UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SIPNET EU S.R.O.

Petitioner

v.

INNOVATIVE COMMUNICATIONS TECHNOLOGIES, INC.

(now STRAIGHT PATH IP GROUP, INC.)

Patent Owner

Patent No. 6,108,704

Filing Date: September 25, 1995

Issue Date: August 22, 2000

Title: POINT-TO-POINT INTERNET PROTOCOL

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Inter Partes Review No. IPR2013-00246, Filing Date April 30, 2014

DECLARATION OF VADIM ANTONOV

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I. INTRODUCTION

1. I have been retained as an independent expert witness by SIPNET EU S.r.o. ("Petitioner") for evaluation of U.S. Patent 6,108,704 (the "'704 Patent") and the asserted references in IPR2013-00246 (the present "*Inter Partes* Review").

2. I am an expert in the fields of operating systems, networks, network protocols, and equipment. My Curriculum Vitae is attached at the bottom of this document.

3. I received a Master of Science degree in Mathematics and Computer Science in 1987 from Moscow State University (Moscow, USSR), dept. of Applied Mathematics and Cybernetics.

4. I received the USSR Council of Ministers award in Science and Technology (similar to U.S. National Medal of Technology and Innovation) for contributions in the field of operating systems in 1986. While working in the private sector in the U.S., I received numerous awards for outstanding performance (Sprint Corp, Symantec Corp).

5. I have extensive experience in the industry (over 25 years), including the technical fields of operating system design, TCP/IP networking, and Voice-over-IP. I have been a programmer, an architect, an executive, and an entrepreneur in these fields.

6. I have participated in network operational, standards-setting forums and organizations such as IETF (Internet Engineering Task Force) and NANOG (North American Network Operators Group). I and was recognized as Distinguished Member of NANOG.

7. Research and development directed by me received SBIR funding from federal agencies such as the U.S. Department of Defense and the National Reconnaissance Office.

II. RETENTION AND COMPENSATION

8. I have been retained to offer an expert opinion on (1) "The Open Group, Technical Standard – Protocols for X/Open PC Internetworking/SMB, Version 2" (Exhibit 1003) ("NetBIOS"), and (2) "Windows NT 3.5, TCP/IP User Guide"

(Exhibit 1004) (“WINS”), Declaration of Ketan Mayer-Patel (Exhibit 2018) (“MAYER”) in relation to the claims of the ’704 Patent and the validity of the claims in the current *Inter Partes* Review.

9. My work on this case is being billed at a rate of $600 per hour, with reimbursement for actual expenses. My compensation is not contingent upon the outcome of the case.

III. BASIS OF MY OPINION AND MATERIALS CONSIDERED

10. In preparation for this report, I have considered and relied on data or other documents identified in this report, including (1) Exhibit 1001: the ‘704 Patent, (2) Paper No. 1, “Petition for *Inter Partes* Review” (“Petition”); (3) Paper No. 11, “Decision: Institution of *Inter Partes* Review” (“Decision”); (4) Exhibit 1003, “NetBIOS”; (5) Exhibit 1004: “WINS”; (6) Exhibit 2018: “Declaration of Ketan Mayer-Patel”; and (7) Exhibit 1022: “Deposition of Ketan D. Mayer-Patel, Ph.D.”

11. I note that Dr. Mayer-Patel does not provide the level of ordinary skill in the art, though he repeatedly refers to what one of ordinary skill in the art would have known. In my opinion, a person of ordinary skill in the art is someone with a

BS in Computer or Software Engineering or equivalent and one to two years of programming experience.

12. I am familiar with the state of the art at the time the ’704 Patent was filed. I used NetBIOS-over-TCP (SCO Xenix) products in 1990-1991. I also have familiarized myself with the state of the art at that time by reviewing both patent and non-patent references from prior to the filing date of the application that became the ’704 Patent.

13. My opinions are also based upon my education, training, research, knowledge, and experience in this technical field.

IV. SUMMARY OF MY OPINIONS

14. Based on my prior experience in the field of computer systems and networking (including network communication protocols), and based on my review of the documents relating to the pending *Inter Partes* Review, I have developed an understanding of the ’704 Patent and the claimed inventions.

15. I have been asked to compare the instituted claims of the ’704 Patent to the NetBIOS and WINS references applied in the pending *Inter Partes* Review. The results of my comparisons are provided below. It is my opinion that all of the claims subject to the current *Inter Partes* Review (i.e., claims 1-7 and 32-42) are anticipated by NetBIOS (and WINS as a NetBIOS Name Server implementation). I have been asked to review the Declaration of Mr. Mayer-Patel (Exhibit 2018), and the results of my review are provided below.

V. LEGAL STANDARDS

16. It is my understanding that a claim is invalid by anticipation when a single prior art reference (as defined by 35 U.S.C. § 102) existed prior to the claim’s priority date and teaches every element of the claim. (*Verizon Servs. Corp. v. Cox Fibernet Va., Inc.*, 602 F.3d 1325, 1336-37 (Fed. Cir. 2010)). I also understand that under 35 U.S.C. § 103, the combined teachings of more than one prior art reference can be used to demonstrate that all of the elements of a claim were known at the time of the invention. I understand this is often referred to as “obviousness,” and such obviousness must be assessed at the time the invention was made. (*Eurand, Inc. v.*

Mylan Pharms., Inc., 676 F.3d 1063, 1073 (Fed. Cir. 2012)). I understand that, under 35 U.S.C. § 103, a patent cannot be valid "if the differences between the subject matter to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art." (35 U.S.C. § 103).

17. It is my understanding that claim terms are to be given their broadest reasonable interpretation in light of the patent specification in an *Inter Partes* Review. (*In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010)). It is also my understanding that this interpretation should be from the viewpoint of one of ordinary skill in the art reading the patent specification. (*In re Suitco*, 603 F.3d at 1260).

VI. DOCUMENT STRUCTURE

18. When reviewing the Patent Owner's Expert Declaration (Exhibit 2018), I discovered that Mr. Mayer-Patel uses the same two arguments repeatedly: the first one being the "registration vs. on-line status" argument, the second one being the "dynamic address assignment" argument.

19. Section VII of this Declaration is a rebuttal of the “registration vs. on-line status” argument used in the Patent Owner’s Expert Declaration sections 17-19, 21-23, 34-39, 41-45, 47-48, 50-54, 58, 60, 62-80.

20. Sections IX and X of this Declaration is a rebuttal of the “dynamic address assignment” argument used in the Patent Owner’s Expert Declaration sections 24-29, 33, 40, 46, 49, 57, 59.

21. The Patent Owner’s Expert Declaration (Exhibit 2018) notes how important it is to recognize the difference between the terms ‘process’ and ‘processing unit’, and that NetBIOS deals with computers while the ‘704 Patent deals with ‘processes’. At the same time the creators of the ‘704 Patent carelessly intermix the terms ‘process’ and ‘processing units’ (computers). The ‘704 Patent Description talks only about ‘processing units’ and does not use the term ‘process’ at all. The ‘704 Patent Claims use only the term ‘process’ and do not mention the term ‘processing unit’ at all. To provide rebuttal for the “process vs. processing unit” arguments used in Sections 20, 41, 51, 58, 67, 70, 71, 76, 77 of the Patent Owner’s Expert Declaration, I am including Section VIII into this Declaration.

22. Besides the two main arguments listed above, the Patent Owner's Expert provided various statements about NetBIOS. Section XI of this Declaration is a rebuttal of these statements.

23. Besides the "on-line vs. registration" argument listed above, the Patent Owner's Expert provided various statements about WINS. Section XII of this Declaration is a rebuttal of these statements. I noticed that the Patent Owner's Expert did not try to use the "dynamic address assignment" argument against WINS.

VII. On-Line Status Determination

24. **Claim.** The Patent Owner and the Patent Owner's Expert repeatedly claimed that the '704 Patent is different from NetBIOS because the 'connection server' disclosed in the '704 Patent somehow knows the current 'on-line' status of a registered process, whereas the NetBIOS Name Server does not know it: "the asserted references do not teach a query or determination as to whether a process is connected to a network, but instead merely determine whether a computer has been initially registered with the NetBIOS or WINS system" (Mayer-Patel Declaration, Exhibit 2018, p.5). To rebut this statement, below I review all mechanisms – disclosed, claimed, or

simply mentioned in the ‘704 Patent - that may allow a ‘connection server’ to track the registered process ‘on-line’ status. I also compare these mechanisms to the mechanisms disclosed in the NetBIOS references.

25. **Timeout Mechanism in the ‘704 Patent.** The “DESCRIPTION OF THE PREFERRED EMBODIMENTS” section of the ‘704 Patent reads: “The connection server 26 then stores these addresses in the database 34 and timestamps the stored addresses using timer 32” (‘704 Patent at 5:28-30), “The connection server 26 may use the timestamps to update the status of each processing unit; for example, after 2 hours, so that the on-line status information stored in the database 34 is relatively current. Other predetermined time periods, such as a default value of 24 hours, may be configured by a systems operator.” (‘704 Patent at 5:39-44). All other “timer” and “timeout” references in this section of the ‘704 Patent are related to the “mail server 28”, not to the “connection server 26”.

26. The ‘704 Patent Claim 3 mentions “timer” and “time stamping” without any indication what that timer and time stamping can be used for: “3. The computer server apparatus of claim 2 further comprising a timer, operatively coupled to the

processor, for time stamping the network protocol addresses stored in the memory." ('704 Patent at 11:40-44). No other Claim of the '704 Patent mentions any timer or a time-out mechanism.

27. **Timeout Mechanism in NetBIOS**. The NetBIOS-over-TCP specification (RFC1001) clearly defines the time-out and periodic refresh mechanisms. It specifies that each registration has a time limit associated with it, and that the NetBIOS Name Server (NBNS) must release a registered name if its time limit is expired. It also specifies that a process can keep its name registered by sending periodic NAME REFRESH requests to the NBNS (with a period smaller than the assigned time limit): "15.1.3.2. NAME LIFETIME AND REFRESH

Names held by an NBNS are given a lifetime during name registration. The NBNS will consider a name to have been silently released if the end-node fails to send a name refresh message to the NBNS before the lifetime expires. A refresh restarts the lifetime clock.

NOTE: The implementor should be aware of the tradeoff between accuracy of the database and the internet overhead that the refresh mechanism introduces. The lifetime period should be tuned accordingly" and "This negotiation of refresh times gives the NBNS means to disable or enable refresh activity." (Exhibit 1003, p.396), and: "15.5.1. NAME REFRESH. Name refresh transactions are used to handle the following situations: a) An NBNS node needs to detect if a P or M node has "silently" gone down, so that names held by that node can be purged from the data base." (Exhibit 1003, p.412).

The Patent Owner's Expert noted: "This registration may extend indefinitely, regardless of whether the node remains connected to the computer network. For example, NetBIOS specifies that the end-node may "request[] an infinite lifetime" of its name registration. (NetBIOS at 378). NBNS, which assigns the "lifetime" of the registered name, "is always allowed to respond with an infinite actual period" for the registered name." (Mayer-Patel Declaration, Exhibit 2018, p.22). While this is true: "Simple or reliable NBNS's may impose an infinite time-to-live." (Exhibit 1003, p.400), this NBNS feature does not indicate that NBNS **always** imposes an infinite lifetime. It does not indicate that NetBIOS-over-TCP does not use the timeout mechanism. It only indicates that NetBIOS-over-TCP may operate with the timeout mechanism disabled.

28. **De-Registration Message method in the ‘704 Patent**. The “DESCRIPTION OF THE PREFERRED EMBODIMENTS” section of the ‘704 Patent reads: “When a user logs off or goes off-line from the Internet 24, the connection server 26 updates the status of the user in the database 34; for example, by removing the user's information, or by flagging the user as being off-line. The connection server 26 may be instructed to update the user's information in the database 34 by an off-line message, such as a data packet, sent automatically from the processing unit of the user prior to being disconnected from the connection server 26” (‘704 Patent at 6:6-14). There are no other references to ‘off-line messages’ sent to the ‘connection server’ by a registered process or by the processing unit it runs on. The ‘704 Patent Claim 7 describes ‘off-line messages’ sent by the ‘connection server’ itself. These messages serve a different purpose and they are unrelated to the ‘off-line messages’ sent to the ‘connection server’, as confirmed by the Patent Owner’s Expert (Mayer-Patel Deposition, Exhibit 1022, p.42:16-p.43:22). The ‘off-line message’ mechanism (asking a server to remove a registration or to mark a registered name as ‘off-line’) is not claimed in any Claim of the ‘704 Patent. The only claimed mechanism to remove a registration is in the

Claim 37: “37. The method of claim 34 wherein step c further comprises: c.1 deleting an entry from the compilation upon the occurrence of a predetermined event.” (‘704 Patent at 15:26-29), and in the Claim 42: “42. The computer program product of claim 38 wherein step c further comprises: c.1 program code configured to delete an entry from the compilation upon the occurrence of a predetermined event.” (704 Patent at 15:26-29). This as well is confirmed by the Patent Owner’s Expert (Mayer-Patel Deposition, Exhibit 1022, p.43:17-p.44:12). These Claims simply specify that a registration can be removed for whatever reason, “upon the occurrence of a predetermined event”. None of these Claims has the limitation of receiving an “off-line message” as such a “predetermined event”.

29. **De-Registration Message method in NetBIOS.** The NetBIOS-over-TCP/IP specification clearly specifies that each process can inform the NetBIOS Name Server (NSNB) that it no longer wishes to receive data or connection requests sent to its registered name: “15.1.3. NAME RELEASE. NetBIOS names may be released explicitly or silently by an end-node” (Exhibit 1003, page 395). Section 15.4.2 of the RFC1001 document and Sections 4.2.9-4.2.11, 5.1.2.4 of the RFC1002

document describe in details the format of the NAME RELEASE messages and their processing.

30. While the ‘704 Patent mentions that the ‘off-line’ message is to be sent by an entire computer (‘processing unit’) before it goes offline (“disconnects from the connection server”), the NetBIOS specification allows a process itself to ask the name server to remove the process name. Besides, real-life NetBIOS implementations (such as Microsoft WINS) running on a ‘processing unit’ automatically release registered names for all processes running on that unit – before that ‘processing unit’ goes off-line or is being switched off. This is described in the Exhibit 1004 quoted by the Patent Owner’s Expert: “If WINS is enabled: Whenever a computer is shut down properly, it releases its name to the WINS server, which marks the related database entry as released. [...] (WINS at 58-59).” (Mayer-Patel Declaration, Exhibit 2018, p.44-45).

31. **Polling method in the ‘704 Patent (Rebuttal).** The ‘704 Patent discloses two mechanisms for establishing point-to-point communications. The primary method uses a ‘connection server’ which keeps records linking process names to

their network addresses. The secondary method involves an Email server and a process sending a “call request” with its network address to the callee via E-mail. The ‘704 Patent SUMMARY OF THE INVENTION says: “A point-to-point Internet protocol is disclosed which exchanges Internet Protocol (IP) addresses between processing units to establish a point-to-point communication link between the processing units through the Internet.

A first point-to-point Internet protocol is disclosed which includes the steps of:

(a) storing in a database a respective IP address of a set of processing units that have an on-line status with respect to the Internet;

(b) transmitting a query from a first processing unit to a connection server to determine the on-line status of a second processing unit; and

(c) retrieving the IP address of the second unit from the database using the connection server, in response to the determination of a positive on-line status of the second processing unit, for establishing a point-to-point communication link between the first and second processing units through the Internet.

A second point-to-point Internet protocol is disclosed, which includes the steps of:

(a) transmitting an E-mail signal, including a first IP address, from a first processing unit;

(b) processing the E-mail signal through the Internet to deliver the E-mail signal to a second processing unit; and

(c) transmitting a second IP address to the first processing unit for establishing a point-to-point communication link between the first and second processing units through the Internet." ('704 Patent at 1:57-2:21).

It is my understanding that the second (secondary) protocol is claimed in the Claims 8 and 9 of the '704 Patent. It is my understanding that the Claims 8 and 9, and thus, the secondary protocol (which involves an E-mail server) are not reviewed in this *Inter Partes* Review, and that all Claims in this Review are related to the first, primary protocol, disclosing a 'connection server'.

32. The Patent Owner's Expert referred to the "polling" method used with the 'connection server' to keep track of the on-line status of registered process. In particular, he said: "the polling I think is described in Column 6 between Lines 55 and 60" (Mayer-Patel Deposition, Exhibit 1022, p.45:21-p.46:1), "the polling for every three to

five seconds language occurs in Column 6" (Mayer-Patel Deposition, Exhibit 1022, p.47 19:20).

33. The text the Patent Owner's Expert referred to is: "The mail server 28 then polls the second processing unit 22, for example, every 3-5 seconds, to deliver the E-mail. Generally, the second processing unit 22 checks the incoming lines, for example, at regular intervals to wait for and to detect incoming E-mail from the mail server 28 through the Internet 24." ('704 Patent, 6:55-60). Firstly, this text clearly says that polling occurs to deliver a "communication request" sent via E-mail, not to check the on-line status of the "processing unit 22" (in absence of a "communication request" there is no polling). Secondly, POP3 mail servers do not poll their clients when they need to deliver mail (as specified in the first quoted phrase). Instead, mail clients poll POP3 mail servers to check if there is any incoming mail for them (as specified in the second quoted phrase). Finally, the whole paragraph is talking about the "mail server 28", and not the "connection server 26". It talks about the second/secondary point-to-point protocol disclosed in the '704 Patent, while the topic of this Review is the first/primary protocol disclosed in the '704 Patent, its "connection server 26", and its anticipation by NetBIOS.

34. The method the Patent Owner's Expert refers to is not related to the 'connection server', nor is it related to tracking the on-line status of registered processes. There is no disclosure of any other "polling method" used by 'connection server' anywhere in the '704 Patent. No Claim of the '704 Patent mentions any polling method used to track the on-line status of processes registered with the 'connection server'.

35. **Polling method in NetBIOS.** The NetBIOS-over-TCP implementation describes a proactive method for a NetBIOS Name Server (NBNS) to check if any registered name is still claimed by a connected ('on-line') process. NBNS can send a Name Challenge request containing a registered name to the processing node the registered process was running on. If it receives a positive response for that request, it confirms that the processing node is still connected to the network, and that the registered process is still running on that node, and that the process is connected to the network. A negative response or repeated non-responsiveness indicates that the name was registered by a process that has been disconnected from the network. "15.5.2. NAME CHALLENGE. Name challenge is done by sending a NAME QUERY REQUEST to an end node of any type. If a POSITIVE NAME QUERY

RESPONSE is returned, then that node still owns the name. If a NEGATIVE NAME QUERY RESPONSE is received or if no response is received, it can be assumed that the end node no longer owns the name." (Exhibit 1003, p.413), and "15.1.7. CONSISTENCY OF THE NBNS DATA BASE. 1. The NBNS (or any other node) may "challenge" (using a NAME QUERY REQUEST) an end-node to verify that it actually owns a name. Such a challenge may occur at any time. Every end-node must be prepared to make a timely response. Failure to respond causes the NBNS to consider that the end-node has released the name in question." (Exhibit 1003, p.399).

36. **No other method.** During the April 18th Deposition, the Patent Owner's Expert was asked about all methods to "track the on-line status" disclosed in the '704 Patent. He provided the following answer: "So in addition to using time-outs -- or using -- I'm sorry -- time stamps, explicit messages of on-line and off-line status by a process, and polling processes, it does describe inferring off-line status because of nonresponsiveness, which actually is a sort of a polling. So those are the three methods that are described by the patent for -- in the -- in the description of -- of possible embodiments." (Mayer-Patel Deposition, Exhibit 1022, p.46:14-47:2).

37. **Relative Reliability.** None of the reviewed methods can ensure that a Name Server (or a 'connection server') can always possess actual, up-to-date information about the process on-line status. If a process goes off-line and stops refreshing its registration, its record will remain 'active' till its timeout expires (this can take hours). The '704 Patent Description acknowledges that the on-line information can be only "relatively current". It reads: "The connection server 26 may use the timestamps to update the status of each processing unit; for example, after 2 hours, so that the on-line status information stored in the database 34 is relatively current. Other predetermined time periods, such as a default value of 24 hours, may be configured by a systems operator." ('704 Patent at 5:39-44). Similarly, the 'off-line message' sent by a process or its processing unit before going off-line may be lost, because the network has already been disconnected, as confirmed by the Patent Owner's Expert: "Q. If the computer just went -- if the computer is disconnected, could an off-line message be sent? A. If a computer is physically disconnected from the network, a process running on that computer would not be able to send a message." (Mayer-Patel Deposition, Exhibit 1022, p.42:9-14). And if a system implements active 'polling', it cannot reliably trace the process on-line status

between the moments when ‘polling’ is performed. The Patent Owner’s Expert writes: “Because the WINS system merely coordinates with the NetBIOS database, it too has no assurance that a registered node is currently online. In fact, the WINS reference explicitly states: Any name-to-IP address mapping registered with a WINS server can be provided reliably as a response to a name query. However, a mapping in the database does not ensure that the related device is currently running, only that a computer claimed the particular IP address and it is a currently valid mapping. (WINS at 57 (emphasis added)).” (Mayer-Patel Declaration, Exhibit 2018, p.44). This statement means that NetBIOS and WINS provide only relatively current information about the on-line status of a process. It does not mean (as the Patent Owner and the Patent Owner Expert try to imply) that NetBIOS and WINS do not provide the on-line status information at all.

38. **Conclusion.** I reviewed all methods disclosed, claimed, or mentioned in the ‘704 Patent that can be used by its ‘connection server’ to track the ‘on-line’ status of the registered processes. I compared these methods to the methods disclosed in the NetBIOS references. The timeout method is briefly mentioned in the ‘704 Patent, and it is not claimed in any of the ‘704 Patent Claims. This timeout method (along with registration refreshing) is disclosed in details in the NetBIOS

references, and it is fully implemented in NetBIOS Name Server products such as Microsoft WINS. The ‘off-line message’ (‘name release’) method is briefly mentioned in the ’704 Patent, and it is not claimed in any of the ‘704 Patent Claims. This ‘name release’ method is disclosed in details in the NetBIOS references, and it is fully implemented in NetBIOS Name Server products such as Microsoft WINS. The active polling method for a ‘connection server’ is not disclosed in the ‘704 Patent. The ‘name challenge’ active polling method is disclosed in details in the NetBIOS references. No other mechanism that could allow a ‘connection server’ to track the process on-line status is disclosed, claimed, or even mentioned in the ‘704 Patent, as confirmed by the Patent Owner’s Expert. In my opinion, the ‘704 Patent does not disclose or teach any mechanism to track the on-line status of registered processes other than the mechanisms disclosed in the NetBIOS references.

VIII. Process vs. Computer/Processing Unit

39. The ‘704 Patent carelessly mixes the terms ‘process’ and ‘processing unit’. The ‘704 Patent Description talks only about ‘processing units’ and does not use the term ‘process’ at all. The ‘704 Patent Claims use only the term ‘process’ and do not

mention the term ‘processing unit’ at all. I have noticed that the Patent Owner’s and the Patent Onwer’s Expert freely switch between discussing ‘processes’ and discussing ‘processing units’, too. The background information in this Section is necessary: (a) to understand my rebuttal of the “process vs. processing unit” (or “process vs. computer”) arguments and (b) to support my arguments related to ‘processing unit’ network addresses vs. ‘process’ network addresses. This is a generic information about the TCP/IP protocol stack, publicly available since the invention of the TCP/IP protocol stack and publication of RFC793 (September 1981) and RFC768 (August 1980). I use the information from RFC1001/1002 (Exhibit 1003), too.

40. An IP address is assigned to a computer, device, or other ‘processing unit’ connected to a TCP/IP network. It addresses that processing unit: data packets sent to a given IP address are delivered to that processing unit. Since a processing unit may run several processes connected to the network, in general, an IP address cannot be used as the network address of a process: the process network address should also contain some ‘local part’, identifying a ‘process’ within a given ‘processing unit’.