

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHARTER COMMUNICATIONS, INC.,
Petitioner,

v.

IARNACH TECHNOLOGIES LTD.,
Patent Owner.

Case IPR: 2024-01287
U.S. Patent No. 9,287,982

SECOND DECLARATION OF PAUL MIN

Exhibit 1016 Charter Comm. v. Iarnach Tech. IPR2024 - 01287

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I, Paul Min, resident at 53 Arundel Place, St. Louis, MO 63105, hereby declare as follows:

I have been retained by Petitioner to provide my opinions concerning the validity of Claims 1-11 of U.S. Pat. No. 9,287,982 (“the ’982 Patent”). I am being compensated for my time in preparing this Declaration, and my compensation is not tied to the outcome of this matter. I have no other affiliations with the Petitioner.

I reserve the right to supplement this Declaration if further information becomes available or if I am asked to consider additional information. I further reserve the right to consider and comment on any expert opinions, statements, or testimony offered by the Patent Owner in this matter.

I. INTRODUCTION AND QUALIFICATIONS

1. My qualifications are set forth in my previous declarations.
2. I understand that PO’s expert, Dr. Kerry Litvin, does not have any direct experience designing, bringing to launch or the like emulating HFC network used for the cable television network using the fiber optics technology
3. I understand that PO’s expert has been issued a number of patents in engineering design. In contrast, in my more than 30 years of experience with telecommunications technology, I have acquired significant knowledge about telecommunications systems industry standards and standard setting organizations

such as ANSI, IEEE, ITU, IETF, DOCSIS, and 3GPP. I have extensive firsthand experience in the development of servers and networking equipment including switches and routers and transmission equipment. Specifically, I have extensive firsthand experience in emulating a variety of legacy networks, such as emulating the HFC networks based on fiber optics technology. In addition, since early 1990s, I have been developing these equipment as prototypes and/or commercial grade products. I have developed various hardware and software that could be utilized in the broadcast network such as the cable television distribution network based on the DOCSIS standard. I have also worked on various optical-to-electrical conversion technologies that are used in the SONET, the passive optical network (PON), and the OTN. My experience in these technologies includes the development of software programs that support various functions required to operate these technologies.

II. UNDERSTANDING OF THE LAWS

4. In this declaration, I formed my opinions based on my understanding of the governing law, which was set forth in my previous declarations.

III. BASIS FOR MY OPINION

5. In forming my opinion, I have relied on the '982 Patent claims and its disclosure (EX1001), the prosecution history of the '982 patent (EX1002), the prior art and other documents discussed herein and in the Petition (1006-1008) as

well as my own experience and expertise in this field. I also have reviewed the Patent Owner's Response, the declaration of Patent Owner's Expert, Dr. Kerry Litvin and Patent Owner's exhibits.

IV. ADDITIONAL COMMENTS ON GROUNDS 1 AND 3

A. "Service Auto-Configuration"

6. I understand that PO's expert has criticized certain isolated citations to the Bernstein reference relied upon in the Petition and my declaration as allegedly not disclosing "a service auto-configuration method." To support his argument, PO's expert cites the last paragraph of the specification as purportedly describing the "automatic configuration of the OLT and ONU. EX2008, ¶42 citing EX1001 at 8:19-31.

7. First, I note that PO's expert did not consider the full analysis of claim 1 in forming his opinion, which is I understand is improper. In addition, PO's expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

8. Second, the portion of the specification cited by PO's expert describes the "service auto-configuration" method/network by repeating certain actions explicitly recited in the body of claims 1 and 6. For example, the cited portion of

the '982 Patent describes “the service auto-configuration method and network” as “configuration of the OLT and the ONU at the same time through a configuration file including the configuration information of the ONU and the configuration information of the OLT in the DPOE system” during “the process of the ONU initialization.” EX1001 at 8:19-31. Similarly, PO cites the following portion of the specification in its Response as allegedly exemplifying what is meant by “service auto-configuration”: “the present document adds the configuration information about the OLT of the DPOE system in the configuration file, and completes the automatic configuration on the OLT and the ONU at the same time; [during] the process of the ONU initialization[.]” Resp. at 18-19 (quoting EX1001, 7:65-8:2).

9. In other words, the “service auto-configuration” method/network is described as having three characteristics: (1) configuration of the ONU and OLT at the same time; (2) a configuration file including configuration information of the ONU and configuration information of the OLT; and (3) configuration of the ONU and OLT occurring during an ONU initialization process.

10. Each of these three aspects of the “service auto-configuration method and network” cite by PO’s expert is explicitly recited in the bodies of claims 1 and 6. For example, with respect to the first aspects, the bodies of claims 1 and 6 each recite that “the DPOE system” “configure[e/ing] the OLT locally according to the configuration information of the OLT and meanwhile configur[e/ing] the ONU

according to the configuration information of the ONU.” EX1001 at 8:45-49 and 10:5-9. With respect to the second aspect, the bodies of claims 1 and 6 also require that “the configuration file comprises both configuration information of an optical network unit (ONU) and configuration information of an optical line terminal (OLT).” *Id.* at 8:36-40 and 9:39-42. With respect to the third aspect, the bodies of claims 1 and 6 also each require that joint configuration of the ONU and OLT must be performed in/during “a process of [ONU/optical network unit] initialization.” *Id.* at 8:50-51 and 9:35-36. Thus, the body of claims 1 and 6 fully encompass a “service-auto configuration” method and network.

11. I note that neither PO nor PO’s expert has challenged that either the Petition or my declaration fails to show that Bernstein teaches these aspects of either claim 1 or claim 6.

12. As another example, Figure 3 of the ’982 Patent also describes a method characterized as a “service auto-configuration” method. In that example, the “service auto-configuration” method comprises three steps (S301-S303), reproduced below:

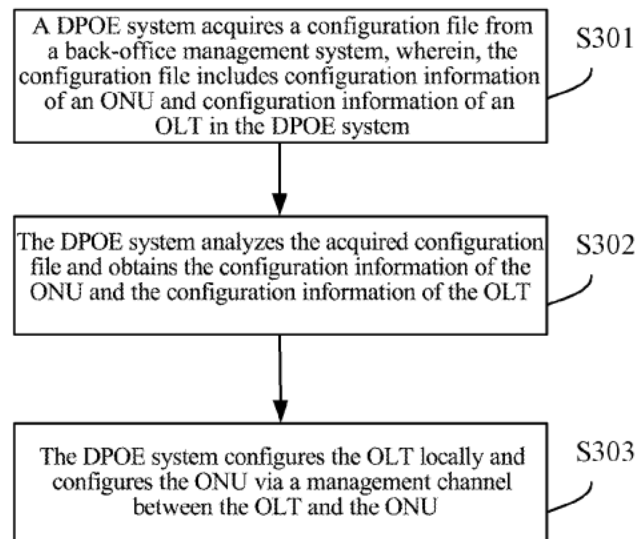


FIG. 3

EX1001 at FIG. 3.

13. Once again, the language recited in the bodies of claims 1 and 6 recite each of the steps shown in FIG. 3:

Step	Claim 1	Claim 6
S301: “A DPOE system acquires a configuration file from a back-office management system, wherein the configuration file includes configuration information of an optical network unit (ONU) and configuration information of an optical line terminal (OLT) in the DPOE system”	“the DPOE system acquiring a configuration file from a back-office management system, wherein the configuration file comprises both configuration information of an optical network unit (ONU) and configuration information of an optical line terminal (OLT) in the DPOE system”	“the DPOE system comprises an acquisition unit,” “the acquisition unit is configured to acquire a configuration file from a back-office management system, wherein the configuration file comprises configuration both information of the ONU and configuration information of an optical line terminal (OLT) in

Step	Claim 1	Claim 6
	8:35-40	the DPOE system” 9:34-42
S302: “The DPOE system analyzes the acquired configuration file and obtains the configuration information of the ONU and the configuration information of the OLT”	“the DPOE system analyzing the acquired configuration file, and obtaining both the configuration information of the ONU and the configuration information of the OLT” 8:41-43	“the DPOE system comprises . . . an analyzing unit,” “the analyzing unit is configured to analyze the acquired configuration file and obtain both the configuration information of the ONU and the configuration information of the OLT” 9:34-36 and 10:1-4
S303: “The DPOE system configures the OLT locally and configures the ONU via a management channel between the OLT and the ONU”	“the DPOE system configuring the OLT locally according to the configuration information of the OLT and meanwhile configuring the ONU according to the configuration information of the ONU via a management channel between the OLT and the ONU” 8:45-49	“the DPOE system comprises . . . a configuration unit,” “the configuration unit is configured to configure the OLT locally according to the configuration information of the OLT and meanwhile configure the ONU according to the configuration information of the ONU via a management channel between the OLT and the ONU” 9:34-36 and 10:5-9

14. As shown in the table above, the bodies of claims 1 and 6 also fully encompass a “service auto-configuration” method and/or network if that term is defined using the disclosure of Figure 3.

15. Again, I note that neither PO nor PO's expert has challenged that either the Petition or my declaration fails to show that Bernstein teaches the aspects of either claim 1 or claim 6 with respect to steps S301 or S303. With respect to step S302, I explain below why PO and its' expert's claim that Bernstein fails to teach "analyzing" the acquired configuration and that conversion may occur without analysis are baseless.

16. I understand that PO's expert agreed that "Claim 1 encompasses steps that comprise a service auto-configuration method" and that his answer for claim 6 was the same as that for claim 1. EX1017 at 32:16-33:13 and 35:5-16.

B. "DPOE system analyzing the acquired configuration file"

17. I understand that PO's expert has criticized certain isolated citations to the Bernstein reference relied upon in the Petition and my declaration as allegedly not disclosing that Bernstein's "DPOE system analyz[es] the acquired configuration file." To support his argument, PO's expert cites the last paragraph of the specification as purportedly describing the "automatic configuration of the OLT and ONU. EX2008, ¶42 citing EX1001 at 8:19-31.

18. First, I note that PO's expert did not consider the full analysis of claim 1 in forming his opinion, which is I understand is improper. In addition, PO's expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in

the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

19. Second, it also appears that PO's expert ignored the explicit language of the Petition and my Declaration, which each say that "Bernstein describes that DPON 40 includes a 'DOCSIS-to-PON translator 84' that **analyzes** the configuration file, obtaining configuration information of both the OLT and ONU, that it then converts 'into associated PON parameters 63 that can be used by the OLT 18 and ONU 24.'" Pet. at 28 citing EX1005, ¶66 (citing EX1006, 3:53-63).

20. Instead of acknowledging the language of the Petition and my Declaration, PO's expert focus on the cited text of Bernstein, which states:

A DOCSIS-to-PON translator **84** is then used for converting any of the parameters **61** obtained by the cable modem proxy **60** into associated PON parameters **63** that can be used by the OLT **18** and ONU **24**. Some of the translated PON parameters **63** are programmed into a PON driver **86** for either communicating with the ONU **24** or sent over the optical cable **20** for configuring the ONU **24**. The PON driver **86** represents any of the EPON **64**, GPON **66**, or WDM **68** previously shown in FIG. 2. The translated PON parameters **63** may also be used for operating or configuring OLT hardware **88**.

EX1006, 3:53-63.

21. A POSA would understand that this portion of Bernstein includes "analysis" because a translation occurs, and at a fundamental level, no translation may take place without some level of analysis as one must first determine the format and content of a piece of information to translate or convert it into another

form. For example, to convert a word from a given language to English, one must first determine the original language of the word (e.g. Spanish) and the specific content of the word (“casa”) in order to properly translate that word to its English-equivalent (“house”). As another example, converting from one system of measurement to another, such as United States customary to metric (i.e. inches or feet to centimeters or meters), one must first determine the initial system and unit for the information (e.g. 1 foot) and apply the correct conversion methodology to convert the measurement to the desired system (e.g. 0.3048 meters). The same is true of a process for converting configuration information from DOCSIS parameters to PON parameters. Indeed, it is non-sensical to suggest that Bernstein’s translator would merely output random PON parameters without first determining which specific parameters and values are included in the configuration file, and no POSA would come to such a conclusion.

22. A POSA also would understand that the Bernstein reference to the translator 84 as a “DOCSIS-to-PON translator” necessarily means that some analysis must occur. In PO’s expert report at paragraph 51 on page 23, Dr. Litvin states that “an example of ‘analyzing’ can be seen in the modern DOCSIS specification. For example, DOCSIS 3.1 specifies the cable modem binary configuration file format.” That is to say that Dr. Litvin is asserting that the extracting data from the TLV format into another data elements includes

“analyzing.” I agree with this statement, but disagree with Dr. Litvin’s conclusion that Bernstein teaches something different. In my opinion, in order to properly translate a “DOCSIS” parameter, the Bernstein “DOCSIS-to-PON translator 84” must first analyze the acquired configuration file before any translation may occur. In reference to the DOCSIS standard itself, a document entitled “DOCSIS 3.0 Operations Support System Interface Specification CM-SP-OSSIV3.0-I05-071206” (EX1019) states at page 92 that “TLV-11 translation defines the process used by the CM to convert CM configuration file information (TLV-11 elements) into SNMP PDU (varbinds). The CM is required to translate CM configuration file TLV-11 elements into a single SNMP PDU containing (n) MIB OID/instance and value components (SNMP varbinds),” and also states at page 93 that “[i]f any CM configuration file TLV-11 elements translate to SNMP MIB OIDs that are not MIB OID elements supported by the CM, then the CM MUST ignore those SNMP varbinds, and treat them as if they had not been present, for the purpose of CM configuration.” This means that the DOCSIS standard itself use the term “translation”/“translate” to describe the process of extracting data from the TLV format to another data elements. A POSA would understand that the term “DOCSIS” is used in the title of the translator refers to the format of the configuration file when it is obtained by the DPOE system, such that the Bernstein’s DPOE system is receiving a DOCSIS configuration file.

23. That the Bernstein DPOE system obtains a DOCSIS configuration file is further confirmed by the analysis of the phrase “acquiring a configuration file from a back-office management system” in claims 1 and 6, to which the phrase “analyz[es/ing] the acquired configuration file” refers. In the discussion of those terms, both the Petition and my Declaration note that configuration file is obtained from an MSO network or back-office 16 as follows:

Cable Modem proxy 60 issues a request to the TFTP for a configuration file. *Id.*, 5:31-32 (“[T]he CM proxy 60 may send a TFTP request for a **DOCSIS configuration file** download”) and FIG. 7 (100, “TFTP-REQ-CFG-FILE”). In response, the TFPT replies with the configuration file. *Id.*, 5:32-34 (“The TFTP server 52 replies with a TFTP download configuration file 102”) and FIG. 7 (102, “TFTP-REQ-CFG-FILE”).

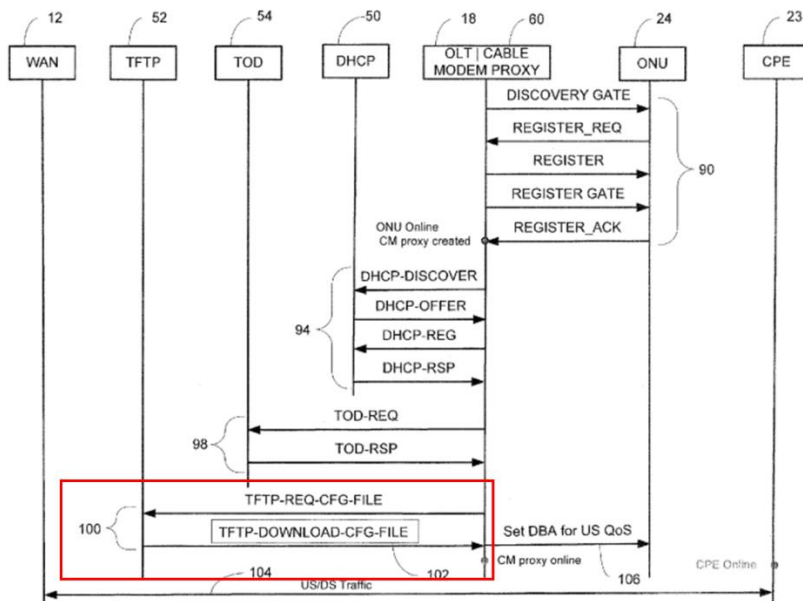


FIG. 7

Petition at 26 citing EX1005, ¶62 (citing 5:31-34 and FIG. 7 (annotated)) (emphasis added). Because an MSO is known to a POSA to provide the framework of a DOCSIS network and TFPT is the protocol specified by DOCSIS to obtain DOC-

SIS configuration files, this passage of Bernstein makes clear to a POSA that a DOCSIS configuration file is used.

24. I note that PO's expert agrees that when a DOCSIS configuration file is used, the DOCSIS configuration file must be analyzed before any conversion may take place:

There is no particular order specified in which the individual configuration settings [of a DOCSIS configuration file] must be arranged (they can be randomly ordered) and, as stated above, the configuration settings run in a stream (a continuum) with no record markers (breaks). *Id.* The DPOE system does not know in advance what is contained in the file nor the order of these settings. See *id.* Hence, prior to any potential needed format converting, and before any provisioning can take place, the file must be "analyzed" so that the DPOE system can parse through the content of the file. Only then will it be able to take the appropriate action for each of the individual configuration settings contained within the configuration file. In this case, analyzing the file could mean extracting the individual TLV configuration settings, determining their intent (possibly by comparing to known values in a lookup table of TLVs stored in local memory or by other algorithmic means) and then taking appropriate action according to each individual configuration setting.

EX2008, ¶52; see also EX1017 at 46:16-49:22 (confirming same))

25. Because a POSA would understand for the reasons above that Bernstein also teaches use of a DOCSIS configuration file, each of these statements by PO's expert is equally applicable to the configuration file of Bernstein.

26. I understand that PO's expert has suggested that "implementing a translation step without analyzing the file first . . . suggests to a POSITA that the individual settings within the configuration file are provided in a predetermined order or blocks that are known ahead of time to the DPoE system." I disagree with

this statement for several reasons. First, Bernstein explains that the problem with prior art PON systems is that “PON protocols do not support the full functionality of DOCSIS.” EX1006, 1:25-26. Coupled with Bernstein’s disclosure of an MSO providing all the features of DOCSIS back-office system (as described above), a POSA would not expect Bernstein to disregard the typical DOCSIS configuration format in favor of a custom configuration when Bernstein uses DOCSIS technology for all other aspects of its back-office system. Such a departure from “the full functionality of DOCSIS” would frustrate the intended purpose of Bernstein.

27. Second, even if Bernstein’s DPOE system received a configuration file in a predetermined format, DOCSIS parameters may specify different levels of service for various services, such as data at 10mb/s (megabits per second), 100mb/s or 1Gb/s. Thus, even if the format of the data was predetermined such that, for example, “data services” were provided in a set location within the configuration file, Bernstein’s translator would still need to analyze the setting information to determine the correct level of service specified in the file in order to properly configure the ONU and OLT to provide the service level at which the customer is paying.

28. As yet another example, the Bernstein DOCSIS-to-PON translation process includes analysis is further described later in Petition’s analysis of claim 1.

Bernstein's description of an alternative embodiment shown in Figure 4 uses two translators to automatically configure both OTL and ONU contemporaneously. Pet. at 35-36 citing EX1005 at ¶82. Bernstein explains that both the OTL and the ONU are configured in the same MSO registration session:

A first DOCSIS-to-PON translator 84A converts some of the DOCSIS parameters 61 obtained from the **MSO registration sessions** that are used by the OLT 18. For example, certain DOCSIS QoS and security information may be used by the OLT 18 for transmitting or denying service for certain types of packet data received over Internet 12. **These OLT related DOCSIS parameters 61 are sent to translator 84A and converted into PON parameters 63 that are then programmed into the OLT 18.** Accordingly, the OLT 18 operates according to these particular QoS and security parameters 63.

...

The MSO registration session may complete with one or more DOCSIS parameters 61 being obtained by the CM DOCSIS stack 82. The DOCSIS parameters 61 are sent to a DOCSIS-to-PON translator 84B in ONU 24 for converting into corresponding ONU parameters. The converted ONU parameters are then programmed into the ONU 24 by translator 84B.

Id. (citing EX1006, 4:4-41). That each of translator 84a and 84b is able to extract only the necessary DOCSIS parameters for the OLT or ONU, respectively indicates to a POSA that they each must analyze the configuration file and determine which parameters relate to the OLT or ONU.

C. “Service Opened By The ONU”

29. I understand that PO's expert has criticized certain isolated citations to the Bernstein reference relied upon in the Petition and my declaration as allegedly not disclosing that Bernstein's “configuration information for the OLT is configuration information related to services opened by the ONU.”

30. First, I note that PO's expert did not consider the full analysis of claim 1 (from which claim 2 depends and which is incorporated by reference into the analysis of claim 6 from which claims 8-9 depend) in forming his opinion, which is I understand is improper. In addition, PO's expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

31. In his Declaration, PO's expert appears to be arguing that only the specific services identified in the '982 Patent, namely the EVP-LAN and VLAN services, are the only types of services that may meet the language "services opened by the ONU."

32. However, I understand that during his deposition, PO's expert acknowledged that "services opened by the ONU" could relate to any service requested by a customer, including data/internet services, video/IPTV services and voice services. EX1017 at 72:7-73:22.

33. In his declaration, PO's expert acknowledges that the portion of Bernstein cited in the specific subsection referring to dependent claim 2 relates to "Bernstein explaining that the OLT will translate various **service requirements** into bandwidth requirements for a 'pipe' to an ONU." EX2008, ¶56. A POSA would understand

that that these “services” and “bandwidth requirements” relate at least to data/Internet services provided to a customer, and therefore meet the definition PO’s expert provided in his deposition.

34. Moreover, I note that claim 2 depends on claim 1, and thereby includes the limitations of claim 1. Thus, the analysis of claim 2 necessarily entails the analysis of claim 1. Similarly, the analysis of claim 1 is incorporated by reference into the analysis of claim 6 from which claims 8-9 depend. In the analysis of claim 1, my declaration repeatedly notes that the OLT configuration information relates to “services opened by the ONU.” EX1005, ¶¶64, 67, 98, 101. I also explained in my analysis of claim 1 that Bernstein’s bandwidth requirements for the pipe to the ONU reflect an overall bandwidth setting for various services, including data/internet services, video services and voice services. *See, e.g.*, EX1005 ¶71. These services are the very three exemplary services acknowledged by PO’s expert as “services opened by the ONU.”

35. Moreover, a POSA would understand that a DOCSIS CM configuration file necessarily includes “information related to services opened by an ONU.” The function of a Cable Modem is to provide, at a minimum, data services to a customer. The DOCSIS standard requires that the service definitions, or setting parameters, for the requested service be set forth in a “CM configuration file.” Thus, a POSA would understand that Bernstein’s DOCSIS CM configuration file

includes at least information relating to the provision of data services to a customer, and thus, includes information to configure the OLT such that the “OLT configuration information relates to services opened by the ONU.”

V. ADDITIONAL COMMENTS ON GROUNDS 2 AND 4

A. “Service Auto-Configuration”

36. I understand that PO’s expert has criticized certain isolated citations to the Tsuge reference relied upon in the Petition and my declaration as allegedly not disclosing “a service auto-configuration method.” To support his argument, PO’s expert cites the last paragraph of the specification as purportedly describing the “automatic configuration of the OLT and ONU. EX2008, ¶42 citing EX1001 at 8:19-31.

37. First, I note that PO’s expert did not consider the full analysis of claim 1 in forming his opinion, which is I understand is improper. In addition, PO’s expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

38. Second, as explained above with respect to Ground 1 and 2, the portion of the specification cited by PO’s expert describes the automatic configuration by repeating certain actions explicitly recited in the body of claims 1 and 6. For

example, the cited portion of the '982 Patent describes the “service auto-configuration method and network” as having three characteristics: (1) configuration of the ONU and OLT at the same time; (2) a configuration file including configuration information of the ONU and configuration information of the OLT; and (3) configuration of the ONU and OLT occurring during an ONU initialization process.”

39. I note that neither PO nor PO’s expert has challenged that either the Petition or my declaration fails to show that Tsuge teaches these aspects of either claim 1 or claim 6.

40. Also as set forth above, Figure 3 of the '982 Patent also describes a method characterized as a “service auto-configuration” method, and the steps outlined in that method track the language of claims 1 and 6 as follows:

Step	Claim 1	Claim 6
S301: “A DPOE system acquires a configuration file from a back-office management system, wherein the configuration file includes configuration information of an optical network unit (ONU) and configuration information of an optical line terminal (OLT) in the DPOE system”	“the DPOE system acquiring a configuration file from a back-office management system, wherein the configuration file comprises both configuration information of an optical network unit (ONU) and configuration information of an optical line terminal (OLT) in the DPOE system”	“the DPOE system comprises an acquisition unit,” “the acquisition unit is configured to acquire a configuration file from a back-office management system, wherein the configuration file comprises configuration both information of the ONU and configuration information of an optical line terminal (OLT) in the DPOE system”

Step	Claim 1	Claim 6
S302: “The DPOE system analyzes the acquired configuration file and obtains the configuration information of the ONU and the configuration information of the OLT”	“the DPOE system analyzing the acquired configuration file, and obtaining both the configuration information of the ONU and the configuration information of the OLT”	“the DPOE system comprises . . . an analyzing unit,” “the analyzing unit is configured to analyze the acquired configuration file and obtain both the configuration information of the ONU and the configuration information of the OLT”
S303: “The DPOE system configures the OLT locally and configures the ONU via a management channel between the OLT and the ONU”	“the DPOE system configuring the OLT locally according to the configuration information of the OLT and meanwhile configuring the ONU according to the configuration information of the ONU via a management channel between the OLT and the ONU”	“the DPOE system comprises . . . a configuration unit,” “the configuration unit is configured to configure the OLT locally according to the configuration information of the OLT and meanwhile configure the ONU according to the configuration information of the ONU via a management channel between the OLT and the ONU”

41. Again, I note that neither PO nor PO’s expert has challenged that either the Petition or my declaration fails to show that Tsuge teaches the aspects of either claim 1 or claim 6 with respect to steps S301, S302 or S303.

42. I also note that PO’s expert mischaracterized the portions of Tsuge cited in my discussion of the preamble of claim 1. Petition at 60 citing EX1005, ¶132

(citing EX1008 14:40-15:22). In that section, I cite the following disclosure in Tsuge:

The OLT 101 executes the CM setting information obtaining sequence by using the information obtained by the foregoing procedure (step 920). Specifically speaking, the CM setting information file is obtained from the CM setting information management server 263 by using the IP address of the CM setting information management server 263 and the CM setting information file name. The CM IP address which has already been obtained is used as a PON side IP address at the time when the CM setting information obtaining sequence is executed. The CM setting information obtaining sequence is executed by using the CM setting information signal 523. **According to the DOCSIS standard, the sequence is executed in a form of obtaining the file by the TFTP.** That is, the sequence is executed by repeating the following procedure k times (k denotes the total number of blocks in the case where the CM setting information file is divided into TFTP data blocks): a transmission of an RRQ (Read ReQuest) message to the CM setting information management server (step 921); a subsequent reception of a DATA message from the CM setting information management server (step 922); and a transmission of an ACK message to the CM setting information management server (step 923).

Subsequently, the OLT 101 executes an OLT/ONU setting sequence by using the obtained CM setting information file (step 930). Specifically speaking, by using an algorithm shown in FIG. 13 which will be described in detail hereinafter, **the OLT 101 sequentially interprets setting parameters included in the CM setting information file. The contents of the setting parameters are converted into the ONU setting information signal 543 or the settings to the OLT itself or into both of them (there is also a possibility that the contents of the setting parameters are not converted into any of them).** In the case where they are converted into the settings to the OLT itself, the settings are reflected to the OLT (step 934). In the case where they are converted into the ONU setting information signal 543, an ONU setting request message is transmitted to the ONU 102 as a setting target (step 931). The ONU 102 which received the ONU setting request message reflects the requested setting to itself (step 932) and returns an ONU setting response message toward the OLT (step 933). Each of the ONU setting request message and the ONU setting response message is one of the ONU setting information signal 543.

EX1008, 14:40-15:22.

43. As shown above, this portion of Tsuge also fully describes a “service auto-configuration” method/network as defined in the examples of the ’982 Patent because they show that Tsuge’s DPOE system, during an initialization process of ONU, obtains a configuration file, analyzes it and uses the information in the file to configure both the ONU and OLT at the same time.

B. “Converts The Configuration Information Of The OLT Into A Message Format Which Can Be Identified By The OLT”

44. I understand that PO’s expert has criticized certain isolated citations to the Tsuge reference relied upon in the Petition and my declaration as allegedly not disclosing “Converts The Configuration Information Of The OLT Into A Message Format Which Can Be Identified By The OLT.”

45. First, I note that PO’s expert did not consider the full analysis of claim 1 in forming his opinion, which is I understand is improper. In addition, PO’s expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

46. Both the Petition and my Declaration explained in analyzing claim 1 (which analysis is incorporated by reference to sections discussing other independent claims) that Tsuge teaches converting information from the “CM

setting information file”/DOCSIS configuration file into message format which can be identified by the OLT. For example, the Petition and my Declaration repeatedly cite the following portion of Tsuge describing the conversion of OLT configuration information into a message format understandable by the OLT:

Subsequently, the OLT 101 executes an OLT/ONU setting sequence by using the obtained CM setting information file (step 930). Specifically speaking, by using an algorithm shown in FIG. 13 which will be described in detail hereinafter, **the OLT 101 sequentially interprets setting parameters included in the CM setting information file. The contents of the setting parameters are converted into the ONU setting information signal 543 or the settings to the OLT itself or into both of them (there is also a possibility that the contents of the setting parameters are not converted into any of them).** In the case where they are converted into the settings to the OLT **itself, the settings are reflected to the OLT (step 934).** In the case where they are converted into the ONU setting information signal 543, an ONU setting request message is transmitted to the ONU 102 as a setting target (step 931). The ONU 102 which received the ONU setting request message reflects the requested setting to itself (step 932) and returns an ONU setting response message toward the OLT (step 933). Each of the ONU setting request message and the ONU setting response message is one of the ONU setting information signal 543.

EX1008 14:67-15:15 (emphasis added). For example, this portion of Tsuge is cited in the Petition’s analysis of claim 1 at pages 60, 63 (“Tsuge explains ‘[t]he contents of the setting parameters are converted into the ONU setting information signal 543 or the settings to the OLT itself or into both of them [.]’”) and 66 (““In the case where they are converted into the settings to the OLT *itself*, the settings are reflected to the OLT (step 934).””) as well in my Declaration at paragraphs 132, 135, 137 and 141. This passage of Tsuge unequivocally shows that in Tsuge’s

primary embodiment, OLT configuration information must first be converted **before** it can be “reflected.” Additionally, a POSA would understand from this passage that Tsuge’s other uses of the word “reflected” also encompasses OLT configuration information that may have been converted.

C. “Back-Office Management System”

47. I understand that PO’s expert has criticized certain isolated citations to the Tsuge reference relied upon in the Petition and my declaration as allegedly not disclosing “Back-Office Management System” because they allegedly fail to show a DHCP server. I disagree.

48. First, I note that PO’s expert did not consider the full analysis of claim 1 in forming his opinion, which is I understand is improper. In addition, PO’s expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

49. Second, I understand that no party is currently alleging the term “back-office management system” requires the inclusion of a DHCP server.

50. Third, even if the phrase “back-office management system” required incorporation of a DHCP server, the Petition further explains how Tsuge’s back-

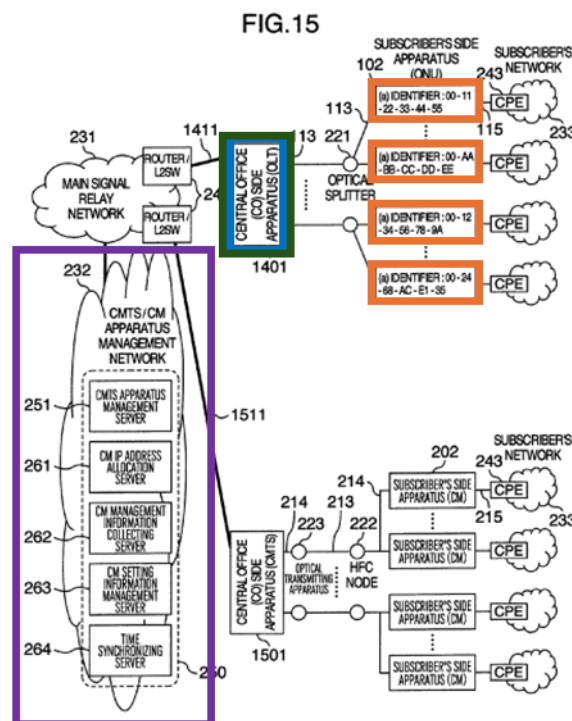
office system uses a DHCP server to provide information for the TFTP server, which is later accessed to retrieve stored configuration files:

Tsuge explains its method may be employed during the *initial* setting of the ONU. *Id.* (citing EX1008, 4:46-56. (“the OLT receives the *initial setting information* of the CM by using the address information and the file name of the TFTP server obtained by **the DHCP** and *makes initial setting* corresponding to its contents to the ONU by using the protocol of the PON interval (or, reflects it to the setting of the OLT itself).”))

Petition at 71 (*italics in original, bold added*).

51. In addition, I understand that PO’s expert acknowledges that the Petition explains that Tsuge’s “CMTS/CM Apparatus Management Network,” corresponds to the claimed “back-office management system”:

Tsuge discloses that the “CMTS/CM Apparatus Management Network 232” comprising a conventional DOCSIS back-office management system [PURPLE] that, *inter alia*, stores and provides DOCSIS configuration files:



Petition at 61 (citing EX1005, ¶134 (citing EX1008, FIG. 15) (annotated); see also EX1017 at 76:8-78:8 (discussing use of DHCP protocol by IP Address Allocation Server 261)).

52. Thus, PO's expert admits that the identified "back-office management system" includes an "IP Address Allocation Server 261."

53. I understand that PO's expert acknowledged at his deposition that the role of a DHCP server is to allocate IP addresses. EX1017 at 75:9-17.

54. Under the DOCSIS standard, the use of the DHCP protocol is required for the allocation of IP addresses. Accordingly, given Tsuge's compliance with the DOCSIS standard, a POSA would understand Tsuge's "IP Address Allocation Server 261" to be a DHCP server.

D. "Save a Configuration File"

55. I understand that PO's expert has criticized certain isolated citations to the Tsuge reference relied upon in the Petition and my declaration as allegedly not disclosing that the back-office management system does not "save" a configuration file. I disagree.

56. First, I note that PO's expert did not consider the full analysis of claim 1 in forming his opinion, which is I understand is improper. In addition, PO's expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in

the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

57. Second, the Petition explains how Tsuge's back-office system employs a TFTP server that saves configuration files to be provided on demand when an OLT requests the specific file by name:

Tsuge discloses a conventional DOCSIS back-office TFTP server [PURPLE] that **saves configuration files** [DARK GREEN] that contain both configuration information of the ONU [ORANGE] and of the OLT, and download that file to the DPoE system in response to a request for a configuration file:

FIG.11

551	1101	1102	1103	1104
CM IP ADDRESS	CM SETTING INFORMATION MANAGEMENT SERVER IP ADDRESS	CM SETTING INFORMATION FILE NAME	ONU INTRINSIC IDENTIFIER	
10.1.2.3	10.100.1.253	default.cm	00-11-22-33-44-55	
10.1.2.4	10.100.1.253	default.cm	00-AA-BB-CC-DD-EE	
10.1.2.129	10.100.1.253	premium.cm	00-12-34-56-78-9A	
⋮	⋮	⋮	⋮	

Petition at 80-81 citing EX1005, ¶171 (citing EX1008, 14:40-61, 15:59-62, Figs. 11 and 12 (annotated)).

58. The Petition further explains how Tsuge's DPOE system requests the stored file from back-office system uses TFTP request to the TFTP server. Specifically, a TFTP session is created with the associated server (1104) during which the stored configuration having the associated file name (1103) can be retrieved. Petition at 62-63 citing EX1005, ¶136 (citing EX1008 14:20-61, Fig. 9).

The Board correctly identified this behavior as such in its institution decision. Paper 12 at 47-48.

59. I understand that PO's expert acknowledged at his deposition that a TFPT may store files and provide the stored files in response to TFPT requests. EX1017 63:22-64:6.

60. In my experience, TFPT servers typically store large collections of files and provide stored files in response to TFPT requests for those files. Conversely, it is uncommon for a TFPT server to generate a new file on demand in response to a request. To generate a file, the TFPT server would still need to store information showing which services to which a given customer subscribes and then generate a configuration file based on the stored information.

61. In addition, it would be impractical for a DOCSIS TFPT server to generate new files every time a TFPT request was issued for a configuration file due to the large number of users (i.e. customers) as such a file generation process would require significantly more resources than merely providing a previously saved file because the generation process would need to be performed hundreds, thousands or even millions of times—every time any ONU in the entire network is initialized. On the other hand, storing a configuration file would mean that each unique configuration file is only generated once.

E. “Service Opened By The ONU”

62. I understand that PO’s expert has criticized certain isolated citations to the Tsuge reference relied upon in the Petition and my declaration as allegedly not disclosing that Tsuge’s “configuration information for the OLT is configuration information related to services opened by the ONU.”

63. First, I note that PO’s expert did not consider the full analysis of claim 1 in forming his opinion, which is I understand is improper. In addition, PO’s expert appears to have taken each statement in the limited citations he considered in isolation without considering the context of the language as described elsewhere in the reference. A POSA would consider this language in the context of the full disclosure of the reference in which it is used.

64. In his Declaration, PO’s expert appears to be arguing that only the specific services identified in the ’982 Patent, namely the EVP-LAN and VLAN services, are the only types of services that may meet the language “services opened by the ONU.”

65. However, I understand that during his deposition, PO’s expert acknowledged that “services opened by the ONU” could relate to any service requested by a customer, including data/internet services, video/IPTV services and voice services. EX1017 at 72:7-73:22.

66. In his declaration, PO's expert ignores the language of my declaration discussing claim 2. There, I state that "Tsuge discloses that 'the configuration information of the OLT is configuration information related to services opened by the ONU.'" EX1005, ¶ 154. I also refer to my earlier analysis in section 1[c], which explains that Tsuge's OLT configuration information relates to data services, i.e. "services opened by the ONU:"

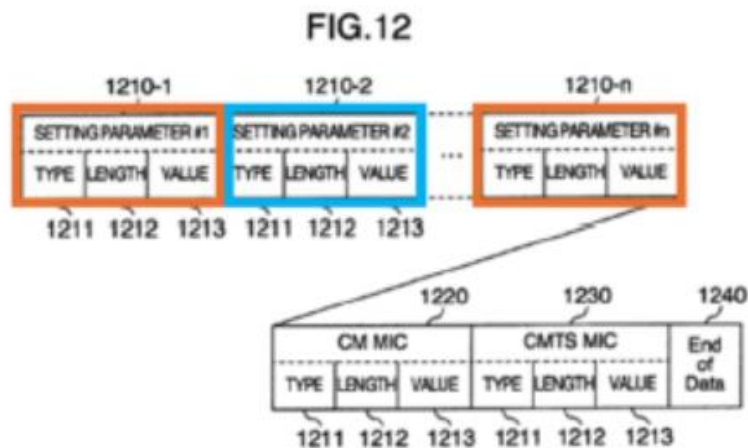
The OLT 101 obtains a CM setting information file corresponding to a certain ONU by the CM setting information obtaining sequence 920 shown in FIG. 9. **The setting information of the upstream communication bandwidth of the service flow corresponding to the LLID allocated to the ONU is included in the CM setting information file.** Based on the DOCSIS standard, information such as continuous upstream maximum communication bandwidth, upstream maximum burst length, and upstream minimum reservation communication bandwidth is included in the upstream communication bandwidth setting. **Those upstream communication bandwidth setting information is stored as setting for the LLID into the OLT** by the OLT•ONU setting sequence 930 shown in FIG. 9 (step 1810).

EX1008, 18:25-38 (cited at Pet., 67-68) (emphasis added). These "service flow" settings relating to various communication bandwidth settings "allocated to the ONU" are "OLT configuration information related to services opened by the ONU."

67. I discuss also discuss in Section 1[c] Tsuge's FIG. 9, which describes a method by which Tsuge's DPOE system obtains a DOCSIS configuration file from a TFTP server and configures both the ONU and OLT using the ONU and OLT configuration information in that file to configure the OLT to enable services

provided by the ONU. EX1005, ¶¶141-144. I also discuss in that section FIG. 13, which further elaborates on the configuration method described in FIG. 9. *Id.* That Tsuge's DOCSIS configuration files also include information related to services opened by the ONU also is confirmed by the use of the term "CM setting information file" in FIGS. 9 and 13, which a POSA would understand refers to the DOCSIS Cable Modem configuration file, as the Cable Modem's functions are performed by the ONU in Tsuge's DPOE system.

68. Tsuge's use of the term "CM setting information file" in FIGS. 9 and 13, which refers to Cable Modem settings, also confirms that Tsuge uses the DOCSIS configuration format. In Fig. 12, Tsuge further describes the format of the "CM Setting Information File" as using a DOCSIS-standard TLV (Type, Length, Value) format:



Pet. at 18 and 82.

69. PO's expert describes the same format of in his declaration, noting that "In that [DOCSIS] specification, the configuration file 'consists of a number of configuration settings (1 per parameter) each of the form: Type Length Value:'"

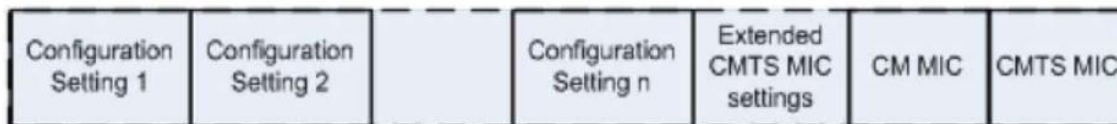


Figure 253 - Binary Configuration File Format

EX2008, ¶51 (citing EX2011 at 23). PO's expert also acknowledged that Tsuge uses the same TLV format required by DOCSIS. EX1017, 52:3-53:5.

70. Moreover, I note that claim 2 depends on claim 1, and thereby includes the limitations of claim 1. Thus, the analysis of claim 2 necessarily entails the analysis of claim 1. Similarly, the analysis of claim 1 is incorporated by reference into the analysis of claim 6 from which claims 8-9 depend. In the analysis of claim 1, I state my opinion that "Tsuge discloses a method for provisioning **DOCSIS services** on ONU/OLT hardware in a 'GE-PON.'" EX1005, ¶132 (emphasis added). I also note in my analysis of claim 1 that Tsuge's configuration files are "DOCSIS configuration files." *Id.* ¶134.

71. Moreover, and as noted above in my comments on Grounds 1 and 2, a POSA would understand that a DOCSIS CM configuration file necessarily includes "information related to services opened by an ONU." The function of a Cable Modem is to provide, at a minimum, data services to a customer. The

DOCSIS standard requires that the service definitions, or setting parameters, for the requested service be set forth in a “CM configuration file.” Thus, a POSA would understand by Tsuge’s use of a DOCSIS CM configuration file includes at least information relating to the provision of data services to a customer, and thus, includes information to configure the OLT such that the “OLT configuration information relates to services opened by the ONU.”

Signature Page Follows.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on August 7, 2025

A handwritten signature in black ink, appearing to read "Paul Min". The signature is fluid and cursive, with the first name "Paul" being more legible than the last name "Min".

Paul Min