UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

In Re:	U.S. Patent 7,657,018	:	Attorney Docket No. 066303.0616
Inventor:	David Matthew Smith	:	
Filed:	November 29, 2005	:	
Issued:	February 2, 2010	:	IPR No. Unassigned
Assignee:	Metaswitch Networks Ltd		
Title:	Method and System for Combining a Conversion between Time-Division Multiplexed Digital Signals and Packetized Digital Signals with a Switching System Interface		

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PETITION FOR *INTER PARTES* REVIEW OF CLAIMS 1, 2, 7, 8, 10, 13 and 14 OF U.S. PATENT NO. 7,657,018 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. §§ 42.100 *ET SEQ.*

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LIST OF EXHIBITS[1]

Ex. 1001	U.S. Patent No. 7,657,018 by Smith ("'018 Patent")
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Ex. 1003	U.S. Patent No. 6,807,273 by Smith ("'273 Patent")
Ex. 1004	Prosecution History of the '018 Patent
Ex. 1005	U.S. Patent Application Publication No. 2003/0103614 by Smith ("*Smith Publication*")
Ex. 1006	U.S. Patent No. 6,064,673 ("*Anderson*")
Ex. 1007	Declaration of Seamus Gilchrist
Ex. 1008	Curriculum Vitae of Seamus Gilchrist

[1] In this Petition, references to the pages of Ex. 1002 correspond to the page indicated by the exhibit label. References to the other exhibits correspond to column and line number (for patents) and paragraph number (for the patent application publication and the expert declaration) found within the document itself, rather than the page indicated by the exhibit label.

I. INTRODUCTION

Genband US LLC and Genband Management Services Corp. (collectively, "Petitioner") file this petition ("Petition") for *inter partes* review ("IPR") under 35 U.S.C. §§ 311–319 and 37 C.F.R. § 42 of Claims 1, 2, 7, 8, 10, 13 and 14 of U.S. Patent No. 7,657,018 ("the '018 Patent"), and assert that there is a reasonable likelihood that it will prevail as to each of the challenged claims. The assignment records of the U.S. Patent and Trademark Office list Metaswitch Networks Ltd. ("Metaswitch") as the owner of the '018 Patent.

The '018 Patent relates to digital switching systems for routing calls in a telecommunication network. Ex. 1001, 1:25-30. The subject matter of the '018 Patent substantially overlaps the subject matter of an earlier-filed patent application to which the '018 Patent purports to claim priority. Ex. 1001, 1:9-20. However, the '018 Patent application fails to establish a proper claim of priority to the earlier-filed patent application. Thus, the publication of the earlier-filed patent application qualifies as prior art that renders obvious each of the challenged claims.

In particular, the '018 Patent states that it is a continuation-in-part of U.S. Patent Application 10/971,821 (the "parent application"). Ex. 1001, p. 1. The parent application purports to be a continuation-in-part of U.S. Patent Application 09/998,438 (the "grandparent application"). Ex. 1002, p. 1. The grandparent application issued as U.S. Patent 6,807,273 on October 19, 2004 ("the '273

Patent"). Ex. 1003, p. 1. Three days ***later***, on October 22, 2004, the parent application was filed. Ex. 1002, p. 1. Because the parent application was filed ***after*** the grandparent application issued as a patent, the parent and grandparent applications were never co-pending, and the patent owner cannot properly claim priority to the grandparent application under 35 U.S.C. § 120 and M.P.E.P. § 211.

Due to lack of co-pendency in the priority chain, the earliest possible priority date for the '018 Patent is October 22, 2004, the parent application filing date. More than one year earlier, on June 5, 2003, the grandparent application published as U.S. Patent Publication 2003/0103614 (the "*Smith Publication*"), qualifying as prior art to the '018 Patent under 35 U.S.C. § 102(b). Ex. 1005, p. 1.

The '018 Patent relates to a "switching system interface" for bypassing the common control and switch matrix of a Class 5 switch. Ex. 1001, 1:25-30. A Class 5 switch refers to a conventional telecommunications switch for connecting calls between end-user devices (telephones) and the network. Ex. 1003, 1:32-44.[2] Components of the Class 5 switch include a common control and switch matrix. *See id*. 1:45-51 and 1:60-64. The common control performs call processing and manages the switch matrix. *Id*. 1:66-2:5. The switch matrix routes the calls over line and trunk frames (electronics that interface with the cabling that extends out to

[2] Citations are to the '273 Patent because the '018 Patent relies on an incorporation by reference of the '273 Patent to provide details of the Class 5 switch.

the network, for example, to end users or other switches). *Id*. 1:63-66, 1:30-59.

As discussed above, the '018 Patent improperly attempts to claim priority to the grandparent application that published as the *Smith Publication*. The *Smith Publication* qualifies as prior art, and it discloses all the main features of the '018 Patent. This is evidenced by the purported claim of priority and the fact that, to provide written description support for a switching system interface that bypasses the common control and switch matrix, the '018 Patent incorporates the subject matter of the *Smith Publication* by reference in its entirety.[3]

The '018 Patent combines the switching system interface that was already disclosed in the *Smith Publication* with techniques for converting time-division multiplexed ("TDM") signals to packetized digital signals. *See e.g.*, the '018 Patent's Title ("*Method and System for Combining a Conversion between Time-Division Multiplexed Digital Signals and Packetized Digital Signals with a Switching System Interface*").

Converting TDM signals to packetized digital signals was well known in the prior art. The *Smith Publication* discloses "***conventional***" algorithms for "convert[ing] ... PCM timeslots into digital packets, and vice versa." Ex. 1005, ¶ 071. Moreover, during prosecution of the '018 Patent, the Examiner rejected

[3] Except for differences in the claims, the *Smith Publication* is identical to U.S. 6,807,273, which the '018 Patent incorporates by reference. Ex. 1001, 1:9-20.

converting between TDM and packet as a reason for patentability in view of U.S. Patent No. 6,064,673 ("*Anderson*"). Ex. 1004 at p. 80-83, citing Ex. 1006.

As explained below, the challenged claims are unpatentable because the *Smith Publication* anticipates or, in view of *Anderson*, renders obvious each claim limitation. The *Smith Publication* was not cited as considered by the U.S. Patent and Trademark Office during the original prosecution of the '018 Patent. During prosecution, the Applicant never distinguished the claims from *Anderson* with respect to the claim limitation for which this Petition points to *Anderson*.

II. MANDATORY NOTICES AND FEES

Real Parties in Interest: The Petitioners are Genband US LLC and Genband Management Services Corp., which are wholly-owned subsidiaries of Genband Holdings Company. Genband International Holding Company is also a wholly-owned subsidiary of Genband Holdings Company. Certain affiliates of JPMorgan Chase & Co., JPMorgan Chase Bank, N.A., and OEP Capital Advisors, L.P. own interests in Genband Holdings Company.[4] Each of the parties identified in this

[4] Affiliates include AN Holdings, Inc.; OEP II Partners Co-Invest, L.P.; OEP III Co-Investors, L.P.; OEP GB Holdings; One Equity Partners III, L.P.; OEP II Co-Investors, L.P.; One Equity Partners II, L.P.; J.P. Morgan Partners (BHCA), L.P.; J.P. Morgan Partners Global Investors, L.P.; J.P. Morgan Partners Global Investors A, L.P.; J.P. Morgan Partners Global Investors (Cayman), L.P.; J.P. Morgan

section is a real party in interest.

Related Matters: On July 7, 2014, Patent Owner filed a complaint for patent infringement against Petitioner in the U.S. District Court for the Eastern District of Texas, alleging infringement of the '018 Patent. The action is captioned: Civil Action No. 2:14-cv-00744, *Metaswitch Networks Ltd v. Genband US LLC*.

Lead Counsel and Request for Authorization: Pursuant to 37 C.F.R. §§ 42.8(b)(3) and 42.10(a), Petitioner designates Lead Counsel as Chad C. Walters (Reg. No. 48,022) and Back-up Counsel as Barton E. Showalter (Reg. No. 38,302), Brian W. Oaks (Reg. No. 44,981), and Kathryn A. Juffa (Reg. No. 65,688) all of Baker Botts L.L.P.

Service Information: As identified in the attached Certificate of Service, a copy of this Petition, in its entirety, is being served to the address of the attorney or agent of record for the '018 Patent.

Petitioner may be served at its Lead Counsel address as follows: Baker Botts L.L.P., 2001 Ross Avenue, Suite 600, Dallas, Texas 75201; Tel. (214) 953-6511; Fax (214) 661-4511. Petitioner consents to service by electronic mail at chad.walters@bakerbotts.com, bart.showalter@bakerbotts.com, brian.oaks@bakerbotts.com, and katie.juffa@bakerbotts.com. A Power of

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Partners Global Investors (Cayman) II, L.P.; J.P. Morgan Partners Global Investors (Selldown), L.P.; and J.P. Morgan Partners Global Investors (Selldown) II, L.P.

Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b).

Fees: Under 37 C.F.R. § 42.103(a), the Office is authorized to charge the fee set forth in 37 C.F.R. § 42.15(a) to Deposit Account No. 02-0384 as well as any additional fees that might be due in connection with this Petition.

III. REQUIREMENTS FOR *INTER PARTES* REVIEW: 37 C.F.R. § 42.104

Petitioner certifies under 37 C.F.R. § 42.104(a) that the '018 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR of any claim of the '018 Patent on the grounds identified. Petitioner requests IPR and that the challenged claims be found unpatentable on these grounds:

Ground	Claims	Statutory Basis	Applied References
1	7, 8, 10, 13, 14	35 U.S.C. § 102(b)	*Smith Publication*
2	1-2	35 U.S.C. § 103(a)	*Smith Publication* and *Anderson*

As discussed above, the '018 Patent has an earliest possible priority date of October 22, 2004.[5] The *Smith Publication* and *Anderson* were published before October 22, 2003 and qualify as prior art under pre-AIA 35 U.S.C. § 102(b). The

[5] The '018 Patent cannot claim priority to the November 30, 2001 filing date of U.S. 6,807,273 due to a lack of co-pendency in the priority chain.

analysis below provides reasons that the challenged claims are unpatentable, and the claim charts below identify where each limitation is found in the prior art. Support is provided in the Declaration of Seamus Gilchrist, Ex. 1007.

IV. OVERVIEW OF THE '018 PATENT

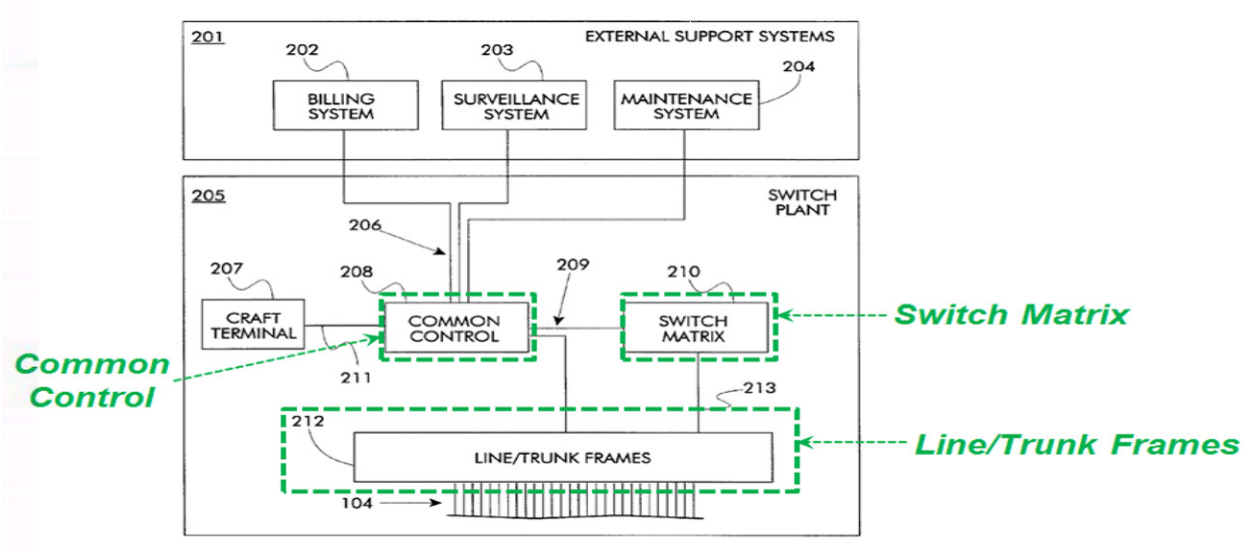
A. Summary of the Technology

The '018 Patent incorporates the teachings of the '273 Patent by reference. Ex. 1001, 1:14-20. Thus, in describing some aspects of the '018 Patent, this Petition also references text and figures of the '273 Patent.

According to the '273 Patent, the traditional telecommunications central office (also referred to as a Class 5 central office) should be updated to address telecommunications deregulation, the rise of the Internet, and various other industry trends that have changed the demands placed on the network. *See* Ex. 1003, 2:16-3:45. However, replacing all of the equipment and cabling in the Class 5 central office would be difficult and extremely expensive. *Id*. 1:30-34. Thus, the '273 Patent proposes bypassing certain outdated components while retaining other components that are still serviceable. In particular, the '273 Patent proposes bypassing the outdated common control and switch matrix while retaining the legacy line/trunk frames of the Class 5 central office. *Id*. 3:46-54.

In a traditional Class 5 central office, the common control performs call processing and manages the switch matrix. *Id*. 1:66-2:5. The switch matrix routes

the calls over line and trunk frames (electronics that interface with the cabling that extends out to the network, for example, to end users or other switches). *Id*., 1:63-66, 1:30-59. Figure 2 of the '273 Patent (reproduced below) illustrates the traditional Class 5 central office, including common control 208, switch matrix 210, and line/trunk frames 212.



Ex. 1003 ('*273 Patent*) at Figure 2 (annotated)

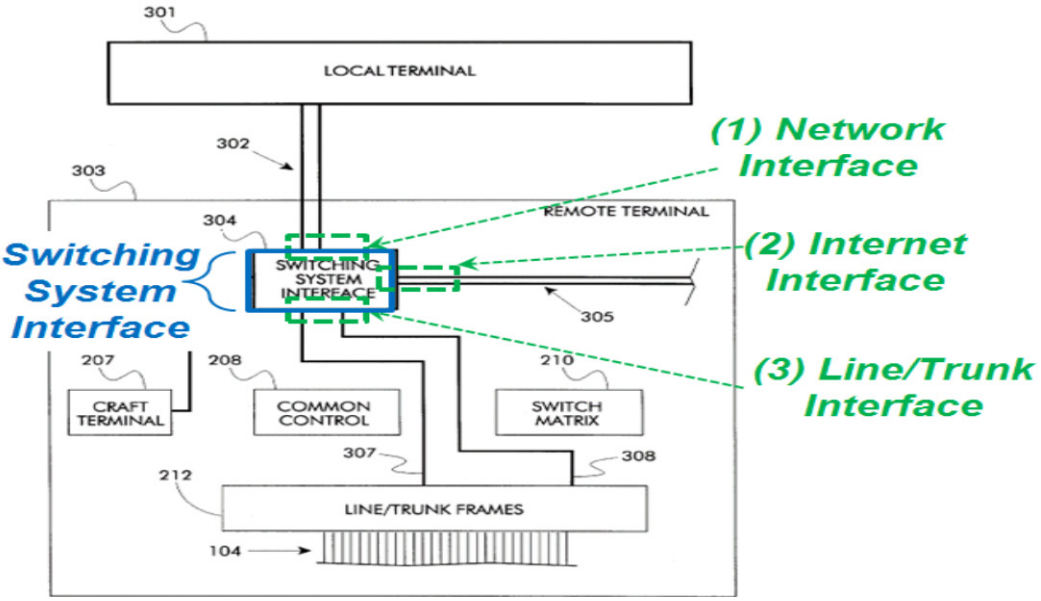
The '273 Patent describes a switching system interface that bypasses the legacy common control and switch matrix. *Id*. 3:40-54. Figure 3 of the '273 Patent illustrates the switching system interface 304 that operates legacy line/trunk frames 212 while bypassing legacy common control 208 and switch matrix 210. Figure 3 has been annotated below to highlight three types of interfaces in the switching system interface 304:

(1) *Network Interface*: connects the switching system interface 304 to a

digital transmission facility 302, such as a DS1 or DS3. Digital transmission facility 302 connects the switching system interface 304 to a local terminal 301 (e.g., a switch). *See e.g.*, Ex. 1003 at Abstract, 3:55-67, 4:51-60, 5:29-31, 7:1-5, 9:10-13, 9:23-24, FIGS. 3, 6, and 8.

(2) *Internet Interface*: connects to an internet-dedicated trunk 305 that can divert internet (packet) traffic away from local terminal 301. *See e.g.*, Ex. 1003 at 2:47-51, 7:7-9, 7:46-50, FIGS. 3 and 6.

(3) *Line/Trunk Interface*: connects to legacy line/trunk frames 212. The line/trunk interface uses a proprietary signal format that was used by the old common control and switch matrix (prior to being bypassed) to communicate with line/trunk frames 212. *See e.g.*, Ex. 1003 at 4:51-60, 6:27-40, 6:62-67, 7:9-32, 8:1-56, FIGS. 3-9.



Ex. 1003 (*'273 Patent*) at Figure 3 (annotated excerpt)

The ’018 Patent also describes providing a conversion between TDM digital signals and packetized digital signals within the switching system interface described above. *See* Ex. 1001, 2:30-33. The background of the ‘018 Patent acknowledges that the switching system interface for bypassing the common control and switch matrix was previously disclosed in the ‘273 Patent:

> “***US. Pat. No. 6,807,273 (“’273”) discloses*** a novel method and system for ***bypassing a common control and switch matrix*** of a class 5 digital switch ***by a switching system interface*** that couples one or more line/trunk frames of the digital switch to one or more transmission facilities in a communications network that preferably operates under an industry-recognized protocol.”

Ex. 1001, 1:45-51 (emphasis added).

According to the ‘018 Patent, its primary object is to combine the switching system interface for bypassing the common control and switch matrix (i.e., the switching system interface disclosed in the ‘273 Patent) with a conversion between time-division multiplexed signals and packetized digital signals:

> “It is a ***primary object*** of this invention to ***combine a conversion*** between time-division multiplexed digital signals and packetized digital signals ***with a switching system interface*** used to bypass the common control and switch matrix of a legacy class 5 digital switch[.]”

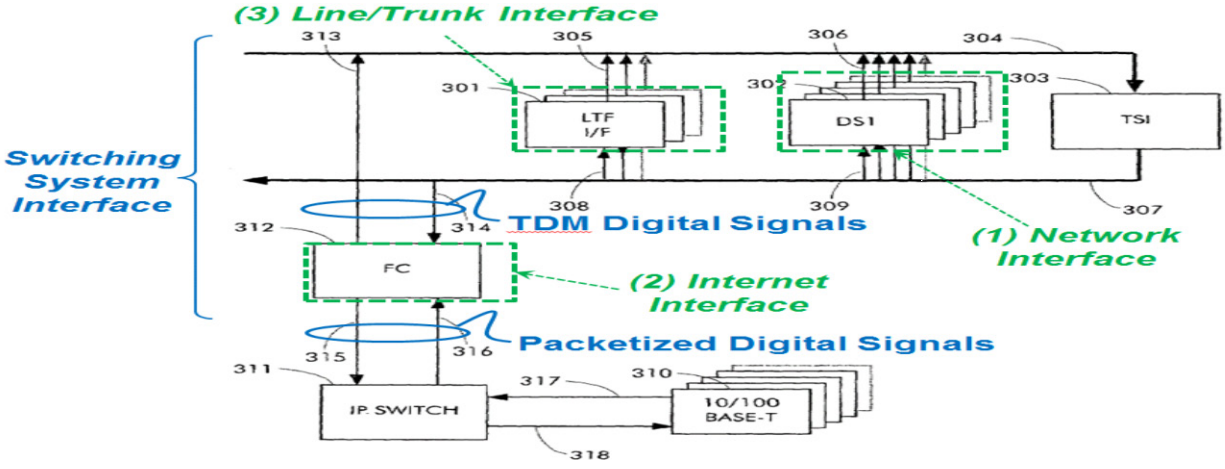
Ex. 1001, 3:34-41 (emphasis added).

Figure 3 of the ‘018 Patent illustrates the switching system interface of the

'018 Patent. The '018 Patent describes the switching system interface as having an "***original***" switching system interface portion. Ex. 1001, 5:47-53. The original portion includes the same types of interfaces as the switching system interface disclosed in the '273 Patent. Specifically, the original switching system interface of the '018 Patent includes a line trunk interface 301 and a DS1 interface 302.

> "FIG. 3 illustrates a switching system interface having additional functions of connecting to IP-based networks and converting between time-division multiplexed and packet-based digital signals ... [.] The ***original switching system interface includes line trunk interfaces 301, DS1s 302***, a timeslot interchange function 303, a PCM bus 304, and a PCM bus 307."

Ex. 1001, 5:47-53. Figure 3 of the '018 Patent has been annotated below to show the same types of interfaces as those described above with respect to the '273 Patent. The interfaces include (1) the network interface (DS1 302), (2) the internet interface (FC 312), and (3) the line/trunk interface (LTF I/F 301).



Ex. 1001 (*'018 Patent*) at Figure 3 (annotated)

(1) *Network Interface*: The "DS1 interface" in the '018 Patent is the same type of interface as the network interface described above with respect to the '273 Patent. Like the network interface in the '273 Patent, the DS1 interface in the '018 Patent connects to a digital transmission facility (DS1) that transmits to a local terminal (e.g., a host switch). *See e.g.*, Ex. 1001 at 5:43-53 (the original switching system interface includes "DS1 interfaces" that "transmit the PCM data to DLCs and the host switch"); claim 1 (a "switching system interface having: at least one network interface for terminating a digital transmission facility").

(2) *Internet Interface*: The "format converter" in the '018 Patent, like the internet interface in the '273 Patent, interfaces with a packet network. *See e.g.*, Ex. 1001 at 5:59-6:6 (format converter 312 converts TDM to packets and diverts the packets to an IP switch); 6:45-48 (format converter 312 makes calls "over a packet network," such as "a local area network (LAN) or the Internet");

(3) *Line/Trunk Interface*: The "line trunk interface" in the '018 Patent is the same type of interface as the line/trunk interface described above with respect to the '273 Patent. Like the line/trunk interface in the '273 Patent, the line trunk interface in the '018 Patent connects to legacy line/trunk frames. *See e.g.*, Ex. 1001 at 5:40-53 (the original switching

system interface includes "line trunk interfaces" that "transmit[] the PCM data to legacy line/trunk frames"); claim 1 (a "switching system interface having ... at least one line/trunk interface, compatible with internal signals used to operate the line/trunk interface of a class 5 digital switching system").

B. Summary of the Claimed Subject Matter

The independent claims of the '018 Patent relate to an interface that bypasses the common control and switch matrix of a Class 5 switch and converts TDM digital signals to packetized digital signals. As shown in Sections VII and IX, these concepts were known in the prior art. Additionally, Sections VII and IX show that the dependent claims merely add obvious implementation details that were also known in the prior art.

C. The Claims of the '018 Patent are Entitled to a Priority Date No Earlier Than October 22, 2004

As discussed in Section I of this Petition, the claims of the '018 Patent are entitled to a priority date no earlier than October 22, 2004,[6] the filing date of the

[6] Petitioner does not concede that the claims of the '018 Patent are entitled to the October 22, 2004 filing date of the parent application. However, Petitioner need not address that issue here, because the prior art cited in this Petition pre-dates both the parent application and the '018 Patent.

parent application (App. No. 10/971,821). The claims of the '018 Patent are ***not*** entitled to the earlier priority date of the purported grandparent application (App. No. 09/998,438). The parent application was filed ***after*** the grandparent application issued as a patent. Thus, the parent and grandparent applications were never co-pending, which means the Applicant failed to satisfy the requirements for a proper claim of priority under 35 U.S.C. § 120 and M.P.E.P. § 211.

D. Prosecution History of the '018 Patent

The original independent claims submitted in the application for the '018 Patent were generally directed to two limitations: (i) a "bypassing" limitation, and (ii) a "converting" limitation. The "bypassing" limitation recites a switching system interface for bypassing a common control and switch matrix of a Class 5 switch. The "converting" limitation recites converting between TDM and packetized digital signals. Ex. 1004 at pp. 111-118.

The prosecution history of the '018 Patent includes two Office Actions rejecting the claims. In the first Office Action, dated October 28, 2008, the Examiner rejected the "bypassing" limitation over U.S. Patent No. 5,903,372 ("*Czerwiec*"), U.S. Publication No. 2002/0128023 ("*Forte*"), and U.S. Publication No. 04/0081174 ("*Lakhani*"). The Examiner rejected the "converting" limitation over U.S. Patent No. 6,064,673 ("*Anderson*"). *Id*. at pp. 80-83.

In a response dated March 30, 2009, to distinguish the cited references the

Applicant amended the "bypassing" limitation of the independent claims to include additional limitations from the purported grandparent application, which had already issued as the '273 Patent. The additional limitations recited a switching system interface comprising a "network interface for terminating a digital transmission facility that is part of a network architecture," a "line/trunk interface, compatible with internal signals used to operate the line/trunk interface of the class 5 digital switching system," and a "switching means, connected to the network interface and to the line/trunk interface." *Id.* at pp. 61-70.

In the second Office Action, dated June 8, 2009, the Examiner stated that this amendment to the "bypassing" limitation necessitated a non-statutory obviousness-type double patenting rejection over the '273 Patent. *Id.* at pp. 56-58. This equates to the Examiner finding the claims obvious over the '273 Patent had the Examiner uncovered the break in the priority chain. M.P.E.P. § 804, ¶ 8.32(B)(1). The Examiner also rejected the claims under 35 U.S.C. § 112 for failure to include a limitation that the Examiner identified as "critical or essential" to the practice of the invention, in particular, "a switching system interface having means for bypassing a common control and switch matrix of a class 5 digital switch." *Id.* at p. 56.

On September 8, 2009, the Applicant filed a terminal disclaimer to overcome the double patenting rejection and a Response amending the claims to

include the "critical or essential" limitations identified in the second Office Action. *Id.* at p. 42. A Notice of Allowance was mailed on September 22, 2009, without specifying a reason for allowability. *Id.* at p. 16. Thus, the Examiner allowed the '018 Patent application only after the Applicant made "critical/essential" amendments to incorporate material from the '273 Patent into the "bypassing" limitation, and only after receiving a terminal disclaimer over the '273 Patent.

The prosecution history shows that the Examiner never thought that the "converting" limitation was novel; rather, the alleged novelty of the '018 Patent is predicated on subject matter disclosed in the '273 Patent. However, all of the subject matter disclosed in the '273 Patent was disclosed nearly verbatim in the prior art *Smith Publication* (i.e., the prior publication of the '273 Patent application). Thus, the '018 Patent is invalid in view of the *Smith Publication*.

V. STATEMENT OF MATERIAL FACTS

Pursuant to 37 C.F.R. § 42.22, Petitioner submits a statement of material facts:

(1) U.S. Patent No. 7,657,018 claims continuation-in-part priority to U.S. Patent Application 10/971,821, which in turn claims continuation-in-part priority to U.S. Patent Application 09/998,438.

(2) U.S. Patent Application 09/998,438 issued as U.S. Patent 6,807,273 on October 19, 2004.

(3) U.S. Patent Application 10/971,821 was filed on October 22, 2004.

(4) U.S. Patent Application 10/971,821 and U.S. Patent Application 09/998,438 were never co-pending.

(5) U.S. Patent No. 7,657,018 Patent cannot properly claim priority to U.S. Patent Application 09/998,438 under 35 U.S.C. § 120 and M.P.E.P. § 211.

(6) The earliest possible filing date to which U.S. Patent No. 7,657,018 may claim priority is the October 22, 2004 filing date of U.S. Patent Application 10/971,821.

(7) U.S. Patent Application Publication No. 2003/0103614 published on June 5, 2003.

(8) U.S. Patent Application Publication No. 2003/0103614 qualifies as prior art to U.S. Patent No. 7,657,018 under 35 U.S.C. § 102(b).

VI. CLAIM CONSTRUCTION

A claim in an IPR proceeding is given its "broadest reasonable construction in light of the specification." *See* 37 C.F.R. § 42.100(b). Thus, the words of the claim are given their plain meaning unless inconsistent with the specification. *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989). Means-plus-function claims are construed to cover corresponding structure described in the specification and equivalents thereof. *See Lockheed Martin Corp. v. Space Systems/Loral, Inc.*, 324 F.3d 1308 (Fed. Cir. 2003).

In the related district court case, Petitioner contends that each means-plus-

function claim term in the '018 Patent is indefinite. However, given that Petitioner cannot raise indefiniteness in the instant Petition, Petitioner provides the Patent Owner's constructions to meaningfully discuss the invalidity of the claims in view of the prior art.[7] Petitioner does not concede that the disclosures are sufficient to comply with 35 U.S.C. § 112, ¶ 6.

Means for bypassing (Claims 1 and 7). In the related district court case, Patent Owner Metaswitch identifies the function as "bypassing a common control and switch matrix of a class 5 digital switch" and the corresponding structure as "line/trunk interfaces, DS1 interfaces, and equivalents thereof." Here, Petitioner applies that construction to meaningfully discuss the invalidity of the claims in view of the prior art. The extent of any structure in the '018 Patent for the line/trunk and DS1 interfaces appears at 1:52-64; 2:15-29; 5:7-46; FIGS. 2, 3.

Switching means (Claims 1 and 7). In the related district court case, Patent Owner Metaswitch identifies the function as "routing data between said network interfaces and said line/trunk interface" and the corresponding structure as "PCM interface and/or line/trunk manager module and equivalents thereof." Metaswitch identifies the PCM interface as comprising line/trunk frame interfaces 201, DS1

[7] The instant Petition applies the constructions that the Patent Owner identified in the related district court case. The broadest reasonable interpretation of the claim terms can be no broader than the construction identified by the Patent Owner.

interfaces 202, and timeslot interchange function 203. Here, Petitioner applies that construction to meaningfully discuss the invalidity of the claims in view of the prior art. The extent of any structure disclosed in the '018 Patent for the timeslot interchange 303 appears at 5:27-46, 6:11-32; FIGS. 2, 3.

Means for converting data (Claims 1 and 7). In the related district court case, Patent Owner Metaswitch identifies the function as "means for converting data between time-division multiplexed digital signals [of a legacy line frame of a legacy line] and packetized digital signals" and the corresponding structure as "format converter and equivalents thereof." Here, Petitioner applies that construction to meaningfully discuss the invalidity of the claims in view of the prior art. The extent of any structure disclosed in the '018 Patent for the format converter 312 appears at 5:47-6:43; FIG. 3.

VII. SUMMARY OF PRIOR ART

The prior art shows the subject matter of the '018 Patent was not novel at the time.

A. *Smith Publication* Discloses Bypassing Common Control and Switch Matrix of a Class 5 Switch and Other Claim Limitations of the '018 Patent

As discussed in Section IV above, the '018 Patent claims relate to (i) bypassing the common control and switch matrix of a Class 5 digital switch and (ii) converting TDM digital signals to packetized digital signals. The *Smith Publication* shows that these were known in the prior art. The *Smith Publication*

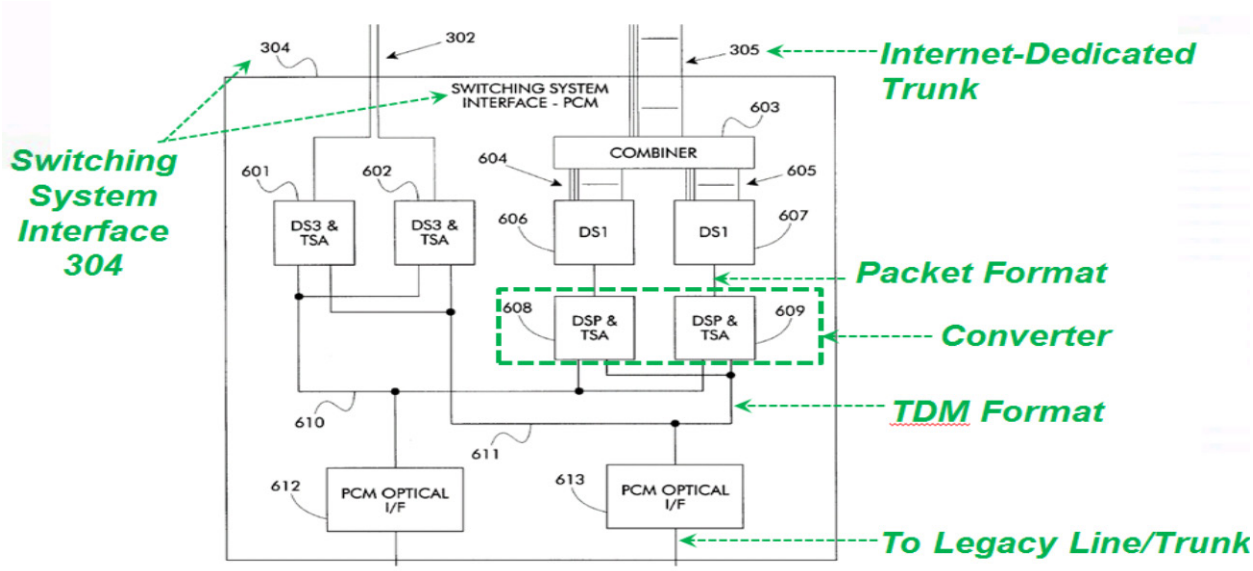
published June 5, 2003, qualifying as prior art under 35 U.S.C. § 102(b). *See* Ex. 1004 (as discussed above, the earliest possible priority date of the '018 Patent is October 22, 2004 due to the Applicant's failure to meet the co-pendency requirements for claiming priority to the '273 Patent application).

The *Smith Publication* discloses bypassing the common control and switch matrix of a Class 5 digital switch, which the Examiner deemed as "critical" and which the Applicants added to the claims to gain allowance. *See* Section IV.D, *supra*. The *Smith Publication* is the publication of the application for the '273 Patent, on which the '018 Patent relies to support the "bypass" feature. Except for differences in the claims, the *Smith Publication* is identical to the '273 Patent summarized above in Section IV.A.

The *Smith Publication* also discloses the "converting" feature of the '018 Patent claims. Specifically, the *Smith Publication* discloses that known media gateways "convert the digital format of voice calls on trunks from legacy class 5 switches into the formats used in packet networks." Ex. 1005, ¶ 008. The *Smith Publication* also discloses combining TDM-to-packet conversion with a switching system interface for bypassing the common control and switch matrix.

Figure 6 of the *Smith Publication*, reproduced below, shows that switching system interface 304 includes DSP modules 608 and 609 that receive time division multiplexed digital signals from legacy lines/trunks (via PCM buses 610 and 611)

and convert them to packetized digital signals. *See Id*. at ¶ 057. DSP module 608 comprises DSP section 912, which uses "***conventional***" algorithms to perform the conversion. *Id.* at FIGS. 3, 6, 9 and ¶ 071 ("conventional modem signal processing algorithms may be programmed into DSP section 912 for converting the analog modem tones represented in one or more PCM timeslots into digital packets.")



Ex. 1005 (*Smith Publication*) at Figure 6 (annotated)

Thus, both (i) bypassing the common control and switch matrix of a Class 5 digital switch, and (ii) converting the digital format of voice calls from legacy Class 5 switches into the formats used in packet networks were disclosed in the prior art *Smith Publication*. As shown in Section IX, the challenged claims are anticipated or at least obvious in view of the *Smith Publication*.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

In the mid-2000s when the '018 Patent application was filed, a person of

ordinary skill in the art (POSITA) would have been someone with a Bachelor's Degree in electrical engineering, computer science, or a related scientific field, and at least two years of work or research experience in the telecommunications industry, which could include telecommunications device design, telecommunications software development, or related areas. Alternatively, a POSITA in the relevant timeframe would have been someone with an advanced degree, such as a Master's Degree, in electrical engineering, computer science, or a related scientific field, focusing on telecommunications technology. Alternatively, a POSITA in the relevant timeframe could have been someone lacking formal technical education but having experience in the telecommunications industry that would be equivalent to such education. Ex. 1007, ¶ 29.

IX. THERE IS A REASONABLE LIKELIHOOD THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE

Pursuant to 37 C.F.R. § 42.104(b)(4)-(5), all of the challenged claims are unpatentable for the reasons set forth in detail below.

A. Claims 7, 8, 10, 13, and 14 are unpatentable as anticipated under § 102 in view of the *Smith Publication*

Claims 7, 8, 10, 13, and 14 are unpatentable as anticipated by *Smith Publication*.

1. Independent Claim 7

The *Smith Publication* discloses each limitation of Claim 7, including bypassing the common control and switch matrix of a class five switch, which the

Examiner deemed as "critical" and which the Applicant added to the claims to gain allowance of the '018 Patent. *See* Section IV.D and Ex. 1004, p. 56.

- ***switching system interface*** **(claim limitations [7a]-7[b])**

Claim 7 is directed to a switching system interface used to bypass a common control and switch matrix of a class 5 digital switch. In the '018 Patent, support for bypassing the common control and switch matrix comes from incorporation by reference of the '273 Patent. The background section of the '018 Patent admits that the '273 Patent discloses such bypassing:

> "US. Pat. No. 6,807,273 (''273') discloses a novel method and system for ***bypassing a common control and switch matrix of a class 5 digital switch*** by a ***switching system interface*** that ***couples one or more line/trunk frames*** of the digital switch ***to one or more transmission facilities*** in a communications network[.]"

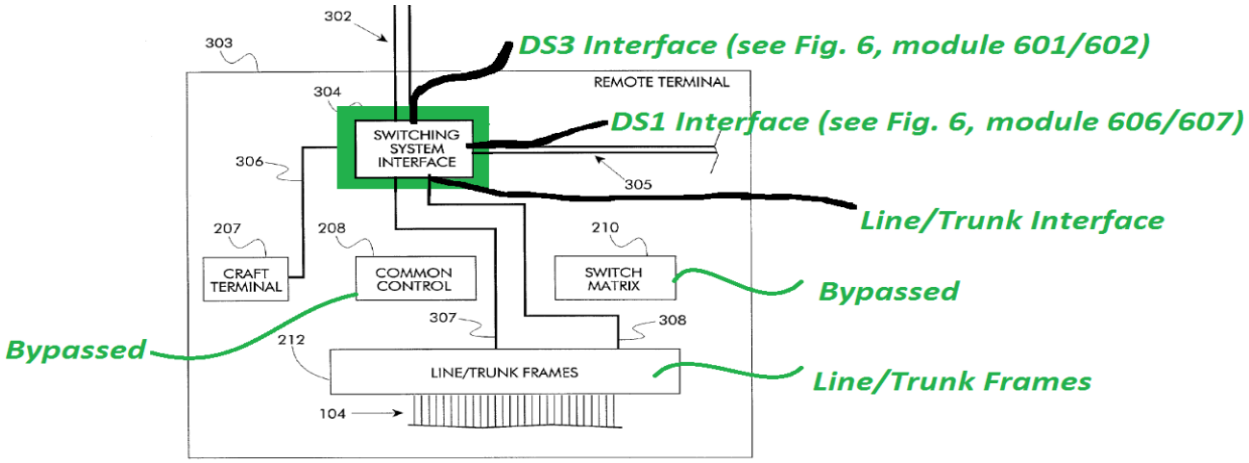
Ex. 1001 at 1:9-20 and 1:45-51 emphasis added. The '018 Patent claims align with the '273 Patent so closely that during prosecution, the Examiner issued a double patenting rejection over the '273 Patent. Ex. 1004, pp. 56-58. This equates to the Examiner rejecting the '018 Patent claims as obvious over the '273 Patent had the Examiner uncovered the break in priority. M.P.E.P. § 804, ¶ 8.32(B)(1).

The *Smith Publication* is a prior publication of the application that led to the '273 Patent. As shown in the analysis and claim chart below, the *Smith Publication* discloses a switching system interface 304 for bypassing the common

control and switch matrix and converting TDM signals to packets.

- ***means for bypassing a common control and switch matrix of a class 5 digital switch*** **(claim limitation [7c])**

In the related district court litigation, the Patent Owner identifies line/trunk interfaces, DS1 interfaces, and equivalents thereof as the means for bypassing the common control and switch matrix. *Smith Publication* discloses a switching system interface 304 with equivalent structure to line/trunk interfaces (e.g., PCM Optical I/F 612/613 discussed with respect to limitation [7e] below) and DS1 interfaces (e.g., any of modules 601, 602, 606, or 607 discussed with respect to limitation [7d] below). FIG. 3 of the *Smith Publication* has been annotated below to show these interfaces and the bypassed common control and switch matrix:



Ex. 1005 (*Smith Publication*) at Figure 3 (annotated excerpt)

- ***network interface for terminating a digital transmission facility that is part of a packet-network architecture*** **(claim limitation [7d])**

Any one of modules 601, 602, 606, or 607 in the *Smith Publication* discloses

a network interface that terminates a digital transmission facility. *Smith Publication's* FIG. 6 shows DS3 modules 601/602 terminate digital transmission facility 302. FIG. 6 shows DS1 modules 606/607 terminate digital transmission facility 305. Either of these digital transmission facilities 302/305 is part of a "packet-network architecture."

The *Smith Publication* shows that digital transmission facility 302 connects to a local terminal 301. Ex. 1005, FIG. 3. The *Smith Publication* states that local terminal 301 can be a media gateway and that a media gateway is a packet switch. Ex. 1005, ¶¶ 008 and 046. Thus, digital transmission facility 302 is part of a packet network architecture. In the event that the being "part of a packet network architecture" is interpreted as requiring the digital transmission facility to carry packets, the *Smith Publication* discloses that digital transmission facility 305 carries ATM packets that DS3 modules 601/602 receive from DSP modules 608, 609. *See e.g.*, Ex. 1005, ¶¶ 008, 056-057, FIG. 3 and FIG. 6.

- ***line/trunk interface, compatible with internal signals used to operate the line/trunk interface of the class 5 switch*** **(claim limitation [7e])**

The *Smith Publication's* FIG. 3 shows that switching system interface 304 interfaces with line/trunk frames 212. FIGS. 6-7 show components of switching system interface 304, including PCM Optical I/F 612/613 for interfacing with line/trunk frames. *See e.g.*, Ex. 1005, ¶ 54; Ex. 1007, ¶ 67. The *Smith Publication's* line/trunk interface is compatible with "internal signals" used to

operate line/trunk frames. For example, the *Smith Publication* discloses compatibility with "proprietary signals of a digital switching system that communicate between the line/trunk frames and the common-control-and-switch matrix." *Id*. ¶ 023. Figure 2 illustrates the line/trunk frames 212, common control 208, and switch matrix 210 as ***internal*** to switch plant 205 (i.e., the class 5 switch). Ex. 1005, ¶ 041 (switch plant 205 shows the components of the class 5 switch).

Figure 4, with reference to Figure 2, illustrates connecting switching system interface 304 to "***internal wiring***" (cables 209 and 213) previously used by the common control and switch matrix. *Id*. at ¶ 047 ("In order to access internal wiring, one or more specialized circuit modules 405 and 406 are installed. ... Thus, switching system interface 304 accesses [] all necessary busses and signals in order to manage line/trunk frames 212 ... while the potentially complex and/or old and fragile cabling associated with the various groups of equipment frames from the prior art class 5 switching system have been left intact and not disturbed.").

Moreover, the '273 Patent that issued from the application that published as the *Smith Publication* includes claims that recite "internal signals." Ex. 1003, claims 1, 2, 6, 8, 13, 16, 18, 24, 26. The Examiner did not raise a written description objection when the '273 Patent application was amended to recite "internal signals" in the claims; thus, the Examiner determined that the application that published as the *Smith Publication* discloses internal signals.

- ***switching means for routing data between the network interface and the line/trunk interface*** **(claim limitation [7f])**

In the related district court litigation, the Patent Owner identifies the structure of the switching means as DS1 interfaces 202, line/trunk frame interfaces 201, and timeslot interchange function 203 of the '018 Patent. For the reasons discussed above regarding limitations [7d] and [7e], the *Smith Publication* discloses equivalent structure to DS1 interfaces 202 (e.g., any of DS3 modules 601/602 and/or DS1 modules 606/607 are equivalent) and line/trunk frame interfaces 201 (e.g., PCM Optical I/F 612/613). The *Smith Publication* also discloses time slot assignment means (TSA) equivalent to timeslot interchange function 203 of the '018 Patent. For example, FIG. 6 of the *Smith Publication* shows TSA 601/602 routes data between a network interface (DS3 601/602) and the line trunk interface (PCM optical I/F 612/613). *See also*, FIG. 8 (showing the time slot assignment within modules 601/602 as TSA 809 and the network interface within modules 601/602 as DS3 interface 802). FIG. 6 shows TSA 608/609 also routes data between a network interface (DS1 606/607) and line trunk interface (PCM optical I/F 612/613 to line/trunk frames 212). Ex. 1007, ¶¶ 72-74.

- ***means for converting data between time-division multiplexed digital signals and packetized digital signals*** **(claim limitation [7g])**

As discussed in Section IV.D of this Petition, the Examiner rejected converting between TDM and packet as a reason for patentability during

prosecution of the '018 Patent. Ex. 1004, pp. 80-83. Additionally, the '018 Patent admits that converting between TDM and packet was known. Ex. 1001, 2:8-11 ("media gateways ... are specialized packet switches that also convert the time-division multiplexed digital format of voice calls on trunks from legacy class 5 switches into the packetized formats used in packet networks.").

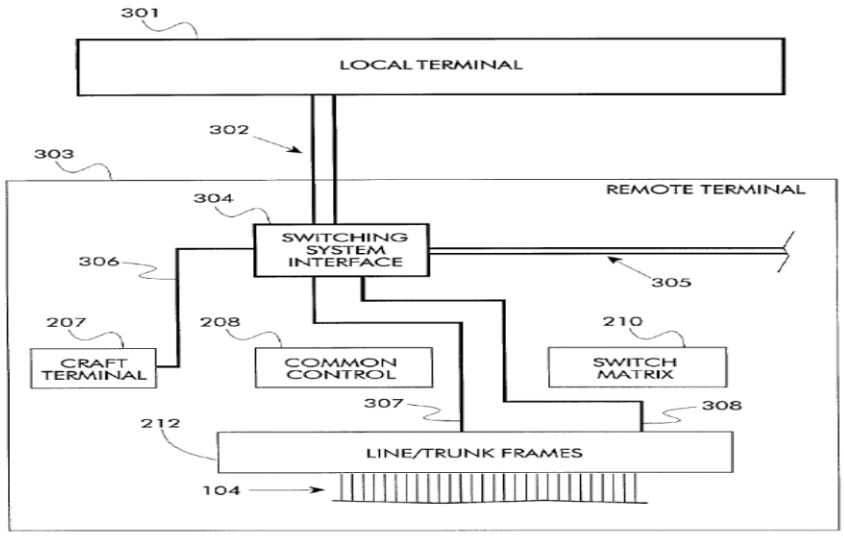
The *Smith Publication* demonstrates that combining a switching system interface for bypassing the common control and switch matrix with TDM/packet conversion was also known. For example, switching system interface 304 includes DSP modules 608 and 609 that receive TDM timeslots from legacy lines via PCM buses 610 and 611. Ex. 1005, Fig. 6; ¶¶ 054, 057. The DSP modules 608 and 609 include a DSP section 912 that converts the received digital signals to packetized digital signals. *Id.* ¶ 057; FIG. 9; ¶ 071 ("conventional modem signal processing algorithms may be programmed into DSP section 912 for ***converting*** the analog modem tones represented in one or more ***PCM timeslots into digital packets***, and vice versa"). One of ordinary skill in the art would understand the disclosure of timeslots to refer to time division multiplexed signals. Ex. 1007, ¶ 77.

In the related district court litigation, the Patent Owner identifies the corresponding structure as format converter 312 in the '018 Patent. The '018 Patent illustrates format converter 312 as a black box, and describes that it can be a "DSP" that converts between TDM and packets. Ex. 1001, 5:59-63. In the *Smith*

Publication, "DSP" modules 608/609 disclose the same or equivalent structure.

The following claim chart provides examples where *Smith Publication* discloses each claim limitation of the '018 Patent. Because the '018 Patent incorporates the '273 Patent by reference, in many instances the *Smith Publication* discloses the ***identical*** structure as disclosed in the '018 Patent.

'018 Patent Claims	***Smith Publication* ("*Smith*")**
[7a] A switching system interface providing conversion between time-division multiplexed digital signals and packetized digital signals used to bypass a common control and switch matrix of a class 5 digital switch, the switching system interface comprising:	*See e.g., Smith* at ¶ 012, "What is needed is ***a means to bypass the common control and switch matrix of a legacy class 5 switching system*** in a way that permits any other switching system or media gateway to perform the associated functions, so that the legacy software may be discarded and/or any limitations of the legacy switch matrix may be overcome, ***while retaining the legacy line/trunk frames and cable plant and incurring minimal changes to the overall physical plant of the legacy class 5 central office***." *See e.g., Smith* at ¶ 015, "Therefore, what is needed is a method of ***bypassing the common control and switch matrix of a first class 5 digital switch, by providing a switching system interface which couples one or more line/trunk frames of the first digital switch to one or more digital transmission facilities*** that make up the remote end of a DLC, where the local terminal is a second class 5 digital switch or media gateway." *See e.g., Smith* at ¶¶ 045-046, "One embodiment of the method of the present invention is illustrated schematically in FIG. 3. ... A local terminal 301, typically comprising a class 5 digital switch or media gateway, resides either in another office (possibly in another city), or even in the same office, and couples to switching system interface 304 by means of one or more digital transmission facilities 302. ***Remote terminal 303 of the DLC architecture comprises line/trunk frames 212 and switching system interface 304. Optional internet-dedicated trunks 305 carry intercepted***

	internet traffic* that is diverted away from local terminal *301."  Fig. 3 *See e.g., Smith* at ¶ 008, "Another trend is toward networks that carry both voice calls and data over common transport based on connectionless access protocols such as asynchronous transfer mode ("ATM") and transport control protocol/ ***internet protocol*** ("TCP/IP"), ***also referred to as*** '***packet networks***.' ... 'Media gateways' are packet switches that also ***convert the digital format of voice calls on trunks from legacy class 5 switches into the formats used in packet networks***." *See e.g., Smith* at ¶ 030, "***FIG. 6 illustrates the component modules of a preferred embodiment of the switching system interface*** of the present invention, that process and route pulse-code modulation signals." *See e.g., Smith* at ¶ 057, "***Redundant digital signal processor ("DSP") modules 608 and 609 provide the internet reroute capability*** mentioned above. ... It will be further seen by one skilled in the art that DSP modules 608 and 609 can be made capable of performing the functions of dial-up digital modems, and that DS1 modules 606 and 607 would then carry packets such as ATM cells instead of circuits, or could be replaced with industry standard digital packet interfaces such as 100BaseT."

	See e.g., Smith at ¶ 033, "FIG. 9 illustrates schematically the component parts of a ... DSP module that are used to identify dial-up internet calls." *See e.g., Smith* at ¶ 068, "***DSP module 608 comprises*** data memory 907, CPU section 909, redundant management interfaces 910 and 911, ***DSP section 912***, and redundant time slot assignment means 913 and 914." *See e.g., Smith* at ¶ 071, "It will also be understood by one skilled in the art that ***conventional modem signal processing algorithms may be programmed into DSP section 912 for converting the analog modem tones represented in one or more PCM timeslots into digital packets***, and vice versa." *See also* ¶¶ 002-004, 012,015, 018, 019, 023, 024, 032, 041, 045, 047, 072, FIGS. 1-9, Abstract, Claim 1, Claim 5.	
'018 Patent Claims	***Smith Publication* ("*Smith*")**	
[7b] a switching system interface	*See e.g.*, FIGS. 3, 6, "***switching system interface 304***" *See e.g.*, claim limitation [7a] *supra*.	
'018 Patent Claims	**'018 Patent § 112(6)**	***Smith***
[7c] having means for bypassing a common control and switch matrix of a class 5 digital switch,	Structure: line/trunk interfaces, DS1 interfaces, and equivalents thereof.	*See e.g., Smith* at FIG. 3 and ¶ 045, "stored program control system 208 and switch matrix 210 of FIG. 2 are disconnected and replaced by switching system interface 304. ... PCM cables 213 are replaced by ***PCM cables 308, which carry PCM between line/trunk frames 212 and switching system interface 304***." *See e.g., Smith* at FIG. 3 and ¶ 046, "***A local terminal 301... couples to switching system interface 304 by means of one or more digital transmission facilities 302***." *See e.g., Smith* at FIG. 6 and ¶ 053, "FIG. 6 illustrates schematically the internal PCM flow of a version of the preferred embodiment of the switching system interface of the

		present invention. ***This version uses DS3's as digital transmission facilities to the local terminal, and DS1's as dedicated internet trunks***." *See also*, *Smith* at FIG. 8 and ¶¶ 060-065. *See e.g., Smith* at ¶ 015, "bypassing the common control and switch matrix of a first class 5 digital switch, by providing a switching system interface which ***couples one or more line/trunk frames of the first digital switch to one or more digital transmission facilities***." *See e.g.*, limitations [7a]-[7b] *supra*.
	Function: "bypassing a common control and switch matrix of a class 5 digital switch"	*See e.g., Smith* at ¶ 052, "The technician now commands line/trunk frames 212 to change operation over to B-plane, which causes service to be carried through switching system interface 304 and thus through local terminal 301. ... Now redundancy is available through switching system interface 304, and ***the common control and switch matrix of prior art class 5 switching system 102 have been completely bypassed***." *See e.g., Smith* at claim 8. A ***switching system interface for bypassing the common-control-and-switch matrix of a first digital switching system*** for telecommunications networks, ***comprising: at least one network interface for terminating a digital transmission facility*** that is part of a digital loop carrier architecture, ***at least one line/trunk pulse-code***

		modulation interface, compatible with the pulse-code modulation signals used to operate said line/trunk frames of said first digital switching system, [and] a time-slot assignment means, connected to said network interfaces and to said line/trunk pulse-code modulation interfaces, for ***coupling certain pulse-code modulation timeslots between said network interfaces and said line/trunk pulse-code modulation interfaces***[.] *See e.g.*, limitations [7a]-[7b] *supra*.
'018 Patent Claims	***Smith Publication* ("*Smith*")**	
[7d] at least one network interface for terminating a digital transmission facility that is part of a packet-network architecture;	*See e.g.*, *Smith* at Abstract "A switching system interface comprising ***one or more network interfaces for terminating digital transmission facilities***[.]" *See e.g.*, *Smith* at ¶ 023, "a switching system interface comprising ... ***at least one network interface connected to the remote end of a corresponding digital transmission facility of a DLC architecture***." *See e.g., Smith* at ¶ 030, "***FIG. 6 illustrates the component modules of a preferred embodiment of the switching system interface [304]*** of the present invention, that process and route pulse-code modulation signals."	

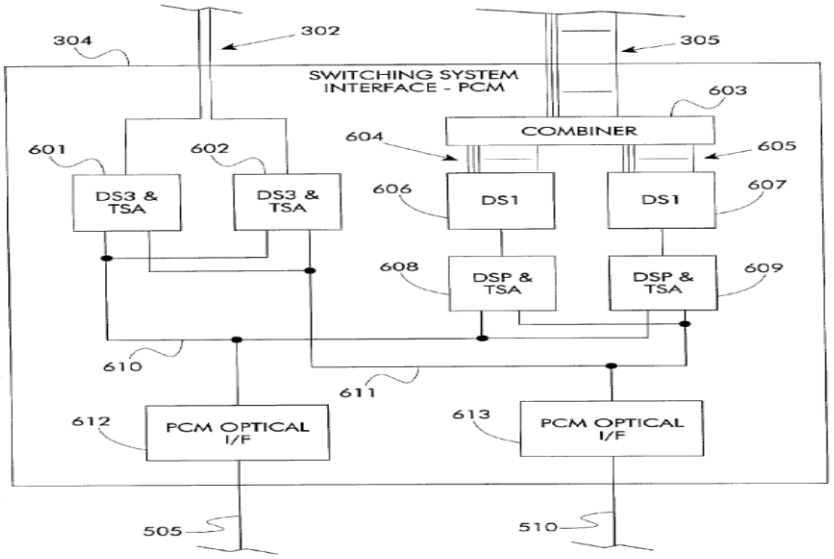


Fig. 6

See e.g., Smith at ¶ 055, "***digital transmission facilities 302 of FIG. 3 comprise redundant DS3 facilities terminating on A-plane DS3 module 601 and B-plane DS3 module 602*** [of switching system interface 304]."

See e.g., Smith at ¶ 032 "FIG. 8 illustrates schematically a preferred embodiment of a network interface [.]"

See e.g., Smith at ¶¶ 060-062, "FIG. 8 illustrates ... the electronic module that can perform as either DS3 module 601 and DS3 module 602."

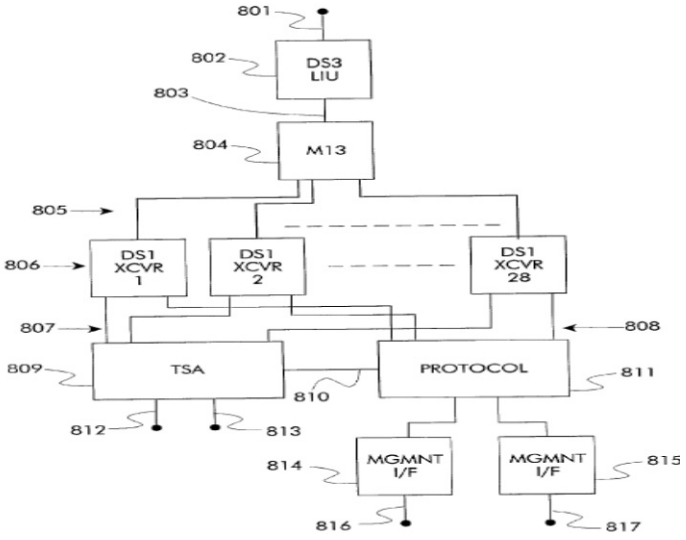


Fig. 8

See e.g., Smith at ¶¶ 060-062, "The processing of the DS3

	signal is conventional, as follows: DS3 facility 801 is coupled to DS3 line interface unit 802, which terminates the DS3 line signal, ... M13 multiplexer 804 [] terminates the DS3 framing patterns [and] translates the DS3 data into 28 DS1 signals[.] ... The 28 PCM streams 807 from DS1 transceivers 806 are coupled to time slot assignment means 809, which is programmed to map selected timeslots between the PCM streams and redundant PCM busses 610 and 611." *See e.g., Smith* at ¶ 046, "***A local terminal 301, typically comprising a*** class 5 digital switch or ***media gateway***, resides either in another office (possibly in another city), or even in the same office, and ***couples to switching system interface 304 by means of one or more digital transmission facilities 302***." *See e.g., Smith* at ¶ 008, "Another trend is toward networks that carry both voice calls and data over common transport based on connectionless access protocols such as asynchronous transfer mode ("ATM") and transport control protocol/internet protocol ("TCP/IP"), also referred to as "packet networks". ... ***"Media gateways" are packet switches that also convert the digital format of voice calls on trunks from legacy class 5 switches into the formats used in packet networks***." *See e.g., Smith* at ¶¶ 056-057, "***digital transmission facilities 305 of FIG. 3 comprise one or more DS1 facilities terminating on A-plane DS1 module 606 and B-plane DS1 module 607***. ... DSP modules 608 and 609 can be made capable of performing the functions of dial-up digital modems, and that ***DS1 modules 606 and 607 would then carry packets*** such as ATM cells instead of circuits, or could be replaced with industry standard digital packet interfaces such as 100BaseT." *See also* ¶¶ 003-004, 012, 015, 019, 035-045, 053, 055, 060-065, Claims 8-9, FIGS. 2, 3-9. *See e.g.*, claim limitations [7a]-[7c] *supra*.

'018 Patent Claims	***Smith Publication* ("*Smith*")**
[7e] at least one line/trunk interface, compatible with internal signals used to operate the line/trunk interface of the class 5 digital switching system; and	*See e.g.*, *Smith* at Claim 8, "A switching system interface ... comprising ... ***at least one line/trunk pulse-code modulation interface, compatible with the pulse-code modulation signals used to operate said line/trunk frames of said first digital switching system*** [.]" *See e.g., Smith* at Claim 23, "method comprises ***accessing the proprietary signals of a digital switching system*** that communicate between the line/trunk frames and the common-control-and-switch matrix; ***providing a switching system interface comprising interfaces compatible with the proprietary signals***[.]" *See e.g., Smith* at ¶ 045, "PCM cables 213 are replaced by ***PCM cables 308, which carry PCM between line/trunk frames 212 and switching system interface 304***. A subset of management cables 209 used for managing line/trunk frames 212 are replaced by ***management cables 307, which carry management signals between the line/trunk frames and the switching system interface***[.]" *See e.g., Smith* at ¶ 047, "internal wiring associated with administrative cables 209 and PCM cables 213 [of the prior art class 5 switching system] are still in place. In order to ***access this internal wiring***, one or more specialized circuit modules 405 and 406 are installed in depopulated frames 403 and 404, in place of the removed prior art modules. Cable sets 401 and 402 connect specialized circuit modules 405 and 406 to switching system interface 304. Thus, ***switching system interface 304 accesses [] all necessary busses and signals in order to manage line/trunk frames 212 and carry PCM data to and from these frames, while the potentially complex and/or old and fragile cabling associated with the various groups of equipment frames from the prior art class 5 switching system have been left intact and not disturbed***." *See e.g., Smith* at ¶ 059 "***redundant shelf controls 701 and 702 control all line trunk frames***[.]" *See also Smith* at ¶¶ 023, 047, 053, FIGS. 2-9, Claim 8.

	See e.g., claim limitations [7a]-[7d] *supra*.	
'018 Patent Claims	**'018 Patent § 112(6)**	***Smith***
[7f] a switching means, connected to the network interface and to the line/trunk interface, for routing data between the network interfaces and the line/trunk interface; and	Structure: PCM interface, line/trunk manager module, and/or timeslot interchange and equivalents thereof	*See e.g., Smith* at FIG. 6 "***PCM optical interface 612***" and "***PCM optical interface 613***." *See also Smith* at ¶ 054. *See e.g., Smith* at FIG. 7, "***line/trunk manager 705***" and "***line/trunk manager 706***." *See also Smith* at ¶ 059. *See e.g., Smith* at Claim 8, FIGS. 6, 8, 9, ***"TSA" [time slot assignment]***. *See e.g., Smith* at ¶¶ 060-064, "line interface unit 802 [] terminates the DS3 line signal[.] ... M13 multiplexer 804 ... translates the DS3 data into 28 DS1 signals[.] ... The 28 PCM streams 807 from ***DS1 transceivers 806 are coupled to time slot assignment means 809, which is programmed to map selected timeslots between the PCM streams and redundant PCM busses 610 and 611***. ..." *See e.g., Smith* at ¶ 054, **"**each circuit of the associated line/trunk frames has a time slot assigned in the upstream and the downstream directions of PCM busses 610 and 611." *See also Smith* at ¶¶ 045, 053-054, 062. *See e.g.*, claim limitations [7a]-[7e] *supra*.
	Function: "routing data between	*See e.g.*, *Smith* at Claim 1, "A method for bypassing the common-control-and-switch matrix of a first digital

	said network interfaces and said line/trunk interface"	switching ... providing **a *switching system interface comprising at least one network interface*** ... and comprising interfaces compatible with said pulse-code modulation, timing, and management signals, ***and connecting said compatible interfaces of said switching system interface to said line/trunk frame of said first digital switching system***." *See e.g., Smith* at ¶ 030, "***FIG. 6 illustrates the component modules of a preferred embodiment of the switching system interface of the present invention, that process and route pulse-code modulation signals***." *See e.g., Smith* at Claim 9, "***[a] call processing means causes certain pulse-code modulation timeslots to be connected between said network interfaces and said line/trunk frames, by operating said individual time-slot assignment means on said network interfaces***." *See also* ¶¶ 015, 019, 023, 024, 030, 045, 047, 053-059, 062, FIG. 3-9, Claims 8-9. *See e.g.*, claim limitations [7a]-[7e] *supra*.
'018 Patent Claims	**'018 Patent § 112(6)**	***Smith***
[7g] means for converting data between time-division multiplexed digital signals and packetized digital	Structure: format converter and equivalents thereof	*See e.g.*, *Smith* at FIG. 6, "***DSP 608***" and "***DSP 609***." *See e.g., Smith* at FIG. 6 and ¶ 057, "***Redundant digital signal processor ("DSP") modules 608 and 609 provide the internet reroute***

signals.		***capability*** mentioned above." *See e.g., Smith* at ¶ 054, "***each circuit of the associated line/trunk frames has a time slot assigned in the upstream and the downstream directions of PCM busses 610 and 611***." *See e.g., Smith* at ¶ 057, "each DSP module 608 and 609 further comprises a time-slot assignment means as part of its interface to PCM busses 610 and 611." *See e.g., Smith* at ¶ 057, "***DSP modules 608 and 609 can be made capable of performing the functions of dial-up digital modems,*** and that DS1 modules 606 and 607 would then ***carry packets*** such as ATM cells instead of circuits, or could be replaced with industry standard digital packet interfaces such as 100BaseT." *See e.g., Smith* at ¶ 056, "Each DS1 module 606 and 607 comprises a multiplicity of DS1s 604 and 605, which are coupled together through passive combiner 603 to provide a multiplicity of ***internet-dedicated trunks 305*** of FIG. 3." *See e.g.*, ¶¶ 071-072, claim limitations [7a]-[7f] *supra*.
	Function: "converting data between time-division multiplexed digital signals of a legacy line frame of a	*See e.g., Smith* at ¶ 057, "***Redundant digital signal processor ("DSP") modules 608 and 609 provide the internet reroute capability[.]"*** *See e.g., Smith* at ¶ 068, "***DSP module 608 comprises ... DSP***

	legacy line and packetized digital signals"	***section 912***[.]" *See e.g., Smith* at ¶ 071, "It will also be understood by one skilled in the art that ***conventional modem signal processing algorithms may be programmed into DSP section 912 for converting the analog modem tones represented in one or more PCM timeslots into digital packets***, and vice versa." *See e.g.*, claim limitations [7a]-[7f] *supra*.

2. Dependent Claim 8

The *Smith Publication* discloses that the means for converting data between time-division multiplexed digital signals and packetized digital signals "includes utilizing a digital signal processor" as recited in Claim 8 of the '018 Patent. As discussed with respect to Claim 7, the *Smith Publication's* DSPs 608/609 disclose the claimed "means for converting." In the *Smith Publication*, "DSP" is an acronym meaning "digital signal processor." Ex. 1005, ¶ 057.

3. Independent Claim 10

Independent Claim 10 of the '018 Patent recites a method of utilizing a switching system interface like the one recited in independent Claim 7. The prior art discloses each limitation of Claim 10 for reasons analogous to those discussed above with respect to Claim 7, as summarized in the claim chart below.

'018 Patent Claims	***Smith Publication* ("*Smith*")**
[10a] A method of	*See e.g., Smith* at Abstract, "***A method for bypassing the***

'018 Patent Claims	***Smith Publication* ("*Smith*")**
combining time-division multiplexed digital signals and packetized digital signals with a switching system interface used to bypass the common control and switch matrix of a legacy class 5 digital switch, the method comprising the steps of:	***common control and switch matrix of a class 5 digital switch***." *See e.g., Smith* at ¶ 012, "What is needed is ***a means to bypass the common control and switch matrix of a legacy class 5 switching system*** in a way that permits any other switching system or media gateway to perform the associated functions, so that the legacy software may be discarded and/or any limitations of the legacy switch matrix may be overcome, ***while retaining the legacy line/trunk frames and cable plant and incurring minimal changes to the overall physical plant of the legacy class 5 central office***." *See e.g., Smith* at ¶ 015, "Therefore, what is needed is a method of ***bypassing the common control and switch matrix of a first class 5 digital switch, by providing a switching system interface which couples one or more line/trunk frames of the first digital switch to one or more digital transmission facilities*** that make up the remote end of a DLC, where the local terminal is a second class 5 digital switch or media gateway." *See e.g., Smith* at ¶¶ 045-046, FIG. 3 "A local terminal 301, typically comprising a class 5 digital switch or media gateway, resides either in another office (possibly in another city), or even in the same office, and couples to switching system interface 304 by means of one or more digital transmission facilities 302. ***Remote terminal 303 of the DLC architecture comprises line/trunk frames 212 and switching system interface 304. Optional internet-dedicated trunks 305 carry intercepted internet traffic that is diverted away from local terminal 301***." *See e.g., Smith* at ¶ 008, "Another trend is toward networks that carry both voice calls and data over common transport based on connectionless access protocols such as asynchronous transfer mode ("ATM") and transport control protocol/ ***internet protocol*** ("TCP/IP"), ***also referred to as*** '***packet networks***.' ... 'Media gateways' are packet switches that also ***convert the digital format of voice calls on trunks***

'018 Patent Claims	***Smith Publication* ("*Smith*")**
	from legacy class 5 switches into the formats used in packet networks." *See e.g., Smith* at ¶ 030, "***FIG. 6 illustrates the component modules of a preferred embodiment of the switching system interface*** of the present invention, that process and route pulse-code modulation signals." *See e.g., Smith* at ¶ 057, "***Redundant digital signal processor ("DSP") modules 608 and 609 provide the internet reroute capability*** mentioned above. ... It will be further seen by one skilled in the art that DSP modules 608 and 609 can be made capable of performing the functions of dial-up digital modems, and that DS1 modules 606 and 607 would then carry packets such as ATM cells instead of circuits, or could be replaced with industry standard digital packet interfaces such as 100BaseT." *See e.g., Smith* at ¶ 068, "***DSP module 608 comprises*** data memory 907, CPU section 909, redundant management interfaces 910 and 911, ***DSP section 912***, and redundant time slot assignment means 913 and 914." *See e.g., Smith* at ¶ 071, "It will also be understood by one skilled in the art that ***conventional modem signal processing algorithms may be programmed into DSP section 912 for converting the analog modem tones represented in one or more PCM timeslots into digital packets***, and vice versa." *See also* ¶¶ 002-004, 012,015, 018, 019, 023, 024, 032, 041, 045, 047, 072, FIGS. 1-9, Abstract, Claim 1, Claim 5.
[10b] utilizing a switching system interface to bypass a common control and switch matrix of the digital class 5 switch;	*See e.g., Smith* at claim 1, "A method for ***bypassing the common-control-and-switch matrix*** of a first digital switching system for telecommunications networks, comprising: ... ***providing a switching system interface*** ... whereby said switching system interface enables a local terminal of said digital loop carrier architecture to directly operate said line/trunk frames, thus providing telecommunications service to subscribers connected to said line/trunk frames without the use of said common-control-and-switch matrix of said first digital switching

'018 Patent Claims	***Smith Publication* ("*Smith*")**
	system." *See also, Smith* at ¶ 015. *See e.g.*, *Smith* at FIGS. 3, 6, "***switching system interface 304***." *See e.g., Smith* at ¶ 004, "The common control comprises, among other things, a stored program control system," and ¶ 045, "In this method the stored program control system 208 and switch matrix 210 of FIG. 2 are disconnected and replaced by switching system interface 304." *See also, Smith* at ¶¶ 043-043 ("common control 208"). *See also*, the passages cited above with respect to claim limitation 10[a].
[10c] accessing internal signals of the class 5 digital switching system used to control line and trunk interfaces of the class 5 digital switching system and convey data in and out of the line and trunk interfaces;	*See e.g., Smith* at claim 1, "***accessing pulse-code modulation, timing, and management signals of said first digital switching system between a line/trunk frame and said common-control-and-switch matrix***." *See also* ¶¶ 023, 047, Figs. 3-9. *See e.g.*, *Smith* at Claim 8, "A switching system interface ... comprising ... ***at least one line/trunk pulse-code modulation interface, compatible with the pulse-code modulation signals used to operate said line/trunk frames of said first digital switching system*** [.]" *See e.g., Smith* at Claim 23, "method comprises ***accessing the proprietary signals of a digital switching system*** that communicate between the line/trunk frames and the common-control-and-switch matrix; ***providing a switching system interface comprising interfaces compatible with the proprietary signals***[.]" *See e.g., Smith* at ¶ 045, "PCM cables 213 are replaced by ***PCM cables 308, which carry PCM between line/trunk frames 212 and switching system interface 304***. A subset of management cables 209 used for managing line/trunk frames 212 are replaced by ***management cables 307, which carry management signals between the line/trunk frames and the switching system interface***[.]" *See e.g., Smith* at ¶ 047, "internal wiring associated with

'018 Patent Claims	***Smith Publication* ("*Smith*")**
	administrative cables 209 and PCM cables 213 [of the prior art class 5 switching system] are still in place. In order to ***access this internal wiring***, one or more specialized circuit modules 405 and 406 are installed in depopulated frames 403 and 404, in place of the removed prior art modules. Cable sets 401 and 402 connect specialized circuit modules 405 and 406 to switching system interface 304. Thus, ***switching system interface 304 accesses [] all necessary busses and signals in order to manage line/trunk frames 212 and carry PCM data to and from these frames, while the potentially complex and/or old and fragile cabling associated with the various groups of equipment frames from the prior art class 5 switching system have been left intact and not disturbed***." *See e.g., Smith* at ¶ 059 "***redundant shelf controls 701 and 702 control all line trunk frames***[.]" *See also Smith* at ¶¶ 023, 047, 053, FIGS. 2-9, Claim 8. *See e.g.*, the passages cited above with respect to claim limitations 10[a]-10[b].
[10d] providing a switching system interface comprising at least one network interface connected to at least one digital transmission facility that is part of a network architecture, and comprising interfaces compatible with the internal signals; and	*See e.g., Smith* at claim 1, "providing a ***switching system interface*** comprising at least one ***network interface*** connected to at least one ***digital transmission facility*** that is part of a ***digital loop carrier architecture***, and comprising interfaces ***compatible with said pulse-code modulation, timing, and management signals***." *See e.g.*, *Smith* at Abstract "A switching system interface comprising ***one or more network interfaces for terminating digital transmission facilities***[.]" *See e.g.*, *Smith* at ¶ 023, "a switching system interface comprising ... ***at least one network interface connected to the remote end of a corresponding digital transmission facility of a DLC architecture***." *See e.g., Smith* at ¶ 030, "***FIG. 6 illustrates the component modules of a preferred embodiment of the switching system interface [304]*** of the present invention, that process and route pulse-code modulation signals."

'018 Patent Claims	***Smith Publication* ("*Smith*")**
	See e.g., Smith at ¶ 055, "***digital transmission facilities 302 of FIG. 3 comprise redundant DS3 facilities terminating on A-plane DS3 module 601 and B-plane DS3 module 602*** [of switching system interface 304]." *See e.g., Smith* at ¶ 032 "FIG. 8 illustrates schematically a preferred embodiment of a network interface [.]" *See e.g., Smith* at ¶¶ 060-062, "FIG. 8 illustrates schematically the [] embodiment of the electronic module that can perform as either DS3 module 601 and DS3 module 602." *See e.g., Smith* at ¶¶ 060-062, "The processing of the DS3 signal is conventional ... M13 multiplexer 804, which terminates the DS3 framing patterns, translates the DS3 data into 28 DS1 signals ... ." *See also* ¶¶ 003-004, 012, 015, 019, 035-045, 053, 055, 060-065, Claims 8-9, FIGS. 2, 3-9. *See e.g.*, the passages cited above with respect to claim limitations 10[a]-10[c].
[10e] connecting the compatible interfaces of the switching system interface to the internal signals of the class 5 digital switching system, the connection between the compatible interfaces and the internal signals enabling a terminal in the network architecture to directly operate the internal signals to provide telecommunications service to subscribers	*See e.g., Smith* at claim 1 "***connecting said compatible interfaces of said switching system interface to said line/trunk frame of said first digital switching system, whereby said switching system interface enables a local terminal of said digital loop carrier architecture to directly operate said line/trunk frames, thus providing telecommunications service to subscribers connected to said line/trunk frames without the use of said common-control-and-switch matrix of said first digital switching system***." *See e.g., Smith* at ¶ 030, "***FIG. 6 illustrates the component modules of a preferred embodiment of the switching system interface of the present invention, that process and route pulse-code modulation signals***." *See e.g., Smith* at ¶¶ 060-064, "line interface unit 802 [] terminates the DS3 line signal[.] ... M13 multiplexer 804 ... translates the DS3 data into 28 DS1 signals[.] ... The 28 PCM streams 807 from ***DS1 transceivers 806 are coupled***

'018 Patent Claims	***Smith Publication* ("*Smith*")**
connected to the line and trunk interfaces without the use of the common-control-and switch matrix of the class 5 digital switching system; and	***to time slot assignment means 809, which is programmed to map selected timeslots between the PCM streams and redundant PCM busses 610 and 611***. ..." *See e.g., Smith* at ¶ 054, ***"each circuit of the associated line/trunk frames has a time slot assigned in the upstream and the downstream directions of PCM busses 610 and 611***." *See e.g., Smith* at Claim 9, "***[a] call processing means causes certain pulse-code modulation timeslots to be connected between said network interfaces and said line/trunk frames, by operating said individual time-slot assignment means on said network interfaces***." *See e.g., Smith* at Claim 8, FIGS. 6, 8, 9, ***"TSA" [time slot assignment]***. *See also* ¶¶ 015, 019, 023, 024, 030, 045, 047, 053-059, 062, FIG. 3-9, Claims 8-9. *See e.g.*, the passages cited above with respect to claim limitations 10[a]-10[d].
[10f] converting time-division multiplexed digital signals to packetized digital signals through the switching system interface.	*See e.g.*, *Smith* at ¶ 008, "'Media gateways' are packet switches that also ***convert the digital format of voice calls on trunks from legacy class 5 switches into the formats used in packet networks***." *See e.g., Smith* at FIG. 6 and ¶ 057, "***Redundant digital signal processor ("DSP") modules 608 and 609 provide the internet reroute capability*** mentioned above." *See e.g., Smith* at ¶ 054, "***each circuit of the associated line/trunk frames has a time slot assigned in the upstream and the downstream directions of PCM busses 610 and 611***." *See e.g., Smith* at ¶ 057, "each DSP module 608 and 609 further comprises a time-slot assignment means as part of its interface to PCM busses 610 and 611." *See e.g., Smith* at ¶ 057, "DSP modules 608 and 609 can be made capable of performing the functions of dial-up digital modems, and that DS1 ***modules 606 and 607 would then***

'018 Patent Claims	***Smith Publication* ("*Smith*")**
	carry packets such as ATM cells instead of circuits, or could be replaced with industry standard digital packet interfaces such as 100BaseT." *See e.g., Smith* at ¶ 056, "Each DS1 module 606 and 607 comprises a multiplicity of DS1s 604 and 605, which are coupled together through passive combiner 603 to provide a multiplicity of ***internet-dedicated trunks 305*** of FIG. 3." *See e.g., Smith* at ¶ 068, "***DSP module 608 comprises*** ... ***DSP section 912***[.]" *See e.g., Smith* at ¶ 071, "It will also be understood by one skilled in the art that ***conventional modem signal processing algorithms may be programmed into DSP section 912 for converting the analog modem tones represented in one or more PCM timeslots into digital packets***, and vice versa." *See e.g.*, the passages cited above with respect to claim limitations 10[a]-10[e].

4. Dependent Claim 13

Claim 13 recites "connecting a digital signal processor within the telecommunications network to the second connection to enable the media gateway to communicate with the internal signals." The claim is difficult to decipher because the terms "second connection" and "media gateway" lack antecedent basis. Petitioner has reviewed the '018 Patent specification for guidance. In the detailed description section of the '018 Patent, the term "media gateway" appears only once, describing that switching system interface includes a DS1 interface that can connect to a media gateway via a DS1 facility. Ex. 1001, 5:7-26.

The *Smith Publication* provides at least equivalent disclosure. The *Smith*

Publication's switching system interface 304 includes a DS3 interface 601/602 that can connect to a media gateway (local terminal 301) via a DS3 facility (digital transmission facility 302). Ex. 1005, FIGS. 3, 6, ¶ 046 (local terminal 301 can be a media gateway); ¶ 060 (a DS3 signal comprises DS1 signals); Ex. 1007, ¶ 85.

The '018 Patent specification lacks any clear disclosure regarding the claimed connection to a DSP that enables the media gateway to communicate with the internal signals. The only reference to "DSP" in the '018 Patent describes format converter (FC) 312. Ex. 1001, 5:63. Format converter 312 performs packet conversion, and the '018 Patent describes packet conversion as functionality of a media gateway. *Id*., 2:8-11. The *Smith Publication* provides at least equivalent disclosure: "DSP" modules 608/609 perform media gateway functionality (packet conversion) and communicate with internal signals (via PCM connections to the line/trunk frames). *See e.g.*, Ex. 1005, ¶¶ 008, 045, 054, 068, 071, FIG. 3, FIG. 6.

Alternatively, the limitation is also met by the *Smith Publication's* use of a media gateway as local terminal 301. As shown in FIG. 3 and FIG. 6, the media gateway/local terminal 301 communicates with internal signals of the line/trunk frames 212 via switching system interface 304. The *Smith Publication* further discloses that media gateways perform TDM-to-packet conversion (¶ 008) and that a DSP can be used to perform conventional packet conversion algorithms (¶ 071).

5. Dependent Claim 14

The *Smith Publication* discloses "receiving signals originating from a line trunk frame" as recited in Claim 14 of the '018 Patent. In *Smith Publication's* FIG. 3, switching system interface 304 receives signals from line/trunk frame 212.

The *Smith Publication* discloses "extracting Pulse Code Modulation (PCM) data and signal information from these signals," and "transmitting the PCM data on a timeslot" as recited in Claim 14. *Smith Publication's* FIG. 6 shows that switching system interface 304 includes PCM interfaces 612/613 between the line/trunk frames and PCM busses 610/611, where "each circuit of the associated line/trunk frames has a time slot assigned in the upstream and the downstream directions of PCM busses 610 and 611." Ex. 1005, ¶ 054; Ex. 1007, ¶ 89.

The *Smith Publication* discloses "packetizing the PCM data, and transmitting the packetized data to an external IP address" as recited in Claim 14. FIG. 6 shows that PCM busses 610/611 connect to DSP modules 608/609 that send the data to DS1 modules 606/607. The *Smith Publication* states "DSP modules 608 and 609 can be made capable of performing the functions of dial-up digital modems, and that DS1 modules 606 and 607 would then carry ***packets*** such as ATM cells instead of circuits." Ex. 1005, ¶ 057. The DS1 modules 607/608 send the packets to "internet-dedicated trunks 305" which "carry intercepted internet traffic that is diverted away from local terminal 301." Ex. 1005, ¶¶ 046, 049. FIG.

6 shows the internet-dedicated trunk 305 connects switching system interface 304 to external equipment using "industry standard digital packet interfaces." *Id*. ¶ 57, ¶ 72 ("digital packets are exchanged with an external packet router through DS1 module 606 or 607"). The *Smith Publication* discloses "internet protocol" (IP), an industry standard for digital packets. *Id*. ¶ 8; Ex. 1007, ¶ 90.

B. Claims 1-2 are unpatentable as obvious under § 103 in view of the *Smith Publication* and *Anderson*

As further discussed below, Petitioner submits that Claims 1-2 are unpatentable as obvious in view of *Smith Publication* and *Anderson*.

1. Independent Claim 1

Claim 1 of the '018 Patent recites a "switching system converter" comprising a "switching system interface" and a "means for converting data." The *Smith Publication* discloses the "switching system interface" recited in limitations 1[a]-1[f] of Claim 1 for reasons analogous to those discussed above with respect to limitations 7[a]-7[f] of Claim 7. The combination of the *Smith Publication* and *Anderson* render obvious the "means for converting data" recited in limitation 1[g] of Claim 1 for the reasons discussed below.

In Claim 1 of the '018 Patent, the "means for converting data" converts between "time-division multiplexed digital signals of a legacy line frame of a legacy line and packetized digital signals utilizing pulse code modulation (PCM) data transport." During prosecution, the Examiner rejected this limitation as

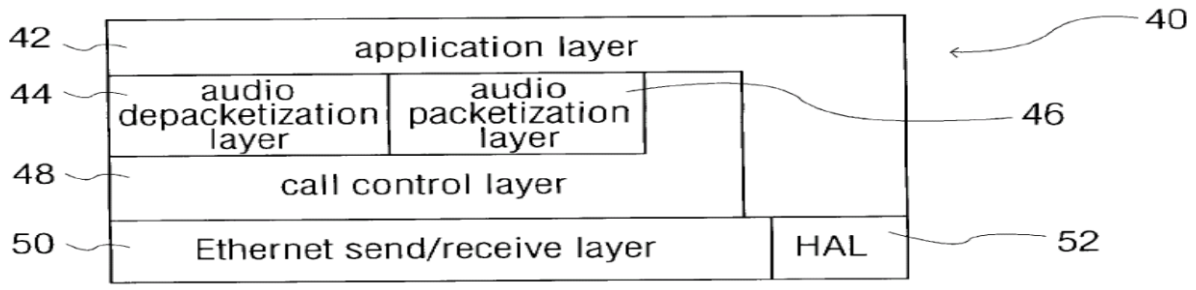
disclosed by *Anderson*. Ex. 1004, p. 81. In response, the Applicant substantially amended Claim 1 by adding components of the switching system interface, stating that the amendment was made to "distinguish the present invention from [] *Anderson*." Ex. 1004, p. 67. The amendment is reproduced below:

> 1. (Currently Amended) A switching system converter ... comprising:
>
> a switching system interface having means for bypassing a common control and switch matrix of a class 5 digital switch, the switching system interface having: ~~and;~~
>
> at least one network interface for terminating a digital transmission facility that is part of a network architecture;
>
> at least one line/trunk interface. compatible with internal signals used to operate the line/trunk interface of the class 5 digital switching system; and
>
> a switching means, connected to the network interface and to the line/trunk interface, for routing data between the network interfaces and the line/trunk interface; and
>
> means for converting ~~the~~ data between time-division multiplexed digital signals of a legacy line frame of a legacy line and packetized digital signals utilizing pulse code modulation (PCM) data transport.

Ex. 1004, p. 61. The *Smith Publication*, which the Examiner did not consider during prosecution, discloses the features of the switching system interface that were introduced by amendment to overcome the rejection based on *Anderson*. *See*

Section IX.A(1) above. The Applicant never distinguished the "means for converting data" limitation from *Anderson*.

Anderson discloses a system to "***enable [a] time-division multiplexed signal to be converted into a packet-based digital signal***." Ex. 1006, 2:17-20. In Figure 2, *Anderson* illustrates a protocol stack 40 used in the system. Ex. 1006, 5:26-45.



Ex. 1006 (*Anderson*) at Figure 2

Protocol stack 40 includes audio packetization layer 46. *Anderson* describes receiving analog signals from a communication device (e.g., telephone or central office lines), converting the analog signals to a stream of digital data, and passing the digital data to audio packetization software. *Id*., 5:46-66. The "audio packetization software ***builds data packets*** from the stream of digital data" and "compresses the packets using standard compression techniques (at 68), such as ***pulse code modulation (PCM)*** compression (e.g., G.711)[.]" *Id*., 5:46-6:7. After PCM compression, the audio packetization software sends the PCM packets for delivery over the Ethernet (i.e., a packet network). *Id*., 6:19-28.

It was obvious to combine utilizing pulse code modulation (PCM) data

transport (as disclosed by *Anderson*) with the switching system interface disclosed by the *Smith Publication*. The *Smith Publication* already discloses a feature that converts time-division multiplexed digital signals of a legacy line to packetized digital signals. In particular, DSP modules 608/609 receive PCM timeslots from legacy line/trunk frames via PCM busses 610/611 and "***convert[] ... PCM timeslots into digital packets***," such as ATM packets. Ex. 1005, ¶¶ 054, 057, 71. DSP modules 608/609 send the packets over "industry-standard digital packet interfaces such as 100BaseT [Ethernet]." *Id*., ¶ 054.

The *Smith Publication* discloses sending audio (voice calls) over packet networks. *Id*., ¶ 008. The *Smith Publication* also discloses PCM (DSP modules 608/609 comprise DSP section 912 programmed with "conventional" algorithms for "***converting*** the analog modem tones represented in ***one or more PCM timeslots into digital packets***, and vice versa."). *Id*., ¶¶ 68, 71. *Smith Publication* also discloses sending the digital packets from DSP modules 608/609 to DS1 modules 606/607 (FIG. 6) and that DS1s can communicate PCM streams (¶ 62).

One of ordinary skill in the art would have been motivated to combine the *Smith Publication* with *Anderson* for at least the following reasons:

- Combining prior art elements according to known methods to yield predictable results. The *Smith Publication* discloses a switching system interface 304 that converts TDM timeslots of legacy line/trunk frames to packets. *Anderson*

discloses packetizing PCM data received from a digital telephone line interface module (TLIM) and thus uses PCM transport. *See* Ex. 1006, 5:26-6:18. Methods for combining the prior art elements from the *Smith Publication* and *Anderson* were known. *Anderson* discloses using a plug in module (*id*. at 4:24-35) that a person of ordinary skill in the art would have been able to interchange with the packetization components in the *Smith Publication's* switching system interface. It would have been predictable that this modification to the *Smith Publication's* switching system interface could be use d to send audio signals from the line/trunk frames over a packet network, as disclosed by *Anderson*. Ex. 1007 at ¶ 99.

- Simple substitution of one known element (*Smith Publication's* packetization technique) for another (*Anderson's* packetization technique, which uses PCM compression) to obtain predictable results (send audio signals from the line/trunk frames over a packet network). Ex. 1007 at ¶ 100.
- Use of known technique (*Anderson's* packetization technique, which uses PCM compression) to improve similar devices (*Smith Publication's* switching system interface, which packetizes TDM timeslots) in the same way (send audio from line/trunk frames over a packet network). Ex. 1007 at ¶ 101.
- Applying a known technique (*Anderson's* packetization technique, which uses PCM compression) to a known device (*Smith Publication's* switching system interface) ready for improvement to yield predictable results (*Smith Publication's*

switching system interface packetizes TDM timeslots from line/trunk frames. It was predicable that *Smith Publication's* switching system interface could be improved by *Anderson's* PCM compression, for example, to send audio over the packet network). Ex. 1007 at ¶ 102.

- "Obvious to try" – choosing from a finite number of identified, predictable solutions with a reasonable expectation of success. The identified solutions include 1) packetizing without compression, and 2) packetizing with compression. With respect to the latter, industry standards provided a finite number of identified solutions for compression (e.g., *Anderson* discloses a PCM standard, G.711, and 5 other standards for different compression types, Ex. 1006, 5:66-6:7). It would have been reasonable to expect that the packets disclosed by the *Smith Publication* could be successfully compressed using PCM at least because *Anderson* had successfully used PCM in a similar context (converting signals from telephone networks to packets for transmission over a packet network). Ex. 1007 at ¶ 103.
- Known work in a field of endeavor (*Anderson's* use of PCM compression the field of packetizing TDM signals from digital telephone lines) may prompt variations of it for use in the same field (*Smith Publication* also packetizes TDM signals from digital telephone lines) based on design incentives (send audio over the packet network) if the variations are predictable to one of ordinary skill in the art (the variation was predictable based on *Anderson's* successful use of PCM in

the same field). Ex. 1007 at ¶ 104.

- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. Both *Smith Publication* and *Anderson* relate to packetizing TDM signals received from digital telephone lines. *Anderson* provides motivation to use PCM (to send audio over the packet network). Ex. 1006, 5:66-6:7; Ex. 1007 at 105.

The following claim chart identifies where each limitation is found in the prior art. A detailed version of the claim chart appears in Exhibit 1007 at ¶ 106.

'018 Patent Claims	***Smith Publication* ("*Smith*") and *Anderson***
[1a] A switching system converter providing conversion between time-division multiplexed digital signals and packetized digital signals used to bypass a common control and switch matrix of a class 5 digital switch,	*See e.g., Smith* at ¶ 008, 012, 015, 030, 033, 045-046, 057, 068, 071, FIG. 3, FIG. 6, FIG. 9. *See also Smith* at ¶¶ 002-004, 012,015, 018, 019, 023, 024, 032, 041, 045, 047, 072, FIGS. 1-9, Abstract, Claim 1, Claim 5, and claim limitations [7a]-[7g] *supra.*
[1b] the switching system converter comprising: a switching system interface	*See e.g.*, FIGS. 3, 6, "switching system interface 304," claim limitations [7a]-[7g] and [1a] *supra*.
[1c] having means for bypassing a common control and switch matrix of a class 5 digital switch,	**Structure:** *See e.g., Smith* at FIG. 3 and ¶¶ 045-046 , FIG. 6 and ¶ 053, FIG. 8 and ¶¶ 060-065, ¶ 015, and claim limitations [7a]-[7g] and [1a]-[1b] *supra*. **Function:** *See e.g., Smith* at ¶ 052, *Smith* at Claim 8, and claim limitations [7a]-[7g] and [1a]-[1b] *supra*.

[1d] the switching system interface having: at least one network interface for terminating a digital transmission facility that is part of a network architecture;	*See e.g.*, *Smith* at Abstract, ¶¶ 023, 030, 032, 055, 060-062, and FIGS. 3, 6, and 8. *See also Smith* at ¶¶ 003-004, 012, 015, 019, 035-045, 053, 055, 060-065, Claims 8-9, FIGS. 2, 3-9, and claim limitations [7a]-[7g] and [1a]-[1c] *supra*.
[1e] at least one line/trunk interface, compatible with internal signals used to operate the line/trunk interface of the class 5 digital switching system; and	*See e.g.*, *Smith* at Claims 8 and 23, ¶¶ 045, 047, 059, FIG. 3. *See also Smith* at ¶¶ 023, 047, 053, FIGS. 2-9, Claim 8, and claim limitations [7a]-[7g] and [1a]-[1d] *supra*.
[1f] a switching means, connected to the network interface and to the line/trunk interface, for routing data between the network interfaces and the line/trunk interface; and	**Structure:** *See e.g., Smith* at FIG. 6-7, ¶¶ 045, 053, 054, 059, 060-064, *Smith* at Claims 8- 9. *See e.g.*, claim limitations [7a]-[7g] and [1a]-[1e] *supra*. **Function:** *See e.g.*, *Smith* at Claim 1, ¶ 030, and FIG. 6. *See also Smith* at ¶¶ 015, 019, 023, 024, 030, 045, 047, 053-059, 062, FIG. 3-9, Claims 8-9, and claim limitations [7a]-[7g] and [1a]-[1e] *supra*.
[1g] means for converting data between time-division multiplexed digital signals of a legacy line frame of a legacy line and packetized digital signals utilizing pulse code modulation (PCM) data transport.	**Structure:** *See e.g.*, *Smith* at FIG. 6, "DSP 608" and "DSP 609." *See e.g., Smith* at FIG. 6 and ¶ 057, "***Redundant digital signal processor ("DSP") modules 608 and 609 provide the internet reroute capability*** mentioned above." *See e.g., Smith* at ¶ 054, "***each circuit of the associated line/trunk frames has a time slot assigned in the upstream and the downstream directions of PCM busses 610 and 611***." *See e.g., Smith* at ¶ 057, "***each DSP module 608 and 609 further comprises a time-slot assignment means as part of its interface to PCM busses 610 and 611***."

	See e.g., Smith at ¶ 057, "DSP modules 608 and 609 can be made capable of performing the functions of dial-up digital modems, and that DS1 ***modules 606 and 607 would then carry packets such as ATM cells instead of circuits, or could be replaced with industry standard digital packet interfaces such as 100BaseT***." *See e.g., Smith* at ¶ 056, "Each DS1 module 606 and 607 comprises a multiplicity of DS1s 604 and 605, which are coupled together through passive combiner 603 to provide a multiplicity of ***internet-dedicated trunks 305*** of FIG. 3." *See e.g.*, ¶¶ 071-072, claim limitations [7a]-[7g] and [1a]-[1f] *supra*. **Function:** *See e.g., Smith* at ¶ 057, "***Redundant digital signal processor ("DSP") modules 608 and 609 provide the internet reroute capability[.]"*** *See e.g., Smith* at ¶ 068, "***DSP module 608 comprises*** ... ***DSP section 912***[.]" *See e.g., Smith* at ¶ 071, "It will also be understood by one skilled in the art that ***conventional modem signal processing algorithms may be programmed into DSP section 912 for converting the analog modem tones represented in one or more PCM timeslots into digital packets***, and vice versa." *See e.g., Anderson* at 2:17-20, "Some of the products include accessories that interface with the Private Branch Exchange (PBX) to ***enable the time-division multiplexed signal to be converted into a packet-based digital signal***."

	See e.g., Anderson at 5:46-6:7: "audio packetization software builds data packets from the stream of digital data and ... compresses the packets using standard compression techniques (at 68), such as ***pulse code modulation (PCM)*** compression (e.g., G.711)[.]" *See e.g., Anderson* at 1:17-2:67; 4:25-6:29; FIGS. 1-3. *See e.g.*, claim limitations [7a]-[7g] and [1a]-[1f] *supra*.

2. Dependent Claim 2

The *Smith Publication-Anderson* combination discloses "the packetized PCM data transport is Internet Protocol (IP)" recited in Claim 2 of the '018 Patent. For the reasons discussed with respect to limitation [1g], it would have been obvious to utilize a packetized PCM data transport in view of the *Smith Publication* and *Anderson*. It would have been further obvious to use Internet Protocol (IP) because both the *Smith Publication* and *Anderson* disclose IP.

The *Smith Publication* discloses converting PCM timeslots to packets (¶ 071) and carrying the packets, such as ATM cells, via industry standard digital packet interfaces (¶ 57). The *Smith Publication* further discloses that Internet Protocol is a transport that is interchangeable with ATM:

> Another trend is toward networks that carry both voice calls and data over common ***transport based on connectionless access protocols*** such as asynchronous transfer mode ("ATM") and ***transport control protocol/internet protocol*** ("TCP/IP"), also referred to as 'packet

networks'.

Ex. 1005 at ¶ 008, emphasis added, *see also* ¶¶ 071, 072. In addition, during prosecution, the Examiner rejected Claim 2 in view *Anderson's* disclosure that a "well-known advantage of packetized voice (or audio) is the ability to transfer signals over wide area network infrastructures (e.g., the ***Internet***)[.]" Ex. 1004, p. 81 (citing Ex. 1006, 2:7-20, emphasis added).

CONCLUSION

Petitioner respectfully requests that IPR of the '018 Patent be instituted and that Claims 1, 2, 7, 8, 10, 13, and 14 be cancelled as unpatentable under 35 U.S.C. § 318(b).

Respectfully submitted,
BAKER BOTTS L.L.P.

June 26, 2015
Date

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CERTIFICATE OF SERVICE

In accordance with 37 C.F.R. §§ 42.6(e) and 42.105, the undersigned certifies that on the 26th day of June, 2015, a complete and entire copy of the **PETITION FOR *INTER PARTES* REVIEW OF CLAIMS 1, 2, 7, 8, 10, 13 and 14 OF U.S. PATENT NO. 6,807,273 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. §§ 42.100 *ET SEQ*** ("Petition") and related documents were served on the patent owner at the correspondence address of record for the subject patent,

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via Express Mail or by means at least as fast and reliable as Express Mail. Additionally, the same were also served upon counsel for the subject patent's owner, Metaswitch Networks, Ltd,

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because that is likely to effect service.

In accordance with § 42.51(b)(1), the undersigned certify that Petitioner is not aware of, and therefore does not provide any "relevant information that is inconsistent with a position advanced by Petitioner[]."

CERTIFICATE OF SERVICE

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