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U.S. DISTRICT COURT
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EASTERN DISTRICT
OF TEXAS

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

CISCO SYSTEMS, INC. AND
CISCO TECHNOLOGY, INC.

Plaintiffs,

v.

HUAWEI TECHNOLOGIES, CO., LTD.,
HUAWEI AMERICA, INC. AND
FUTUREWEI TECHNOLOGIES, INC.,

Defendants.

CIVIL ACTION NO. [_____]

COMPLAINT AND JURY DEMAND

For its complaint against Defendants Huawei Technologies Co., Ltd. (“Huawei”), Huawei America, Inc. (“Huawei America”) and FutureWei Technologies, Inc. (“FutureWei”) (collectively “Defendants”), Plaintiffs Cisco Systems, Inc. (“Cisco Systems”) and Cisco Technology, Inc. (“Cisco Technology”) (collectively “Cisco”) allege as follows:

I. NATURE OF THE ACTION

1. This is an action arising from Defendants’ systematic and wholesale infringement of Cisco’s intellectual property. Huawei, a Chinese company, and its wholly owned United States subsidiaries, Huawei America and FutureWei, manufacture and offer for sale a line of network routers designed to compete with Cisco’s network routers. Unlike Cisco, however, which invested substantially in the development of its own proprietary router technology and software, Huawei has chosen to misappropriate and infringe Cisco’s intellectual property in an attempt to develop a cheaper, inferior router which Huawei claims is compatible with Cisco’s routers. In doing so, Huawei and its U.S. subsidiaries have shown a complete disregard for Cisco’s intellectual property rights and the laws which protect those rights. The extent of Defendants’ copying and misappropriation of Cisco’s intellectual property is

staggering. Defendants have copied Cisco's patented technologies; they have copied the copyrighted user interface for Cisco's routers; they have made verbatim copies of whole portions of Cisco's user manuals; and there is overwhelming evidence that they unlawfully gained access to Cisco's source code and copied it as the basis for the operating system for their knock-off routers. Cisco brings this action to enjoin this wholesale theft of its valuable intellectual property and recover the substantial damages it has incurred from Defendants' illegal conduct.

II. PARTIES

2. Cisco Systems is a California corporation with its principal place of business in San Jose, California. It is a worldwide leader in the development, manufacture and sale of computer networking products.

3. Cisco Technology is a California corporation with its principal place of business in San Jose, California. Cisco Technology is a wholly-owned subsidiary of Cisco Systems.

4. On information and belief, Huawei is a foreign corporation with its principal place of business in the Peoples Republic of China. It is a multi-billion dollar company that conducts business throughout the world in the manufacture and sale of network and telecommunications equipment. On information and belief, Huawei conducts business in this judicial district through FutureWei and/or Huawei America.

5. FutureWei is a corporation organized and existing under the laws of the State of Texas with its principal place of business at 1700 Alma Drive, Plano, Texas. On information and belief, FutureWei is a wholly owned subsidiary of Huawei. FutureWei is present in and conducts business in this judicial district. In addition to its Plano office, FutureWei also maintains offices in San Jose, California and Reston, Virginia. FutureWei's registered agent is:

Rongxin Chong
1700 Alma Drive, Suite 500
Plano, Texas 75075

6. Huawei America is a corporation organized and existing under the laws of the State of California with its principal place of business in San Jose, California. On information and belief, Huawei America is a wholly owned subsidiary of Huawei. Huawei America is present in and conducts business in this judicial district. In addition to its San Jose office, Huawei America also maintains a sales office in Plano, Texas. Huawei America's registered agent is:

James Yan
3772 Sun West Terrace
Fremont, CA 94555

III. JURISDICTION AND VENUE

7. Defendants transact business and are found in this judicial district through regular business conduct and activity that includes, among other things, the following:

- a. Huawei offers for sale in this district the network routers and related software which are alleged in this action to infringe Cisco's intellectual property rights.
- b. Huawei already has made commercial sales in the United States of the network routers which are alleged in this action to infringe Cisco's intellectual property rights, including sales originated from the sales office in Plano, Texas.
- c. Huawei and FutureWei each operate a website for the purpose of promoting Huawei products, including the network routers, switches and other network products that use the software alleged to infringe Cisco's intellectual property rights. The Huawei and FutureWei websites can be accessed by customers, potential customers and others located in this district for information about the allegedly infringing routers and other Huawei products, as well as employment opportunities with Huawei's interests in the United States. The infringing computer software created by Defendants through the violation of Cisco's rights, referred to as "VRP," and the infringing user manuals created by Defendants through the violation of Cisco's rights can be downloaded by residents of this district through the Huawei website.

d. Huawei operates a research and development facility in this district, in Plano, and has actively recruited residents of this district and elsewhere for employment at that facility.

e. Huawei has incorporated a subsidiary in Texas (FutureWei) for the purpose of doing business in the United States. The FutureWei sales office in Plano, Texas promotes and sells the infringing routers which are the subject of this action and otherwise conducts business in this judicial district.

f. Huawei has created a California subsidiary (Huawei America) for the purpose of doing business in the United States. Huawei America also maintains a sales office in Plano, Texas, through which it regularly engages in activities to promote and sell the infringing routers and otherwise conducts business in this judicial district.

g. Huawei, FutureWei and Huawei America are accused of committing a number of illegal acts and infringements of Cisco's intellectual property, the harmful effect of which is felt in this judicial district where Cisco sells a substantial volume of products and maintains a substantial research and development facility.

8. The Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331, 1338(a) and (b), and 1367 and the doctrine of supplemental jurisdiction.

9. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391 and 1400 because (1) Huawei is a foreign corporation subject to personal jurisdiction in this district, (2) Defendants reside and may be found in this judicial district, (3) the acts of infringement and misappropriation alleged herein were committed in this judicial district, (4) Defendants have a regular and established place of business in this district, and/or (5) a substantial part of the events giving rise to the claims occurred in this judicial district.

IV. FACTUAL BACKGROUND

10. Cisco provides a broad line of hardware and software solutions for transporting data, voice, and video over networks and throughout the Internet. Included in the equipment Cisco provides are network routers, switches, and devices that enable data and

information to be transported from one network to another – locally, regionally and internationally. Routers and switches are the backbone of Internet traffic, routing packets of data as they are transported from sender to recipient. For example, the transmission of an email message from Dallas, Texas to Hong Kong will pass through multiple routers or switches as the packets of information comprising the message pass from one network to another. The science of routing packets of data through networks is complex and challenging and requires tremendous innovation and technological development to assure that messages are sent quickly and securely and arrive at their intended destination. As a pioneer in this area, Cisco has achieved widespread renown for the technological superiority, convenience and security of its routers, which in turn has facilitated the amazing growth of computer networks and the Internet.

11. Cisco came to its position of technological leadership by hard work and substantial research and development investment. As a result of its endeavors, Cisco has created valuable intellectual property in the form of patents, copyrights, trademarks and trade secrets that protect the valuable technology it has created. Cisco is the owner of a number of key patents covering the operation of its routers and the particularized manner in which they function. One of the core technologies contained in every Cisco router is called the Cisco Internetwork Operating System (“IOS Software Programs”), a proprietary computer program that manages the routing of packets through the router or switch. The IOS Software Programs are the product of countless man-hours of software design and programming by Cisco employees and contractors.

12. Defendants recently introduced for sale in the United States a line of routers referred to as “Quidway routers” which, on information and belief, it has promoted as operating virtually identically as Cisco routers but costing less than Cisco routers. On information and belief, Huawei sells the same or similar infringing routers in a number of foreign countries, the exact identities of which Cisco expects to learn through discovery. On information and belief, Defendants promote their Quidway routers by claiming they can replace a Cisco router without any loss of performance or security. While Defendants’ claim of interoperability are dubious, it is apparent that in their attempt to produce a Cisco “clone,” Defendants engaged

in wholesale theft of Cisco's intellectual property. That theft includes the adoption of Cisco's patented processes, the systematic copying of Cisco's copyrighted Command Line Interface, the copying of Cisco's proprietary IOS source code, and the systematic copying of Cisco's user manuals. Huawei's Vice President, Fei Min, recently admitted that "all the world's leading equipment suppliers are our learning models." The evidence shows unequivocally that the "learning" was in fact blatant copying and misappropriation, undertaken in complete disregard of Cisco's intellectual property rights.

Cisco's Copyright Protection.

13. Cisco Technology has duly recorded in the United States Copyright Office registrations protecting Cisco's IOS Software Programs, its Command Line Interface, and its User Manuals. Cisco Technology is the owner of the registered copyrights in each of the following computer programs and their corresponding user manuals, each of which substantially consists of original material (hereafter referred to as "Cisco's Copyrighted Works"). The following Cisco's Copyrighted Works consist of their respective computer code ("IOS Software Programs"), the Command Line Interface and corresponding screen displays ("CLI"), and the corresponding IOS user manuals ("IOS Manuals"):

- a. Cisco Internetwork Operating System Version 11.0, Reg. No. TXu-1-036-057 (Ex. A)
- b. Cisco Internetwork Operating System Version 11.1, Reg. No. TXu-1-048-569 (supplementing TX-5-531-435) (Ex. B)
- c. Cisco Internetwork Operating System Version 11.2, Reg. No. TXu-1-036-063 (Ex. C)
- d. Cisco Internetwork Operating System Version 11.3, Reg. No. TXu-1-036-062 (Ex. D)
- e. Cisco Internetwork Operating System Version 12.0, Reg. No. TXu-1-036-064 (Ex. E)

- f. Cisco Internetwork Operating System Version 12.1, Reg. No. TXu-1-036-066 (Ex. F)
- g. Cisco Internetwork Operating System Version 12.2, Reg. No. TXu-1-036-065 (Ex. G)

14. For each of the foregoing works, Cisco Technology complied in all respects with the Copyright Act and all other laws of the United States governing copyrights, and has received Certificates of Registration from the Register of Copyrights.

Copying of Command Line Interface.

15. A key component of the copyrighted IOS Software Programs is the “Command Line Interface” or “CLI.” The CLI is the user interface by which users of Cisco routers communicate with the routers. Just as a computer user must communicate instructions to a computer (e.g., copy a file), the Information Technology (“IT”) manager must communicate with routers in order to configure and manage them. For Cisco routers the interaction between the IT manager and the router is facilitated by a unique Command Line Interface, an elaborate structure of textual commands that the IT manager must learn in order to “talk” to the router. Each command corresponds to a function that can be performed by the router. When the command is entered by the human operator, the router performs the function associated with that particular command.

16. Cisco’s CLI is a unique, expressive work that has been developed over many years of creative endeavor. Other manufacturers of network routers have their own command line interfaces that differ from Cisco’s, both in terms of the particular commands and in the organization of those commands. When developing a router interface, the software developer has a range of creative choices in deciding what textual commands to compose, the definitions assigned to the commands, and the overall structure of the interface. Cisco’s CLI represents its own original expression of one way to provide this communication.

17. Defendants have engaged in wholesale copying of Cisco’s CLI. Because the CLI can be visually observed during the operation of a router and is published in Cisco’s user

manuals, Defendants would have had no difficulty in gaining access to the CLI. A comparison of the command line interface of the operating system for the Quidway routers, switches and other products that use VRP, and Cisco's CLI reveals repeated incidents of slavish copying. For example, the following chart shows two of the many areas in which commands were copied by Defendants.

<u>CISCO'S IOS</u> <u>HSRP Commands</u>	<u>DEFENDANTS' VRP</u> <u>HSRP Commands</u>
standby authentication	standby authentication
standby ip	standby ip
standby preempt	standby preempt
standby priority	standby priority
standby timers	standby timers
standby track	standby track
standby use-bia	standby use-bia
standby mac-address <address>	standby use-ovmac
show standby	show standby
debug standby	debug standby
<u>PQ Commands</u>	<u>PQ Commands</u>
priority-group	priority-group
priority-list default	priority-list default
priority-list interface	priority-list interface
priority-list protocol	priority-list protocol
priority-list queue-limit	priority-list queue-limit
show queuing priority	show queuing priority
debug priority-queue	debug priority

18. So much of the Cisco CLI is duplicated in the Defendants' interface that an IT manager familiar with the Cisco CLI would not have to be re-trained in order to operate one of Huawei's Quidway routers, switches or products that use VRP. As a result of its extensive copying of the Cisco CLI, Defendants can promote their Quidway routers, switches and products that use VRP by convincing Cisco customers that they will not have to learn a new command line interface if they purchase Defendants' products. On information and belief, Defendants have informed customers that IT managers familiar with Cisco routers will not need additional training to manage Defendants' products. As one Huawei distributor declared, he was "impressed by the ability of a Cisco-trained engineer to take a Huawei product out of the box and use it." By choosing copyright infringement over independent development, Defendants are attempting to compete with Cisco by stealing Cisco's innovations instead of creating their own as well as avoiding the process of training potential users in a separate interface.

Copying of IOS Source Code.

19. Cisco is informed and believes and therefore alleges that Defendants have copied substantial portions of the IOS Software Programs source code. The operating system for the Quidway routers is known as "VRP," which stands for Versatile Routing Platform. The VRP program contains telltale similarities to the IOS Software Programs indicating that Defendants had access to the proprietary IOS Software Programs source code and used some or all of the source code in the creation of VRP.

20. The IOS Software Programs source code contains thousands of "text strings," distinctive textual statements written into the software by the programmers to convey information about the tasks to be performed by the software. Software which is independently developed will have unique text strings organized in a unique sequence or order. An analysis of Defendants' VRP code reveals that it contains large portions of text strings that are identical or substantially similar to the text strings from the IOS Software Programs, both in terms of the phrasing of the text strings and the sequence in which they appear. This level of identity cannot be explained by either coincidence or independent development on the part of Huawei. It

points inescapably to one conclusion: Defendants had access to Cisco's proprietary IOS source code and copied that source code in the creation of Defendants' VRP.

21. At various points in time, the IOS Software Programs have had minor bugs that do not affect the fundamental functions of the program but represent idiosyncratic ways in which the program was written. Because they stand as unusual anomalies, these bugs serve as telltale fingerprints if they appear in other computer programs. Just as a school teacher can determine copying from the existence of a shared mistake among student papers, Cisco has discovered the presence of a "bug" in the Defendants' VRP software, which can only be explained by Defendants' unlawful access to and use of the IOS Software Programs source code.

22. Cisco has never made its IOS source code available to Defendants nor has it ever authorized anyone else to do so. Cisco is informed and believes and therefore alleges that Defendants obtained access to Cisco's IOS source code or portions thereof by improper means, that Defendants had reason to know that the source code was confidential to Cisco, and that Defendants had reason to know that their access to the source code was not authorized by Cisco. On information and belief, Defendants have exercised dominion and control over Cisco's IOS source code, which is in the form of one or more computer files (i.e., one or more documents), in an unlawful and unauthorized manner to the exclusion of and inconsistent with Cisco's rights. Defendants' possession of Cisco's IOS source code is tantamount to a refusal after demand.

Copying of Cisco's User Manuals.

23. Cisco provides the IOS Manuals to its customers to assist them in the operation of Cisco's routers. These manuals describe in detail the operation of the Cisco routers, the CLI and how to configure the routers for use in network operation. Cisco has invested thousands of man-hours in the preparation of the IOS Manuals, each of which is protected from unlawful copying under the Copyright Laws of the United States and other countries.

24. Defendants make available to customers and prospective customers user manuals that explain the function of its Quidway routers, switches, and other products that use VRP. In creating Defendants' user manuals, Defendants have copied extensively from the IOS

Manuals. In many cases, Defendants have copied whole paragraphs of text from the IOS Manuals, sometimes changing a word here or there in an attempt to mask their flagrant plagiarism. Defendants also have copied the organization and structure of the IOS Manuals so that the overall appearance of Defendants' manuals is substantially similar to the IOS Manuals. Attached as Exhibit H is an example of Defendants' copying of Cisco's copyrighted user manuals.

Patent Infringement.

25. In addition to the unlawful conduct described above, Defendants also have infringed Cisco's patented processes and methods in their attempt to create a router that replicates the functionality of Cisco's routers. In particular, Defendants have infringed no less than five Cisco patents through their incorporation of patented and proprietary Cisco technology in Quidway routers, switches, and other network devices that use VRRP. These infringements were blatant and willful and were part of Defendants' overall plan to misappropriate Cisco's technology.

Adoption of Cisco's Nomenclature and Model Numbers.

26. In addition to the theft of Cisco's technology, Defendants have taken steps to mislead customers into believing that their Quidway routers are comparable to and completely interchangeable with Cisco routers.

27. Defendants have adopted a product numbering scheme for their router products that is substantially the same as Cisco's numbering scheme. Defendants have adopted other Cisco nomenclature as well, such as Cisco's acronym for its security products (i.e., "SAFE"). Huawei refers to its security products as SAFE. The title Cisco applies to engineers who are certified in operating Cisco's routers, "Certified Cisco Internetworking Experts" or "CCIE" has also been appropriated by Defendants in their use of the term "Huawei Certified Internetworking Experts" or "HCIE." Given the wide range of model numbers and nomenclature from which Defendants could have chosen, their decision to mimic Cisco's naming conventions is further evidence of Defendants' unlawful scheme to knock off Cisco's technology and mislead

customers into believing that the products are interchangeable without any loss of performance, security or reliability.

V. COUNT ONE

(Patent Infringement—'032 Patent)

28. Plaintiff Cisco realleges and repeats the allegations of paragraphs 1 through 27 above.

29. On February 11, 1992, the United States Patent and Trademark Office duly and legally issued United States Letters Patent No. 5,088,032 (the "'032 patent") entitled "METHOD AND APPARATUS FOR ROUTING COMMUNICATIONS AMONG COMPUTER NETWORKS." Cisco Technology holds legal title to the '032 patent. By virtue of a license, Cisco Systems has all substantial rights in the '032 patent, including the right to sue for infringement of the '032 patent.

30. Defendants have been and are infringing the '032 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale products that infringe one or more of the claims of the '032 patent.

31. Defendants are contributorily infringing the '032 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale in the United States materials and/or apparatus for use in practicing the inventions set forth in the '032 patent, that they know to be especially made or especially adapted for use in infringement of the invention embodied in the '032 patent. On information and belief, these materials and/or apparatus have no substantial non-infringing use in commerce.

32. Defendants are inducing infringement of the '032 patent within this district and elsewhere in the United States by instructing in the use of materials and/or apparatus that infringe one or more of the claims of the '032 patent.

VI. COUNT TWO

(Patent Infringement—'599 Patent)

33. Plaintiff Cisco realleges and repeats the allegations of paragraphs 1 through 32 above.

34. On December 5, 1995, the United States Patent and Trademark Office duly and legally issued United States Letters Patent No. 5,473,599 (hereinafter the "'599 patent"), entitled "STANDBY ROUTER PROTOCOL." Cisco Technology holds legal title to the '599 patent. By virtue of a license, Cisco Systems has all substantial rights in the '599 patent, including the right to sue for infringement of the '599 patent.

35. Defendants have been and are infringing the '599 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale products that infringe one or more of the claims of the '599 patent.

36. Defendants are contributorily infringing the '599 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale in the United States materials and/or apparatus for use in practicing the inventions set forth in the '599 patent, that they know to be especially made or especially adapted for use in infringement of the inventions embodied in the '599 patent. On information and belief, these materials and/or apparatus have no substantial non-infringing use in commerce.

37. Defendants are inducing infringement of the '599 patent within this district and elsewhere in the United States by instructing in the use of materials and/or apparatus that infringe one or more of the claims of the '599 patent.

VII. COUNT THREE

(Patent Infringement—'704 Patent)

38. Plaintiff Cisco realleges and repeats the allegations of paragraphs 1 through 37 above.

39. On May 21, 1996, the United States Patent and Trademark Office duly and legally issued United States Letters Patent No. 5,519,704 (hereinafter the "'704 patent"), entitled

“RELIABLE TRANSPORT PROTOCOL FOR INTERNETWORK ROUTING.” Cisco Technology holds legal title to the ’704 patent. By virtue of a license, Cisco Systems has all substantial rights in the ’704 patent, including the right to sue for infringement of the ’704 patent.

40. Defendants have been and are infringing the ’704 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale products that infringe one or more of the claims of the ’704 patent.

41. Defendants are contributorily infringing the ’704 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale in the United States materials and/or apparatus for use in practicing inventions set forth in the ’704 patent, that they know to be especially made or especially adapted for use in infringement of the inventions embodied in the ’704 patent. On information and belief, these materials and/or apparatus have no substantial non-infringing use in commerce.

42. Defendants are inducing infringement of the ’704 patent within this district and elsewhere in the United States by instructing in the use of materials and/or apparatus that infringe one or more of the claims of the ’704 patent.

VIII. COUNT FOUR

(Patent Infringement—’718 Patent)

43. Plaintiff Cisco realleges and repeats the allegations of paragraphs 1 through 42 above.

44. On August 1, 2000, the United States Patent and Trademark Office duly and legally issued United States Letters Patent No. 6,097,718 (hereinafter the “’718 patent”), entitled “SNAPSHOT ROUTING WITH ROUTE AGING.” Cisco Technology holds legal title to the ’718 patent. By virtue of a license, Cisco Systems has all substantial rights in the ’718 patent, including the right to sue for infringement of the ’718 patent.

45. Defendants have been and are infringing the ’718 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale products that infringe one or more of the claims of the ’718 patent.

46. Defendants are contributorily infringing the '718 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale in the United States materials and/or apparatus for use in practicing the inventions set forth in the '718 patent, that they know to be especially made or especially adapted for use in infringement of the inventions embodied in the '718 patent. On information and belief, these materials and/or apparatus have no substantial non-infringing use in commerce.

47. Defendants are inducing infringement of the '718 patent within this district and elsewhere in the United States by instructing in the use of materials and/or apparatus that infringe one or more of the claims of the '718 patent.

IX. COUNT FIVE

(Patent Infringement—'251 Patent)

48. Plaintiff Cisco realleges and repeats the allegations of paragraphs 1 through 47 above.

49. On December 4, 2001, the United States Patent and Trademark Office duly and legally issued United States Letters Patent No. 6,327,251 (hereinafter the "'251 patent"), entitled "SNAPSHOT ROUTING." Cisco Technology holds legal title to the '251 patent. By virtue of a license, Cisco Systems has all substantial rights in the '251 patent, including the right to sue for infringement of the '251 patent.

50. Defendants have been and are infringing the '251 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale products that infringe one or more of the claims of the '251 patent.

51. Defendants are contributorily infringing the '251 patent within this district and elsewhere in the United States by making, using, selling, importing, distributing or offering for sale in the United States materials and/or apparatus for use in practicing the inventions set forth in the '251 patent, that they know to be especially made or especially adapted for use in infringement of the inventions embodied in the '251 patent. On information and belief, these materials and/or apparatus have no substantial non-infringing use in commerce.

52. Defendants are inducing infringement of the '251 patent within this district and elsewhere in the United States by instructing in the use of materials and/or apparatus that infringe one or more of the claims of the '251 patent.

X. COUNT SIX

(Copyright Infringement – IOS source code and CLI)

53. Cisco alleges and incorporates by reference the allegations in paragraphs 1 through 52 above.

54. Defendants have infringed and, unless enjoined in this action, will continue to infringe Cisco's Copyrighted Works by, among other things:

- (a) Copying substantial portions of the code of the IOS Software Programs;
- (b) Copying substantial portions of the CLI;
- (c) Distributing works containing material copied from the IOS Software Programs and CLI; and
- (d) Creating derivative works based on the IOS Software Programs and CLI.

55. Defendants' copying and distribution of the IOS Software Programs and CLI and the creation of unauthorized derivative works constitute willful infringement under the Copyright Act. By reason of Defendants' acts of infringement, Cisco has suffered and will continue to suffer, unless Defendants' infringement is enjoined, irreparable injury that cannot be adequately remedied at law. Because of such willful infringement, Cisco is entitled to enhanced damages and an award of its attorneys fees and costs pursuant to the Copyright Act.

56. Defendants' unauthorized copying and distribution of the IOS Software Programs and CLI and the creation of unauthorized derivative works constitute willful infringement under the copyright laws (or laws extending similar protection) of the foreign countries in which Defendants have copied, sold or distributed their infringing works. By reason of these acts of infringement, Cisco has suffered and will continue to suffer, unless Defendants'

infringement is enjoined, irreparable injury that cannot be adequately remedied at law. The exact foreign countries in which defendants have copied, sold or distributed their infringing works, and the extent of that illegal conduct, are not presently known to Cisco and can be learned only upon appropriate discovery from defendants. Cisco reserves the right, upon obtaining relevant discovery from defendants on their infringing conduct in foreign countries, to amend this Complaint to assert claims for violations of foreign copyright laws (or laws extending similar protection) and obtaining appropriate remedies for defendants' violations of those laws.

XI. COUNT SEVEN

(Copyright Infringement – IOS Manuals)

57. Cisco alleges and incorporates by reference the allegations in paragraphs 1 through 56 above.

58. Defendants have infringed and, unless enjoined in this action, will continue to infringe Cisco's Copyrighted Works by, among other things:

- (a) Copying substantial portions of the IOS Manuals;
- (b) Distributing works containing material copied from the IOS Manuals; and
- (c) Creating derivative works based on the IOS Manuals.

59. Defendants' copying and distribution of the IOS Manuals and the creation of derivative works are not authorized by Cisco and constitute willful infringement under the Copyright Act. By reason of Defendants' acts of infringement, Cisco has suffered and will continue to suffer, unless Defendants' infringement is enjoined, irreparable injury that cannot be adequately remedied at law. Because of such willful infringement, Cisco is entitled to enhanced damages and an award of its attorneys' fees and costs pursuant to the Copyright Act.

60. Defendants' unauthorized copying and distribution of the IOS Manuals and the creation of derivative works constitute willful infringement under the copyright laws (or laws extending similar protection) of the foreign countries in which Defendants have copied, sold or distributed their infringing works. By reason of these acts of infringement, Cisco has

suffered and will continue to suffer, unless Defendants' infringement is enjoined, irreparable injury that cannot be adequately remedied at law. The exact foreign countries in which defendants have copied, sold or distributed their infringing works, and the extent of that illegal conduct, are not presently known to Cisco and can be learned only upon appropriate discovery from defendants. Cisco reserves the right, upon obtaining relevant discovery from defendants on their infringing conduct in foreign countries, to amend this Complaint to assert claims for violations of foreign copyright laws (or laws extending similar protection) and obtaining appropriate remedies for defendants' violations of those laws.

XII. COUNT EIGHT

(Trade Secret Misappropriation)

61. Cisco alleges and incorporates by reference the allegations of paragraphs 1 through 60 above.

62. Cisco maintains the source code to its IOS Software Programs as trade secrets and has taken reasonable measures to preserve the secrecy of the source code. The source code derives independent economic value from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use.

63. On information and belief, Defendants have gained access to some or all of Cisco's IOS source code through improper means and/or a breach of a confidential relationship. Defendants gained such access with knowledge, or at least reason to know, that the source code is confidential to Cisco. Defendants lacked authorization to use the source code for any purpose.

64. On information and belief, Defendants misappropriated Cisco's trade secrets by making use of the IOS Software Programs source code in order to create their VRP operating system by, among other things, using the confidential source code to learn confidential information about the structure and operation of the IOS Software Programs, patterning their own development of VRP on what they learned from Cisco's confidential information, and copying portions of the source code for incorporation into the VRP operating system.

Defendants further misappropriated Cisco's trade secrets by, on information and belief, copying portions of the IOS Software Programs source code for incorporation into their VRP operating system.

65. These acts of misappropriation violate the laws of the State of Texas and the laws of other states in which acts of misappropriation have occurred. As a direct and proximate result of Defendants' misappropriation of Cisco's trade secrets, Defendants have been unjustly enriched and Cisco has sustained damages in an amount to be proved at trial. Cisco has also suffered irreparable injury as a result of Defendants' misappropriation and will continue to suffer irreparable injury that cannot be adequately remedied at law unless Defendants are enjoined from utilizing the fruits of their misappropriation or engaging in further acts of misappropriation.

66. Each of the acts of misappropriation was done willfully and maliciously by Defendants, entitling Cisco to punitive damages to be proved at trial.

67. Defendants' misappropriation of Cisco's trade secrets also constitutes violations of those laws protecting trade secrets in foreign countries in which Defendants have taken, used, disclosed or profited from Cisco's trade secrets. The identity of those foreign countries in which defendants have taken, used, disclosed or profited from Cisco's trade secrets, and the extent of such illegal conduct, are not presently known to Cisco and can be learned only through appropriate discovery from Defendants. Cisco reserves the right, upon obtaining relevant discovery from Defendants, to amend this complaint to assert claims for trade secret misappropriation and/or theft under the laws of foreign countries, and to obtain appropriate remedies for Defendants' illegal acts under the laws of foreign countries.

XIII. COUNT NINE

(Common Law Misappropriation)

68. Cisco alleges and incorporates by reference the allegations of paragraphs 1 through 67 above.

69. The CLI is a critical component of Cisco's business and represents enormous commercial value to the company. Cisco has invested substantial time and expense in the development of the CLI, a development effort that has entailed thousands of man hours of work spread over an extended period of time. Cisco also has invested substantial time and expense in training its customers on the use of the CLI.

70. By replicating the structure, organization and commands of CLI, Defendants have misappropriated the substantial commercial value of the CLI without the consent or authorization of Cisco.

71. By this misappropriation, Defendants are attempting to reap the benefits of Cisco's effort without committing the time and resources to independently develop an interface. Because they have avoided the expense of creating their own user interface, Defendants are able to price their routers at levels that would not be possible if Defendants were not obtaining a free ride on the basis of Cisco's efforts.

72. As a direct and proximate result of Defendants' misappropriation, Cisco has sustained damages in an amount to be proved at trial. Defendants' misappropriation has caused, and unless enjoined, will continue to cause, substantial competitive injury to Cisco.

XIV. COUNT TEN

(False Representation – Lanham Act § 43(a))

73. Cisco repeats and incorporates the allegations in paragraphs 1 through 72 above.

74. On information and belief, Defendants have represented to customers and prospective customers that their Quidway routers are interoperable with Cisco routers without any loss or performance, security or convenience. Such representations constitute a false and misleading characterization of the qualities and characteristics of Defendants' products in violation of Section 43(a) of the Lanham Act, 15 U.S.C. § 1125(a).

75. As a direct and proximate result of Defendants' misrepresentations of fact, Cisco has suffered and will continue to suffer irreparable injury unless Defendants are enjoined from engaging in their unlawful conduct.

76. As a direct and proximate result of Defendants' passing off, Cisco has suffered and will continue to suffer irreparable injury unless Defendants are enjoined from engaging in their unlawful conduct.

XV. COUNT ELEVEN

(Unfair Competition – Texas Common Law and Lanham Act § 44)

77. Cisco repeats and incorporates the allegations in paragraphs 1 through 76 above.

78. Defendants have engaged in unfair competition under Texas common law and under Lanham Act § 44 by, among other things, misappropriating Cisco's trade secrets, misappropriating the commercial value of the CLI, making false representations regarding the qualities and characteristics of their Quidway routers, making claims of "full intellectual property rights" under Cisco IP and mimicking Cisco's nomenclature and product numbering system to mislead customers and potential customers regarding the alleged interoperability of Quidway routers.

79. As a direct and proximate result of Defendants' acts of unfair competition, Defendants have been unjustly enriched and Cisco has sustained damages in an amount to be proved at trial. Cisco has also suffered irreparable injury as a result of Defendants' unfair competition and will continue to suffer irreparable injury unless Defendants are enjoined from utilizing the fruits of their unfair competition or engaging in further acts of unfair competition.

80. Each of the acts of unfair competition were done willfully and maliciously by Defendants, entitling Cisco to punitive damages to be proved at trial.

XVI. COUNT TWELVE

(Conversion)

81. Cisco repeats and incorporates the allegations in paragraphs 1 through 80 above.

82. On information and belief, Defendants converted Cisco's computer code by unlawfully acquiring possession of one or more computer files (i.e., one or more documents) containing Cisco's computer source code and exercising dominion and control over the computer source code in an unlawful and unauthorized manner to the exclusion of and inconsistent with Cisco's rights, tantamount to a refusal after demand.

83. As a direct and proximate result of Defendants' acts of conversion, Cisco has sustained damages in an amount to be proved at trial. Cisco has also suffered irreparable injury as a result of Defendants' conversion and will continue to suffer irreparable injury unless Defendants are enjoined from utilizing the fruits of their conversion.

84. Each of the acts of conversion were done willfully and maliciously by Defendants, entitling Cisco to punitive damages to be proved at trial.

XVII. DEMAND FOR TRIAL BY JURY

85. Cisco hereby demands a jury trial for all issues deemed to be triable by jury.

XVIII. PRAYER FOR RELIEF

WHEREFORE, Cisco respectfully requests that this Court enter judgment in its favor and against Defendants and grant the following relief:

A. A judgment that Defendants have infringed the patents in suit.
B. A judgment that Defendants' infringement of the patents in suit has been willful.

C. A preliminary and permanent injunction, pursuant to 35 U.S.C. § 283, enjoining Defendants, and all persons in active concert or participation with them, from any

further acts of infringement, contributory infringement or inducement of infringement of the patents in suit.

D. An order, pursuant to 35 U.S.C. § 284, awarding Cisco damages adequate to compensate Cisco for Defendants' infringement of the patents in suit, in an amount to be determined at trial, but in no event less than a reasonable royalty.

E. An order, pursuant to 35 U.S.C. § 284, trebling all damages awarded to Cisco based on Defendants' willful infringement of the patents in suit.

F. An order, pursuant to 35 U.S.C. § 285, finding that this is an exceptional case and awarding to Cisco its reasonable attorneys fees incurred in this action.

G. A preliminary and permanent injunction enjoining Defendants, and all persons in active concert or participation with them, from infringing or contributorily infringing Cisco's copyrights in the IOS Software Programs, CLI or IOS Manuals.

H. An order requiring Defendants to account for all gains, profits and advantage derived from their infringement of Cisco's Copyrighted Works.

I. An order awarding Cisco damages against Defendants equal in amount to the damages sustained by Cisco and the profits earned by Defendants from their infringement pursuant to 17 U.S.C. § 504(b).

J. An order awarding Cisco statutory damages pursuant to 17 U.S.C. § 504(c).

K. An order awarding Cisco its attorneys fees and costs on account of Defendants' infringement pursuant to 17 U.S.C. § 505.

L. An order requiring the impoundment and destruction of all routers, computer programs and manuals, or any version or modification thereof, found to constitute an infringement of Cisco's copyrights or trade secrets.

M. A preliminary and permanent injunction enjoining Defendants, and all persons in active concert or participation with them, from misappropriating or threatening to misappropriate Cisco's trade secrets or misappropriating the commercial value of the CLI.

N. A preliminary and permanent injunction enjoining Defendants, and all persons in active concert or participation with them, from making false and misleading statements regarding the performance, characteristics or interoperability of Defendants' Quidway routers.

O. A preliminary and permanent injunction enjoining Defendants, and all persons in active concert or participation with them, from using, selling, offering for sale, marketing, distributing or placing in interstate commerce their Quidway routers, switches, or other products that use VRP, and the VRP operating system itself.

P. An order awarding Cisco damages in an amount to be determined at trial arising from Defendants' trade secret misappropriation, common law misappropriation, false and misleading representations regarding their Quidway routers, switches, or other products that use VRP, and Defendants' unfair competition.

Q. An order requiring Defendants to disgorge all ill-gotten profits earned from their unlawful conduct, together with restitution to plaintiffs arising from Defendants' unlawful conduct.

R. An order awarding Cisco the unjust enrichment gained by Defendants from their unlawful conduct.

S. An order awarding Cisco punitive damages in an amount to be determined at trial on account of Defendants' wanton, willful and malicious tortious conduct.

T. An order awarding Cisco its attorneys fees and costs in this action.

U. Such other and further relief as this Court may deem just and proper.

Dated: January 22, 2003

Respectfully submitted,



Sam F. Baxter
Attorney-In-Charge for Plaintiff
State Bar No. 01938000

McKool Smith, P.C.
P.O. Box O
505 East Travis Street, Suite 105
Marshall, TX 75670
Telephone: (903) 927-2111
Facsimile: (903) 927-2622

Jeffrey R. Bragalone
State Bar No. 02885775

McKool Smith, P.C.
300 Crescent Court, Suite 1500
Dallas, TX 75201
Telephone (214) 978-4000
Facsimile: (214)978-4044

OF COUNSEL:

ORRICK, HERRINGTON & SUTCLIFFE LLP
Chris R. Ottenweller (Ca. State Bar No. 73649)
G. Hopkins Guy (Ca. State Bar No. 124811)
1000 Marsh Road
Menlo Park, CA 94025
Telephone: (650) 614-7400
Facsimile: (650) 614-7401

EXHIBIT A

CERTIFICATE OF REGISTRATION



OFFICIAL SEAL

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE



EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

Month Day Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 11.0

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 11.0; Cisco IOS Version 11.0; Cisco Internetwork Operating System 11.0; Cisco Internetwork Operating System Release 11.0; Cisco Internetwork Operating System Version 11.0

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼ Number ▼ Issue Date ▼ On Pages ▼

2

a NAME OF AUTHOR ▼

Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in: United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NOTE
Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b NAME OF AUTHOR ▼

See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED
1995
This information must be given in all cases.

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK
Complete this information ONLY if this work has been published.
Month Day Year
Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

APPLICATION RECEIVED
JUN 14 2002
ONE DEPOSIT RECEIVED
JUN 14 2002
TWO DEPOSITS RECEIVED
FUNDS RECEIVED

DO NOT WRITE HERE OFFICE USE ONLY

MORE ON BACK ► • Complete all applicable spaces (numbers 5-8) on the reverse side of this page. • See detailed instructions. • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of 4 pages

EXAMINED BY

FORM TX

CHECKED BY

CORRESPONDENCE

Yes

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

Yes No If your answer is "Yes," why is another registration being sought? (Check appropriate box.)

a. This is the first published edition of a work previously registered in unpublished form.

b. This is the first application submitted by this author as copyright claimant.

c. This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶

Year of Registration ▶

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates.

Prior works by claimant and preexisting third party computer code

a

6

See instructions
before completing
this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed.

New and revised computer code and accompanying documentation

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
Name ▼ Account Number ▼

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt./City/State/ZIP ▼

Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

Area code and daytime telephone number ▶ (650) 858-7696

Fax number ▶ (650) 494-1417

Email ▶ tsao@fenwick.com

b

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

- author
- other copyright claimant
- owner of exclusive right(s)
- authorized agent of Cisco Technology, Inc.

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

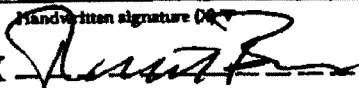
Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel

Date ▶

Handwritten signature (X) 

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST

- Complete all necessary spaces
- Sign your application in space 8

SEND ALL ELEMENTS IN THE SAME PACKAGE

1. Application form
2. Nonrefundable filing fee in check or money order payable to Register of Copyrights
3. Deposit material

MAIL TO

Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

9

As of July 1, 1999, the filing fee for Form TX is \$30.

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 408, or in any written statement filed in connection with the application, shall be fined not more than \$2,500.

CONTINUATION SHEET FOR APPLICATION FORMS

FORM TX /CON
UNITED STATES COPYRIGHT OFFICE

F TXU 1-036-057
TXU001836057

PA	PAUSE	SEG	SEU	SR	SRU	TX	TXU	VA	VAU
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EFFECTIVE DATE OF REGISTRATION
JUN 14 2002
(Month) (Day) (Year)

CONTINUATION SHEET RECEIVED
JUN 14 2002

Page 3 of 4 pages

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application. Space B is not applicable to Short forms. Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

• **TITLE:** (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form)
Cisco IOS 11.0

A
Identification
of
Application

• **NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S):** (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)
Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

B
Continuation
of Space 2

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

e
NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

f
NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the

CONTINUATION OF (Check which): Space 1 Space 4 Space 6 Space 2b

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo- nymous	Nature of Contribution
ABE Staffing, Inc.	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
Bev Talbot	No	United States	Yes	No	Documentation

C

Continuation
of other
Spaces

Certificate
will be
mailed in
window
envelope
to this
address:

Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼ 2 Palo Alto Square
City/State/ZIP ▼ Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application

**SEND ALL 3 ELEMENTS
IN THE SAME PACKAGE**
1. Application form
2. Nonrefundable fee in check or
money order payable to Register
of Copyrights
3. Deposit Material

MAIL TO
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20558-8000

D

Fees are effective
through June 30,
2002. After that date,
check the Copyright
office Web site at
www.loc.gov/copyright
or call (202)
707-3000 for current
fee information.

EXHIBIT B

CERTIFICATE OF REGISTRATION

FORM CA
 For Supplementary Registration
 UNITED STATES COPYRIGHT OFFICE



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters
 REGISTER OF COPYRIGHTS
 United States of America

REGISTRATION NUMBER

TXu 1-048-569



EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

Aug. 20, 2002
 Month Day Year

OFFICIAL SEAL

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼ Cisco IOS 11.1	
Registration Number of the Basic Registration ▼ TX 5-531-435	Year of Basic Registration ▼ 2002
Name(s) of Author(s) ▼ Cisco Systems, Inc.	Name(s) of Copyright Claimant(s) ▼ Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number 3b Line Heading or Description _____ Date and Nation of First Publication of this Particular Work _____

Incorrect Information as It Appears in Basic Registration ▼
 February 28, 1996; United States

Corrected Information ▼
 N/A (please delete)

Explanation of Correction ▼
 The work is unpublished.

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number _____ Line Heading or Description _____

Amplified Information and Explanation of Information ▼

MORE ON BACK ►

- Complete all applicable spaces (D-G) on the reverse side of this page.
- See detailed instructions.
- Sign the form at Space F.

DO NOT WRITE HERE

Page 1 of _____ pages

AUG 20 2002

FUNDS RECEIVED DATE

AUG 20 2002

EXAMINED BY *TMS*

CORRESPONDENCE

REFERENCE TO THIS REGISTRATION ADDED TO

BASIC REGISTRATION YES NO

FOR
COPYRIGHT
OFFICE
USE
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: Part B or Part C

Line Number: 5 Line Heading or Description: Previous Registration

Incorrect Information as It Appears in Basic Registration: Box C unchecked

Corrected Information: Box C checked

Explanation of Correction: This work is a changed version.

Line Number: 2b Line Heading or Description: Name of Author

Incorrect Information as It Appears in Basic Registration: No entry

Corrected Information: See Attached Form TX/CON for Additional Authors

Explanation of Correction: Additional authors on Form TX/CON

D

Correspondence: Give name and address to which correspondence about this application should be sent.

To T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

Phone (650) 858-7696

Fax (650) 494-1417

Email tsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name _____

Account Number _____

Certification* I, the undersigned, hereby certify that I am the: (Check only one)

author

owner of exclusive right(s)

other copyright claimant

duly authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name ▼ TU T. TSAO

Date ▼ 8/19/02

Handwritten signature (X) ▼

T. Tsao

Certificate will be mailed in window envelope to this address:

Name ▼	Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼	2 Palo Alto Square
City/State/ZIP ▼	Palo Alto, CA 94306

YOU MUST

- Complete all necessary spaces
- Sign your application in Space F

SEND ALL ELEMENTS IN THE SAME PACKAGE

1. Application form
2. Nonrefundable filing fee in check or money order payable to Register of Copyrights

MAIL TO

Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20540-0000

Fees are subject to change. For current fees, visit the Copyright Office website at www.copyright.gov or call (800) 994-7770.

*17 U.S.C. § 508(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than \$2,500.

CERTIFICATE OF REGISTRATION

FORM TX

For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

TX 5-531-435



EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

Month Day Year

OFFICIAL SEAL

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 11.1

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 11.1; Cisco IOS Version 11.1; Cisco Internetwork Operating System 11.1; Cisco Internetwork Operating System Release 11.1; Cisco Internetwork Operating System Version 11.1

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼ Number ▼ Issue Date ▼ On Pages ▼

2

a NAME OF AUTHOR ▼

Cisco Systems, Inc.

DATES OF BIRTH AND DEATH

Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?

Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE

Name of Country

OR { Citizen of ▼
Domiciled in: United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK

Anonymous? Yes No
Pseudonymous? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

New and revised computer code

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "author" of that part, and leave the space for dates of birth and death blank.

b

NAME OF AUTHOR ▼

Was this contribution to the work a "work made for hire"?

Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE

Name of Country

OR { Citizen of ▼
Domiciled in: _____

DATES OF BIRTH AND DEATH

Year Born ▼ Year Died ▼

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK

Anonymous? Yes No
Pseudonymous? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c

NAME OF AUTHOR ▼

Was this contribution to the work a "work made for hire"?

Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE

Name of Country

OR { Citizen of ▼
Domiciled in: _____

DATES OF BIRTH AND DEATH

Year Born ▼ Year Died ▼

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK

Anonymous? Yes No
Pseudonymous? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED

1996 Year

This information must be given in all cases.

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK

Complete this information ONLY if this work has been published. Month: February Day: 28 Year: 1996

United States Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

APPLICATION RECEIVED
JUN 14 2002 July 16, 2002
ONE DEPOSIT RECEIVED
JUN 14 2002
TWO DEPOSITS RECEIVED
FUNDS RECEIVED

MORE ON BACK ► Complete all applicable spaces (numbers 6-9) on the reverse side of this page.
See detailed instructions. Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of 4 pages

EXAMINED BY TMS FORM TX
 CHECKED BY _____
 CORRESPONDENCE
 Yes _____
 FOR
 COPYRIGHT
 OFFICE
 USE
 ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?
 Yes No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) 5
 a. This is the first published edition of a work previously registered in unpublished form.
 b. This is the first application submitted by this author as copyright claimant.
 c. This is a changed version of the work, as shown by space 6 on this application.
 If your answer is "Yes," give: Previous Registration Number Pending Year of Registration 2002

DERIVATIVE WORK OR COMPILATION
 Presenting Material Identify any preceding work or works that this work is based on or incorporates. 6
 Prior works by claimant and preexisting third party computer code
 a. _____
 b. _____ See instructions before completing this space.

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
 Name _____ Account Number _____ 7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt./City/State/ZIP 8
 To T. Tsao, Esq.
 Fenwick & West LLP
 2 Palo Alto Square
 Palo Alto, CA 94306
 Area code and daytime telephone number (650) 858-7696 Fax number (650) 494-1417
 E-mail tsao@fenwick.com

CERTIFICATION I, the undersigned, hereby certify that I am the 8
 Check only one: author
 other copyright claimant
 owner of exclusive rights
 authorized agent of Cisco Technology, Inc.
 of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.
 Name of author or other copyright claimant, or owner of exclusive rights _____
 Typed or printed name and date Robert A. Barr, Worldwide Patent Counsel Date _____

Handwritten signature (X) [Signature]


Certificate will be mailed in window envelope to this address: 9

Name <u>Susanne S. Morales, Paralegal / Fenwick & West LLP</u>	CHECK THIS: <input type="checkbox"/> Complete all necessary spacing <input type="checkbox"/> Sign your application in space 8 STAMPS & FEES: <input type="checkbox"/> Application fee <input type="checkbox"/> Non-refundable filing fee in check or money order as of July 1, 2004, payable to Register of Copyrights <input type="checkbox"/> Deposit envelope FEES: <input type="checkbox"/> Entry of Copyrights <input type="checkbox"/> Copyright Office <input type="checkbox"/> 101 Independence Avenue, S.E. <input type="checkbox"/> Washington, D.C. 20540-0000
Number/Street/Apt. <u>2 Palo Alto Square</u>	
City/State/ZIP <u>Palo Alto, CA 94306</u>	

(1) U.S.C. § 504(c) Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 502, or in any written statement filed in connection with the application, shall be fined not more than \$2,000.
 June 1994-2003, ISBN 0-503-08088-9
 WEB REV: June 1999
 U.S. GOVERNMENT PRINTING OFFICE: 1999-461-079-00

CONTINUATION SHEET FOR APPLICATION FORMS

FORM TX /CON
UNITED STATES COPYRIGHT OFFICE

R TX 5-531-435

 0174000551435
 PA PAUSE SE SEG SEU SR SRU TX (X) U VA VAU

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

EFFECTIVE DATE OF REGISTRATION
 JUN 14 2002
 (Month) (Day) (Year)
 CONTINUATION SHEET RECEIVED
 JUN 14 2002
 Page 3 of 4 pages

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

• TITLE: (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)
 Cisco IOS 11.1

A
Identification
of
Application

• NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S): (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)
 Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
d
NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
 Year Born ▼ Year Died ▼

B
Continuation
of Space 2

Was this contribution to the work a "work made for hire"?
 Name of Country
 Yes
 No
 OR { Citizen of ► _____
 Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
 Anonymous? Yes No
 Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
 Year Born ▼ Year Died ▼

e

Was this contribution to the work a "work made for hire"?
 Name of Country
 Yes
 No
 OR { Citizen of ► _____
 Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
 Anonymous? Yes No
 Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
 Year Born ▼ Year Died ▼

f

Was this contribution to the work a "work made for hire"?
 Name of Country
 Yes
 No
 OR { Citizen of ► _____
 Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
 Anonymous? Yes No
 Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA, TX, or VA.

CONTINUATION OF (Check which): Space 1 Space 4 Space 6 Space 2b

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
Energetic Systems	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
Bev Talbott	No	United States	Yes	No	Documentation

C
Continuation
of other
Spaces

Certificate
will be
mailed in
window
envelope
to this
address:

Name ▼	Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼	2 Palo Alto Square
City/State/ZIP ▼	Palo Alto, CA 94306

YOU MUST
• Complete all necessary spaces
• Sign your application

**SEND ALL 3 ELEMENTS
IN THE SAME PACKAGE**
1. Application form
2. Nonrefundable fee in check or
money order payable to Register
of Copyrights
3. Deposit Material

MAIL TO
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20540-8000

D
Fees are effective
through June 30,
2002. After that date,
check the Copyright
office Website at
www.loc.gov/copyright
or call (202)
707-3900 for current
fee information.

EXHIBIT C

CERTIFICATE OF REGISTRATION

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America

TXu 1-036-063
EFFECTIVE DATE OF REGISTRATION

EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

Month Day Year

OFFICIAL SEAL

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 11.2

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 11.2; Cisco IOS Version 11.2; Cisco Internetwork Operating System 11.2; Cisco Internetwork Operating System Release 11.2; Cisco Internetwork Operating System Version 11.2

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼ Number ▼ Issue Date ▼ On Pages ▼

2

a NAME OF AUTHOR ▼
Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in: United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymus? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b NAME OF AUTHOR ▼
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymus? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymus? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED
1996
This information must be given in all cases.

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK

Complete this information ONLY if this work has been published. Month ► Day ► Year ► Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

APPLICATION RECEIVED

JUN 14 2002

ONE DEPOSIT RECEIVED

JUN 14 2002

TWO DEPOSITS RECEIVED

FUNDS RECEIVED

DO NOT WRITE HERE OFFICE USE ONLY

MORE ON BACK ► • Complete all applicable spaces (numbers 5-9) on the reverse side of this page. • See detailed instructions. • Sign the form at line 8.

DO NOT WRITE HERE

Page 1 of 4 pages

EXAMINED BY TMS FORM TX
 CHECKED BY _____
 CORRESPONDENCE FOR COPY-
 Yes OFFICE USE ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

Yes No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

- a. This is the first published edition of a work previously registered in unpublished form.
- b. This is the first application submitted by this author as copyright claimant.
- c. This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶ Pending

Year of Registration ▶ 2002

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

a 6

See instructions before completing this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
 New and revised computer code and accompanying documentation

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
 Name ▼ Account Number ▼

a 7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼

Tu T. Tsao, Esq.
 Fenwick & West LLP
 2 Palo Alto Square
 Palo Alto, CA 94306

Area code and daytime telephone number ▶ (650) 858-7696

Fax number ▶ (650) 494-1417

Email ▶ ttsao@fenwick.com

b

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

- author
- other copyright claimant
- owner of exclusive right(s)
- authorized agent of Cisco Technology, Inc.

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

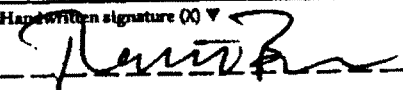
8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel

Date ▶ _____

Handwritten signature (X) ▼

X 

Certificate will be mailed in window envelope to this address:

Name ▼
 Susanne S. Morales, Paralegal / Fenwick & West LLP
 Number/Street/Apt ▼
 2 Palo Alto Square
 City/State/ZIP ▼
 Palo Alto, CA 94306

YOU MUST

- Complete all necessary spaces
- Sign your application in space 8

SEND ALL ELEMENTS IN THE SAME PACKAGE

1. Application form
 2. Nonrefundable filing fee in check or money order payable to Registrar of Copyrights
 3. Deposit material
- MAIL TO
 Library of Congress
 Copyright Office
 101 Independence Avenue, S.E.
 Washington, D.C. 20559-6000

9

As of July 1, 1999, the filing fee for Form TX is \$30.

CONTINUATION SHEET FOR APPLICATION FORMS

TXu 1-036-063

BT 2001056074

PA	PAUSE	SEG	SEU	SR	SRU	TX	TXU	VA	VAU
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- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
- Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
- Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

EFFECTIVE DATE OF REGISTRATION

JUN 14 2002
(Month) (Day) (Year)

CONTINUATION SHEET RECEIVED

JUN 14 2002

Page 3 of 4 pages

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

A
Identification
of
Application

• **TITLE:** (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)
Cisco IOS 11.2

• **NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S):** (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)
Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
Continuation
of Space 2

d

NAME OF AUTHOR ▼ (See Space C)	DATES OF BIRTH AND DEATH Year Born ▼ Year Died ▼
Was this contribution to the work a "work made for hire"?	AUTHOR'S NATIONALITY OR DOMICILE Name of Country
<input type="checkbox"/> Yes <input type="checkbox"/> No	OR { Citizen of ► _____ Domiciled in ► _____
	WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK Anonymous? <input type="checkbox"/> Yes <input type="checkbox"/> No Pseudonymous? <input type="checkbox"/> Yes <input type="checkbox"/> No
	<small>If the answer to either of these questions is "Yes," see detailed instructions.</small>
NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼	

e

NAME OF AUTHOR ▼	DATES OF BIRTH AND DEATH Year Born ▼ Year Died ▼
Was this contribution to the work a "work made for hire"?	AUTHOR'S NATIONALITY OR DOMICILE Name of Country
<input type="checkbox"/> Yes <input type="checkbox"/> No	OR { Citizen of ► _____ Domiciled in ► _____
	WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK Anonymous? <input type="checkbox"/> Yes <input type="checkbox"/> No Pseudonymous? <input type="checkbox"/> Yes <input type="checkbox"/> No
	<small>If the answer to either of these questions is "Yes," see detailed instructions.</small>
NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼	

f

NAME OF AUTHOR ▼	DATES OF BIRTH AND DEATH Year Born ▼ Year Died ▼
Was this contribution to the work a "work made for hire"?	AUTHOR'S NATIONALITY OR DOMICILE Name of Country
<input type="checkbox"/> Yes <input type="checkbox"/> No	OR { Citizen of ► _____ Domiciled in ► _____
	WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK Anonymous? <input type="checkbox"/> Yes <input type="checkbox"/> No Pseudonymous? <input type="checkbox"/> Yes <input type="checkbox"/> No
	<small>If the answer to either of these questions is "Yes," see detailed instructions.</small>
NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼	

CONTINUATION OF (Check which):

Space 1

Space 4

Space 6

Space 2b

C

Continuation
of other
Spaces

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo- nymous	Nature of Contribution
ABE Staffing Services, Inc.	Yes	United States	Yes	No	Computer code
HCL America, Inc.	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	India	Yes	No	Computer code
Network Aware, Inc.	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
NSA	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation
Bev Talbott	No	United States	Yes	No	Documentation

Certificate
will be
mailed in
window
envelope
to this
address:

Name ▼	Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼	2 Palo Alto Square
City/State/ZIP ▼	Palo Alto, CA 94306

YOU MUST
• Complete all necessary spaces
• Sign your application

**SEND ALL ELEMENTS
IN THE SAME PACKAGE**
1. Application form
2. Nonrefundable fee in check or
money order payable to Register
of Copyrights
3. Deposit Material

MAIL TO
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20558-6000

D

Fees are effective
through June 30,
2002. After that date,
check the Copyright
office Website at
www.loc.gov/copyright
or call (202)
707-3000 for current
fee information.

EXHIBIT D

Copyright Office fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

TX	TXU	PA	PAU	VA	VAU	SR	SRU	RE
----	-----	----	-----	----	-----	----	-----	----

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

Month Day Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼

Cisco IOS 11.3

Registration Number of the Basic Registration ▼

TXu 1-036-062

Year of Basic Registration ▼

2002

Name(s) of Author(s) ▼

Please see Space D for list of author names

Name(s) of Copyright Claimant(s) ▼

Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number 2a Line Heading or Description Name of Author

Incorrect Information as It Appears in Basic Registration ▼

Cisco Systems, Inc.

Corrected Information ▼

Cisco Systems Sales & Services, Inc.

Explanation of Correction ▼

correct name of author

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number 2b and C Line Heading or Description Name of Author

Amplified Information and Explanation of Information ▼

Please add to the following to the list of authors:

Name of Author: Cisco Technology, Inc.

Work for Hire: Yes

Domicile: United States

Anonymous: No

Pseudonymous: No

Nature of Contribution: Computer code and documentation

FUNDS RECEIVED DATE

EXAMINED BY

CORRESPONDENCE

REFERENCE TO THIS REGISTRATION ADDED TO BASIC REGISTRATION YES NO

FOR COPYRIGHT OFFICE USE ONLY

D

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: Part B or Part C Part A

Cisco Systems, Inc.
HCL America, Inc.
HCL Consulting Limited
Metaplex, Inc.
Technosoft Corp.
Nano Solutions
Oakhill Publications / Computer Education Consulting
ABE Staffing Services, Inc.
Lasselle-Ramsay
Kevin Shafer
Rick Barron

E

Correspondence: Give name and address to which correspondence about this application should be sent.

Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696 Fax (650) 938-5200 Email ttsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name _____
Account Number _____

Certification* I, the undersigned, hereby certify that I am the: (Check only one)

author owner of exclusive right(s)
 other copyright claimant duly authorized agent of Cisco Technology, Inc.
Name of author or other copyright claimant, or owner of exclusive right(s) ▲
of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

F

Typed or printed name ▼ Robert A. Barr, Worldwide Patent Counsel

Date ▼ 1/8/03

Handwritten signature (X) ▼ *Robert Barr*

Certificate will be mailed in window envelope to this address:

Name ▼	Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼	801 California Street
City/State/ZIP ▼	Mountain View, CA 94041

YOU MUST:

- Complete all necessary spaces
- Sign your application in Space F

SEND ALL ENVELOPES IN A SEPARATE PACKAGE:

1. Application form
2. Non-refundable filing fee in check or money order payable to Register of Copyrights

MAIL TO:

Library of Congress
Copyright Office
301 Independence Avenue, S.E.
Washington, D.C. 20559-6000

G

Fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-5900.

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than \$2,500.

CERTIFICATE OF REGISTRATION

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE



OFFICIAL SEAL

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America



EFFECTIVE DATE OF REGISTRATION

JUN 1 4 2002

Month Day Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 11.3

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 11.3; Cisco IOS Version 11.3; Cisco Internetwork Operating System 11.3; Cisco Internetwork Operating System Release 11.3; Cisco Internetwork Operating System Version 11.3

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼ Number ▼ Issue Date ▼ On Pages ▼

2

NAME OF AUTHOR ▼

a Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in ▼ United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

NAME OF AUTHOR ▼

b See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in ▼

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of ▼
Domiciled in ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED

1997

This information must be given in all cases.

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK

Complete this information ONLY if this work has been published.

Month Day Year

Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

DO NOT WRITE HERE OFFICE USE ONLY

APPLICATION RECEIVED
JUN 14 2002

ONE DEPOSIT RECEIVED
JUN 14 2002

TWO DEPOSITS RECEIVED

FUNDS RECEIVED

MORE ON BACK ▶ • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions. • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of 4 pages

EXAMINED BY TMS FORM TX
 CHECKED BY _____
 CORRESPONDENCE FOR COPY-
 Yes OFFICE USE ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?
 Yes No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼
 a. This is the first published edition of a work previously registered in unpublished form.
 b. This is the first application submitted by this author as copyright claimant.
 c. This is a changed version of the work, as shown by space 6 on this application.
 If your answer is "Yes," give: Previous Registration Number ▶ Pending Year of Registration ▶ 2002

5

DERIVATIVE WORK OR COMPILATION
 Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼
 Prior works by claimant and preexisting third party computer code

a 6

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
 New and revised computer code and accompanying documentation

See instructions before completing this space.
 b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
 Name ▼ Account Number ▼

a 7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼
Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306
 Area code and daytime telephone number ▶ (650) 858-7696 Fax number ▶ (650) 494-1417
 Email ▶ ttsao@fenwick.com

b

CERTIFICATION* I, the undersigned, hereby certify that I am the
 Check only one ▶ author
 other copyright claimant
 owner of exclusive right(s)
 authorized agent of Cisco Technology, Inc.
 of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.
 Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.
Robert A. Barr, Worldwide Patent Counsel Date ▶ _____
 Handwritten signature (X) ▼
 X [Signature]

Certificate will be mailed in window envelope to this address:
 Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP
 Number/Street/Apt ▼ 2 Palo Alto Square
 City/State/ZIP ▼ Palo Alto, CA 94306

9
 YOU MUST
 • Complete all necessary spaces
 • Sign your application in space 8
 SEND ALL ELEMENTS IN THE SAME PACKAGE
 1. Application form
 2. Nonrefundable filing fee in check or money order payable to Register of Copyrights
 3. Deposit material
 As of July 1, 1999, the filing fee for Form TX is \$36.
 MAIL TO
 Library of Congress
 Copyright Office
 101 Independence Avenue, S.E.
 Washington, D.C. 20559-6000

CONTINUATION SHEET FOR APPLICATION FORMS

FORM TX /CON
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-062



#TXu01036062

PA	PAUSE	SEG	SEU	SR	SRU	TX	TXL	VA	VAU
----	-------	-----	-----	----	-----	----	-----	----	-----

EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

(Month) (Day) (Year)

CONTINUATION SHEET RECEIVED

JUN 14 2002

Page 3 of 4 pages

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
- Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
- Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

- **TITLE:** (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

Cisco IOS 11.3

A
Identification
of
Application

- **NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S):** (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)
- Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

B
d
NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

B
Continuation
of Space 2

Was this contribution to the work a "work made for hire"? **AUTHOR'S NATIONALITY OR DOMICILE**
Name of Country
 Yes No
OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No If the answer to either of these questions is "Yes," see detailed instructions.
Pseudonymous? Yes No

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

e

Was this contribution to the work a "work made for hire"? **AUTHOR'S NATIONALITY OR DOMICILE**
Name of Country
 Yes No
OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No If the answer to either of these questions is "Yes," see detailed instructions.
Pseudonymous? Yes No

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

f

Was this contribution to the work a "work made for hire"? **AUTHOR'S NATIONALITY OR DOMICILE**
Name of Country
 Yes No
OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No If the answer to either of these questions is "Yes," see detailed instructions.
Pseudonymous? Yes No

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA, TX, or VA.

CONTINUATION OF (Check which):

Space 1

Space 4

Space 6

Space 2b

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nonymous	Nature of Contribution
HCL America, Inc.	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	India	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Technosoft Corp.	Yes	United States	Yes	No	Computer code
Nano Solutions	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
ABE Staffing Services, Inc.	Yes	United States	Yes	No	Documentation
Lasselle-Ramsay	Yes	United States	Yes	No	Documentation
Kevin Shafer	No	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation

C

Continuation of other Spaces

Certificate will be mailed in window envelope to this address:

Name ▼	Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼	2 Palo Alto Square
City/State/ZIP ▼	Palo Alto, CA 94306

YOU MUST:

- Complete all necessary spaces
- Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE:

1. Application form
2. Nonrefundable fee in check or money order payable to Register of Copyrights
3. Deposit Material

MAIL TO:

Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20540-8000

D

Fees are effective through June 30, 2002. After that date, check the Copyright office Website at www.loc.gov/copyright or call (202) 707-3000 for current fee information.

EXHIBIT E

Copyright Office fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

TX	TXU	PA	PAU	VA	VAU	SR	SRU	RE
----	-----	----	-----	----	-----	----	-----	----

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

Month Day Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼

Cisco IOS 12.0

Registration Number of the Basic Registration ▼

TXU 1-036-064

Year of Basic Registration ▼

2002

Name(s) of Author(s) ▼

Please see Space D for list of author names

Name(s) of Copyright Claimant(s) ▼

Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number 2a Line Heading or Description Name of Author

Incorrect Information as It Appears in Basic Registration ▼

Cisco Systems, Inc.

Corrected Information ▼

Cisco Systems Sales & Services, Inc.

Explanation of Correction ▼

correct name of author

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number 2b and C Line Heading or Description Name of Author

Amplified Information and Explanation of Information ▼

Please add the following to the list of authors:

Name of Author: Cisco Technology, Inc.

Work for Hire: Yes

Domicile: United States

Anonymous: No

Pseudonymous: No

Nature of Contribution: Computer code and documentation

MORE ON BACK ►

• Complete all applicable spaces (D-G) on the reverse side of this page.
• See detailed instructions. • Sign the form at Space F.

DO NOT WRITE HERE

Page 1 of _____ pages

FUNDS RECEIVED DATE

EXAMINED BY

CORRESPONDENCE

REFERENCE TO THIS REGISTRATION ADDED TO BASIC REGISTRATION YES NO

FOR COPYRIGHT OFFICE USE ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

Continuation of: Part B or Part C Part A

Cisco Systems, Inc.
Adecco Employment Services
Avisoft Corporation
HCL Consulting Limited
HCL America, Inc.
H.L. Yoh Company LLC
Aguas
Metaplex, Inc.
Rapidigm
Wipro Limited
Lasselle-Ramsay
Oakhill Publications / Computer Education Consulting
Rick Barron
On-Call Consultants, Inc.
Judy Melanson

D

Correspondence: Give name and address to which correspondence about this application should be sent.

Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696 Fax (650) 938-5200 Email tsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name
Account Number

Certification* I, the undersigned, hereby certify that I am the: (Check only one)

author owner of exclusive right(s)
other copyright claimant [X] duly authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s)
of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name Robert A. Barr, Worldwide Patent Counsel

Date 1/8/03

Handwritten signature (X) Robert Barr

Certificate will be mailed in window envelope to this address:

Name: Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt: 801 California Street
City/State/ZIP: Mountain View, CA 94041

YOU MUST:
- Complete all necessary spaces
- Sign your application in Space F
SEND ALL FEES TO:
1. Application form
2. Non-refundable filing fee in check or money order payable to Register of Copyrights
MAIL TO:
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20540-6000

FOR MORE INFORMATION:
www.copyright.gov
or call (202) 707-5900

G

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 408, or in any written statement filed in connection with the application, shall be fined not more than \$2,500.

CERTIFICATE OF REGISTRATION

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America



EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

Month Day Year

OFFICIAL SEAL

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 12.0

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12.0; Cisco IOS Version 12.0; Cisco Internetwork Operating System 12.0; Cisco Internetwork Operating System Release 12.0; Cisco Internetwork Operating System Version 12.0

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼ Number ▼ Issue Date ▼ On Pages ▼

2

a NAME OF AUTHOR ▼
Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of _____
Domiciled in: United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b NAME OF AUTHOR ▼
See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of _____
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country
OR { Citizen of _____
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonymous? Yes No
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED
1998
This information must be given in all cases.

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK

Month _____ Day _____ Year _____
Complete this information ONLY if this work has been published. Nation

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

APPLICATION RECEIVED
JUN 14 2002
ONE DEPOSIT RECEIVED
JUN 14 2002
TWO DEPOSITS RECEIVED
FUNDS RECEIVED

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

DO NOT WRITE HERE OFFICE USE ONLY

MORE ON BACK ► • Complete all applicable spaces (numbers 5-8) on the reverse side of this page.
• See detailed instructions. • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of 4 pages

EXAMINED BY Tms' FORM TX
 CHECKED BY _____
 CORRESPONDENCE FOR
 Yes OFFICE
 USE
 ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

Yes No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

- a. This is the first published edition of a work previously registered in unpublished form.
- b. This is the first application submitted by this author as copyright claimant.
- c. This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶ Pending

Year of Registration ▶ 2002

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

a 6

See instructions before completing this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
 New and revised computer code and accompanying documentation

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
 Name ▼ Account Number ▼

a 7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt./City/State/ZIP ▼

b

Tu T. Tsao, Esq.
 Fenwick & West LLP
 2 Palo Alto Square
 Palo Alto, CA 94306

Area code and daytime telephone number ▶ (650) 858-7696

Fax number ▶ (650) 494-1417

Email ▶ ttsao@fenwick.com

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

- author
- other copyright claimant
- owner of exclusive right(s)
- authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

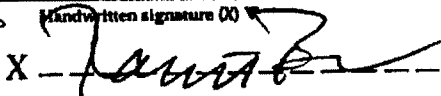
of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel

Date ▶

Handwritten signature (X) 

Certificate will be mailed in window envelope to this address:

Name ▼
 Susanne S. Morales, Paralegal / Fenwick & West LLP
 Number/Street/Apt ▼
 2 Palo Alto Square
 City/State/ZIP ▼
 Palo Alto, CA 94306

YOU MUST
 - Complete all necessary spaces
 - Sign your application in space 8

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE

1. Application form
2. Nonrefundable filing fee in check or money order As of July 1, 1998,
3. Deposit material

MAIL TO
 Library of Congress
 Copyright Office
 101 Independence Avenue, S.E.
 Washington, D.C. 20559-6000

9

the filing fee for Form TX is \$30.

CONTINUATION SHEET FOR APPLICATION FORMS

FORM TX /CON
UNITED STATES COPYRIGHT OFFICE

TXU 1-036-064



ST-001036064

P	A	U	S	E	S	E	S	R	S	R	U	T	X	T	X	U	V	A	V	A	U
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

(Month) (Day) (Year)

CONTINUATION SHEET RECEIVED

JUN 14 2002

Page 3 of 4 pages

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
- Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
- Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

- **TITLE:** (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)

Cisco IOS 12.0

A
Identification
of
Application

- **NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S):** (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)

Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

NAME OF AUTHOR ▼

(See Space C)

DATES OF BIRTH AND DEATH

Year Born ▼ Year Died ▼

B

Continuation
of Space 2

Was this contribution to the work a "work made for hire"? **AUTHOR'S NATIONALITY OR DOMICILE**

- Yes
 No

Name of Country

OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK

Anonymous? Yes No

Pseudonymous? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH

Year Born ▼ Year Died ▼

e

Was this contribution to the work a "work made for hire"? **AUTHOR'S NATIONALITY OR DOMICILE**

- Yes
 No

Name of Country

OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK

Anonymous? Yes No

Pseudonymous? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

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NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH

Year Born ▼ Year Died ▼

f

Was this contribution to the work a "work made for hire"? **AUTHOR'S NATIONALITY OR DOMICILE**

- Yes
 No

Name of Country

OR { Citizen of ► _____
Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK

Anonymous? Yes No

Pseudonymous? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Spaces 1, 4, or 6 of the Short Forms PA, TX, or VA.

CONTINUATION OF (Check which):

Space 1

Space 4

Space 6

Space 2b

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-nymous	Nature of Contribution
Adecco Employment Services	Yes	United States	Yes	No	Computer code
Avnisoft Corporation	Yes	United States	Yes	No	Computer code
HCL Consulting Limited	Yes	United States	Yes	No	Computer code
HCL America, Inc.	Yes	India	Yes	No	Computer code
H.L. Yoh Company LLC	Yes	United States	Yes	No	Computer code
Aquas	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Rapidigm	Yes	United States	Yes	No	Computer code
Wipro Limited	Yes	India	Yes	No	Computer code
Lasselle-Ramsay	Yes	United States	Yes	No	Documentation
Oakhill Publications/ Computer Education Consulting	Yes	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation
On-Call Consultants, Inc.	Yes	United States	Yes	No	Documentation
Judy Melanson	No	United States	Yes	No	Documentation

C

Continuation of other Spaces

Certificate will be mailed in window envelope to this address:

Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼ 2 Palo Alto Square
City/State/ZIP ▼ Palo Alto, CA 94306

YOU MUST:
• Complete all necessary spaces
• Sign your application

SEND ALL 3 ELEMENTS IN THE SAME PACKAGE
1. Application form
2. Nonrefundable fee in check or money order payable to Register of Copyrights
3. Deposit Material

MAIL TO:
Library of Congress, Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-4000

D

Fees are effective through June 30, 2002. After that date, check the Copyright Office Website at www.loc.gov/copyright or call (202) 707-3000 for current fee information.

EXHIBIT F

Copyright Office fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

FORM CA
For Supplementary Registration
UNITED STATES COPYRIGHT OFFICE

REGISTRATION NUMBER

TX	TXU	PA	PAU	VA	VAU	SR	SRU	RE
----	-----	----	-----	----	-----	----	-----	----

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

Month Day Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

A

Title of Work ▼
Cisco IOS 12.1

Registration Number of the Basic Registration ▼ TXu 1-036-066	Year of Basic Registration ▼ 2002
Name(s) of Author(s) ▼ Please see Space D for list of author names	Name(s) of Copyright Claimant(s) ▼ Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼

Line Number	2a	Line Heading or Description	Name of Author
Incorrect Information as It Appears in Basic Registration ▼			
		Cisco Systems, Inc.	
Corrected Information ▼			
		Cisco Systems Sales & Services, Inc.	
Explanation of Correction ▼			
		correct name of author	

C

Location and Nature of Information in Basic Registration to be Amplified ▼

Line Number	2b and C	Line Heading or Description	Name of Author
Amplified Information and Explanation of Information ▼			
Please add the following to the list of authors:			
		Name of Author: Cisco Technology, Inc.	
		Work for Hire: Yes	
		Domicile: United States	
		Anonymous: No	
		Pseudonymous: No	
		Nature of Contribution: Computer code and documentation	

MORE ON BACK ▶ • Complete all applicable spaces (D-G) on the reverse side of this page.
• See detailed instructions. • Sign the form at Space F.

DO NOT WRITE HERE
Page 1 of _____ pages

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CORRESPONDENCE

REFERENCE TO THIS REGISTRATION ADDED TO BASIC REGISTRATION YES NO

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Continuation of: Part B or Part C Part A

Cisco Systems, Inc.
ABE Staffing Services, Inc.
Adecco Employment Services
A.S.K. Office Personnel Solutions
Computer People
Cotelligent
Devsoft Corporation
HCL America, Inc.
HCL Consulting Limited
IT & E Corporation
Ma Foi Management Consultants Limited
Maprik Holdings Pty.Ltd
Metaplex, Inc.

Pipelink
Rapidigm
Softsol Resources, Inc.
Wipro Limited
Lasselle-Ramsay
Oakhill Publications / Computer Education
Consulting
Essential Solutions
Rick Barron

D

Correspondence: Give name and address to which correspondence about this application should be sent.

Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696 Fax (650) 938-5200 Email ttsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.

Name

Account Number

Certification* I, the undersigned, hereby certify that I am the: (Check only one)

- author
owner of exclusive right(s)
other copyright claimant
duly authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name Robert A. Barr, Worldwide Patent Counsel

Date 1-8-02

Handwritten signature (X)

Handwritten signature of Robert A. Barr

Certificate will be mailed in window envelope to this address:

Name: Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt: 801 California Street
City/State/ZIP: Mountain View, CA 94041

YOU MUST
Complete all necessary spaces
Sign your application in Space F
SEND ALL ITEMS IN THE SAME PACKAGE
1. Application form
2. Nonrefundable filing fee in check or money order payable to Register of Copyrights
MAIL TO
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Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20540-4000

G

Fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-5900.

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than \$2,500.

CERTIFICATE OF REGISTRATION

FORM TX
For a Nondramatic Literary Work
UNITED STATES COPYRIGHT OFFICE



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

REGISTER OF COPYRIGHTS
United States of America



EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

Month Day Year

OFFICIAL SEAL

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1

TITLE OF THIS WORK ▼

Cisco IOS 12.1

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12.1; Cisco IOS Version 12.1; Cisco Internetwork Operating System 12.1; Cisco Internetwork Operating System Release 12.1; Cisco Internetwork Operating System Version 12.1

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼ Number ▼ Issue Date ▼ On Pages ▼

2

NAME OF AUTHOR ▼

a Cisco Systems, Inc.

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country

OR { Citizen of _____
Domiciled in: United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonym? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NOTE

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
New and revised computer code and accompanying documentation

NAME OF AUTHOR ▼

b See Attached Form TX/CON for Additional Authors

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country

OR { Citizen of _____
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonym? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

c

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
Name of Country

OR { Citizen of _____
Domiciled in: _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
Anonymous? Yes No
Pseudonym? Yes No

If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

3

a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED

2000

This information must be given in all cases.

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK

Complete this information ONLY if this work has been published. Month Day Year

Month Day Year

4

COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼

Cisco Technology, Inc.
170 West Tasman Drive
San Jose, CA 95134

APPLICATION RECEIVED

JUN 14 2002

ONE DEPOSIT RECEIVED

JUN 14 2002

TWO DEPOSITS RECEIVED

FUNDS RECEIVED

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

By agreement

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MORE ON BACK ► • Complete all applicable spaces (numbers 5-9) on the reverse side of this page.
• See detailed instructions. • Sign the form at line 8.

DO NOT WRITE HERE
Page 1 of 4 pages

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TMS

FORM TX

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CORRESPONDENCE
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DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

Yes No If your answer is "Yes," why is another registration being sought? (Check appropriate box.)

a. This is the first published edition of a work previously registered in unpublished form.

b. This is the first application submitted by this author as copyright claimant.

c. This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶

Pending

Year of Registration ▶

2002

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates.

Prior works by claimant and preexisting third party computer code

a

6

See instructions
before completing
this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed.

New and revised computer code and accompanying documentation

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
Name ▶ Account Number ▶

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▶

Tu T. Tsao, Esq.
Fenwick & West LLP
2 Palo Alto Square
Palo Alto, CA 94306

Area code and daytime telephone number ▶ (650) 858-7696

Fax number ▶

(650) 494-1417

Email ▶
ttsao@fenwick.com

b

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

author

other copyright claimant

owner of exclusive right(s)

authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) A

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

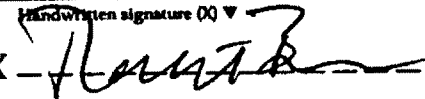
8

Typed or printed name and date ▶ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel

Date ▶

Handwritten signature (X) ▶

X 

Certificate will be mailed in window envelope to this address:

Name ▶
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▶

2 Palo Alto Square

City/State/ZIP ▶

Palo Alto, CA 94306

YOU MUST

- Complete all necessary spaces
- Sign your application in space 8

SEND ALL ELEMENTS IN THE SAME PACKAGE

1. Application form
2. Nonrefundable filing fee in check or money order As of July 1, 1999, the filing fee for Form TX is \$30.
3. Deposit material

MAIL TO

Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

9

CONTINUATION SHEET FOR APPLICATION FORMS

FORM TX /CON
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-066

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P A PAU | SE | SEG | SEU | SR | SRU | TX | TXU | VA | VAU

EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

(Month) (Day) (Year)
CONTINUATION SHEET RECEIVED

JUN 14 2002

Page 3 of 4 pages

- This Continuation Sheet is used in conjunction with Forms CA, PA, SE, SR, TX, and VA, only. Indicate which basic form you are continuing in the space in the upper right-hand corner.
- If at all possible, try to fit the information called for into the spaces provided on the basic form.
- If you do not have enough space for all the information you need to give on the basic form, use this Continuation Sheet and submit it with the basic form.
- If you submit this Continuation Sheet, clip (do not tape or staple) it to the basic form and fold the two together before submitting them.
- Space A of this sheet is intended to identify the basic application.
- Space B is a continuation of Space 2 on the basic application. Space B is not applicable to Short forms.
- Space C (on the reverse side of this sheet) is for the continuation of Spaces 1, 4, or 6 on the basic application or for the continuation of Space 1 on any of the three Short Forms PA, TX, or VA.

DO NOT WRITE ABOVE THIS LINE. FOR COPYRIGHT OFFICE USE ONLY

IDENTIFICATION OF CONTINUATION SHEET: This sheet is a continuation of the application for copyright registration on the basic form submitted for the following work:

• **TITLE:** (Give the title as given under the heading "Title of this Work" in Space 1 of the basic form.)
Cisco IOS 12.1

A

Identification of Application

• **NAME(S) AND ADDRESS(ES) OF COPYRIGHT CLAIMANT(S):** (Give the name and address of at least one copyright claimant as given in Space 4 of the basic form or Space 2 of any of the Short Forms PA, TX, or VA.)
Cisco Technology, Inc., 170 West Tasman Drive, San Jose, CA 95134

NAME OF AUTHOR ▼
(See Space C)

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

B

Continuation of Space 2

Was this contribution to the work a "work made for hire"? Name of Country
 Yes No
 OR { Citizen of ► _____
 Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
 Anonymous? Yes No If the answer to either of these questions is "Yes," see detailed instructions.
 Pseudonymous? Yes No

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

e

Was this contribution to the work a "work made for hire"? Name of Country
 Yes No
 OR { Citizen of ► _____
 Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
 Anonymous? Yes No If the answer to either of these questions is "Yes," see detailed instructions.
 Pseudonymous? Yes No

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH
Year Born ▼ Year Died ▼

f

Was this contribution to the work a "work made for hire"? Name of Country
 Yes No
 OR { Citizen of ► _____
 Domiciled in ► _____

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
 Anonymous? Yes No If the answer to either of these questions is "Yes," see detailed instructions.
 Pseudonymous? Yes No

NATURE OF AUTHORSHIP Briefly describe nature of the material created by the author in which copyright is claimed. ▼

Use the reverse side of this sheet if you need more space for continuation of Spaces 1, 4, or 6 of the basic form or for the continuation of Space 1 on any of the Short Forms PA, TX, or VA.

CONTINUATION OF (Check which):

Space 1 Space 4 Space 6 Space 2b

C

Name of Author	Work for Hire	Domicile	Anonymous	Pseudo-anonymous	Nature of Contribution
ABE Staffing Services, Inc.	Yes	United States	Yes	No	Computer code
Adecco Employment Services	Yes	United States	Yes	No	Computer code
A.S.K. Office Personnel Solutions	Yes	Australia	Yes	No	Computer code
Computer People	Yes	United States	Yes	No	Computer code
Cotelligent	Yes	United States	Yes	No	Computer code
Devsoft Corporation	Yes	United States	Yes	No	Computer code
HCL America, Inc.	Yes	India	Yes	No	Computer code
HCL Consulting Limited	Yes	United States	Yes	No	Computer code
IT & E Corporation	Yes	India	Yes	No	Computer code
Ma Foi Management Consultants Limited	Yes	Australia	Yes	No	Computer code
Maprik Holdings Pty Ltd	Yes	United States	Yes	No	Computer code
Metaplex, Inc.	Yes	United States	Yes	No	Computer code
Pipmlink	Yes	United States	Yes	No	Computer code
Rapidigm	Yes	India	Yes	No	Computer code
Softsol Resources, Inc.	Yes	United States	Yes	No	Computer code
Wipro Limited	Yes	United States	Yes	No	Documentation
Lasselle-Ramsay	Yes	United States	Yes	No	Documentation
Oakhill Publications/Computer Education Consulting	Yes	United States	Yes	No	Documentation
Essential Solutions	Yes	United States	Yes	No	Documentation
Rick Barron	No	United States	Yes	No	Documentation

Continuation of other Spaces

Certificate will be mailed in window envelope to this address:

Name ▼
Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
2 Palo Alto Square

City/State/ZIP ▼
Palo Alto, CA 94306

YOU MUST
 • Complete all necessary spaces
 • Sign your application

SEND ALL ELEMENTS IN THE SAME PACKAGE
 1. Application form
 2. Nonrefundable fee in check or money order payable to Register of Copyrights
 3. Deposit Material

MAIL TO
 Library of Congress, Copyright Office
 101 Independence Avenue, S.E.
 Washington, D.C. 20559-0000

D

Fees are effective through June 30, 2002. After that date, check the Copyright office Website at www.loc.gov/cepyright or call (202) 707-3000 for current fee information.

EXHIBIT G

Copyright Office fees are subject to change. For current fees, check the Copyright Office website at www.copyright.gov, write the Copyright Office, or call (202) 707-3000.

FORM CA
For Supplementary Registration
UNITED STATES COPYRIGHT OFFICE

REGISTRATION NUMBER

TX	TXU	PA	PAU	VA	VAU	SR	SRU	RE
----	-----	----	-----	----	-----	----	-----	----

EFFECTIVE DATE OF SUPPLEMENTARY REGISTRATION

Month Day Year

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A

Title of Work ▼ Cisco IOS 12.2	
Registration Number of the Basic Registration ▼ TXu 1-036-065	Year of Basic Registration ▼ 2002
Name(s) of Author(s) ▼ Please see Space D for list of name of authors	Name(s) of Copyright Claimant(s) ▼ Cisco Technology, Inc.

B

Location and Nature of Incorrect Information in Basic Registration ▼		
Line Number <u>2a</u>	Line Heading or Description	Name of Author
Incorrect Information as It Appears in Basic Registration ▼		
Cisco Systems, Inc.		
Corrected Information ▼		
Cisco Systems Sales & Services, Inc.		
Explanation of Correction ▼		
correct name of author		

C

Location and Nature of Information in Basic Registration to be Amplified ▼		
Line Number <u>2b and C</u>	Line Heading or Description	Name of Author
Amplified Information and Explanation of Information ▼		
Please add the following to the list of author names:		
Name of Author: Cisco Technology, Inc.		
Work for Hire: Yes		
Domicile: United States		
Anonymous: No		
Pseudonymous: No		
Nature of Contribution: Computer code and documentation		

MORE ON BACK ▶ • Complete all applicable spaces (D-G) on the reverse side of this page.
• See detailed instructions. • Sign the form at Space F.

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Page 1 of _____ pages

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CORRESPONDENCE

REFERENCE TO THIS REGISTRATION ADDED TO BASIC REGISTRATION YES NO

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Continuation of: Part B or Part C Part A

Cisco Systems, Inc.
ABE Staffing Services, Inc.
Adecco Employment Services
Acionyx, Incorporated
Greenwood Group, dba Manpower
Technical Services
HCL America, Inc.
HCL Consulting Limited
H.L. Yoh Company LLC
Hughes Software Systems USA
InfoSys Technologies Limited
Insight Solutions, Inc.
IT & E Corporation

Ma Foi Management Consultants Limited
Metalogic, S.A.R.L.
Metaplex, Inc.
Rapidigm
Savvy System Consultants
Ultimate Technology, Inc.
Wipro Limited
Lasselle-Ramsay
Oakhill Publications / Computer Education Consulting
Rick Barron

D

Correspondence: Give name and address to which correspondence about this application should be sent.

Tu T. Tsao, Esq.
Fenwick & West LLP
801 California Street
Mountain View, CA 94041

Phone (650) 335-7696

Fax (650) 938-5200

Email ttsao@fenwick.com

Deposit Account: If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account:

Name

Account Number

Certification: I, the undersigned, hereby certify that I am the: (Check only one)

- author owner of exclusive right(s)
- other copyright claimant duly authorized agent of

Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲ of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Typed or printed name ▼ Robert A. Barr, Worldwide Patent Counsel

Date ▼ 1-8-03

Handwritten signature (X) ▼ *Robert A. Barr*

Certificate will be mailed in window envelope to this address:

Name ▼ Susanne S. Morales, Paralegal / Fenwick & West LLP
Number/Street/Apt ▼ 801 California Street
City/State/ZIP ▼ Mountain View, CA 94041

YOU MUST:
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• Sign your application in Space F
SEARCH FEES TO BE PAID IN ADVANCE:
1. Application form
2. Nonrefundable filing fee in check or money order payable to Registrar of Copyrights
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Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20540-8000

Post are subject to change. For current fees, check the Copyright Office website at www.copyright.gov with the Copyright Office, or call (202) 707-9000.

G

*17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 408, or in any written statement filed in connection with the application, shall be fined not more than \$2,500.

CERTIFICATE OF REGISTRATION



OFFICIAL SEAL

This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters
 REGISTER OF COPYRIGHTS
 United States of America

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 For a Nondramatic Literary Work
 UNITED STATES COPYRIGHT OFFICE

RE TXu 1-036-065

 EFFECTIVE DATE OF REGISTRATION
JUN 14 2002
 Month Day Year

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

1 TITLE OF THIS WORK ▼
 Cisco IOS 12.2

PREVIOUS OR ALTERNATIVE TITLES ▼ Cisco IOS Release 12.2; Cisco IOS Version 12.2; Ciso Internetwork Operating System 12.2; Ciso Internetwork Operating System Release 12.2; Cisco Internetwork Operating System Version 12.2

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

Volume ▼	Number ▼	Issue Date ▼	On Pages ▼

2 a NAME OF AUTHOR ▼
 Cisco Systems, Inc.

DATE OF BIRTH AND DEATH
 Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
 Name of Country
 OR { Citizen of ►
 Domiciled in ► United States

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
 Anonymous? Yes No
 Pseudonymous? Yes No

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼
 New and revised computer code and accompanying documentation

b NAME OF AUTHOR ▼
 See Attached Form TX/CON for Additional Authors

DATE OF BIRTH AND DEATH
 Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?
 Yes
 No

AUTHOR'S NATIONALITY OR DOMICILE
 Name of Country
 OR { Citizen of ►
 Domiciled in ►

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK
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DATE OF BIRTH AND DEATH
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AUTHOR'S NATIONALITY OR DOMICILE
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 OR { Citizen of ►
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NOTE
 Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

3 a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED This information must be given in all cases. 2001
 b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK Complete this information ONLY if this work has been published. Month ► Day ► Year ► Nation

4 COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼
 Cisco Technology, Inc.
 170 West Tasman Drive
 San Jose, CA 95134

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼
 By agreement

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 JUN 14 2002
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 JUN 14 2002
 TWO DEPOSITS RECEIVED
 FUNDS RECEIVED

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 Yes

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COPYRIGHT
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DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

Yes No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

- a. This is the first published edition of a work previously registered in unpublished form.
- b. This is the first application submitted by this author as copyright claimant.
- c. This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ▶

Pending

Year of Registration ▶

2002

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

Prior works by claimant and preexisting third party computer code

a

6

See instructions before completing this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼
 New and revised computer code and accompanying documentation

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.
 Name ▼ Account Number ▼

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼

Tu T. Tsao, Esq.
 Fenwick & West LLP
 2 Palo Alto Square
 Palo Alto, CA 94306

Area code and daytime telephone number ▶ (650) 858-7696

Fax number ▶ (650) 494-1417

Email ▶ ttsao@fenwick.com

b

CERTIFICATION* I, the undersigned, hereby certify that I am the

Check only one ▶

- author
- other copyright claimant
- owner of exclusive right(s)
- authorized agent of Cisco Technology, Inc.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

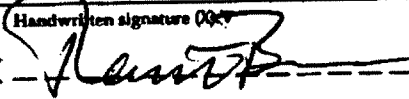
of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Robert A. Barr, Worldwide Patent Counsel

Date ▶

Handwritten signature (X) 

Certificate will be mailed in window envelope to this address:

Name ▼
 Susanne S. Morales, Paralegal / Fenwick & West LLP

Number/Street/Apt ▼
 2 Palo Alto Square

City/State/ZIP ▼
 Palo Alto, CA 94306

YOU MUST

- Complete all necessary spaces
- Sign your application in space 8

SEND ALL ELEMENTS IN THE SAME PACKAGE

1. Application form
2. Nonrefundable filing fee in check or money order payable to Registrar of Copyrights
3. Deposit material

MAIL TO

Library of Congress
 Copyright Office
 101 Independence Avenue, S.E.
 Washington, D.C. 20559-8000

9

As of July 1, 1999, the filing fee for Form TX is \$30.

CONTINUATION SHEET FOR APPLICATION FORMS

FORM TX /CON
UNITED STATES COPYRIGHT OFFICE

TXu 1-036-065



#TXu001036065*

PA	PAU	SE	SEG	SEU	SR	SR1	SR2	TXU	VA	VAU
----	-----	----	-----	-----	----	-----	-----	-----	----	-----

EFFECTIVE DATE OF REGISTRATION

JUN 14 2002

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Page 3 of 4 pages

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Cisco/Huawei

**Exhibit H:
Manual Comparison**

Huawei “ip address” Command (1 of 2)

User Manual – Command Reference (Volume 1)
Versatile Routing Platform

Chapter 1

IP Address Configuration Commands

* * * *

1.1.1 ip address

To set a primary or secondary IP address for an interface, use the **ip address** command. To remove an IP address or disable IP processing, use the **no** form of this command.

ip address *ip-address mask* [**secondary**]

no ip address [*ip-address*]

Syntax Description

ip-address IP address.

net-mask mask for the associated IP subnet. It is all in decimal format divided by dots. If there is no *ip-address* in the command **no ip address**, delete all the *ip-address* of the interface.

secondary specifies that the configured address is a secondary IP address. If this keyword is omitted, the configured address is the primary IP address.

Default

No IP address is defined for the interface

Huawei Command Reference, Version 1.5, Volume 1, Module 04, pp. 1-1 to 1-2

<http://datacomm.huawei.com/english/index.html>

[Select "Document Center" link; then select "VRP Command and Configuration Manual" link; then select "Command Reference V1.5"; then select "Command Reference(V1.5)-Volume 1" link.]

Cisco “ip address” Command (1 of 2)

ip address

ip address

To set a primary or secondary IP address for an interface, use the **ip address** interface configuration command. To remove an IP address or disable IP processing, use the **no** form of this command.

ip address *ip-address mask* [**secondary**]

no ip address *ip-address mask* [**secondary**]

Syntax Description

ip-address IP address.

mask Mask for the associated IP subnet.

secondary (Optional) Specifies that the configured address is a secondary IP address. If this keyword is omitted, the configured address is the primary IP address.

Default

No IP address is defined for the interface.

Cisco Network Protocols Command Reference, Part 1, Version 11.2, IP Commands, pp. V-57 to V-58

http://www.cisco.com/en/US/products/sw/iosswrel/ps1824/products_command_reference_chapter09186a0080080d98.html

[Select "ip address" link or select PDF file for entire document and go to cited pages]

Huawei “ip address” Command (2 of 2)

User Manual – Command Reference (Volume 1)
Versatile Routing Platform

Chapter 1

IP Address Configuration Commands

* * * *

Command Mode

Interface configuration mode

Usage Guideline

An interface can have one primary IP address and multiple secondary IP addresses. Packets generated by the software always use the primary IP address. Therefore, all routers and access servers on a segment should share the same primary network number.

Hosts can determine subnet masks using the Internet Control Message Protocol (ICMP) Mask Request message. Routers respond to this request with an ICMP Mask Reply message.

You can disable IP processing on a particular interface by removing its IP address with the no ip address command. If the software detects another host using one of its IP addresses, it will print an error message on the console.

The optional keyword secondary allows you to specify an unlimited number of secondary addresses. Secondary addresses are treated like primary addresses, except the system never generates datagrams other than routing updates with secondary source addresses. IP broadcasts and ARP requests are handled properly, as are interface routes in the IP routing table.

Huawei Command Reference, Version 1.5, Volume 1, Module 04, pp. 1-1 to 1-2

<http://datacomm.huawei.com/english/index.html>

[Select "Document Center" link; then select "VRP Command and Configuration Manual" link; then select "Command Reference V1.5"; then select "Command Reference (V1.5)-Volume 1" link.]

Cisco “ip address” Command (2 of 2)

ip address

* * * *

Command Mode

Interface configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

An interface can have one primary IP address and multiple secondary IP addresses. Packets generated by the Cisco IOS software always use the primary IP address. Therefore, all routers and access servers on a segment should share the same primary network number.

Hosts can determine subnet masks using the Internet Control Message Protocol (ICMP) Mask Request message. Routers respond to this request with an ICMP Mask Reply message.

You can disable IP processing on a particular interface by removing its IP address with the no ip address command. If the software detects another host using one of its IP addresses, it will print an error message on the console.

The optional keyword secondary allows you to specify an unlimited number of secondary addresses. Secondary addresses are treated like primary addresses, except the system never generates datagrams other than routing updates with secondary source addresses. IP broadcasts and ARP requests are handled properly, as are interface routes in the IP routing table.

Secondary IP addresses can be used in a variety of situations. The following are the most common applications:

- There may not be enough host addresses for a particular network segment. For example, your subnetting allows up to 254 hosts per logical subnet, but on one physical subnet you need to have 300 host addresses. Using secondary IP addresses on the routers or access servers allows you to have two logical subnets using one physical subnet.
- Many older networks were built using Level 2 bridges. The judicious use of secondary addresses can aid in the transition to a subnetted, router-based network. Routers on an older, bridged segment can be easily made aware that there are many subnets on that segment.

Cisco Network Protocols Command Reference, Part 1, Version 11.2, IP Commands, pp. V-57 to V-58

http://www.cisco.com/en/US/products/sw/iosswrel/ps1824/products_command_reference_chapter09186a0080080d98.html

[Select "ip address" link or select PDF file for entire document and go to cited pages]

Huawei “ip unnumbered” Command (1 of 2)

User Manual – Command Reference (Volume 1)
Versatile Routing Platform

Chapter 1

IP Address Configuration Commands

* * * *

1.1.4 ip unnumbered

To enable IP processing on a serial interface without assigning an explicit IP address to the interface, use the **ip unnumbered** command. To disable the IP processing on the interface, use the **no** form of this command.

ip unnumbered *interface-type interface-number*

no ip unnumbered

Syntax Description

interface-type type of another interface on which the router has an assigned IP address.

interface-number number of another interface on which the router has an assigned IP address.

Default

Disabled

Command Mode

Interface configuration mode

Huawei Command Reference, Version 1.5, Volume 1, Module 04, pp. 1-3 to 1-4

<http://datacomm.huawei.com/english/index.html>

[Select "Document Center" link; then select "VRP Command and Configuration Manual" link; then select "Command Reference V1.5"; then select "Command Reference(V1.5)-Volume 1" link.]

Cisco “ip unnumbered” Command (1 of 2)

ip unnumbered

ip unnumbered

To enable IP processing on a serial interface without assigning an explicit IP address to the interface, use the **ip unnumbered** interface configuration command. To disable the IP processing on the interface, use the **no** form of this command.

ip unnumbered *type number*
no ip unnumbered *type number*

Syntax Description

type number

Type and number of another interface on which the router has an assigned IP address. It cannot be another unnumbered interface.

Default

Disabled

Command Mode

Interface configuration

Cisco Network Protocols Command Reference, Part 1, Version 11.2, IP Commands, pp. V-147 to V-148

http://www.cisco.com/en/US/products/sw/iosswrel/ps1824/products_command_reference_chapter09186a0080080d98.html

[Select "ip unnumbered" link, or select PDF icon for entire document and go to cited pages]

Huawei “ip unnumbered” Command (2 of 2)

User Manual – Command Reference (Volume 1)
Versatile Routing Platform

Chapter 1

IP Address Configuration Commands

* * * *

Usage Guideline

Whenever the unnumbered interface generates a packet (for example, for a routing update), it uses the address of the specified interface as the source address of the IP packet. It also uses the address of the specified interface in determining which routing processes are sending updates over the unnumbered interface. Restrictions include the following:

- 1) Serial interfaces using HDLC, PPP, Balanced (LAPB), and Frame Relay encapsulations, as well as Serial Line Internet Protocol (SLIP) and tunnel interfaces can be unnumbered. It is not possible to use this interface configuration command with X.25 or Switched Multimegabit Data Service (SMDS) interfaces.
- 2) You cannot use the **ping** command to determine whether the interface is up, because the interface has no address. Simple Network Management Protocol (SNMP) can be used to remotely monitor interface status.
- 3) You cannot netboot a runnable image over an unnumbered serial interface.
- 4) You cannot support IP security options on an unnumbered interface.

The interface you specify by the *type* and *number* arguments must be enabled (listed as “up” in the show interfaces command display).

The *interface-type interface-number* cannot be another unnumbered interface.

Example

```
! Allow IP unnumbered from Ethernet 0 encapsulated with PPP.
```

```
Quidway(config-if-Serial0)# ip unnumbered ethernet 0
```

Related Command

```
ip proxy-arp
```

Huawei Command Reference, Version 1.5, Volume 1, Module 04, pp. 1-3 to 1-4

<http://datacomm.huawei.com/english/index.html>

[Select “Document Center” link; then select “VRP Command and Configuration Manual” link; then select “Command Reference V1.5”; then select “Command Reference(V1.5)-Volume 1” link.]

Cisco “ip unnumbered” Command (2 of 2)

ip unnumbered

* * * *

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Whenever the unnumbered interface generates a packet (for example, for a routing update), it uses the address of the specified interface as the source address of the IP packet. It also uses the address of the specified interface in determining which routing processes are sending updates over the unnumbered interface. Restrictions include the following:

- Serial interfaces using HDLC, PPP, Link Access Procedure, Balanced (LAPB), and Frame Relay encapsulations, as well as Serial Line Internet Protocol (SLIP) and tunnel interfaces can be unnumbered. It is not possible to use this interface configuration command with X.25 or Switched Multimegabit Data Service (SMDS) interfaces.
- You cannot use the **ping EXEC** command to determine whether the interface is up, because the interface has no address. Simple Network Management Protocol (SNMP) can be used to remotely monitor interface status.
- You cannot netboot a runnable image over an unnumbered serial interface.
- You cannot support IP security options on an unnumbered interface.

The interface you specify by the *type* and *number* arguments must be enabled (listed as “up” in the **show interfaces** command display).

If you are configuring IS-IS across a serial line, you should configure the serial interfaces as unnumbered. This allows you to conform with RFC 1195, which states that IP addresses are not required on each interface.

Cisco Network Protocols Command Reference, Part 1, Version 11.2, IP Commands, pp. V-147 to V-148

http://www.cisco.com/en/US/products/sw/iosswrel/ps1824/products_command_reference_chapter09186a008080d98.html

[Select “ip unnumbered” link, or select PDF icon for entire document and go to cited pages]

Huawei “ip tcp header-compression” Command (1 of 2)

User Manual – Command Reference (Volume 1)
Versatile Routing Platform

Chapter 2

IP Performance Configuration Commands

* * * *

2.7 ip tcp header-compression

To enable TCP header compression, use the **ip tcp header-compression** command.
To disable compression, use the **no** form of this command.

ip tcp header-compression
no ip tcp header-compression

Default

Disabled

Command Mode

Interface configuration mode

Cisco “ip tcp header-compression” Command (1 of 2)

ip tcp header-compression

ip tcp header-compression

To enable TCP header compression, use the **ip tcp header-compression** interface configuration command. To disable compression, use the **no** form of this command.

ip tcp header-compression [passive]
no ip tcp header-compression [passive]

Syntax Description

passive (Optional) Compresses outgoing TCP packets only if incoming TCP packets on the same interface are compressed. If you do not specify the **passive** keyword, the Cisco IOS software compresses all traffic.

Default

Disabled

Command Mode

Interface configuration

Huawei Command Reference, Version 1.5, Volume 1, Module 04, pp. 2-4 to 2-5

<http://datacomm.huawei.com/english/index.html>

[Select "Document Center" link; then select "VRP Command and Configuration Manual" link; then select "Command Reference V1.5"; then select "Command Reference (V1.5)-Volume 1" link.]

Cisco Network Protocols Command Reference, Part 1, Version 11.2, IP Commands, pp. V-142

http://www.cisco.com/en/US/products/sw/iosswrel/ps1824/products_command_reference_chapter09186a0080080d98.html

[Select "ip tcp header-compression" link, or select PDF file for entire document and go to cited page]

Huawei ‘ip tcp header-compression’ Command (2 of 2)

User Manual – Command Reference (Volume 1)
Versatile Routing Platform

Chapter 2

IP Performance Configuration Commands

* * * *

Usage Guideline

When running PPP in the lines of low speed WAN, the TCP header accounts for a large proportion in all the transmitting data, so TCP header-compression can be used to improve the efficiency of data transmission.

You can compress the headers of your TCP/IP packets in order to reduce the size of your packets. TCP header compression is supported on serial lines using Frame Relay, HDLC or Point-to-Point (PPP) encapsulation. You must enable compression on both ends of a serial connection. RFC 1144 specifies the compression process. Compressing the TCP header can speed up Telnet connections dramatically. In general, TCP header compression is advantageous when your traffic consists of many small packets, not for traffic that consists of large packets. Transaction processing (usually using terminals) tends to use small packets while file transfers use large packets. This feature only compresses the TCP header, so it has no effect on UDP packets or other protocol headers.

When compression is enabled, fast switching is disabled. This means that fast interfaces like T1 can overload the router. Consider your network's traffic characteristics before using this command.

Example

```
! Enable TCP header-compression at the PPP interface Serial0.  
Quidway(config-if-Serial0)# ip tcp header-compression
```

Related Command

encapsulation ppp

Huawei Command Reference, Version 1.5, Volume 1, Module 04, pp. 2-4 to 2-5

<http://datacomm.huawei.com/english/index.html>

[Select "Document Center" link; then select "VRP Command and Configuration Manual" link; then select "Command Reference V1.5"; then select "Command Reference(V1.5)-Volume 1" link.]

Cisco ‘ip tcp header-compression’ Command (2 of 2)

ip tcp header-compression

* * * *

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.8

You can compress the headers of your TCP/IP packets in order to reduce the size of your packets. TCP header compression is supported on serial lines using Frame Relay, HDLC or Point-to-Point (PPP) encapsulation. You must enable compression on both ends of a serial connection. RFC 1144 specifies the compression process. Compressing the TCP header can speed up Telnet connections dramatically. In general, TCP header compression is advantageous when your traffic consists of many small packets, not for traffic that consists of large packets. Transaction processing (usually using terminals) tends to use small packets while file transfers use large packets. This feature only compresses the TCP header, so it has no effect on UDP packets or other protocol headers.

When compression is enabled, fast switching is disabled. This means that fast interfaces like T1 can overload the router. Consider your network's traffic characteristics before using this command.

Example

In the following example, the first serial interface is set for header compression with a maximum of ten cache entries:

```
interface serial 0  
ip tcp header-compression  
ip tcp compression-connections 10
```

Related Command

ip tcp compression-connections

ip tcp compression-connections

Cisco Network Protocols Command Reference, Part 1, Version 11.2, IP Commands, pp. V-142

http://www.cisco.com/en/US/products/sw/iosswrel/ps1824/products_command_reference_chapter09186a0080080498.html

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