

Cox Communications, Inc.
Exhibit 1014

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inter partes Review Case No. IPR2015-_____

Inter partes Review of: U.S. Patent No. 7,907,714

Issued: March 15, 2011

To: Paul G. Baniak et al.

For: Profile Management System Including User Interface for Accessing and Maintaining Profile Data of User Subscribed Telephony Services

**DECLARATION OF PROFESSOR NADER MIR, Ph.D. IN SUPPORT OF
REQUEST FOR *INTER PARTES* REVIEW OF THE '714 PATENT**

1. I am Professor Nader F. Mir, Ph.D. I have been retained by Proskauer Rose, LLP on behalf of Cox Communications, Inc. ("Cox") , and have been asked by counsel to review relevant materials and render my expert opinion in connection with technical matters related to the U.S. Patent No. 7,907,714 ("the '714 patent"). I submit this report on behalf of Cox Communications, Inc. in support of its petition for *Inter Partes* Review (IPR) of the '714 patent ("Petition"). For at least the reasons expressed in this declaration, I agree with the contents of the Petition, and I believe my opinions expressed below are consistent with the Petition.

I. INTRODUCTION

2. I understand that the parties involved in this IPR proceeding are the Petitioner, Cox Communications, Inc., and the patent owner, AT&T Intellectual Property I, L.P.

3. For my efforts in connection with the preparation of this declaration, I have been compensated at my standard hourly rate for this type of consulting activity. However, my compensation is not dependent on the outcome of this proceeding. I am not an employee, consultant, or contractor of either party.

A. Personal Background and Qualifications

4. My professional career has spanned close to 30 years. During these years, I have gained extensive experience in design, analysis, testing, teaching, research, and performance evaluation in the general fields of telecommunications, computer networks, and communications systems.

5. I am currently a tenured full professor of Electrical Engineering at San Jose State University in San Jose, California. I was previously the Associate Chairman of the Electrical Engineering Department at San Jose State University. I am also the Director of a number of graduate programs that San Jose State University offers to several high-tech companies in Northern California.

6. I was awarded a Ph.D. degree in Electrical Engineering, with a focus on computer networking and communication systems and protocols, from

Washington University in St. Louis in 1995. I received a Master's of Science (M.Sc.) degree in Electrical Engineering from Washington University in St. Louis in 1990 and my Bachelors of Science (B.Sc.) degree (with honors) in Electrical Engineering from Polytechnic University in 1985.

7. For close to 30 years, I have studied, designed, and worked in the general fields of telecommunications, computer networks and communications systems. Based on my extensive research, engineering, and teaching experience in such fields, I have been recognized as a specialist in the areas of computer and communication networks; networking devices; protocols including (but not limited to) telephone networks, computer networking, call management, network server organization and operations; and topics including TCP/IP, voice-over-IP (VoIP), content delivery networking, wireless networks and interfacing to non-wireless networks, switching systems, switches and routers, databases in networks, client/server, public-switched telephone networks (PSTN), telephone circuit-switched and SS7 networks, modulation techniques, and modems, among others.

8. Prior to my current position, I was an assistant professor at the University of Kentucky in Lexington. From 1994 to 1996, I was a research scientist at the Advanced Telecommunications Institute, Stevens Institute of Technology, New Jersey, working on the design of advanced communication systems and high-speed computer networks.

9. From 1990 to 1994 I worked at the Computer and Communications Research Center at Washington University in St. Louis as a research assistant on the design and analysis of high-speed switching systems.

10. From 1985 to 1988 I worked with Telecommunication Research & Development Center (TRDC), Surrey, as a telecommunications system research & development engineer, participating in the design of a high-speed digital telephone Private Branch Exchange (PBX).

11. I have designed and implemented a hardware/protocol for use in high-speed computer communication networks as described in U.S. Patent No. 7,012,895, for which I am a named inventor.

12. I hold several technical editorial positions for various journals. As a Technical Editor of *IEEE Communication Magazine*, I am responsible for accepting or rejecting scientific articles submitted to the journal in the areas of computer networking and communication systems. I am a senior member of the IEEE and have served as a member of the technical program committees and the steering committees for a number of major IEEE communications and networking conferences.

13. I have authored a major textbook, titled *Computer & Communication*

Networks,” which is now an internationally-adopted university textbook.¹ The book has been translated into several languages, and the Second Edition was published this year.² The book covers fundamentals and advanced topics in telephone networks, computer networking, network communication, call management, and network server organization and operations, and spans numerous networking topics including (but not limited to) voice, video, data networks, TCP/IP, VoIP, content delivery networking, SS7, PSTN, wireless networks, routers, switching systems, and modulation techniques and modems, among others.

14. I have published numerous refereed technical journal articles and conference papers, all in the field of communication systems and computer networking. The full list of my publications can be found in my *curriculum vitae* (CV), attached as Appendix A.

15. I have received a number of prestigious university, national, and international awards. In particular, I have received a number of research grants from private, state, and governmental funding agencies for conducting research in the fields of computers and communication networks. I am also the recipient of

¹ Nader Mir, *Computer and Communication Networks* (Prentice-Hall eds., 1st ed. 2006).

² Nader Mir, *Computer and Communication Networks* (Prentice-Hall eds., 2nd ed. 2015).

several university teaching recognition awards from San Jose State University; several research excellence awards; and the school's published book award for the year.

16. I have been invited to give a number of talks at both national and international conferences. My speeches at conferences have focused on a variety of topics in computer networking including topics on TCP/IP, packet telephony and VoIP, phone systems, networked servers, wireless multimedia networks, switching systems, and networking user interfaces. I am the recipient of a number of Outstanding Presentation awards from leading international conferences.

17. I make this declaration based on personal knowledge, and I am competent to testify about the matters set forth herein.

18. A copy of my CV is attached to this declaration as Appendix A.

B. Understanding of Legal Standards

19. I am not a lawyer and I have no legal training. I have been informed by Cox's counsel about certain legal principles and standards, which I have assumed and applied for purposes of this declaration. Some of these, which form the legal framework for the opinions I am providing, are summarized below.

1. Validity

20. I have assumed that a patent claim may be found invalid if it is anticipated or rendered obvious by prior art. I have considered references such as

patents and publications to be prior art to the '714 Patent if they were patented or published more than one year before the alleged priority date of the '714 patent, or if they were patented or filed as an application for a patent, which was subsequently published, with a date prior to the date the subject matter of the claims of the '714 Patent was allegedly invented.

21. I understand that claims enjoy the priority date of a provisional application to which priority is claimed only if the provisional application provided adequate written description under 35 U.S.C. § 112, ¶ 1. For purposes of this declaration, I have assumed that the priority date of the claims of the '714 patent is April 3, 1997, the date on which the provisional application to which the '714 patent claims priority was filed.

22. I have assumed that a patent claim is anticipated under 35 U.S.C. § 102 if each and every limitation of the claim is disclosed in a single prior art reference as arranged in the claim. I understand that each element of a patent claim may be disclosed by a prior art reference either expressly or inherently. My understanding is that even an "express" disclosure does not necessarily need to use the same words as the claim. I also understand that an element of a patent claim is inherent in a prior art reference if the element must necessarily be present, and its presence would be recognized by a person of

ordinary skill in the art. However, I understand that inherency cannot be established by mere probabilities or possibilities.

23. I understand that not all innovations are patentable; even if a claimed product or method is not disclosed in its entirety in a single prior art reference, it is nonetheless invalid if the differences between the patented subject matter and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the innovation. I am informed that this standard is set forth in 35 U.S.C. § 103(a).

24. I have assumed that when considering the issues of obviousness, I am to do the following: (i) determine the scope and content of the prior art; (ii) ascertain the differences between the prior art and the claims at issue; (iii) resolve the level of ordinary skill in the pertinent art; and (iv) consider objective evidence of non-obviousness (so-called “secondary considerations”). I appreciate that secondary considerations must be assessed as part of the overall obviousness analysis, and should not be considered merely to decide whether they alter any initial obviousness conclusions that could be drawn based on the prior art.

25. In determining whether the subject matter as a whole would have been obvious at the time that the invention was made to a person having ordinary skill in the art, I have been informed of several principles regarding the combination of elements of the prior art. First, a combination of familiar elements according to

known methods is likely to be obvious when it yields predictable results. Second, if a person of ordinary skill in the art can implement a “predictable variation” in a prior art device, and would see the benefit from doing so, such a variation would be obvious. In particular, when there is pressure to solve a problem and there are a finite number of identifiable, predictable solutions, it would be reasonable for a person of ordinary skill to pursue those options that fall within his or her technical grasp. If such a process leads to the claimed invention, then the latter is not an innovation, but more the result of ordinary skill and common sense.

26. I understand that the “teaching, suggestion, or motivation” test is a useful guide in establishing a rationale for combining elements of the prior art. This test poses the question as to whether there is an explicit teaching, suggestion, or motivation in the prior art to combine prior art elements in a way that realizes the claimed invention. Though useful to the obviousness inquiry, I understand that this test should not be treated as a rigid rule. It is not necessary to seek out precise teachings; it is permissible to consider the inferences and creative steps that a person of ordinary skill in the art would employ.

2. The Level of Ordinary Skill in the Art

27. I understand that “a person of ordinary skill in the relevant field” is presumed to be a person with standard skill, creativity, and knowledge in a particular field or industry. This person thinks along the line of conventional

wisdom in the art but is neither an automaton nor one who undertakes to innovate, whether it is by patient, expensive, and systematic research or by extraordinary insight.

28. In assessing the level of ordinary skill, I further understand one may consider several factors including: (1) the educational level of the inventor; (2) the educational level of active workers in the field; (3) type of problems encountered in the art; (4) prior art solutions to those problems; (5) the rate of innovation in the field; and (6) the sophistication of the technology.

29. Based on my experience, I have an understanding of the capabilities of a person of ordinary skill in the relevant fields. I have supervised and directed many such persons over the course of my career. Further, I had those capabilities myself on the priority date of the '714 patent.

30. I have been informed that the level of skill in the art is evidenced by prior art references. The prior art discussed herein demonstrates that a person of ordinary skill in the field, on the assumed priority date of the '714 patent, was aware of communication voice processing systems, including subscriber-based systems; database access techniques, and user interface functionality, including viewable user interfaces.

31. I have been asked to offer an opinion on the characteristics of a person having ordinary skill in the art as of the priority date of the '714 Patent. In view of

the specification of the '714 patent and the prior art references of record, it is my opinion that a person of ordinary skill at that time in the relevant field of the '714 patent would have an undergraduate degree in computer science or electrical engineering and three to four years of experience in the field, or an equivalent combination of education and experience.

II. THE BASIS OF MY OPINION, THE RELEVANT FIELD, AND THE TIMEFRAME

32. I have reviewed the '714 patent and its file history. I have also reviewed the prior art and other documents and materials cited herein. My opinions are also based in part upon my education, training, research, knowledge, and experience.

33. Based on my review of this material, I believe that the relevant fields for the purposes of the '714 patent are the design and implementation of modems, routers, and cable systems. I have been informed that the relevant timeframe is on or before the earliest effective filing date of the '714 patent, namely, April 3, 1997.

34. As described in Section I above and as shown in my CV, I have extensive experience in the field of electrical engineering, computer networks, telecommunications, and communication systems. Based on my experience, I have a good understanding of the relevant fields in the relevant timeframe.

35. In order to render my opinions in this matter, I have reviewed the following materials:

- The '714 patent (Ex. 1001);
- The file history for the '714 patent (Ex. 1002);
- USPN 5,629,978 to Blumhardt *et al.* ("*Blumhardt*") (Ex. 1003);
- USPN 5,903,845 to Buhrmann *et al.* ("*Buhrmann*") (Ex. 1004);
- USPN 6,031,904 to An *et al.* ("*An*") (Ex. 1005);
- U.S. Patent Appl. No. 60/028,760 to An *et al.* (the "*An Provisional*") (Ex. 1006);
- USPN 6,335,927 to Elliott *et al.* ("*Elliott*") (Ex. 1007);
- USPN 5,757,899 to Boulware *et al.* ("*Boulware*") (Ex. 1008);
- USPN 5,754,636 to Bayless *et al.* ("*Bayless*") (Ex. 1009);
- USPN 5,883,946 to Beck *et al.* ("*Beck*") (Ex. 1010);
- Supplemental Declaration of Terry L. Vieth Pursuant to 37 C.F.R. § 1.131, for U.S. Patent Appl. No. 09/050,986 (Ex. 1011)
- Second Supplemental Declaration of Terry L. Vieth Pursuant to 37 C.F.R. § 1.131, for U.S. Patent Appl. No. 10/761,382 (Ex. 1012)
- Third Supplemental Declaration of Terry L. Vieth Pursuant to 37 C.F.R. § 1.131, for U.S. Patent Appl. No. 10/761,382 (Ex. 1013)

III. TECHNICAL BACKGROUND UNDERLYING THE `353 PATENT

36. I will sometimes refer to the state of the art as “before the `714 patent.” Accordingly, when I speak about the state of the art “before the `714 patent,” I mean before the earliest claimed priority date of the `714 patent.

A. Overview of Communication Networking Prior to 1997

37. The communication networking media in 1997 consisted of two distinct and separate networks: (i) The *public-switched telephone networks* (PSTN), and (ii) *packet-switched networks* (PSN). PSTN and PSN have fundamentally different operational infrastructures. In terms of communication medium type, the communication systems were further classified into wireless systems and wireline systems.

B. Telephone Networks (PSTN and SS7 Networks)

38. The *Public Switched Telephone Network* (PSTN) includes two communication networking structures to provide telephone call services: *circuit-switched networks* in which a circuit is predetermined for each voice session, and the *Signaling System 7* (SS7) *network* for call control signaling. As a result of such structures, two separate transmission paths are used when a telephone call needs to be established: one for call control “signaling” established over the SS7 network; and the other one for media exchange or voice established over circuit-switched networks. SS7 can also become compatible with voice over IP (VoIP) carriers.

39. Figure 1 (below) shows the networking overview of the PSTN including an SS7 network and a circuit-switched network. The SS7 network handles telephone network signaling and is separate from the portion of the circuit-switched network that handles media and voice communications. Each telephone set is connected to a *signal transfer point* (SSP) through a phone *line*. The SSP is the main switching node of the PSTN. Any phone set is directly attached to its corresponding SSP. Each SSP also acts as a point of call signaling origination and termination and therefore functions as the first signaling point for the SS7 network.

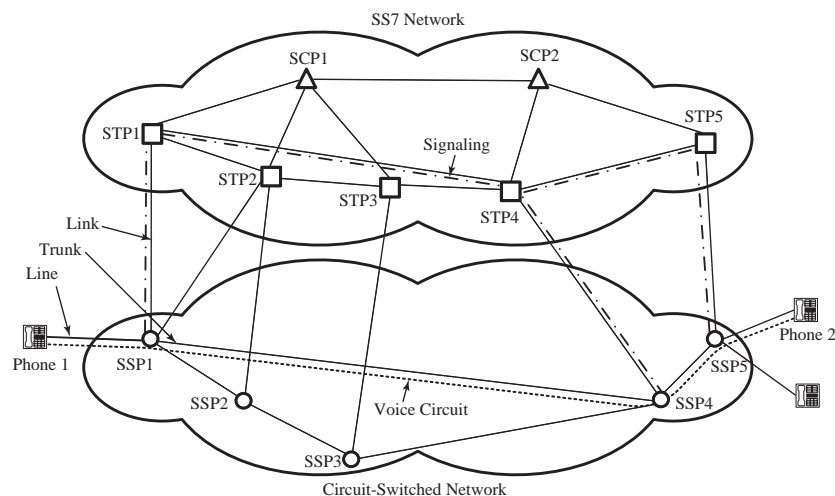


Figure 1. A call establishment in the PSTN and the interaction between the SS7 network and circuit-switched networks

40. Each *signal transfer point* (STP) acts as a router and transfers signaling messages from one STP to another once released from the first SSP. Another signaling node in the SS7 network is the *service control point* (SCP) in

which advanced services are provided. Any STP can inquire a certain data for finding a special route, such as the route based on the toll-free numbers, from the SCP database.

41. Figure 1 also shows an example of a call establishment. Suppose the user of phone 1 wants to contact the user of phone 2. Phone 1 then forwards the dialed number to its attached node, SSP1. SSP1 sends a request message to one of its attached STPs, in this case STP1, to find a route to the destination SSP associated with the dialed number, in this case SSP5. STP1 processes the message very similarly to what a regular router does, and finds the shortest path to the destination's STP for the dialed call. STP1 first checks the destination address of the message, and then checks its routing table to figure out to which STP the message should be sent to next. The path as shown in the figure is found to be STP1-STP4-STP5.

42. Upon the determination of the signaling route by the SS7 network, each corresponding SSP of an STP is informed of the selection. In this case, SSP4 and SSP5 are informed to prepare for establishment of a circuit. At this point, the circuit-switched network establishes the circuit initiated from phone 1 to phone 2 over SSP1-SSP4-SSP5 and the voice conversation can be sent over an available channel of this circuit.

43. PSTN in a smaller scale is known as *private branch exchange* (PBX). PBX can handle the phone communication need of a smaller community such as a campus.

C. Overview of Subscriber Profile Database Prior to 1997

44. A person of ordinary skill in the art would be fully aware that prior to the '714 patent, databases for various purposes in telecommunication systems exist. The simplest database that can be associated with subscribers in telephone networks is a *messaging system*. The concept of messaging systems was well known and well established before the '714 patent, and were capable of processing messages in a variety of media, such as data, text, fax, binary file, voice, and motion video. Examples of personal messaging systems from the 1997 time period include, but are not limited to, paging systems, voice message systems, and e-mail systems.

45. As another example of telecommunication database, *service control point* (SCP) discussed in Section III.B was known to one of ordinary skill in the art as a large database in PSTN. The SCP is a node of the SS7 network that carries out advanced services. For example, when a toll-free 800 number is requested, the SCP finds the location address of the destination SSP to which the call should actually be sent. SCP is also a reference for providing certain profile and information in

connection with phone numbers. In a sense, SCP can be treated as a reference database that can be used for setting up sub-databases.

IV. THE '714 PATENT

A. Overview

46. Independent method claims 1 and 13 of the '714 patent recite basic, well-known processing steps: in general, it discloses receiving a subscriber request to view subscriber profile data on a user interface; retrieving the subscriber profile data from the network; forwarding the subscriber profile data back to the subscriber for viewing; receiving a request from the subscriber to update the subscriber profile data; and forwarding updated subscriber profile data to the network.

47. The dependent claims of the '714 patent add nothing beyond well-known, fundamental features of computing and telephony, including “a server” (*see* claim 4), “a graphical user interface” (*see* claim 5), “positive identification” (*see* claim 6), “a tele-communications network” (*see* claim 7), and so on.

B. Prior Art

48. As part of my analysis for this proceeding, I have carefully reviewed each of the prior art references cited in the Petition (Exs. 1003-1010), and I deem each to be relevant to demonstrating the invalidity of the '714 Patent. In the

remaining paragraphs of this section, I provide a brief summary of each reference and explain what each discloses to a person of ordinary skill.

1. *Blumhardt*

49. *Blumhardt* (Ex. 1003) discloses a method of managing subscriber profile data that is identical to the one claimed in the '714 patent. As shown in Figs. 1 and 7 of *Blumhardt*, profile data is viewed and updated by receiving a profile request message (82) from a client (16); retrieving the subscriber profile data from the public switched telephone network (12) and forwarding it (84) to the client (16); receiving a service update request message (86) from the client (16); and forwarding an update for the subscriber profile data to the network (12).

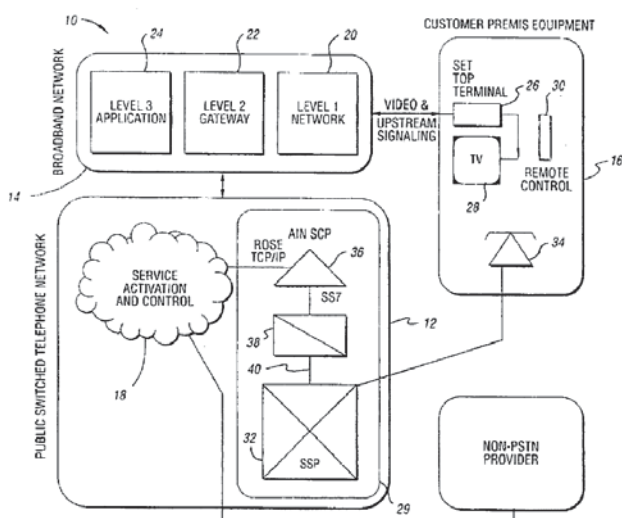


FIG. 1.

2. *Buhrmann*

50. *Buhrmann* (Ex. 1004) discloses a “personal information manager (PIM)” that generates user profile update data based on “profile requests entered

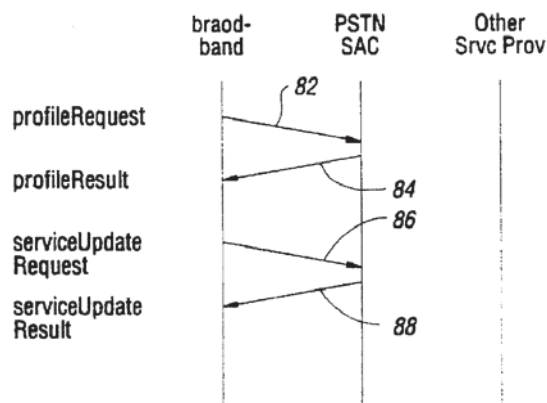
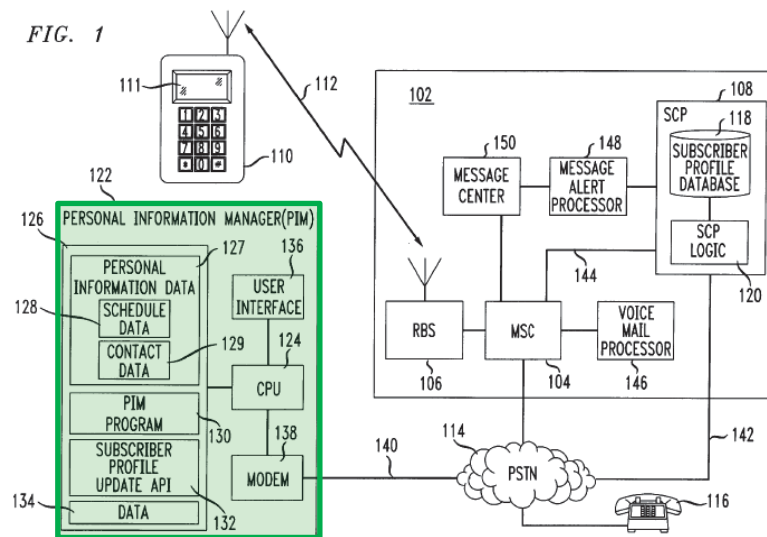


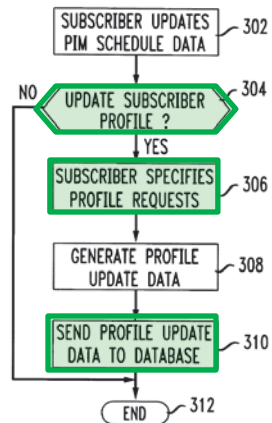
FIG. 7.

by the subscriber.” (See Ex. 1004, Abstract). *Buhrmann*’s PIM (122) transmits the profile data to be stored in a database in a telecommunications system. (Id.) User access is provided by a user interface 136, with a display 500. (Id., 8:4-9; FIGS. 1, 4-6).



51. Figure 3 of *Buhrmann* recites a method of generating profile update data for use in updating the subscriber profile database. Much as in the ‘714 patent, once the subscriber has requested to view their profile data, that data is retrieved and forwarded to the subscriber. A subscriber request to update profile data is received (steps 304, 306) by the PIM and forwarded to the database on the communications network (step 310).

FIG. 3



3. *An*

52. *An* (Ex. 1005) discloses “a method for allowing telephone subscribers to update over the Internet the features which are active on the telephone. A server on the Internet is connected to a profile repository which determines which features are active on each subscriber line. Subscribers with Internet access may access a special home page, and access their feature profile and make additions, deletions etc. to it. This eliminates the need for a human operator to process requests for changing feature profiles.” (Ex. 1005, Abstract)

53. As shown in Fig. 16 of *An*, profile data is viewed and updated by: receiving a query for a service profile (step 214) from a client; retrieving the service profile (step 216) from the network; forwarding a service profile page (step 218) to the client; receiving a service change request (step 220) from the client; and forwarding a table change request (step 222) to the network.

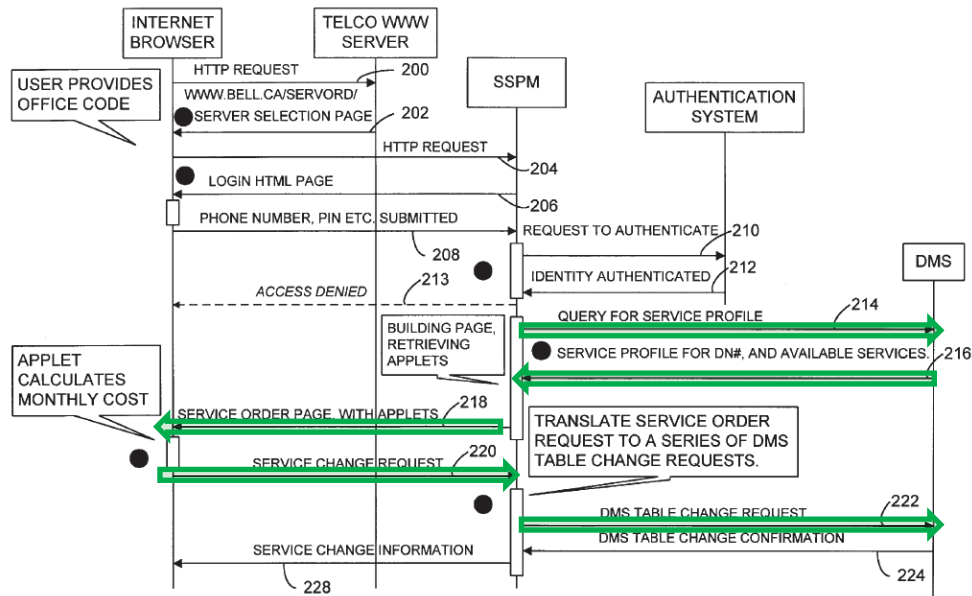
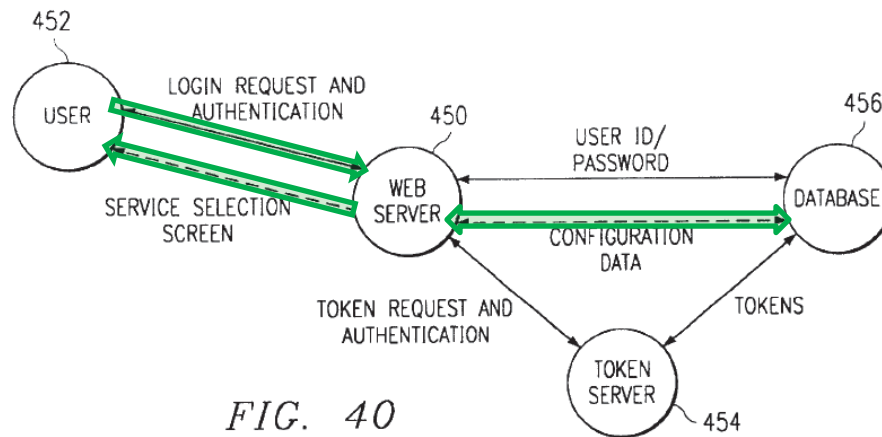


FIGURE 16

4. *Elliott*

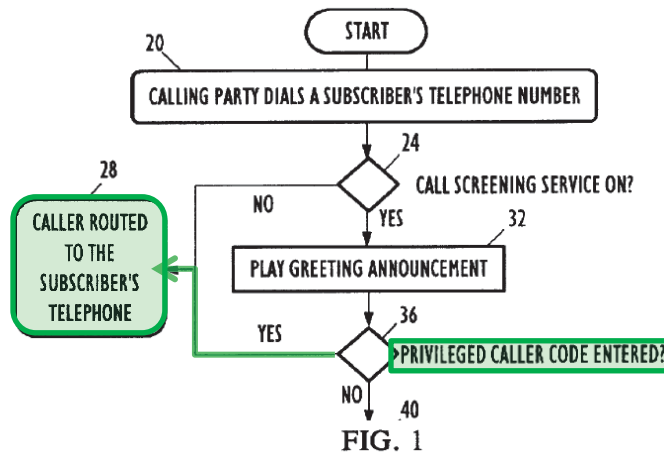
54. *Elliott* (Ex. 1007) discloses a comprehensive system for handling “telephone calls, data, and other multimedia information [in] a hybrid network which includes transfer of information across the internet.” (Ex. 1007, Abstract). In particular, *Elliott* discloses utilizing “user profile information” throughout the system to specify, enable, and control numerous system functions. (*Id.*) Users can manage and control network activities from a user terminal by accessing and updating their “user profile information.” (*Id.*) Figure 40 of *Elliott* illustrates, at a high level, the relationship between the user client (452), the web server (450), and the user profile information database (456). Figure 40 also highlights the communication paths utilized to receive subscriber requests for profile data from the user client, retrieve profile data from the network database via the web server,

forward the profile data to the user, receive a request to update profile data from the client, and forward an update to the network database via the web server.



5. *Boulware*

55. *Boulware* (Ex. 1008) discloses the use of access codes in a call screening system for a telephone switching network. In *Boulware*, a subscriber sets a “privileged caller code” which “allows a subscriber caller who has been provided with the code to be routed directly to the subscriber's telephone upon entering the code when the call screening service is active.” (Ex. 1008, 4:5-19; FIG. 1). The “privileged caller code” is stored as part of the subscriber’s profile data (e.g., “call screening service configuration information may reside on any one of a number of service control points (SCP).” (Ex. 1008, 5:5-20).



6. *Bayless*

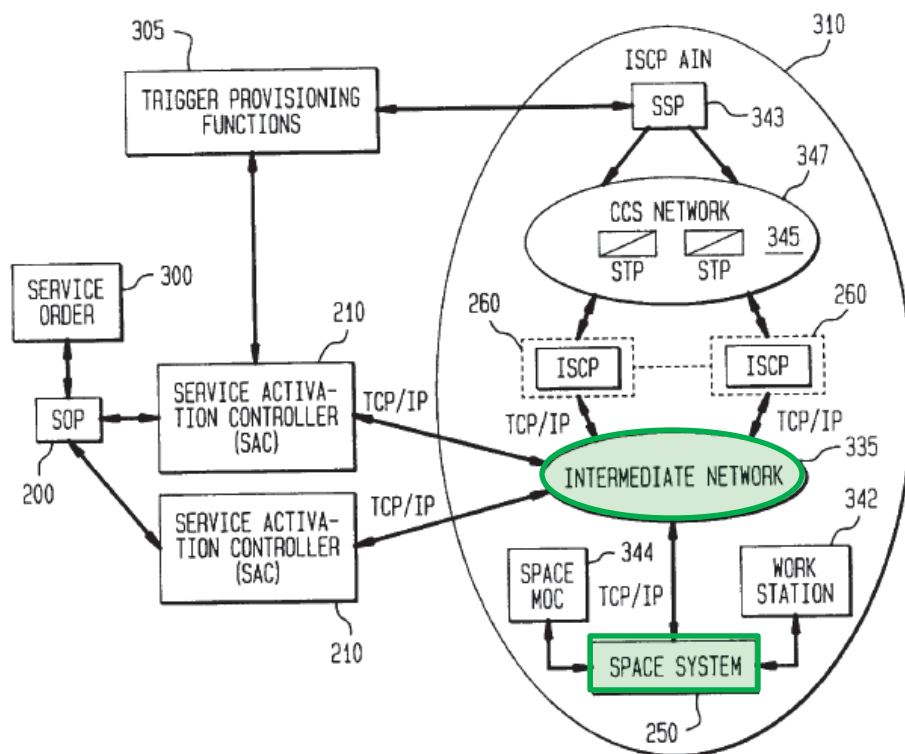
56. *Bayless* (Ex. 1009) discloses a “call logging feature” as one of several telephone functions in a telecommunications system (10) to be accessed through client computer system (14). (Ex. 1009, Abstract, 60:35-41; FIG. 111). A graphical user interface (116) “allow[s] the user to ... access databases of information associated with calling and called parties,” such as “time stamps of when the call began, whether the call went to voicemail, also time duration of the voicemail message, the parties to the call, etc.” (*Id.*, Abstract, 60:35-41, 52-55, 60-63).

7. *Beck*

57. *Beck* (Ex. 1010) discloses a profile management system topology in a telecommunications system for “interfacing a service activation controller and a service management system allow[ing] a remote system to generate, update and delete call processing records.” (*See* Ex. 1010, Abstract; 1:34-40). *Beck*’s system

includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (*Id.*, 4:25-34, FIGS. 2-3). SPACE is a service management system by Bellcore, or “Service Provisioning and Creation Environment (SPACE®) system.” (*Id.*, 1:55-57, 4:16-18, 27-33, FIGS 2-3).

FIG. 3



V. SUMMARY OF CONCLUSIONS REGARDING INVALIDITY

58. As discussed below, I believe the claims of the ‘714 patent are invalid for at least the following reasons:

A(1): Claims 1-5, 7, 13-15, 17, and 22 are unpatentable under § 102 as anticipated by *Blumhardt*. (See ¶¶ 59-63.)

A(2): Claims 8, 9, 18, and 19 are unpatentable under § 103 as obvious over *Blumhardt* in view of *Boulware*. (See ¶¶ 64-68.)

A(3): Claim 10 is unpatentable under § 103 as obvious over *Blumhardt* in view of *Bayless*. (See ¶¶ 69-73.)

A(4): Claims 14, 15, 21, and 22 are unpatentable under § 103 as obvious over *Blumhardt* in view of *Beck*. (See ¶¶ 74-78.)

B(1): Claims 1-7, 12-17, and 20 are unpatentable under § 102 as anticipated by *Buhrmann*. (See ¶¶ 79-82.)

B(2): Claims 8, 9, 18, and 19 are unpatentable under § 103 as obvious over *Buhrmann* in view of *Boulware*. (See ¶¶ 83-87.)

B(3): Claim 10 is unpatentable under § 103 as obvious over *Buhrmann* in view of *Bayless*. (See ¶¶ 88-92.)

B(4): Claims 14, 15, 21, and 22 are unpatentable under § 103 as obvious over *Buhrmann* in view of *Beck*. (See ¶¶ 93-97.)

C(1): Claims 1-7, 11, and 13-17 are unpatentable under § 102 as anticipated by *An*. (See ¶¶ 98-101.)

C(2): Claim 10 is unpatentable under § 103 as obvious over *An* in view of *Bayless*. (See ¶¶ 102-106.)

C(3): Claims 14, 15, 21, and 22 are unpatentable under § 103 as obvious over *An* in view of *Beck*. (See ¶¶ 107-111.)

D(1): Claims 1-7, 13-17, and 22 are unpatentable under § 102 as anticipated by *Elliott*. (See ¶¶ 112-114.)

B(3): Claim 10 is unpatentable under § 103 as obvious over *Elliott* in view of *Bayless*. (See ¶¶ 115-119.)

B(4): Claims 14, 15, 21, and 22 are unpatentable under § 103 as obvious over *Elliott* in view of *Beck*. (See ¶¶ 120-124.)

A. Claims 1-5, 7, 13-15, 17, and 22 are Anticipated by *Blumhardt*

59. In my opinion, Claims 1-5, 7, 13-15, 17, and 22 are unpatentable under 35 U.S.C. § 102(e) as anticipated by *Blumhardt*. I base this on ground A(1) in the claim chart of Table A in the IPR Petition, with which I agree; the disclosures of the '714 patent and *Blumhardt*; my own knowledge and experience; and the explanations of the laws of anticipation provided to me by Cox's counsel.

60. My review of *Blumhardt* confirms that it teaches all of the elements for a profile management method as recited in claims 1-5, 7, 13-15, 17, and 22 of the '714 patent. In particular, *Blumhardt* discloses receiving a subscriber request in the form of a profile request message 82 from a client (e.g., "Customer Premises Equipment (CPE) 16", including "Set Top Terminal 26" and "Television 28"). The client hosts a "Graphical User Interface" provided on the graphical user interface of "Television 28," which is configured to allow the subscriber to view and update subscriber profile data, which may include telephone numbers of authorized or unauthorized callers. (*See, e.g.*, Ex. 1003, 7:52-56, 8:6-13, 32-36, 9:38-41, 10:23-27, FIGS. 1, 3-7.) The profile management system communicates with the client using TCP/IP. (*See, e.g., id.*, 5:49-53.)

61. The subscriber profile data of *Blumhardt* is retrieved from the communications network upon receiving the subscriber request "via profile request message 82" from the client (e.g., "CPE 16"). (*See, e.g., id.*, 10:27-30

(“The service activation and control portion 18 of the PSTN 12 will respond with a profile result message 84”), FIG. 7.) The subscriber profile data (e.g., “profile result message 84”) is then forwarded to the client, which “will then display the information to the user over television 28.” (*See, e.g., id.*, 10:24-30, FIG. 7.)

62. *Blumhardt* discloses that “[w]hen the subscriber wishes to activate any changes made to their telephone services, the broadband network 14 will send a service update request message 86 to the service activation control portion 18 of the PSTN 12.” (*See, e.g., id.*, 10:29-30, FIGS. 3-7.) An update (e.g., “service update request message 86”) to the subscriber profile data (e.g., “telephone services”) is then forwarded to the communications network, where “[t]he data will then be loaded into the appropriate network elements and operations systems for service, and a service update result message 88 will be returned to the broadband application.” (*See, e.g., id.*, 10:29-37, FIGS. 3-7.)

63. *Blumhardt* discloses that subscriber profile data is retrieved from the communications network (e.g., “PSTN 12”) via at least one intermediate system—namely, broadband network 14,” which is shown “directly interfaced” with PSTN 12 in Figure 1, and which “is provided in electrical communication with CPE 16 and, more specifically, STT 26, which is connected to a Graphical User Interface (GUI) such as television 28.” (*See, e.g., id.*, 4:64-5:8, 10:27-34, FIGS. 1, 7.) In *Blumhardt*, the telephone network itself, as well as the PSTN Service Activation

Control (SAC), also act as intermediate systems (*See, e.g., id.*, FIG. 7.). FIG. 7 in *Blumhardt* illustrates the exchange of messages between a broadband network and a PSTN service provider when the telephone service subscriber desires to modify or view their telephone services, while the activation and control portion of the PSTN, as an intermediary responds with a profile result message. (*See, e.g., id.*, 10:20-27.) The service activation control portion 18 disclosed by *Blumhardt* is in effect a server, as it performs the basic tasks of service delivery, including the provision and modification of telephone services.

B. Claims 8-9 and 18-19 are Obvious Over *Blumhardt* in view of *Boulware*

64. In my opinion, Claims 8-9 and 18-19 are unpatentable under 35 U.S.C. § 103 as obvious over *Blumhardt* in view of *Boulware*. I base this on ground A(2) in the claim chart of Table A in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *Blumhardt*, and *Boulware*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

65. As discussed above, *Blumhardt* discloses a “system and method for purchasing, customizing and modifying switch-based and Advanced Intelligent Network (AIN) telephone services through the Broadband Network.” (*See Ex. 1003, Abstract.*) “The system and method utilize a Graphical User Interface (GUI)

... operative to access both Public Switched Telephone Network (PSTN) and non-PSTN telephone services.” (*Id.*) Through the GUI, *Blumhardt*’s system anticipates that “service subscribers have the capability to create, configure and modify services and they are provided immediate access.” (*Id.*, 8:6-8.) Examples of such services “include, but of course, are not limited to, call-waiting 60, three-way calling 62, and calling name delivery 64, all of which may be found under a broad heading entitled “Select the Features Desired.” (*Id.*, 8:28-29, 40-57.)

66. *Blumhardt* does not explicitly disclose the use of access codes. However, *Boulware* discloses “a call screening service ... for a telephone switching network.” (Ex. 1008, Abstract.) Specifically, *Boulware* provides a “privileged caller code,” which is stored as part of the subscriber’s profile data; for example, “call screening service configuration information may reside on any one of a number of service control points (SCP).” (*Id.*, 5:5-20.)

67. Because *Blumhardt* provides a system designed to create and modify a variety of telephone services, a skilled artisan would be readily motivated to incorporate the known telephone screening service of *Boulware* with the known system of *Blumhardt* to yield a predictable improvement of available services. *See* MPEP §§ 2143, 2144.

68. *Boulware* discloses that a subscriber may set a “privileged caller code,” (i.e., an access code), allowing a caller who knows the code to reach the

subscriber even when call screening is activated. (*See, e.g.*, Ex. 1008, 4:5-19; FIG. 1). The “privileged caller code” is stored as part of the subscriber’s profile data, which “may reside on any one of a number of service control points (SCP).” (*See, e.g., id.*, 5:5-20.)

C. Claim 10 is Obvious Over *Blumhardt* in view of *Bayless*

69. In my opinion, Claim 10 is unpatentable under 35 U.S.C. § 103 as obvious over *Blumhardt* in view of *Bayless*. I base this on ground A(3) in the claim chart of Table A in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *Blumhardt*, and *Bayless*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

70. As discussed above, *Blumhardt* discloses a “system and method for purchasing, customizing and modifying switch-based and Advanced Intelligent Network (AIN) telephone services through the Broadband Network.” (*See* Ex. 1003, Abstract.) “The system and method utilize a Graphical User Interface (GUI) ... operative to access both Public Switched Telephone Network (PSTN) and non-PSTN telephone services.” (*Id.*) Through the GUI, *Blumhardt*’s system anticipates that “service subscribers have the capability to create, configure and modify services and they are provided immediate access.” (*Id.*, 8:6-8.) Examples of such services “include, but of course, are not limited to, call-waiting 60, three-

way calling 62, and calling name delivery 64, all of which may be found under a broad heading entitled “Select the Features Desired.” (*Id.*, 8:28-29, 40-57.)

71. *Blumhardt* does not explicitly disclose the use of a reporting system. However, *Bayless* discloses a telecommunications system providing a variety of telephone features accessed through a graphical user interface at a client computer system. (Ex. 1009, Abstract.) One of the several telephone system features provided by *Bayless* is a “call logging feature,” designed to log information about each call generated or received by a user and store that information in a call log database. (*Id.*, 60:35-65.)

72. Because *Blumhardt* provides a system designed to create and modify a variety of telephone services (*see above*), a skilled artisan would be readily motivated to incorporate the known telephone call logging feature of *Bayless* with the known system of *Blumhardt* to yield a predictable improvement of available services. *See* MPEP §§ 2143, 2144.

73. *Bayless* discloses a “call logging feature” as one of several telephone functions that can be accessed and controlled through client computer system (14). (Ex. 1009, Abstract, 60:35-41; FIG. 111). A graphical user interface (116) allows the user to access information about calls and callers, such as “time stamps of when the call began, whether the call went to voicemail, also time duration of the

voicemail message, the parties to the call, etc.” (*See, e.g., id.*, Abstract, 60:35-41, 52-55, 60-63).

D. Claims 14-15 and 21-22 are Obvious Over *Blumhardt* in view of *Beck*

74. In my opinion, Claims 14-15 and 21-22 are unpatentable under 35 U.S.C. § 103 as obvious over *Blumhardt* in view of *Beck*. I base this on ground A(4) in the claim chart of Table A in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *Blumhardt*, and *Beck*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

75. As discussed above, *Blumhardt* provides a system “specifically adapted for use in purchasing and customizing switch-based services as well as purchasing, customizing and modifying Advanced Intelligent Network (AIN) telephone services.” (Ex. 1003, 3:28-37.) *Blumhardt*’s system architecture “includes a Service Switching Point (SSP) and an AIN Service Control Point (SCP) ... provided in electrical communication with the SSP and the PSTN service activation and control functionality.” (*Id.*) “The SCP is operative to provide an AIN service template for each of the PSTN service subscribers.” (*Id.*)

76. Similarly, *Beck* discloses a profile management system topology in a telecommunications system for “interfacing a service activation controller and a

service management system allow[ing] a remote system to generate, update and delete call processing records.” (See Ex. 1010, Abstract, 1:34-40.) *Beck*’s system includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (*Id.*, 4:25-34; FIGS. 2-3.) The SPACE service management system provides a “maintenance operating console 344 to monitor the status of the [Integrated] SCPs.”

77. Because *Blumhardt* provides a similar system architecture as *Beck*, also designed to perform user service management, a skilled artisan would be readily motivated to incorporate the known intermediate SPACE service management system of *Beck* with the known system of *Blumhardt* to yield a predictable improvement of the service management system. See MPEP §§ 2143, 2144.

78. *Beck* discloses a profile management system in a telecommunications network; it includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (See, e.g., Ex. 1010, Abstract, 1:34-40, 4:25-34; FIGS. 2-3.)

E. Claims 1-7, 12-17, and 20 are Anticipated by *Buhrmann*

79. In my opinion, Claims 1-7, 12-17, and 20 are unpatentable under 35 U.S.C. § 102(e) as anticipated by *Buhrmann*. I base this on ground B(1) in the

claim chart of Table B in the IPR Petition, with which I agree; the disclosures of the '714 patent and *Buhrmann*; my own knowledge and experience; and the explanations of the laws of anticipation provided to me by Cox's counsel.

80. My review of *Buhrmann* confirms that it teaches all of the elements for a profile management method as recited in claims 1-7, 12-17, and 20 of the '714 patent. In particular, *Buhrmann* discloses receiving from a client, via "profile request field 502," a request to view subscriber profile data, such as schedule data, or telephone numbers of authorized or unauthorized users. (*See, e.g., id.*, 8:20-26; FIG. 5.) For example, "the subscriber is provided with a schedule display for a chosen day via the user interface 136," which may include a graphical user interface display 500. (*See, e.g., Ex. 1004*, 6:37-53, 7:13-39, 8:4-14, FIGS. 1, 3-5.) the subscriber is presented, through the user interface 136, with a display 500 (FIG. 5)." A modem 138 retrieves the subscriber profile data from service control point (SCP) 108 through the PSTN 114 upon request from the client. (*See, e.g., id.*, 3:54-4:4, 7:36-39, 7:13-22, FIG. 1, 4, 5.)

81. A subscriber who wishes to modify the profile data may enter profile update requests into the PIM 122. (*See, e.g., id.*, 3:54-4:4, 7:55-65, FIGS. 3-5.)

82. The update for the subscriber's profile data is then forwarded to the SCP 108 of the communications network via modem 138 and PSTN 114" (*See, e.g., id.*, 3:54-4:4, 9:14-18, FIG. 3.)

F. Claims 8-9 and 18-19 are Obvious Over *Buhrmann* in view of *Boulware*

83. In my opinion, Claims 8-9 and 18-19 are unpatentable under 35 U.S.C. § 103 as obvious over *Buhrmann* in view of *Boulware*. I base this on ground B(2) in the claim chart of Table B in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *Buhrmann*, and *Boulware*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

84. As discussed above, *Buhrmann* discloses a personal information manager (PIM) that, “either automatically, or based on additional profile requests entered by the subscriber, generates profile update data associated with the personal information data.” (Ex. 1004, Abstract.) “The PIM transmits the profile update data to a database in a telecommunication system which stores subscriber profile data.” (*Id.*) By modifying the subscriber profile data, *Buhrmann* provides that “telecommunication services, including call completion services and message reminder services, are provided to the subscriber based on the updated subscriber profile data.” (*Id.*) *Buhrmann* further discloses that the subscriber profile record of a subscriber is updated in a database via PIM while the PIM can be in any type of electronic personal information device (*Id.*, 6:36-42). *Buhrmann* acknowledges that “telecommunications service providers are offering many different types of

telecommunication services to their customers,” and describes some examples including “call completion,” “call forwarding,” and “alert reminder” services. (*Id.*, 1:20-67.)

85. *Buhrmann* does not explicitly disclose the use of access codes. However, *Boulware* discloses “a call screening service ... for a telephone switching network.” (Ex. 1008, Abstract.) Specifically, *Boulware* provides a “privileged caller code,” which is stored as part of the subscriber’s profile data; for example, “call screening service configuration information may reside on any one of a number of service control points (SCP).” (*Id.*, 5:5-20.) The SCP that *Boulware* bases for call screening is discussed in Section III.B and is the same SCP that *Buhrmann* refers to as a subscriber profile database in the PSTN (Ex. 1004, 5:57-62.)

86. Because *Buhrmann* provides a system designed to create and modify a variety of telephone services, a skilled artisan would be readily motivated to incorporate the known telephone screening service of *Boulware* with the known system of *Buhrmann* to yield a predictable improvement of available services. *See* MPEP §§ 2143, 2144.

87. *Boulware* discloses that a subscriber may set a “privileged caller code,” (i.e., an access code), allowing a caller who knows the code to reach the subscriber even when call screening is activated. (*See, e.g.*, Ex. 1008, 4:5-19; FIG.

1). The “privileged caller code” is stored as part of the subscriber’s profile data, which “may reside on any one of a number of service control points (SCP).” (*See, e.g., id.*, 5:5-20.)

G. Claim 10 is Obvious Over *Buhrmann* in view of *Bayless*

88. In my opinion, Claim 10 is unpatentable under 35 U.S.C. § 103 as obvious over *Buhrmann* in view of *Bayless*. I base this on ground B(3) in the claim chart of Table B in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *Buhrmann*, and *Bayless*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

89. As discussed above, *Buhrmann* discloses a personal information manager (PIM) that, “either automatically, or based on additional profile requests entered by the subscriber, generates profile update data associated with the personal information data.” (Ex. 1004, Abstract.) “The PIM transmits the profile update data to a database in a telecommunication system which stores subscriber profile data.” (*Id.*) By modifying the subscriber profile data, *Buhrmann* provides that “telecommunication services, including call completion services and message reminder services, are provided to the subscriber based on the updated subscriber profile data.” (*Id.*) *Buhrmann* acknowledges that “telecommunications service providers are offering many different types of telecommunication services to their

customers,” and describes some examples including “call completion,” “call forwarding,” and “alert reminder” services. (*Id.*, 1:20-67.)

90. *Buhrmann* does not explicitly disclose the use of a reporting system. However, *Bayless* discloses a telecommunications system providing a variety of telephone features accessed through a graphical user interface at a client computer system. (Ex. 1009, Abstract.) One of the several telephone system features provided by *Bayless* is a “call logging feature,” designed to log information about each call generated or received by a user and store that information in a call log database. (*Id.*, 60:35-65.)

91. Because, as discussed above, *Buhrmann* provides a system designed to create and modify a variety of telephone services, a skilled artisan would be readily motivated to incorporate the known telephone call logging feature of *Bayless* with the known system of *Buhrmann* to yield a predictable improvement of available services. See MPEP §§ 2143, 2144.

92. *Bayless* discloses a “call logging feature” as one of several telephone functions that can be accessed and controlled through client computer system (14). (Ex. 1009, Abstract, 60:35-41; FIG. 111). A graphical user interface (116) allows the user to access information about calls and callers, such as “time stamps of when the call began, whether the call went to voicemail, also time duration of the

voicemail message, the parties to the call, etc.” (*See, e.g., id.*, Abstract, 60:35-41, 52-55, 60-63).

H. Claims 14-15 and 21-22 are Obvious Over *Buhrmann* in view of *Beck*

93. In my opinion, Claims 14-15 and 21-22 are unpatentable under 35 U.S.C. § 103 as obvious over *Buhrmann* in view of *Beck*. I base this on ground B(4) in the claim chart of Table B in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *Buhrmann*, and *Beck*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

94. *Buhrmann* provides a system “for updating a telecommunication subscriber profile and for providing telecommunication services based on the updated subscriber profile.” (Ex. 1004, 5:13-15.) *Buhrmann*’s system architecture includes a “mobile switching center (MSC)” connected to both the public switched telephone network (PSTN), service control point (SCP) 108, the voice mail processor 146, and the message center 150. (*Id.*, 5:52-57.) The SCP “contains a database 118 which contains subscriber profiles.” (*Id.*, 5:58-59.)

95. Similarly, *Beck* discloses a profile management system topology in a telecommunications system for “interfacing a service activation controller and a service management system allow[ing] a remote system to generate, update and

delete call processing records.” (See Ex. 1010, Abstract, 1:34-40.) *Beck*’s system includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (*Id.*, 4:25-34; FIGS. 2-3.) The SPACE service management system provides a “maintenance operating console 344 to monitor the status of the [Integrated] SCPs.”

96. Because *Buhrmann* provides a similar system architecture as *Beck*, also designed to perform user service management, a skilled artisan would be readily motivated to incorporate the known intermediate SPACE service management system of *Beck* with the known system of *Buhrmann* to yield a predictable improvement of the service management system. See MPEP §§ 2143, 2144.

97. *Beck* discloses a profile management system in a telecommunications network; it includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (See, e.g., Ex. 1010, Abstract, 1:34-40, 4:25-34; FIGS. 2-3.)

I. Claims 1-7, 11, and 13-17 are Anticipated by *An*

98. In my opinion, Claims 1-7, 11, and 13-17 are unpatentable because they are anticipated by *An*. I base this on ground C(1) in the claim chart of Table C in the IPR Petition, with which I agree; the disclosures of the ‘714 patent and *An*;

my own knowledge and experience; and the explanations of the laws of anticipation provided to me by Cox's counsel.

99. My review of *An* confirms that it teaches all of the elements for a profile management method as recited in claims 1-7, 11, and 13-17 of the '714 patent. In particular, *An* discloses receiving a subscriber "query for service profile" (step 214) from Internet access unit 58, which hosts a graphical user interface, namely, a web browser, and is connected to Web server 50 through the Internet. (*See, e.g.*, Ex. 1005, 5:6-12, 9:6-8, FIGS. 2-12, 16.) In response to the query, the service profile is retrieved from a digital multiplexed switch (DMS) on the communications network via at least one intermediate system, such as a subscriber service provisioning manager (SSPM). (*See, e.g., id.*, 4:16-46, 5:17-21, 8:31-36, 9:11-13, FIGS. 2-3, 15-16.) A person of ordinary skill would recognize that SSPM is a server for profile management.

100. The profile data is then used to build a customized page, which is sent to the web browser at the client. (*See, e.g., id.*, 5:17-21, 9:13-19, FIGS. 2-3, 16.) Using an HTML form or Java applet, subscribers can request updates to their telephony services, such as activating or deactivating services or changing parameters of those services. When a change is submitted to the server, it is handled by a "request processing" application. (*See, e.g., id.*, 5:22-34, 9:22-24, FIGS. 2-3, 16.) A service order request to update the subscriber profile data is then

sent to the DMS via a service order request. (See, e.g., Ex. 1005, 5:22-34, 9:24-30, FIGS. 2-3, 16.)

101. My review of the *An Provisional* shows that it fully describes the substance of the subject matter claimed in *An*. In particular, the *An Provisional* discloses that a subscriber “Query for service profile” is received by the DMS from a web browser, which allows a subscriber to “configure various services and features.” (See, e.g., Ex. 1006, pp. 16-25, 38, 49-51.) The DMS sends back the “service profile ... and available services.” (See, e.g., *id.*, pp. 50-51.) An application then builds a customized Service Order page, which “[t]ypically . . . includes the subscriber’s current service profile, other available services, an Applet which will react to user selection and calculates monthly cost etc.” (See, e.g., *id.*, pp. 50-51.) If the subscriber requests to change the service profile, the request is sent as “a series of DMS table change requests,” which are sent to the communications network for processing. (See, e.g., *id.*, pp. 50-51.) Confirmations of table changes are sent to the subscriber's browser. (See, e.g., *id.*, pp. 50-51.)

J. Claim 10 is Obvious Over *An* in view of *Bayless*

102. In my opinion, Claim 10 is unpatentable under 35 U.S.C. § 103 as obvious over *An* in view of *Bayless*. I base this on ground C(2) in the claim chart of Table C in the IPR Petition, with which I agree; the disclosures of the ‘714

patent, *An*, and *Bayless*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox's counsel.

103. *An* discloses a "system and method for allowing telephone subscribers to update over the Internet the features which are active on the telephone." (Ex. 1005, Abstract.) In particular, *An* describes that a "subscriber can locate his personal 'telephone feature profile' on the telephone service provider's server on the Internet, access it via a password, such as his/her 'calling card' PIN, and see at a glance the features and options currently active on his line/number." (*Id.*, 1:30-40.) "Additionally, the subscriber may submit requests to add/change/delete features, on-line." (*Id.*) According to *An*, "[e]xamples of some well known features typically available to subscribers include call forward, call waiting, ring again, speed call, message waiting, 3-way conferencing, softkey programming, and 800 services." (*Id.*, 3:15-19.)

104. *An* does not explicitly disclose the use of a reporting system. However, *Bayless* discloses a telecommunications system providing a variety of telephone features accessed through a graphical user interface at a client computer system. (Ex. 1009, Abstract.) One of the several telephone system features provided by *Bayless* is a "call logging feature," designed to log information about each call generated or received by a user and store that information in a call log database. (*Id.*, 60:35-65.)

105. Because *An* provides a system designed to create and modify a variety of telephone services, a skilled artisan would be readily motivated to incorporate the known telephone call logging feature of *Bayless* with the known system of *An* to yield a predictable improvement of available services. *See* MPEP §§ 2143, 2144.

106. *Bayless* discloses a “call logging feature” as one of several telephone functions that can be accessed and controlled through client computer system (14). (Ex. 1009, Abstract, 60:35-41; FIG. 111). A graphical user interface (116) allows the user to access information about calls and callers, such as “time stamps of when the call began, whether the call went to voicemail, also time duration of the voicemail message, the parties to the call, etc.” (*See, e.g., id.*, Abstract, 60:35-41, 52-55, 60-63).

K. Claims 14-15 and 21-22 are Obvious Over *An* in view of *Beck*

107. In my opinion, Claim 14-15 and 21-22 are unpatentable under 35 U.S.C. § 103 as obvious over *An* in view of *Beck*. I base this on ground C(3) in the claim chart of Table C in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *An*, and *Beck*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

108. In the system disclosed by *An*, “[s]ome features may be implemented directly with switches forming part of the PSTN 12, and other features may be

implemented on peripheral processing platforms which may be, for example, AIN (advanced intelligent network) based, or IN (intelligent network) based.” (Ex. 1005, 3:11-15.) *An*’s system architecture further includes "service manager programs (or simply ‘service managers’) running on service manager nodes 16 connected to or forming part of the PSTN 12,” which manage the provision of telephone features. (*Id.*, 3:20-23).

109. Similarly, *Beck* discloses a profile management system topology in a telecommunications system for “interfacing a service activation controller and a service management system allow[ing] a remote system to generate, update and delete call processing records.” (See Ex. 1010, Abstract, 1:34-40.) *Beck*’s system includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (*Id.*, 4:25-34; FIGS. 2-3.) The SPACE service management system provides a “maintenance operating console 344 to monitor the status of the [Integrated] SCPs.”

110. Because *An* provides a similar system architecture as *Beck*, also designed to perform user service management, a skilled artisan would be readily motivated to incorporate the known intermediate SPACE service management system of *Beck* with the known system of *An* to yield a predictable improvement of the service management system. See MPEP §§ 2143, 2144.

111. *Beck* discloses a profile management system in a telecommunications network; it includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (*See, e.g.*, Ex. 1010, Abstract, 1:34-40, 4:25-34; FIGS. 2-3.)

L. Claims 1-7, 13-17, and 22 are Anticipated by *Elliott*

112. In my opinion, Claims 1-7, 13-17, and 22 are unpatentable because they are anticipated by *Elliott*. I base this on ground D(1) in the claim chart of Table D in the IPR Petition, with which I agree; the disclosures of the ‘714 patent and *Elliott*; my own knowledge and experience; and the explanations of the laws of anticipation provided to me by Cox’s counsel.

113. My review of *Elliott* confirms that it teaches all of the elements for a profile management method as recited in claims 1-7, 13-17, and 22 of the ‘714 patent. In particular, *Elliott* discloses a user interface that enables subscribers to control their User Account Profile on a communication network through an intermediate system, such as web server 450. The user interface is accessible through PC software, such as a web browser, and allows subscribers to request their profile information through the “application profile.” A person of ordinary skill would understand that a web browser would access the World Wide Web using TCP/IP.

114. As Elliott describes, “[t]he application profile provides an intelligent interface between the user and his account information, which resides in the user account directory. The User Account Directory accesses the individual account information of users. Users are able to read and write to the directory, making updates to their accounts.” (*See, e.g.*, Ex. 1007, 61:28-62:67, FIGS. 40, 42, 57-61.) In particular, the user (i.e., subscriber) can update features or functionality, with the updates being sent to the communications network. (*See, e.g., id.*, 61:28-62:67, FIGS. 40, 42, 57-61.)

M. Claim 10 is Obvious Over *Elliott* in view of *Bayless*

115. In my opinion, Claim 10 is unpatentable under 35 U.S.C. § 103 as obvious over Elliott in view of Bayless. I base this on ground D(2) in the claim chart of Table D in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, Elliott, and Bayless; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

116. Elliott discloses a comprehensive system for handling “telephone calls, data, and other multimedia information [in] a hybrid network which includes transfer of information across the internet.” (Ex. 1007, Abstract). In particular, Elliott discloses utilizing “user profile information” throughout the system to specify, enable, and control numerous system functions. (*Id.*) For example, Elliott describes an Intelligent Network “call processing architecture for processing voice,

fax and related services.” (*Id.*, 13:5-18). Some services include “... number translation services, automatic or manual operator services, validation services and database services... [and] added services can be easily integrated into the system by enhancing the software in a simple and cost-effective manner.” (*Id.*, 13:5-18). Elliott confirms that “[t]he addition of new value added services is very simple and new features can be added by additional software and configuration...” (*Id.*, 16:7-10.)

117. Elliott does not explicitly disclose the use of a reporting system. However, Bayless discloses a telecommunications system providing a variety of telephone features accessed through a graphical user interface at a client computer system. (Ex. 1009, Abstract.) One of the several telephone system features provided by Bayless is a “call logging feature,” designed to log information about each call generated or received by a user and store that information in a call log database. (*Id.*, 60:35-65.)

118. Because Elliott provides a system designed to easily integrate new telecommunications system services, a skilled artisan would be readily motivated to incorporate the known telephone call logging feature of Bayless with the known system of Elliott to yield a predictable improvement of available services. *See* MPEP §§ 2143, 2144.

119. *Bayless* discloses a “call logging feature” as one of several telephone functions that can be accessed and controlled through client computer system (14). (Ex. 1009, Abstract, 60:35-41; FIG. 111). A graphical user interface (116) allows the user to access information about calls and callers, such as “time stamps of when the call began, whether the call went to voicemail, also time duration of the voicemail message, the parties to the call, etc.” (*See, e.g., id.*, Abstract, 60:35-41, 52-55, 60-63).

N. Claims 14-15 and 21-22 are Obvious Over *Elliott* in view of *Beck*

120. In my opinion, Claims 14-15 and 21-22 are unpatentable under 35 U.S.C. § 103 as obvious over *Elliott* in view of *Beck*. I base this on ground D(3) in the claim chart of Table D in the IPR Petition, with which I agree; the disclosures of the ‘714 patent, *Elliott*, and *Beck*; my own knowledge and experience; and the explanations of the laws of obviousness provided to me by Cox’s counsel.

121. *Elliott* describes an Intelligent Network “call processing architecture for processing voice, fax and related services.” (Ex. 1007, 13:5-18). *Elliott*’s architecture includes “a hybrid (internet-telephony) switch 221 [that] switches circuits on a public switched telephone network (PSTN) 256 with TCP/IP or UDP/IP ports on an internet network 295,” and is “composed of PSTN network interfaces (247, 260), high-speed Internet network interfaces (271, 272, 274), a set of Digital Signal Processor (DSP)s (259, 263), a time-division multiplexed bus

262, and a high-speed data bus 275.” (*Id.*, 85:58-67). “The switch 221 may also query an external Service Control Point (SCP) 276 on the internet to request routing instructions.” (*Id.*, 86:12-14).

122. Similarly, *Beck* discloses a profile management system topology in a telecommunications system for “interfacing a service activation controller and a service management system allow[ing] a remote system to generate, update and delete call processing records.” (*See* Ex. 1010, Abstract, 1:34-40.) *Beck*’s system includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (*Id.*, 4:25-34, FIGS. 2-3.) The SPACE service management system provides a “maintenance operating console 344 to monitor the status of the [Integrated] SCPs.” One of ordinary skill in the art would understand that the SCP system used in *Elliot* is the same as the one discussed in Section IV.B as *Elliot* classifies the switching points (SPs) into SSP, STP, and SCP. (*Id.* 105:67-68 and 106:1-3).

123. Because *Elliot* provides a similar system architecture as *Beck*, also designed to perform user service management (see above), a skilled artisan would be readily motivated to incorporate the known intermediate SPACE service management system of *Beck* with the known system of *Elliot* to yield a predictable improvement of the service management system. *See* MPEP §§ 2143, 2144.

124. *Beck* discloses a profile management system in a telecommunications network; it includes an intermediate network for generating and updating call processing records, which operates “together with [a] service management system/SPACE 250.” (*See, e.g.*, Ex. 1010, Abstract, 1:34-40, 4:25-34; FIGS. 2-3.)

125. I declare under penalty of perjury that the foregoing is true and correct.

Date: 5/18/2015

Nader F. Mir

Nader Mir, Ph.D.

Cox Communications, Inc. Mir Appendix A

Nader F. Mir

Curriculum Vitae (CV), Last Update: April 15, 2015

Department of Electrical Engineering
San Jose State University, California
One Washington Square
San Jose, CA 95192

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<http://www.engr.sjsu.edu/nmir>

Education

Ph.D. Degree: May 1995, Electrical Engineering, Washington University.

Dissertation: Analysis & Design of High-Speed Switching Systems (for Computer Networks)

M.Sc. Degree: Dec. 1990, Electrical Engineering, Washington University.

Specialization: Design and Analysis of Computer and Communication Networks and Protocols.

B.Sc. Degree: May 1985, Electrical Engineering, Polytechnic University.

Concentration: Electronic Circuits.

Rank: top 5%.

Areas of Specialization

- Computer Networks and Protocols, TCP/IP
- Internet Applications, Web, Client-Server, VoIP, CDNs, and Video/Multimedia Networking
- Networking Devices and Interfaces, Switches, and Routers.
- Telecommunication and Telephone Networks, PSTN and SS7, Internet Media Gateways.
- Wireless and Mobile Networks.

Professional Career Summary

- **August 2005 to Present:**
 - **Professor** (and the **Department Associate Chair**, 2006 – 2008), Department of Electrical Engineering, San Jose State University, CA,
 - **Director** of University's graduate programs offered to several Silicon Valley Companies (since 2006).
 - **Patent Litigation Consultant:** experience in patent infringement and invalidity including expert-report preparation, deposition, and court testimony.
- **August 2001 to July 2005:** **Associate Professor**, Department of Electrical Engineering, San Jose State University, CA.
- **August 1996 to July 2001:** **Assistant Professor**, Department of Electrical & Computer Engineering, University of Kentucky, Lexington, KY.
- **January 1995 to June 1996:** **Research Scientist Engineer** (in charge of engineering projects in communication engineering and high-speed computer networks), Advanced Telecommunications Institute, Stevens Institute of Technology, Hoboken, New Jersey.
- **Sep. 1989 to January 1995:** **Research Assistant**, Computer & Communications Research Center, Washington University, St. Louis, Missouri.
- **May 1985 to December 1988:** **Telecomm R&D Engineer** (in charge of engineering projects in telecommunication engineering), Telecommunication Research & Development Center (TRDC), Surrey

CONSULTING, INDUSTRY, AND MANAGEMENT EXPERIENCE

Patent Litigation Expert Witness Experience on patent and technology litigation cases for various law firms. Experience gained:

- Analysis of patent claims
- Prior art research for patent invalidity
- Consulting on term constructions
- Technology examination against patent infringement
- Patent infringement contention
- Claim construction assistance to counsel
- Preparation of invalidity/infringement/non-infringement claim charts
- Preparation of invalidity/infringement/non-infringement expert reports
- Participated in Markman preparation process
- Deposition testimony
- Court testimony

1. Case: AT&T v. Cox Communications

Date: January 2015 – present
Type: Patent Invalidity -- *Inter Partes Review* (IPR)
Worked on: Defendant side
Law Firm: Proskauer Rose LLP. - Boston, MA

2. Case: Cisco Systems v. Arista Networks

Date: January 2015 – present
Type: Patent Invalidity and Non-Infringement -- *International Trade Commission* (ITC)
Worked on: Defendant side
Law Firm: Fish & Richardson P.C- Washington, D.C.

3. Case: Nomadix v. Hospitality Core

Date: December 2014 – present
Type: Patent Invalidity
Worked on: Defendant side
Law Firm: Mehrman Law Office, PC - Atlanta, GA

4. Case: Marvell Semiconductor v. Intellectual Ventures

Date: November 2014 – April 2015
Type: Patent Invalidity -- *Inter Partes Review* (IPR)
Worked on: Defendant side
Law Firm: McAndrews, Held & Malloy Ltd. - Chicago, IL

5. Case: iControl Networks, Inc v. Vringo Infrastructure Inc.

Date: August 2014 – September 2014
Type: Patent Invalidity -- *Inter Partes Review* (IPR)
Worked on: Petitioner side
Law Firm: K&L Gates LLP – Palo Alto, CA

6. Case: IBM v. Intellectual Ventures II, LLC

Date: June 2014 – February 2015
Type: Patent Invalidity -- *Inter Partes Review* (IPR)
Worked on: Defendant side
Law Firms: Knobbe Marten Intellectual Property Law – Irvine, CA

- 7. Case: Compass Bank Commerce Bancshares, Inc., and First National Bank of Omaha v. Intellectual Ventures II, LLC**
Date: June 2014 – February 2015
Type: Patent Invalidity -- *Inter Partes Review* (IPR)
Worked on: Defendant side
Law Firms: Knobbe Marten Intellectual Property Law, – Irvine, CA
- 8. Two Cases: Palo Alto Networks v. Juniper Networks - and - Juniper Networks v. Palo Alto Networks**
Date: May 2014 – June 2014
Type: Patent Infringement
Worked on: Plaintiff side (in the first case) - and - Defendant side (in the second case)
Law Firm: Morrison and & Foerster, LLP – San Francisco, CA
- 9. Case: GlobeTechtrust (GTT), LLC v. AT&T, Inc, FairPoint Communications, CenturyLink, Qwest Communications, CenturyTel, Embarq Comm., and Savvis Comm., and West IP Communications Inc.**
Date: April 2014 – October 2014
Type: Patent Analysis -- *Inter Partes Review* (IPR)
Worked on: Petitioner side
Law Firm: Russ August & Kabat, LLP – Los Angeles, CA.
- 10. Case: Genband US LLC v. Metaswitch Networks.**
Date: March 2014 – November 2014
Type: Patent Non-infringement, and Patent Invalidity
Worked on: Defendant side
Law Firm: Quinn Emanuel Urquhart & Sullivan, LLP – San Francisco, CA
- 11. Case: Google Inc., v. Rockstar Consortium US LLP and Mobilestar Technologies LLC.**
Date: Feb. 2014 – (Nov. 2014, all tasks completed waiting to hear if there is a deposition)
Type: Patent Invalidity -- *Inter Partes Review* (IPR)
Worked on: Petitioner side
Law Firm: Oblon, Spivak, McClelland, Maier Neustadt, LLP – Houston, TX
- 12. Case: Straight Path v. Sony, Google, Netflix, YouTube, and Toshiba**
Date: January 2014 – May 2014
Type: Patent Invalidity and Non-Infringement -- *International Trade Commission* (ITC)
Worked on: Defendants side
Law Firm: Wolf, Greenfield & Sacks, P.C – Boston, MA (for Sony, Google, Netflix, and YouTube)
Keker & Vannest, LLP – San Francisco, CA (for Netflix and Toshiba)
- 13. Case: Straight Path v. Sharp**
Date: September 2013 – January 2014
Type: Patent Invalidity and Non-Infringement -- *International Trade Commission* (ITC)
Worked on: Defendant side
Law Firm: Gibson, Dunn & Crutcher LLP - Washington, D.C.
- 14. Case: Brixham Solution Ltd v. Juniper Networks.**
Date: June 2013 – January 2014
Type: Patent Infringement
Worked on: Plaintiff side
Law Firm: Hagens Berman Sobol Shapiro LLP - Seattle, Washington
- 15. Case: TM Patents, L.P. and T.M. Creditors LLC v. Cisco Systems, Inc.**
Date: May 2013 – December 2013
Type: Patent Non-infringement, and Patent Invalidity

Worked on: Defendant side
Law Firm: Goodwin Procter, LLP - Boston, MA

16. Case: AIP Acquisition LLC v. Level 3 Comm., LLC, Teoco Corp., and Sonus Networks, Inc.

Date: May 2013 – October 2013
Type: Patent Invalidity
Worked on: Defendant side
Law Firm: Akin Gump Strauss Hauer & Feld LLP - Houston, TX

17. Case: Ambit v. Mitel Technologies Inc.

Date: March 2013 – August 2013
Type: Technology Failure Litigation
Worked on: Defendant side
Law Firm: Hiersche, Hayward, Drakeley & Urbach, P.C. - Addison, TX

18. Case: InterDigital Communications v. Samsung, Nokia, ZTE and Huawei

Date: February 2013 – October 2013
Type: Patent Infringement
Worked on: Plaintiff side
Law Firm: Wilson Sonsini Goodrich & Rosatti (WSGR) - Washington, D.C. and Palo Alto, CA

19. Case: AIP Acquisition LLC v. iBasis Inc.

Date: December 2012 – January 2013
Type: Patent Invalidity
Worked on: Defendant side
Law Firm: Latham & Watkins LLP - Washington, DC

20. Case: Pragmatus v. Pantech.

Date: October 2012 – December 2012
Type: Patent Non-infringement and Invalidity
Worked on: Defendant side
Law Firm: H.C. Park & Associates PLC.

21. Case: Tekelec v. Performance Technology Inc.

Date: August 2010 – May 2011
Type: Patent Infringement
Worked on: Plaintiff side
Law Firm: Katten Muchin Rosenman LLP - Chicago, IL

22. Case: Atser Research Technologies Inc. v. Raba-Kistner.

Date: September 2007 - August 2009
Type: Patent Non-infringement and Invalidity
Worked on: Defendant side
Law Firm: Holland & Knight LLP - Washington, DC

23. Case: j2 Global Communication Inc. and Catch Curve Inc. v Protus IP Solution Inc.

Date: May 2007 – September 2009
Type: Patent Non-infringement
Worked on: Defendant side
Law Firm: Smart & Biggar LLP - Ottawa, ON

24. Case: Catch Curve Inc. v. Protus IP Solution Inc.

Date: December 2006 - March 2007
Type: Patent Non-infringement

Worked on: Defendant side
Law Firm: Orrick, Herrington & Sutcliffe LLP - New York, NY

Industry and Engineering Design Experience

- Feb. 2012 to Jan. 2013, **Computer Networking and Communication Engineering Consultant**: *CITS Inc.*, San Jose, California. Worked as a Computer & Communication Network expert and trained company's customers and consulted on various topics such as: Label-Switching Technology, Interoperability between Telephone Network and the Internet, and Multimedia-IPTV Technology, Network Monitoring, Cloud Computing, and Wireless Networks.
- Summer 1998, **Computer Networking Consultant**: *Dupont Computers Inc.*, Washington, D.C. Worked as a computer network management and wireless networks expert.
- Jan. 1995 to Jun. 1996, **Research Scientist Engineer**: *Advanced Telecommunications Institute, Stevens Institute of Technology*, Hoboken, New Jersey. In charge of engineering projects in communication engineering such as high-speed LANs and PSTN.
- Sep. 1989 to Jan. 1995, **Computer/Communications Chip-Design Engineer**: *Computer & Communications Research Center (CCRC), St. Louis, MO*:
 - i. Designed a VLSI gigabit switch controller chip for a high-speed ATM network using CMOS technology, complexity of 200,000 gates, fabricated by Hewlett Packard.
 - ii. Designed a VLSI Huffman Encoder Transmitter in an EE graduate project using CMOS technology, complexity: 800,000 gates, fabricated by MOSIS, University of Southern California.
- Jul. 91 to Dec. 1991, **Electrical Engineering Consultant**, *Bussmann Company*, St. Louis, Missouri, a manufacturer of precision switches. Invited for instructing company's engineers on electrical engineering topics and preparing them for the national PE exam.
- May 1985 to Dec. 1988, **Telecommunications Systems Research & Development Engineer**, *Telecommunication Research & Development Center (TRDC)*, Surrey. Participated in design of a high-speed switched for digital Private Branch Exchange" (PBX) and SS7 networks. The PBX system was connected to the public telephone switching network after completion. Received the best "design/idea" award.

University Management and Administrative Experience

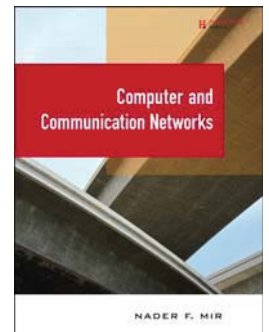
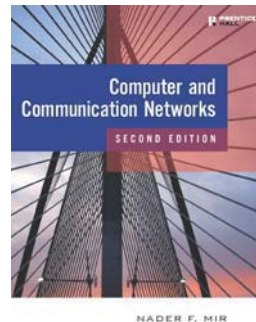
- **Department Associate Chair**, Electrical Engineering Department, SJSU, 2006-08.
- **Advisory Board Member of San Jose Evergreen College**, 2011- present.
- **Director, Off-Campus SJSU-MSE Academic Programs**, Each program brings an average of \$500,000 in revenue to SJSU:
 - Lockheed-Martin Space Corp. CA, MSE Optical Sensors and Networks Program, 2006-2010.
 - KLA-Tencor Corp. CA, MSE Optical Sensors and Networks Program, since 2007.
 - MBA/MSE Dual-Degree, since 2009.
 - MS-EE with emphasis on Analog and Mixed Signals, since 2010.
- **Chair**, Computer Networking Curriculum Committee, Department of Electrical Engineering, SJSU, (2001 to present).
- **Chair**, Governance Committee, Electrical Engineering Department, 2006-2009.
- **Chair**, Electrical Engineering Chairman Search Committee, 2005.
- **Member of EE Department Chair Review**, Electrical Engineering Department, SJSU, 2009-2010.

- **Member of Doctor of Engineering Degree Program Development**, 2002-2005
- **Member of Electrical Engineering Department Committees:** 1) Graduate Committee, 2)Sabbatical Committee 2009-10, 3) Area Committee in Networking and Communication Systems, 4) RTP Committee, 4) Member of Recruitment Committee 6) ABET EE Program Evaluation Task Force.
- **Member of College of Engineering Committees:**1) Graduate Studies and Research (G&R) Committee, 2) College of Engineering, Research Excellence Tiger Team, 3) Committee for SJSU-UCSC Joint EE-Doctoral Degree Program Development, 4) Inter-Departmental Special Interest Group.
- **Member of University Senate Committees:**
 1. University Senate Policy Curriculum & Research Committee (C&R),
 2. General Education Advisory Panel (GEAP) on Math Concept,
 3. Policy Committee of University Senate--Instruction and Student Affairs Committee (I&SA),
 4. Policy Committee of University Senate--Committee on Committee (CoC).
- **Associate Member of the Graduate-Studies Faculty**, Department of Electrical Engineering, University of Kentucky. July 1996 to June 2002.
- **Member of Faculty Search Committees**, University of Kentucky, San Jose State University.
- **Director:** Communication Network Design Lab, UKLAN, University of Kentucky, 2000-2001.

BOOKS, RESEARCH, PUBLICATIONS, PATENTS, AND AWARDS

Books Published

1. N. F. Mir, "[Computer and Communication Networks](#)," a worldwide adopted textbook, *Pearson Prentice-Hall Publisher*, with instructor's supplements including: a Solution Manual and Power Points:
 - 2nd Edition, 874 pages: published in 2015, ISBN 0133814742
 - 1st Edition, 656 pages: published in 2006, ISBN 0131389106 (reprinted three times)
 - Translated to several languages by *Pearson Prentice-Hall Publishing Company*
 - Numerous adoptions by US and International Universities.



2. N. F. Mir, "Video Communication Engineering," *Academic & Engineering Publisher Inc.*, 296 pages, 1st Edition 1986, 2nd Edition 1990.

U.S. Patent

1. [US Patent 7,012,895 B1](#), Inventor: N. F. Mir, Packet-Switching Network with Symmetrical Topology and Method of Routing Packets," Petitioner: Intellectual Properties Office, application no. 09/715,693, disclosure no. 907, March 15, 2006.

Journal Editorial Positions

1. **2005 to present**, [Technical Editor](#), *IEEE Communication Magazine*,

Nader F. Mir - Page 6 of 19

2. **2012 to present**, Editorial Advisory Board Member, *Journal of Computing and Information Technology*.
3. **2004 to 2012**, Technical Editor, *Journal of Computing and Information Technology*.
4. **2008**, Guest Editor, Special Issue of CIT Journal, "Recent Advances in Computer and Communication Networks Technology."
5. **2005**, Editorial Board Member, *International Journal of Internet Technology and Secured Transactions*

Journal Publications

1. **N. F. Mir**, Richard Torres, Sudha Swamy, M. Sarhan, "Evaluation of Protocol Independent Multicast (PIM) and CBT Multicast Protocol on Fault-Tolerance" *International Journal of Computing and DS (IJCDS)*, vol. 2, no. 2, pp. 59-64, May2014.
2. **N. F. Mir**, M. Sarhan,, H. Gao, C. Shivakumar, "Performance Analysis of IMS Signaling in Multimedia Networks," *Journal of Information Engineering (JIE)*, Reference ID Number: IE004, Vol. 1, No. 1, December 2012.
3. M. Musa and **N. F. Mir**, "An Analytical Approach for Mobility Load Balancing in Wireless Networks," *Journal of Computing and Information Technology (CIT)*, Reference Number 1848-1931, Vol. 19, No. 3, p.p. 169-178, December 2011.
4. S. M. Musa and **N. F. Mir**, "Handoff Management of Mobile Agents in High-Speed Wireless Networks," *International Journal of Communication Networks and Internet Security (IJCNIS)*, Reference Number 6409-24864, Volume 2, No. 3, December 2010.
5. G. Singh, S. Prabhu, **N. F. Mir**, S. M. Musa, "Architectural Improvement on a Channel Aware QoS Scheduler for 802.16 WiMAX Base Stations," *Journal of Open Problems in Science and Engineering*, Manuscript Id: MJOPSE010212, Volume 1, Issue. 2, November 2009.
6. S. M. Musa, M. N. Sadiku, and **N. F. Mir**, "Blocking and Clipping Estimations for TDM in Satellite Communication Technology," *Technology Interface Journal*, Reference No. 1523-9926, No. 1, Volume 9, October 2008.
7. **N. F. Mir**, "Recent Advances in Computer and Communication Networks Technology," Guest Editor Column, *Journal of Computing and Information Technology (CIT)*, Special Topics in Computer Networks, Volume 2, pp 1-3, June 2008.
8. S. M. Musa, C. M. Akujoubi, and **N. F. Mir**, "Voice over DSL (VoDSL) Information Management for Broadband Communication Network Access," *Journal of Computing and Information Technology (CIT)*,Reference No. 802, Volume 1, pp 1-8, March 2007.
9. S. M. Musa, E. Opara, C. M. Akujuobi, and **N. F. Mir**, "Utilization of Buffers for Performance Evaluation of Local Area Network Protocols," *Communications Journal of the International Information Management Association (CJ-IIMA)*, Volume 6, Issue 4, pp. 19-32, September 2006.
10. M. Veyseh, B. W. Wei, and **N. F. Mir**, "A Protocol for Clustering and Node Synchronization in Sensor Networks," *wseas Transactions on Communications*, Ref. No.129, Issue 6, Volume 5, pp 1093-1100, June 2006.
11. M. Veyseh, B. W. Wei, and **N. F. Mir**, "An Information Management Protocol to Control Routing and Clustering in Sensor Networks," *Journal of Computing and Information Technology*, Reference: No.587, No. 1, Volume 1, pp 53-68, March 2005.
12. **N. F. Mir**, "Performance Analysis of Efficient Multi-path Crossbars," *Journal of Computer Communications*, Reference: COMCOM2420, Volume 27/3, pp 306-314, February 2004.

13. **N. F. Mir**, "An Efficient Switching System for Next-Generation Large-Scale Computer Networking," *Journal of Computer Networks*, Volume 40, Issue 2, Page 305-315, October 2002.
14. **N. F. Mir**, "Analysis of A High-Speed Interconnection Network," *Journal of Interconnection Networks (JOIN)*, Volume 3, No. 1&2, Page 49-65, June 2002.
15. **N. F. Mir**, "Architectures of Fast Internet Switches for SoC Technology," *IEEE Can Journal of Electrical and Computer Engineering*, Invited Article, Vol. 26, No. 3/4, p.p. 147-151, December 2001.
16. **N. F. Mir**, K. D. Donohue, and Y. M. Matcheswala, "Efficient Architectures and Algorithms for Multicasting Data in Computer Communication Networks," *Journal of Computer Communications*, Vol. 24/15-16, p.p. 1618-1625, Sep. 2001.
17. **N. F. Mir**, "Data Multicast Techniques, Architectures and Algorithms," *IEEE Communications Magazine*, Volume 39, Number 9, p.p. 164-170, Sep. 2001.
18. J. Lu and **N. F. Mir**, "Applications of a New ABR Traffic Controller in Communication Systems," *International Journal of Communication Systems*, Vol. 3, No. 2001:14633- 642, DOI: 10.1002/Dac.493, June 2001.
19. **N. F. Mir**, "MPLS Technology for IP Voice Communications," *Journal of Communication Systems Design*, Vol. 14, No.2, pp. 16-19, Feb 2001.
20. C.-K. Mok and **N. F. Mir**, "An Efficient Interconnection Network for Large-Scale Computer Communications Applications," *Journal of Network and Computer Applications*, Vol. 23, no. 2, p.p. 59-75, July 2000.
21. **N. F. Mir**, "Evaluation of an ATM LAN Constructed With a Cyclic Deflection Network," *Journal of Computer Communications*, Vol. 21, no. 7, pp. 661-669, June 1998.
22. **N. F. Mir**, "Efficient Multicast Approach in an ATM Switching Network for Multimedia Applications," *Journal of Network and Computer Applications*, Vol. 21, pp. 31-39, January 1998.
23. **N. F. Mir**, "ATM Switching Architectures for Wafer-Scale Integration," *IEEE Transactions on VLSI Systems*, Vol. 4, no. 4, pp. 465-471, Dec. 1996.
24. **N. F. Mir**, "Design of a CMOS Buffered Switch for a Gigabit ATM Switching Network," *IEEE Journal of Solid-State Circuits*, Vol. 30, no. 1, pp. 11-18, Jan. 1995.

Conference Refereed Paper Publications & Invited Talks

1. V. Vatsavai, S. Suravarapu and **N. F. Mir**, "Implementation of P2P File Sharing Using Bi-directional Chord Protocol Algorithm," *Proceedings of 2nd International Conference on Computer and Communication Engineering (ICoCoE'15)*, Paper Reference: 1570081459, June 9-11, 2015.
2. **N. F. Mir**, S. Chandran, and H. K. Vijay, "Packet Size Optimization in Peer-to-Peer IPTV Networking Schemes," *Proceedings of the IEEE International Conference on Industrial Automation, Information and Communications Technology (IEEE /IAICT'14)*, Paper Reference: 1569957661, Bali Island, Aug. 28-30, 2014.
3. L. Wesley, **N. F. Mir**, A. Patel and R. Sondur, "Evidence-Based Power Management in Distributed Sensor Networks," *Proceedings of the 8th International Conference on Advances in Computer Science (ACS'13)*, Acceptance Paper Reference: 801-033, April 10-12, 2013.

4. **N. F. Mir**, D. Doshi, and M. Gandhi, "Comparison of Routing in VPN-Based Packet-Switching Network and Label-Switching Network," *Proceedings of the 8th International Conference on Advances in Computer Science (ACS'13)*, Acceptance Paper Reference: 801-006, Phuket, Thailand April 10-12, 2013.
5. **N. F. Mir**, "A Short Contribution on Efficient Modeling of Parallel Queues," *Proceedings of the 31st International Conference on Modeling, Identification and Control (AsiaMIC'12)*, Acceptance Paper Reference: 769-004, April 1-4, 2012.
6. **N. F. Mir**, M. Vashisht and S. Agarwal, "Analysis of IPTV Traffic over Computer Communication Networks," *Proceedings of the 7th International Conference on Advances in Computer Science and Engineering (AsiaMIC'12)*, Acceptance Paper Reference: 770-002, Phuket, Thailand, April 1-4, 2012.
7. **N. F. Mir**, M. Nataraja, and S. Ravikrishnan, "A Performance Evaluation Study of Video-On-Demand Traffic over IP Networks," *the 5th IEEE International Symposium on Security and Multimodality in Pervasive Environments (SMPE'11)*, Acceptance Paper Reference: SPME003, Singapore, March 22-25, 2011.
8. **N. F. Mir**, "VoIP, and Multimedia over Broadband IP Networks," a tutorial presentation, *Proceedings of the 10th International Conference on Networks (ICN'11)*, St. Maarten, Netherland Antilles, January 23-28, 2011.
9. **N. F. Mir**, S. Ravikrishnan and M. Nataraja, "An Analysis of Reliable and Scalable Video-On-Demand Networks," *Proceedings of the 10th International Conference on Networks (ICN'11)*, Paper Reference: 10011, St. Maarten, Netherland Antilles, January 23-28, 2011.
10. **N. F. Mir**, S. Pumpichet, and H. Chan, "An Efficient Inter-Domain Routing in Wireless Mesh Networks," *Proceedings of the 9th International Conference on Parallel and Distributed Computing and Networks (PDCN'10)*, Paper Reference 676-012, Innsbruck, Austria, February 16-18, 2010.
11. **N. F. Mir**, "Overview of VoIP, and Multimedia over IP Networks," Invited Tutorial Talk, *The 9th International Conference on Parallel and Distributed Computing and Networks (PDCN'10)*, Innsbruck, Austria, February 16-18, 2010.
12. **N. F. Mir**, "Mobile IP and Computing, and WiMAX Technology," Invited Tutorial Talk, *The 20th International Conference on Parallel and Distributed Computing Systems (PDCS'08)*, Orlando, Florida, November 16-18, 2008.
13. G. Singh, S. Prabhu, and **N. F. Mir**, "A High-Performance Parallel Scheduling Architecture for WiMAX Base-Stations," *The 20th International Conference on Parallel and Distributed Computing Systems (PDCS'08)*, Paper Reference 631-073, Orlando, Florida, November 16-18, 2008.
14. **N. F. Mir**, "Wireless Networks, Mesh Networks, Mobile IP, and WiMAX Technology," Invited Tutorial Talk, *International Conference on Communication Systems and Networks (CSN'08)*, Langkawi, Malaysia, April 2-4, 2008.
15. **N. F. Mir**, "Analysis of Wireless Sensor Networks," Invited Talk, *SJSU, College of Engineering*, San Jose, CA, March 14, 2008.
16. S. M. Musa, M. N.O. Sadiku, C. M. Akujuobi, and **N. F. Mir**, "Performance of Integrated Digital Loop Carrier in Network Convergence Technology," *Proceedings of IEEE Symposium for Space Applications of Wireless & RFID 2007 (SWIRF'07)*, Houston, Texas, May 8-9, 2007.
17. **N. F. Mir**, "Design of an Optical Internet Switch Fabric," *Proceedings of 11th International Conference on Internet and Multimedia Systems and Applications (IMSA'07)*, Ref. number 577-066, Honolulu, Hawaii, August 20-22, 2007.

18. S. M. Musa, and **N. F. Mir**, "Analysis of Blocking and Clipping for TDM in Satellite Communication Systems," *Proceedings of International Conference on Information, Communications, and Energy Systems and Technologies (ICEST'07)*, Ohrid, Macedonia, June 24-25, 2007.
19. **N. F. Mir**, "A Large Scale Optical Burst Switch Architecture," *International Conference on Networking and Services (ICNS'07)*, Athens, Greece, June 19-23, 2007.
20. S. M. Musa, E. U. Opara, C. Akujuobi, and **N. F. Mir**, "Utilization of Buffers for Performance Evaluation of Local Area Network Protocols," *17th Annual Conference of International Information Management Association*, New Rochelle, New York, October 4-7, 2006.
21. M. Veyseh, B. W. Wei and **N. F. Mir**, "An Energy-Efficient Decentralized Clustering Protocol for Wireless Sensor Networks," *Proceedings of the 5th International Conference on Tele-Communications and Informatics (TELE-INFO'06)*, Ref. number 520-129, pp. 293-298, Istanbul, Turkey, May 27-29, 2006.
22. **N. F. Mir**, "Wireless Mobile Ad-Hoc Network Technology," Invited Tutorial Talk, *International Conference on Communications, Internet and Information Technology (CIIT'05)*, Cambridge, Massachusetts, Oct30-November 3, 2005.
23. M. Veyseh, B. W. Wei and **N. F. Mir**, "A Decentralized Energy Efficient Cluster Formation Protocol for Wireless Sensor Networks," *IEEE 10th IFIP International Conference on Personal Wireless Communication, (PWC'05)*, manuscript#66, Colmar, France, August 25-27, 2005.
24. **N. F. Mir**, "A Wireless Sensor Network to Protect Water Reservoirs," *Proceedings of International Conference on Networks and Communication Systems (NCS'05)*, Paper # 464-170, Krabi, Thailand, April 18-20, 2005.
25. **N. F. Mir**, "Routing in a Wireless Sensor Network," *Proceedings of International Conference on Communications, Internet and Information Technology (CIIT'04)*, Paper # 433-113, St. Thomas, Virgin Islands, November 22-24, 2004.
26. **N. F. Mir**, "Wireless Sensor Network Technology," Invited Tutorial Talk, *International Conference on Communications, Internet and Information Technology (CIIT'04)*, St. Thomas, Virgin Islands, November 22-24, 2004.
27. **N. F. Mir**, "A Self-Organizing Wireless Sensor-Actuator Network," *Proceedings of International Conference on Embedded Systems and Applications, Focused Session: Sensor-Actuator Networks for Engineering (ESA'04)*, Paper # ESA2480, Las Vegas, Nevada, June 21-24, 2004.
28. **N. F. Mir** and Chwei K. Mok, "Performance of a Parallel-Plane Switching Network," *Proceedings of IEEE 7th International Symposium on Parallel Architectures, Algorithms and Networks (ISPN'04)*, Hong Kong, China, May 8-10, 2004.
29. **N. F. Mir**, "Analysis of Fault-Tolerant Multi-Path Crossbars," *Proceedings of IEEE Global Telecommunications Conference (GLOBECOM'03)*, Paper # 1568908427, San Francisco, CA, December 1-5, 2003.
30. **N. F. Mir**, "Multicast Management in Presence of Node/Link Failures," *Proceedings of IEEE International Conference on Software, Telecommunications and Computer Networks (SoftCom'03)*, Paper # 3752, Venice, Italy, Oct. 7-10, 2003.
31. **N. F. Mir**, "Performance of Protocol Independent Multicasting Technique with Node/Link Failures in High-Speed Networks," *IEEE Conference on Systemics, Cybernetics and Informatics*, Orlando, Florida, July 27-30, 2003.

32. **N. F. Mir**, "A Performance Model of Regional and Cellular Handoff for Multimedia Mobile Users in Wireless Networks", *IEEE Conference on Systemics, Cybernetics and Informatics*, Orlando, Florida, July 27-30, 2003.
33. **N. F. Mir**, "A 3-D Interconnection Network and Comparison with Hyper-Cubes," *IEEE Conference on Systemics, Cybernetics and Informatics*, Orlando, Florida, July 27-30, 2003.
34. **N. F. Mir** and A. Chien, "Simulation of Converging Voice over IP in High-Speed Networks", *Abstract of OPNETWORK Conference*, Washington, D.C., August 26 - August 30, 2002.
35. N. F. Mir, "Performance Evaluation of Multi-path Crossbars," *Proceedings of 8th IEEE International Conference on Communication Systems (ICCS'02)*, Singapore, November 24-27, 2002.
36. **N. F. Mir**, "An Efficient Switch System for Next-Generation Large-Scale Computer Networking," *Proceedings of 8th IEEE International Conference on Communication Systems (ICCS'02)*, Singapore, November 24-27, 2002.
37. **N. F. Mir** and A. Chien, "Simulation of Voice over MPLS Communication Networks," *Proceedings of 8th IEEE International Conference on Communication Systems (ICCS'02)*, Singapore, November 24-27, 2002.
38. **N. F. Mir** and I. Habib, "Architecture of a Fast Internet Switch on Chip," joint meeting of *IEEE 5th World Multi-conference on Systemics, Cybernetics and Informatics and 7th Int'l Conference on Information Systems Analysis and Synthesis (ISAS'01)*, Invited, Orlando, Florida, July 22-25, 2001.
39. M. Y. Choy and **N. F. Mir**, "Performance Modeling of Multimedia Traffic in Mobile Wireless Networks," *Proceedings of IEEE Military Communications Conference (MILCOM'2000)*, Los Angeles, CA, October 22-25, 2000.
40. **N. F. Mir**, "Stochastic Evaluation of Multimedia Traffic Hand-off in Wireless Mobile Networks," *IEEE 4th World Multi-conference on Systemics, Cybernetics, and Informatics (SCI'00)*, Invited, Orlando, Florida, July 23, 2000.
41. J. Lu and **N. F. Mir**, "Simulation of a High-Quality ABR Traffic Control Mechanism," *Proceedings of IEEE OPNETWORK'99 Conference* (poster session), Washington, DC, Aug. 30 - Sep. 2, 1999.
42. J. Lu and **N. F. Mir**, "Combining CAPC and Weighted Traffic Scheduling to Achieve High Quality ABR Traffic Control," *Proceedings of IEEE ATM Workshop'99*, Kochi-City, Japan, May 24-27, 1999.
43. **N. F. Mir**, "Traffic Performance Evaluation of High-Speed Communication Networks," *Proceedings of INFORMS Conference on Information Systems and Technology (CIST'99)* Cincinnati, Ohio, May 2-5, 1999.
44. **N. F. Mir**, "Analysis of Non-uniform Traffic in a Switching Network," *Proceedings of IEEE 7th International Conference on Computer Communications and Networks (ICCCN'98)*, Lafayette, Louisiana, Vol. 1, pp. 668-673, Oct. 12-15, 1998.
45. **N. F. Mir**, A New Method to Guarantee Quality-of-Service in ATM Networks," *City University of New York*, Invited, New York, NY, Feb. 23, 1998.
46. Z. Zhang, I. Habib, **N. F. Mir**, "Supporting Multimedia Traffic over Microcellular Networks," *Proceedings of IEEE Global Telecommunications Conference (GLOBECOM'97)*, Phoenix, Arizona, Vol. 1, pp. 145-149, Nov. 3-8, 1997.
47. **N. F. Mir**, "Evaluation of a Multistage Switching Network with Broadcast Traffic," *Proceedings of IEEE Electronics Industries Conference*, Boston, Massachusetts, May 6-8, 1997.

48. **N. F. Mir**, "Comparison of Switching Networks on Performance and Complexity," *IEEE Electronics Industries Conference*, (presentation only), Boston, Massachusetts, May 6-8, 1997.
49. **N. F. Mir**, "High-performance Multicast Switching Systems: Two Architectures for ATM," *City University of New York*, (Invited), New York, NY, Dec.18, 1997.
50. **N. F. Mir** and Y. Tang, "Performance Evaluation of Benes Networks under Non-uniform Traffic," *Proceedings of IEEE International Conference on Communications (ICC'96)*, Dallas, Texas, June 17-22, 1996.
51. **N. F. Mir**, J. Bose, and D. R. Vaman, "Modeling and Traffic Evaluation of an Integrated Wireless-ATM Network," *Proceedings of IEEE ELECTRO '96 Conference Somerset*, New Jersey, April 30 - May 2, 1996.
52. **N. F. Mir**, "Bandwidth Allocation in a Deflection Routing Network," *IEEE ELECTRO '96 Conference* (presentation only), Somerset, New Jersey, April 30 - May 2, 1996.
53. **N. F. Mir**, J. Bose, and D. R. Vaman, "Simulation Study of End-to-End Communications in a Wireless Network," *Proceedings of IEEE Wireless Communication Systems Symposium (WCSS'95)*, (invited paper), New York, N.Y., Nov. 28 - Dec. 2, 1995.
54. **N. F. Mir**, "Performance Analysis of an ATM Local Computer Network," *Proceedings of IEEE 20th Conference on Local Computer Networks (LCN'95)* Minneapolis, Minnesota, no. 20, Oct. 15-18, 1995.
55. **N. F. Mir**, "Evaluation of an ATM Local Computer Network," *Publication of the North Jersey Section of IEEE*, New Jersey Institute of Technology, Invited, Newark, New Jersey, Oct. 27, 1995.
56. **N. F. Mir**, J. Bose, and D. R. Vaman, "Performance Evaluation of an Integrated Wireless-ATM Network," *Proceedings of IEEE ATM Workshop*, Washington, D.C., Oct. 30 - Nov. 1, 1995.
57. S. Ghosh, P. Morreale, **N. F. Mir**, "An Identification Technique for Agent Mobility in ATM Networks," *Proceedings of IEEE ATM Workshop*, Washington, D.C., Oct. 30 - Nov. 1, 1995.
58. **N. F. Mir**, "Simulation of a Manhattan-Street Network for High-Speed ATM Applications," *Proceedings of IEEE International Conference on Communications (ICC'95)*, Seattle, Washington, Vol. 3, pp. 1937 - 1942, June 18-22, 1995.
59. **N. F. Mir**, "A Wafer-Scale ATM Switching System Based on the Manhattan-Street Network," *Proceedings of IEEE 7th International Conference on Wafer-Scale Integration (ICWSI'95)* San Francisco, CA, no. 7, pp. 182-190, Jan. 19-21, 1995.
60. **N. F. Mir**, "Comparison and Performance Analysis of a Deflection-Routing Networks," *Proceedings of International Symposium on Communication Systems*, Stockholm, Sweden, no. 12, Oct. 13-17, 1994.
61. **N. F. Mir**, "Traffic Evaluation of High-Speed Multiplexing Switches Using Deterministic Queueing Analysis," *Proceedings of International Conference on Information Systems* (presentation only), Tokyo, Japan, Vol. 2, pp. 1002-1008, August 24-28, 1994.
62. **N. F. Mir**, "Wafer-Scale ATM Systems," *IEEE Data Acquisition Conference Poster, Invited*, Fermi-lab, Illinois, Oct. 26-28, 1994.
63. **N. F. Mir**, Performance, "Analysis of a Large-Scale Switching System for High-Speed ATM Networks," *Proceedings of IEEE Global Telecommunications Conference (GLOBECOM'94)*, San Francisco, Calif., Vol. 1, pp. 145-149, Nov. 27-Dec. 1, 1994.

64. **N. F. Mir**, "Wafer-Scale Integration as a Technology Choice for High-Speed ATM Switching Systems," *Proceedings of IEEE 6th International Conference on Wafer-Scale Integration (ICWSI'94)*, San Francisco, CA, no. 6, pp. 282-292, Jan. 19-21, 1994.
65. **N. F. Mir**, "VLSI Design of a Gigabit ATM Switch," *Proceedings of IEEE 8th Workshop on VLSI in Communications*, Lake Tahoe, CA, no. 8, Sep. 14-16, 1993.
66. **N. F. Mir**, "Complexity evaluation of a large communication networks," *Industrial Partnership Program Seminar (IPP '93)*, Washington University, St. Louis, MO, no. 9, Dec. 14-15, 1993.
67. **N. F. Mir** and S. T. Jaquille, "Available Bit-Rate Traffic Flow Control in High-Speed Communication Networks," *Proceedings of International Symposium on High Speed Switching Systems*, Paris, France, April 12-14, 1993.
68. **N. F. Mir**, "Analysis and Bandwidth Allocation in Broadband Communication Networks with VBR Traffic," *Proceedings of 2nd International Conference on Broadband Communication Networks*, pp. 132-138, London, England, Vol. 1, Jan. 23-27, 1992.

Conference Organizing Chair, Member of Organizing or Steering Committees, and Member of Technical Program Committees (TPC)

1. Conference TPC Member, *International Telecommunication Union (ITU) - Trust in the Information Society Conference*, Barcelona, Spain, December 9-11 2015.
2. Conference Organizing Chair, *The IEEE International Conference on Computer Communication Networks (ICCCN 2015) ContextQoS15*, Las Vegas, August 3 - 6, 2015.
3. Conference TPC Member, *Annual International Conference on ICT: Big Data, Cloud and Security (ICT-BDCS 2015)*, Singapore, July 12 - 14th, 2015.
4. Conference TPC Member, *The International Conference on Future Computational Technologies and Applications*, (FutComp 2015) Nice, France, March 22 - 25th, 2015.
5. Conference TPC Member, *the 6th FTRA International Conference on Computer Science and its Applications (CSA-14)*, Guam, USA, December 17 - 19th, 2014.
6. Conference Chair, *IEEE International Conference on Industrial Automation, Information and Communications Technology (IEEE /IAICT'14)*, session IPTV technology, Bali Island, Aug. 28-30, 2014.
7. Conference Organizing Chair, *The IEEE International Conference on Computer Communication Networks (ICCCN 2014) ContextQoS14*, Shanghai, China, August 3 - 7, 2014.
8. Conference TPC Member, *"The 2nd International Conference on Security in Computer Networks and Distributed Systems (SNSD'14)"*, Thiruvananthapuram, India, March 12-13th, 2014
9. Conference TPC Member, *"The 5th FTRA International Conference on Computer Science and its Applications (CSA'13)"*, Danang, Vietnam, December 18 – 21st, 2013
10. Conference TPC Member, *IADIS International Conference on Theory and Practice in Modern Computing (TPMC)*, Prague, Czech, July 22-24, 2013.
11. Conference Organizing Chair, *The IEEE International Conference on Computer Communication Networks (ICCCN 2013) ContextQoS13*, Nassau, Bahamas, July 30 - August 2, 2013.
12. Conference TPC Member, *The 6th Annual International Conference on Computer Games Multimedia and Allied Technologies (CGAT 2013) – MobiCONA'13*, Singapore, April 22-29, 2013.
13. Conference Organizing Chair, *The IEEE International Conference on Computer Communication Networks (ICCCN 2012) ContextQoS12*, Munich, Germany, July 30 - August 2, 2012.
14. Conference TPC Member, *IADIS Conference on Theory and Practice in Modern Computing (TPMC)*, Lisbon Portugal, July 17-19, 2012.
15. Conference Organizing Chair, *The IEEE International Conference on Computer Communication Networks (ICCCN' 2011) ContextQoS11*, Maui, Hawaii, August 1-4, 2011
16. Conference TPC Chair and Conference Editor-in-Chief, *International Conference on Mobile Communications, Networking and Applications (MobiCONA'11)*, June 27-28, 2011.

17. Conference Chairing Position, *the 10th International Conference on Networks (ICN'11)*, Peer-to-Peer and Overlay Networking session, St. Maarten, Netherland Antilles, January 23-28, 2011.
18. Conference TPC Member, *The International Conference on Information Science and Applications (ICISA'11)*, Jeju Island, South Korea, April 27-29, 2011.
19. Conference TPC Member, *The International Conference on Communications Systems and Technologies (ICCST'10)*, San Francisco, CA, October, 20-22, 2010.
20. Conference TPC Member, *The International Conference on Models of Information and Communication Systems (MICS'10)*, November 2-4, 2010
21. Conference TPC Member, *The International Conference on Telecommunications and Multimedia (TEMU'10)*, Chania, Crete, Greece, 14-16 July 2010
22. Conference TPC Member, *The 4th International Conference on Digital Telecommunications (ICDT'09)* Colmar, France, July 19-24, 2009
23. Conference TPC Member, *The 2nd International Conference on Digital Telecommunications (ICDT'07)* Silicon Valley, CA, July 1-6, 2007
24. Conference TPC Member, *IEEE Workshop on High Performance Switching and Routing (HPSR'07)*, Brooklyn, NY, May 30-June 1 2007.
25. Conference TPC Member, *IEEE Workshop on Wireless and Sensor Networks (WSNET) under ICPP*, Xian, China, Sep. 2007
26. Conference TPC Member, *IEEE Sarnoff Symposium (SARNOFF'07)*, Princeton, NJ, 2-6 April 30-May 2, 2007.
27. Conference TPC Member, *IEEE International Conference in Communications (ICC'07)*, Wireless Comm. Symposium, June 12-16, 2007.
28. Conference TPC Member, *IEEE International Conference on Wireless Information Networks and Systems (WINSYS07)*, Barcelona, Spain, July 28-31, 2007.
29. Conference TPC Member, *IEEE Global Communication Conference (GLOBECOM'06)*, Symposium: World Class Solutions: Networking the Globe, San Francisco, CA, 27 November - 1 December, 2006.
30. Conference TPC Member, *IEEE Sarnoff Symposium (SARNOFF'06)*, Princeton, NJ, 2-6 March 27-28 2006.
31. Conference TPC Member, *IEEE Wireless Communications and Networking Conference (WCNC'06)*, Las Vegas, NA, 2-6 Apr 2006.
32. Conference TPC Member, *IEEE International Conference on Information Society (i-Society 06)*, Miami, Florida, USA, 7-10 August 2006.
33. Conference TPC Member, *International Conference on Telecommunications and Multimedia*, Heraklion, Crete, Greece, 5-7 July 2006,
34. Conference TPC Member, *IEEE International Conference on E-business and Telecommunication Networks (ICETE'05)*, Reading, UK, October 3-7 2006.
35. Conference TPC Member, *IEEE Workshop on High Performance Switching and Routing (HPSR'05)*, Hong Kong, May 12-14, 2005.
36. Conference TPC Member, *IASTED Telecommunication Conferences*, all conference during 2004-2007.
37. Conference Chair, *IEEE Global Communication Conference (GLOBECOM'05)*, Wireless Internet II (R4.2) Session, Sat. Louis, MO, Nov. 2005.
38. Conference Chair, *IASTED International Conf. on Communications, Internet and Information Technology (CIIT 2004)*, Mobile & Wireless Communication session, St. Thomas, Virgin Islands, Nov. 22-24, 2004.
39. Conference Chair, CIIT 2004 conference, Las Vegas, Nevada, June 21-24, 2004.
40. Conference Chairing Position, *International Conference on Embedded Systems and Applications*, 4-ESA: Code Generation & Optimization of Embedded session, Las Vegas, Nevada, June 21-24, 2004.
41. Conference Chairing Position, *IEEE International Conference on Communication Systems (ICCS'02)* High-Speed Networks Session,, Singapore, November 24-28, 2002.
42. Conference TPC Member, *IEEE International Conference in Communications (ICC'02)*, New York, NY, June 12-16, 2002.
43. Conference General Session Committee Member, *IEEE International Conference on Communications, Circuits and Systems (ICCCAS & WeSino Expo'02)*, Computer and Telecom Networks, Chengdu, China, July 2002.
44. Conference Steering Committee Member, *IEEE International Conference on Communications, Circuits and Systems (ICCCAS & WeSino Expo'02)*, Computer and Telecom Networks, Chengdu, China, July 2002.
45. Conference Chairing Position, *IEEE Global Communication Conference (GLOBECOM'01)*, QoS for Multimedia Applications (QOS06), Services, and Networks Session, San Antonio, TX, Nov. 2001.

46. Conference Chairing Position, *IEEE Global Communication Conference (GLOBECOM'01)*, Mobility Management (WCS12) Session, San Antonio, TX, Nov. 2001.
47. Conference Chairing Position, *IEEE International Conference in Communications (ICC'01)*, Ad-Hoc Mobile Networking Session, Helsinki, Finland, June 11-15, 2001.
48. Conference Chairing Position, Computer Networking, *IEEE Southeastcon Conference*, Session 1, Lexington, KY, March 26, 1999.
49. Conference Chairing Position, ATM Networking *IEEE Workshop on VLSI in Communications*, Switch Design Session, Lake Tahoe, California, Sep. 19-21 1993.

Professional Membership and Publicity

1. 1992 to present, numerous citations in professional records worldwide
2. Senior Member: *Institute of Electrical & Electronic Engineers (IEEE)*
3. Senior Member: IEEE Communications Society
4. Former Member: American Management Association (AMA)
5. Member: California Faculty Association (CFA)
6. In News: April 2000, "*The Record of UK Research Digest*," Computer Network Research Awards
7. Name in: *Who's Who in America, Science and Engineering*, 2000, 5th and 6th Edition
8. Sep. 1995, *IEEE Newsletter, New Jersey communications society*, Invited speaker, pp. 2NJ
9. In News, "*Electronic Engineering Times Magazine*," Silicon Tricks Boost, pp. 16, Issue 821, Dec. 5, 1994Apr. 4, 1994
10. In News, "*Technology News-Letter of Electronic Design Magazine*," Wafer-Scale Switches Being Forecast," pp. 30, Vol. 42, no. 7
11. In University News: "*The Record of Washington University, The Record of Scholarly and Professional Activities, Speaking of ...*," pp. 7 Jan. 27, 1994.

Awards, Honors & Research Grants

1. **Award**, Charles W. Davidson College of Engineering *Faculty Award for Excellence in Scholarship*, April 30, 2015
2. **Grant**: PI, Agency: College of Engineering, SJSU, Title: *professional development grant*, Duration: Nov. 2014 – May 2015.
3. **Author Award**, *San Jose State University Annual Author Award*, October 27, 2014.
4. **Honor**, *Performance Tutorial Award*, "Cloud Computing and Applications in VoIP and Media Networks," *the 8th International Conference on Advances in Computer Science (ACS'13)*, Phuket, Thailand, April 10-13, 2013.
5. **Honor**, *Performance Tutorial Award*, "Latest Applications in Computer Networks: from IPTV to Mobile Multimedia Networks," *the 7th International Conference on Advances in Computer Science and Engineering (AsiaMIC'12)*, Reference: 770-002, Phuket, Thailand, April 1-4, 2012.
6. **Nominated for the University Outstanding Professor Award 2010 and Made It to Final Top 3 Nominee list**: in academic year 2009-2010.
7. **Honor**, *Outstanding Performance Tutorial Award*, "Overview of VoIP, and Multimedia over IP Networks," *The 9th International Conference on Parallel and Distributed Computing and Networks (PDCN'10)*, Innsbruck, Austria, February 16-18, 2010.
8. **Honor**, *Outstanding Performance Tutorial Award*, "Mobile IP and Computing, and WiMAX Technology," *The 20th International Conference on Parallel and Distributed Computing Systems (PDCS'08)*, Orlando, Florida, November 16-18, 2008.
9. **Honor**, *Accomplished Tutorial Award*, "Wireless Networks, Mesh Networks, Mobile IP, and WiMAX Technology," *International Conference on Communication Systems and Networks (CSN'08)*, Langkawi, Malaysia, April 2-4, 2008.
10. **Grant**: Co-PI, Agency: CSU Research Award, Title: *Research Excellence (Development Grant) Award, Design and Analysis of Smart Sensor Networks*, Submitted: May, 2006, Duration: 1 year: August 1, 2006 to July 30, 2007.

11. **Grant:** PI, Agency: College of Engineering, SJSU, Title: *Excellence (Development Grant) Grant Award, Efficient Security Protocols and Guidelines for Various Classes of Wireless Sensor Networks*, Duration: May, 2006 – Aug 2006.
12. **Honor,** *Outstanding Tutorial Performance Award*, “Wireless Mobile Ad-Hoc Network Technology,” Invited Tutorial Talk, *International Conference on Communications, Internet and Information Technology (CIIT’05)*, Cambridge, Massachusetts, Oct30-November 3, 2005.
13. **Honor,** *Outstanding Performance Tutorial Award*, “Wireless Sensor Network Technology,” *International Conference on Communications, Internet and Information Technology (CIIT’04)*, St. Thomas, Virgin Islands, November 22-24, 2004.
14. **Grant:** PI, Agency: CENIC Network Research Foundation, Title: *Phase-I, An End-To-End Protocol for Protection of California Forests from Fire through Surveillance Sensor Networks*, Duration: July 1, 2004 to January 30, 2005.
15. **Honor,** *Most Effective Professor Award*, Institute of Electrical and Electronic Engineers (IEEE)-SJSU Society, San Jose State University, May 14, 2004.
16. **Grant:** PI, Agency: CSU Research Award, Title: *CSU Award for Research, Scholarship or Creative Activity*, Submitted: April, 2004, Duration: 1 year: August 1, 2004 to July 30, 2005.
17. **Honor,** *Outstanding Faculty Member Award*, Golden-Key International Honor Society, San Jose State University, April 6, 2004.
18. **Grant:** PI, Agency: College of Engineering, SJSU, Title: *College of Engineering Research Excellence (COE Research Tiger Team)*, Duration: Jan, 2003 – June 2003.
19. **Grant:** PI, Agency: College of Engineering, SJSU, Title: *Research Development Grant Award on a Distributed Wireless Sensor Networks*, Duration: May, 2003 – Aug 2004.
20. **Award,** PI, Agency: College of Engineering, SJSU, Title: *College of Engineering Teaching Excellence Award (College Instructional Recognition Grant)*, Duration: Jan, 2003 – June 2003.
21. **Grant:** PI, Agency: OPNET Corp., Title: *Software Tool License Fee Award, 20 Licenses of OPNET Tool for San Jose State University*, Approved for 2002 and 2003, (several research/thesis/grant-proposals were generated using this tool).
22. **Grant:** PI, Agency: College of Engineering, SJSU, Title: *Lottery Fund*, Duration: June, 2002.
23. **Grant:** PI, Agency: Laboratory for Advanced Networking, Lexington, KY, Title: *Research Grant for Graduate Students*, Duration: 2 years: June 1, 2001 to June 30 2003. (unused, due to resignation).
24. **Grant:** PI, Agency: UK Vice Chancellor for Research, Title: *Grant for IEEE conference session chair*, Duration: 4 days: June 11-14, 2001.
25. **Grant:** PI, Agency: Council on Post Secondary Education, Title: *Equipments for Teaching Advanced Communication Networking Courses*, Duration: 1 year: June 2001 to June 30 2003.
26. **Grant:** PI, Agency: Southeastern Center for Electrical Engineering Education (SCEEE), Title: *Efficient Handoff Techniques in High-Speed Wireless Networks under Multi-rate Traffic*, Submitted: March 1999, Duration: Sep., 1999 to Aug. 29, 2000.
27. **Grant:** Co-PI, Agency: DARPA/Lucent Technologies, Title: *On-Line Testing and Reconfiguration of Field Programmable Gate Arrays for Fault Tolerant Applications in Adaptive Computing Systems*, Duration: May 25, 99 to May 24, 2001.
28. **Grant:** PI, Agency: UK, Office of Vice President and Dean of College of Engineering, Title: *Research Startup Fund*, Duration: 2 years: July 1 1996 to June 30 1998.
29. **Award:** 4-year Doctoral Research Assistantship Award, Electrical Engineering, Washington University, *Research Sponsors:* National Science Foundation (NSF), Ascom Timplex, Bell Communications Research, Bell Northern Research, DEC, Ital-Tel SIT, NEC America, NTT, Nortel Networks, and Tektronix, Duration: 1991 to 1995.
30. **Award:** 1-year Master’s Research Assistantship Award, Electrical Engineering, Washington University, *Research Sponsors:* National Science Foundation (NSF), Ascom Timplex, Bell Communications Research, Bell Northern Research, DEC, Ital-Tel SIT, NEC America, NTT, Nortel Networks, and Tektronix, Duration: 1990.
31. **Award:** Agency: Telecommunication Research & Development Center (TRDC). Title: *The Best Innovative Telecommunications Engineering System Design Award*, PI: Nader F. Mir, June 1988.

UNIVERSITY TEACHING AND THESIS/PROJECT SUPERVISION

University Teaching Summary

At San Jose State University, CA, August 2001 to present

EE110 Network Analysis (Undergraduate Course)
EE160 Digital Communications (Undergraduate Course)
EE181 Fundamentals of Internetworking (Undergraduate Course)
ENGR297C Sensor Networks (Graduate Course)
EE250 Probability, Random Variables and Stochastic Processes (Graduate Course)
EE281 Internetworking (Graduate Course)
EE283 Broadband Communication Networks (Graduate Course)
EE284 Convergent Voice and Data Networks: VoIP (Graduate Course)

At University of Kentucky, August 1996 to July 2001

EE211 Electric Circuits I (Undergraduate Course)
EE221 Electric Circuits II (Undergraduate Course)
EE512 Digital Communication Systems (Graduate Course)
EE586 Computer Communication and Switching Networks (Graduate Course)
EE599 Performance Evaluation of Computer/Communication Systems (Graduate Course)
EE640 Stochastic & Queuing Systems (Graduate Course)

University Teaching Effectiveness Rating

- *At San Jose State University: Average evaluations rated by students on all courses by Fall 2010 on: “Overall Effectiveness of Instructor”: 4.6/5.0 (This score is above the average for all the college of engineering faculty).*
- *At University of Kentucky: Average evaluations rated by students in Fall 99 on: “Overall Teaching Evaluations”: 3.34/4.00 (This score is above the average for all the college of engineering faculty).*

New Curriculum, Program, and Course Developed

- Collaborated in the development of Joint-Doctoral Program of SJSU with U.C. Santa Cruz.
- Collaborated in the development of MSE Optical Sensors and Networks Program/Curriculum for Lockheed-Martin Space Co, CA, since 2006
- Developed a series of new courses for the Networking Curriculum at the Department of Electrical Eng. SJSU:
 1. EE181, Fundamentals of Internetworking, San Jose State University
 2. EE283, High-Speed Computer Communication Networks, San Jose State University
 3. EE284, Convergent Voice and Data Networks (collaborated), San Jose State University
 4. EE286, Wireless Communication Networks (in progress), San Jose State University
 5. EE586, Communication and Switching Networks, University of Kentucky
 6. EE599-2, Performance of Computer/Communication Systems, University of Kentucky

Thesis/Project Supervision and Advising

- Supervised Thesis and Master’s Projects: 147.

Nader F. Mir - Page 17 of 19

- Served as the Member of other Master's and PhD Thesis Defense Committees: 24
- Supervised Undergraduate Senior Design Projects: 19.

Thesis/Project Titles of MS/PhD Students Supervised/Co-Supervised

- Analysis of Improvement in Multimedia Service Using Load Balancing
- *Simulation of Load Balancing Traffic in a High-Speed Cloud Network*
- *Experimental Analysis of Load Balancing for a Cloud Computing Networks,”*
- *Simulation of Load Balancing Algorithms in a Cloud Network*
- *Comparative Study of Data Center Interconnect Protocols*
- *Implementation of P2P File Sharing Using Bi-directional Chord Protocol Search Algorithm*
- *Simulation of File Transfer in a Peer to Peer (P2P) Network Using Bit-Torrent like Protocol*
- *Simulation of a Campus Network using SDN*
- *Implementation of an SDN-Based Network Using OpenDaylight and OpenFlow Standards*
- *Simulation of Open Flow in SDN Environment*
- *Simulation of Content Delivery Networks (CDNs) Using DNS Server and Content Control Servers.*
- *An Experimental Approach in Content Delivery Networks (CDNs)*
- *Packet Filtering Techniques at Routers Based on Protocol Types*
- *Packet Filtering Techniques at Routers Based on Source and Destination Address Addresses*
- *Simulation of Peer-to-Peer (P2P) Network with Programmable Router*
- *Experimental P2P Networks Using BitTorrent, Gnutella and Python Framework with a Simple GUI*
- *Application of Software-Defined Networking (SDN) technology for Router Functionality*
- *Power Saving Techniques for Backbone Networks*
- *SDN Application in High speed & Multimedia/VoIP Networks*
- *VPN Techniques for Home-Area Networks*
- *Evaluation of Multi-Layer Optical Networks*
- *Secure Connection Establishment over 4G-LTE Networks*
- *Implementation of PIM Multicast Protocol for Cloud Computing*
- *TCP performance in VLANs for Transmissions of Voice over IP (VoIP) and Video over IP*
- *Load Balancing in Cloud Computing*
- *Bandwidth Allocation in Hybrid Networks*
- *Evidence-Based Power Management in Distributed Sensor Networks*
- *Performance Evaluation of Video-on-Demand (VoD) Traffic over IP*
- *Design and Evaluation of Expandable Deflection Networks*
- *Multicasting Data in Non-blocking Switching Networks*
- *Analysis of Handoff in Cellular Wireless Networks*
- *Analysis of Optical Networks and Wave-Length Division Multiplexers*
- *Long Term Evolution (LTE) Handover Using NS3 Tool*
- *Analysis of Voice/Multimedia over IP*
- *Implementation of RSA Algorithm for Wireless V-LAN Security*
- *Performance Evaluation of Virtual Local Area Networks*
- *Modeling Handoff and Mobility under Multi-rate Traffic in Wireless Mobile Communication Networks*
- *Quality of Service Assessment for Multiple VLANs*
- *Analysis of Traffic and Node Mobility over Wi-Fi Networks Using Network Simulator*
- *Performance Evaluation of Transmission Control Protocol (TCP) over WiFi Networks.*
- *Simulation of Label Switching Networks with Multicast PIM-SM Feature.*
- *Evaluation of Label-Switching Networks with QoS Provision*
- *Simulation of Hybrid Networks*
- *Simulation of FDMA/TDMA in MAC-Layers for a Self-Organizing Water-Based Sensor Network*
- *Proxy-Based design for Video Streaming in High-Speed Networks*
- *Analysis of Distributed Wireless Sound Networks*

- *Analysis of Inter-domain Multicast in Ad-Hoc Networks (IMAN) Protocol*
- *Implementation of IMAN Protocol Using network Simulator NS2*
- *Simulation and Analysis of Time Synchronization Algorithms in Wireless Sensor Networks*
- *Performance Evaluation of Inter-Domain Routing and Multicasting in Wireless Mesh Networks*
- *Improved Channel Aware QoS Scheduling Architecture for Base-Stations in 802.16d WiMAX Networks*
- *Web-based Heterogeneous Sensor Network for Health Monitoring of Structures*
- *Performance Evaluation of Internet Protocol TV (IPTV) Traffic over Computer Communication Networks*
- *Performance Evaluation of TCP Connections over WiMAX Networks*
- *Design and Analysis of MPLS based Virtual Private Networks*
- *Analysis of IPv6 formatted data over an MPLS-IPv4 Core*
- *Design and Analysis of MPLS based Virtual Private Networks*
- *Packet Size Optimization of the Internet Protocol Television Networks*
- *Implementation of Core-Based Tree (CBT) Multicasting Routing Protocol over MPLS network.*
- *Design and performance analysis of a Media Gateway Controller (MGC) to Interface PSTN and SIP networks*
- *Design and Simulation of high speed MPLS network for Multimedia Applications*
- *Implementation of PIM Multicasting Protocol Using NS2 Simulator*
- *IP Multimedia Subsystems (IMS) Networks*
- *Design and Analysis of Session Initiation Protocol (SIP) Features for High-Speed Proxy Servers*
- *A Security Protocol Development for an Energy-Based Sensor Network*
- *Design and Analysis of Central Processing Systems for Sensor Networks.*
- *Implementation of Security Protocol in Sensor Networks*
- *Microcontroller Design for Central Monitoring over Large-Scale Sensor Regions*
- *Proxy-Based Design for Video Streaming in High-Speed Networks*
- *Parallel Scheduler for High-Speed Communication Networks*
- *Performance Evaluation of QoS Implementation in VoIP Networks*
- *Implementation and Analysis of Multicast Shared-Memory Architectures for High-Speed Data Switching*
- *Design and Analysis of a PCI Express Controller for High-Speed Data Networks*
- *Modeling and Analysis of Voice in Data Communication Networks*
- *Performance Analysis of Voice in MPLS Communication Networks*
- *Implementation of a Parallel and Self-Routing Switching Fabric for Broadband Communication Networks*
- *A Switching Network Node and Traffic Congestion Controller Design for a High-Speed Switching System*
- *Analysis of Packet Scheduling and Traffic Shaping in a High-Speed Switching Network*
- *An Output Port Processor with Packet Re-sequencing and Congestion Control for a High-Speed Switching*
- *Design of a Network Input Port Processor with Multicast Capability for a High-Speed Switching Fabric*
- *Routing in Dynamic and Survivable Mobile Data Networks*
- *Analysis of Multi-Protocol Label Switching Architectures*
- *Performance Evaluation of Fault-Tolerance in Multicasting Real-Time Traffic Fault-Tolerant*
- *Design and Analysis of Fault-Tolerant Feature in Ad-Hoc Wireless Networks*
- *Design and Analysis of Security Systems for Label-Stacking Mechanism in Data Networks*
- *Implementation of Bluetooth Technology with Improved Transmission Power*
- *Characterization and Testing of a Digital Frequency Synthesizer*
- *Design of Built-In Self-Testing Circuits for a Sensor Node*
- *Design and Analysis of Data Processing Systems for a Self-Organizing Wireless Sensor Network*
- *Comparison of Hypercube Network with SSN for High-Speed Computing*
- *A Routing Protocol for a Self-Organizing Wireless Sensor Network*
- *Implementation of MAC-Layer Protocol for a Self-Organizing Wireless Sensor Network*
- *Analysis of Re-circulating High-Speed Multi-Stage Switches*
- *Design and Evaluation of a Packet-Contention System for Multi-Path Buffered Crossbar*
- *Design and Performance of a Flag-Circuitry and Controller of a Multipath Buffered Crossbar*