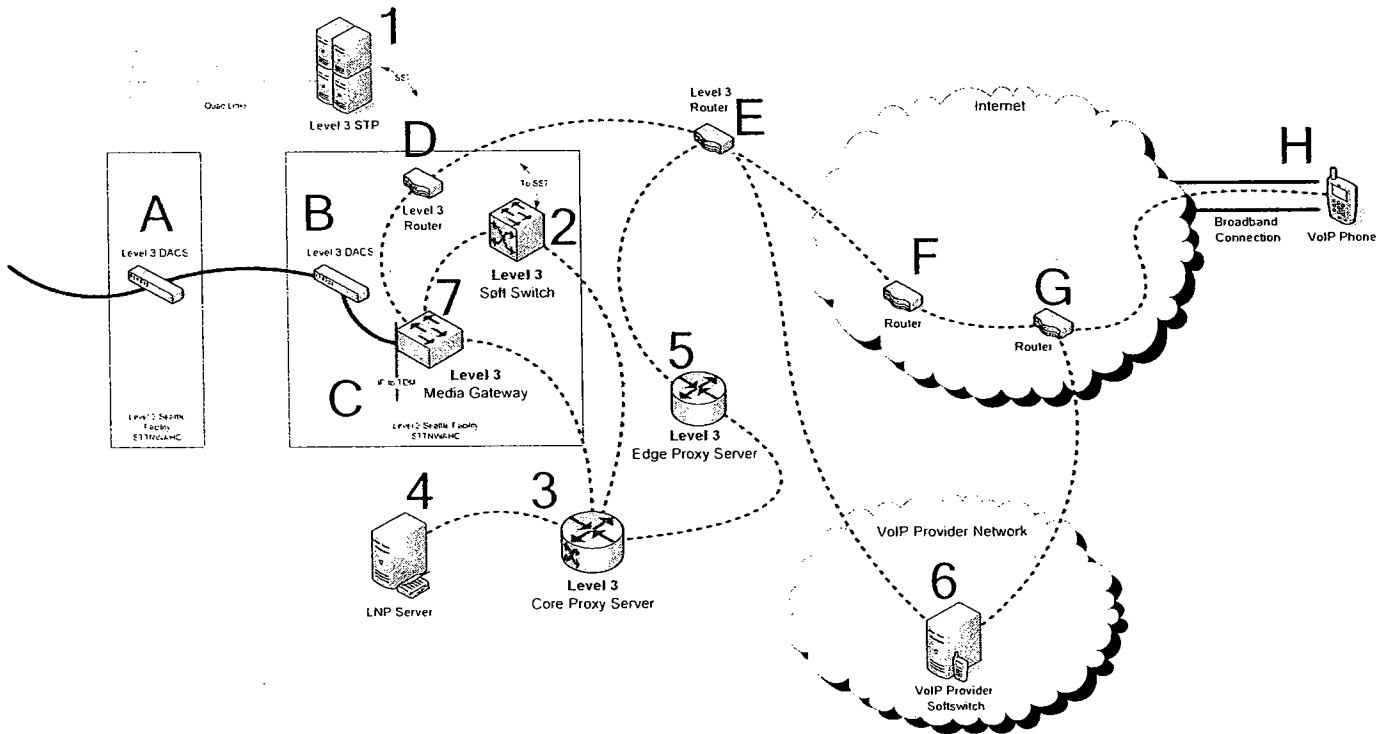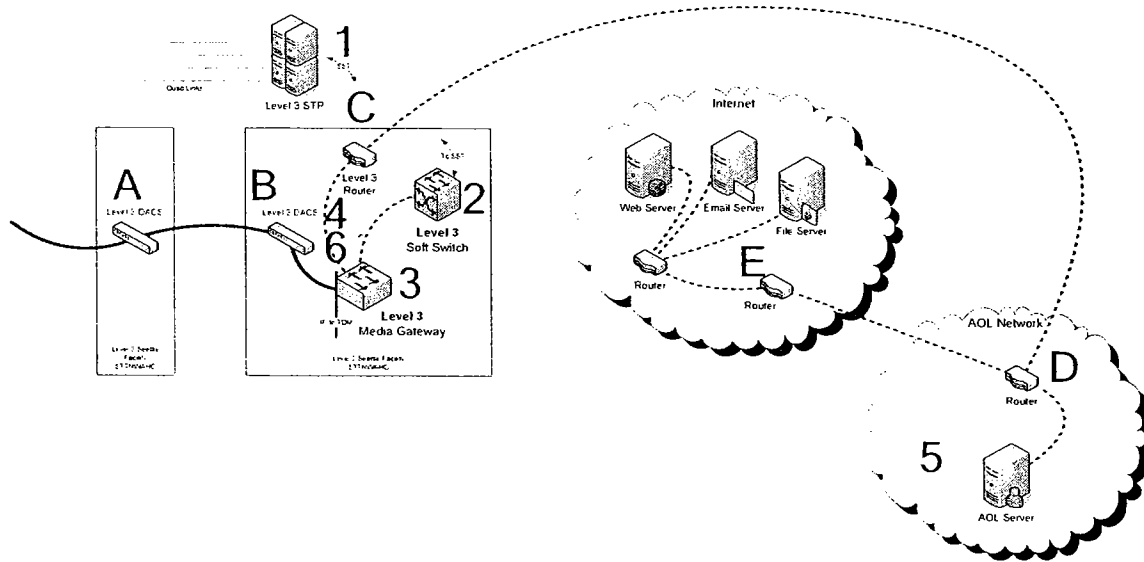

❶ Level 3 SS7 Network receives call setup request from Qwest SS7 Network;

❷ Level 3 SS7 STP signals Level 3 Soft Switch which converts SS7 signaling to SIP;

❸ Call Setup request is routed to Core Proxy Server for routing instructions;

❹ Core Proxy Server Queries Local Number Portability Server for phone number owner;

❺ Core Proxy Server signals customer Edge Proxy server;

❻ Edge Proxy Server signals VoIP providers Soft Switch; VoIP Provider's Soft Switch signals that call path is available;

❼ Signal sent back to Qwest network to place call on a certain trunk. Media Gateway opens trunk and provides means to convert call to and from IP;

Ⓐ Traffic flows from Level 3 POI down bearer path as TDM through Ⓑ;

Ⓒ Traffic is converted from TDM to IP and flows as IP through ⒹⒺⒻⒼ to customer VoIP equipment at Ⓗ.

MANAGED MODEM
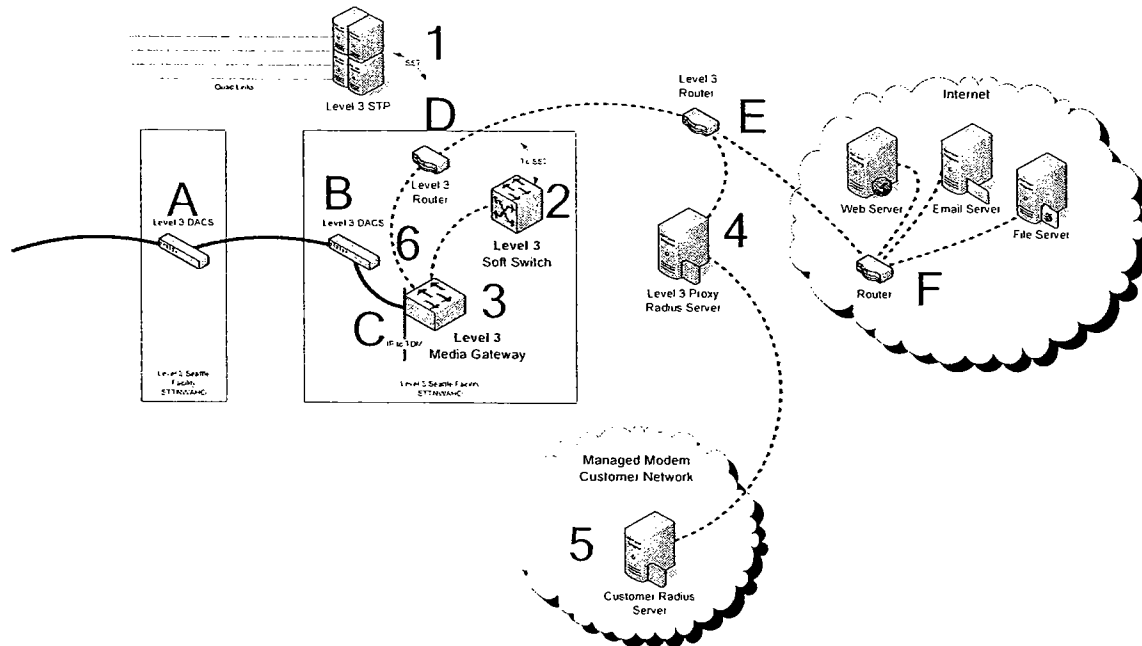
❶ Level 3 SS7 Network receives request from Qwest SS7 network to terminate a call;

❷ Level 3 SS7 signals Soft Switch for termination instructions; Soft Switch returns termination info to Qwest Network;

❸ Soft Switch signals Media Gateway to accept call an a particular trunk;

🅐 ISP bound call comes from Level 3 POI across 🅑 to Media Gateway;

🅒 Media Gateway accepts call and waits for authentication info from user;

❹ Authentication request sent to Level 3 Proxy Radius Server;

❺ Authentication request sent to Managed Modem Customer's Radius Server which validate credentials;

❻ With approval traffic passes through routers at 🅓🅔🅕 to the Internet.

AOL Dial ISP Call

❶ Level 3 SS7 Network receives request from Qwest SS7 network to terminate a call;

❷ Level 3 SS7 signals Soft Switch for termination instructions; Soft Switch returns termination info to Qwest Network;

❸ Soft Switch signals Media Gateway to accept call an a particular trunk;

Ⓐ ISP bound call comes from Level 3 POI across ❸ to Media Gateway;

❹ Authentication request sent to AOL over data network of routers Ⓔ and Ⓓ;

❺ AOL approves users access;

❻ User can connect to internet through AOL network ❻ⒹⒺ.

Qwest / Level 3 Seattle, WA Network
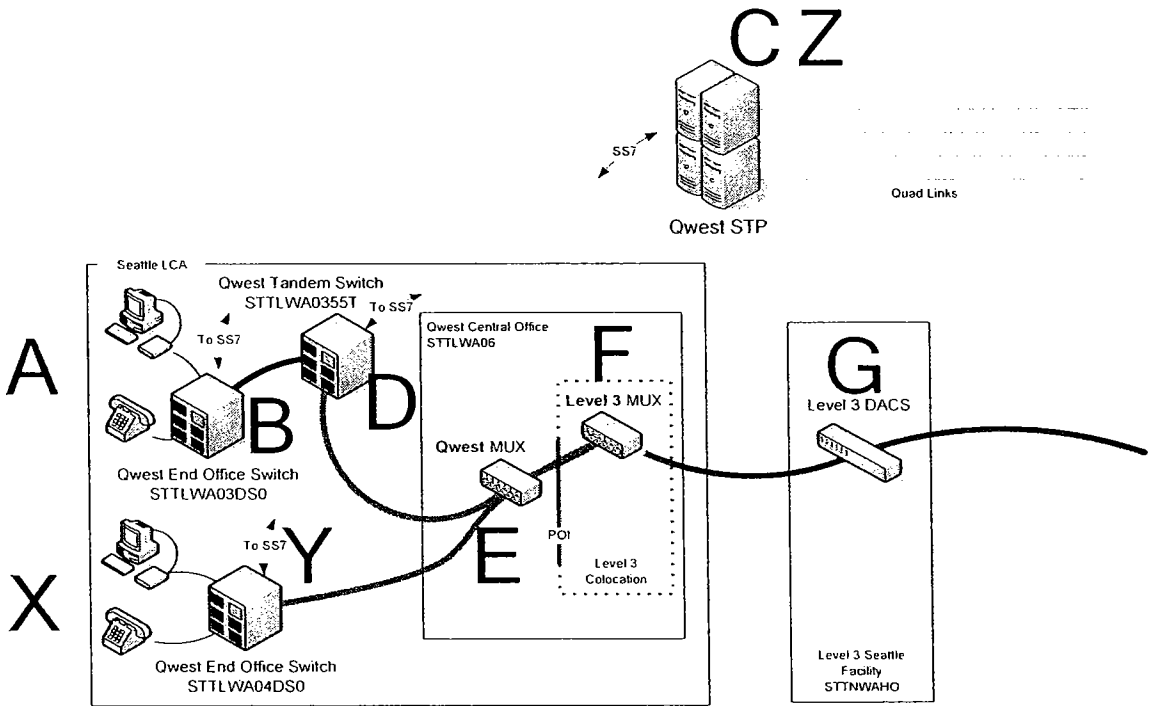
In Seattle the Level 3 network connects with Qwest either through trunks at a tandem switch to get to an end office such as the relationship between STTLWA0355T (Tandem) and STTLWA03DS0 or the Level 3 network connects directly to the Qwest End office such as STTLWA04DS0. Both types of connects come back to Level 3 collocation site at STTLWA06

Call 1 – End User connected to STTLWA03DS0 calls Seattle phone number of ISP or VoIP user supported by Level 3

A End User picks up phone to dial VoIP user or starts internet software to dial into the internet;

B End office switch starts call process and signals SS7 network for instructions;

C SS7 network communicates with Level 3 network;

D End office routes call to Tandem;

E Tandem routes call on to Direct End Office Trunk;

F Call traverses Level 3 POI and goes to Level 3 network **G**.

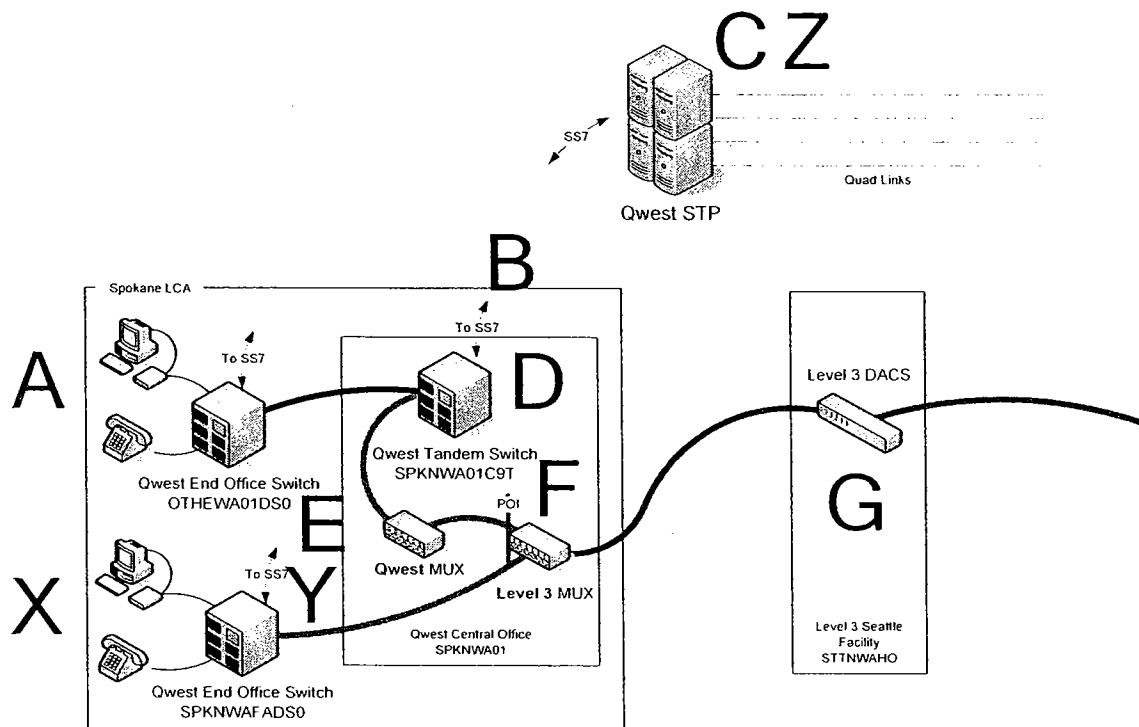**Call 2 – End User connected to STTLWA04DS0 calls Seattle phone number of ISP or VoIP user supported by Level 3**

❶ End User picks up phone to dial VoIP user or starts internet software to dial into the Internet;

❷ End office switch starts call process and signals SS7 network for instructions;

❸ SS7 network communicates with Level 3 network;

❹ End Office routes call on to Direct End Office Trunk;

❺ Call traverses Level 3 POI and goes to Level 3 network ❻.

VoIP calls from Level 3 to Qwest end users follow the exact path in reverse

Qwest / Level 3 Spokane, WA Network

In Spokane the Level 3 network connects with Qwest either through trunks at a tandem switch to get to an end office such as the relationship between SPKNWA01C9T (Tandem) and OTHEWA01DS0 or the Level 3 network connects directly to the Qwest End office such as SPKNWAFADS0. Both type of connections come back to the Level 3 network end point established at SPKNWA01 which services as a POI. Level 3 has established this network end point by leasing separate DS3 networks from both ELI and Qwest

Call 1 – End User connected to OTHEWA01DS0 calls Spokane phone number of ISP or VoIP user supported by Level 3

A End User picks up phone to dial VoIP user or starts internet software to dial into the Internet;

B End office switch starts call process and signals SS7 network for instructions;

C SS7 network communicates with Level 3 network;

D End office routes call to Tandem;

E Tandem routes call on to Direct End Office Trunk;

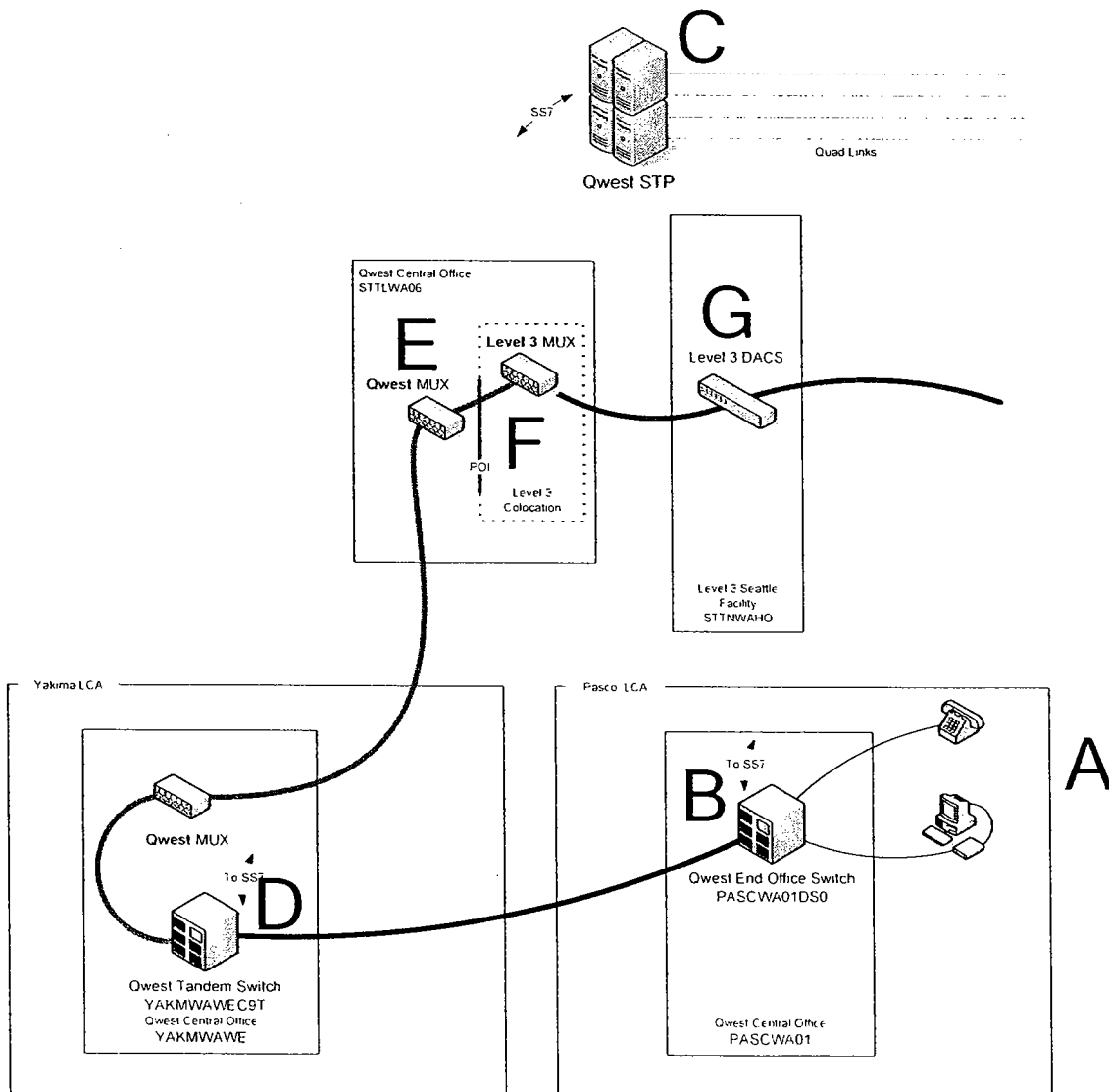**F** Call traverses Level 3 POI and goes to Level 3 network **G**.

Call 2 – End User connected to SPKNWAFADS0 calls Spokane phone number of ISP or VoIP user supported by Level 3

- ❶ End User picks up phone to dial VoIP user or starts Internet software to dial into the Internet;
- ❷ End office switch starts call process and signals SS7 network for instructions;
- ❸ SS7 network communicates with Level 3 network;
- ❹ End Office routes call on to Direct End Office Trunk;
- ❺ Call traverses Level 3 POI and goes to Level 3 network ❻.

Exhibit MG-5G
CONFIDENTIAL

Qwest / Level 3 Pasco, WA Network:

VoIP calls from Level 3 to Qwest end users follow the exact path in reverse

C

SS7

Quad Links

Qwest STP

Qwest Central Office
STTLWA06

E

:Level 3 MUX:

G

Qwest MUX

Level 3 DACS

POI

F

Level 3
Colocation

Level 3 Seattle
Facility
STTNWAHO

Yakima LCA

Pasco LCA

A

To SS7

B

Qwest MUX

To SS7

D

Qwest End Office Switch
PASCWA01DS0

Qwest Tandem Switch
YAKMWAWEC9T
Qwest Central Office
YAKMWAWE

Qwest Central Office
PASCWA01

In Pasco the Level 3 network does not connect with Qwest in the Local Calling Area creating a VNXX arrangement through Yakima. VNXX traffic represents less than 1% of traffic exchanged between Level 3 and Qwest.

Call 1 – End User connected to PASCWA01DS0 calls Pasco phone number of ISP or VoIP user supported by Level 3

Ⓐ End User picks up phone to dial VoIP user or starts internet software to dial into the Internet;

Ⓑ End office switch starts call process and signals SS7 network for instructions;

Ⓒ SS7 network communicates with Level 3 network;

Ⓓ End office routes call to Tandem;

Ⓔ Tandem routes call on to Direct End Office Trunk;

Ⓕ Call traverses Level 3 POl and goes to Level 3 network **Ⓖ**.