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Paper 47
Entered: September 2, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SEAGATE TECHNOLOGY (US) HOLDINGS, INC. and
SEAGATE TECHNOLOGY LLC,
Petitioner,

v.

ENOVA TECHNOLOGY CORP.,
Patent Owner.

Case IPR2014-00683
Patent 7,136,995 B1

Before MICHAEL R. ZECHER, GEORGIANNA W. BRADEN, and FRANCES L. IPPOLITO, *Administrative Patent Judges.*

IPPOLITO, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Seagate Technology (US) Holdings, Inc. and Seagate Technology LLC (collectively "Petitioner") filed a Corrected Petition ("Pet.") requesting an *inter partes* review of claims 1–15 of U.S. Patent No. 7,136,995 B1 ("the '995 patent"). Paper 4. Enova Technology Corp. ("Patent Owner") timely filed a Preliminary Response ("Prelim. Resp.") to the Petition. Paper 9. Based on these submissions, we instituted trial as to claims 1–15 of the '995 patent on the following proposed grounds of unpatentability:

Reference(s)	**Basis**	**Claim(s) Challenged**
Nolan[1] and SCSI-2[2]	§ 103	1–13
Nolan, SCSI-2, and Hamlin[3]	§ 103	14
Nolan, SCSI-2, and Detrick[4]	§ 103	15

Paper 10, 29 ("Dec. to Inst.").

After institution, Patent Owner filed a Patent Owner's Response (Paper 22, "PO Resp."), and Petitioner filed a Reply (Paper 27, "Reply"). In addition, Petitioner filed a Motion to Exclude. Paper 31 ("Pet. Mot. Exclude"). Patent Owner filed an Opposition to Petitioner's Motion to Exclude (Paper 38, "PO Exclude Opp."), and Petitioner filed a Reply (Paper 42, "Pet. Exclude Reply"). Patent Owner filed a Motion to Exclude. Paper 33 ("PO Mot. Exclude"). Petitioner filed an Opposition to Patent Owner's Motion to Exclude (Paper 37, "Pet. Exclude Opp."), and Patent Owner filed

[1] GB Patent App. No. 2,264,373 A, published Aug. 25, 1993 (Ex. 1002, "Nolan").
[2] ANSI, SMALL COMPUTER SYSTEM INTERFACE-2 (ANSI X3.131-1994 (R1999), 1994) (Ex. 1003, "SCSI-2").
[3] US Patent No. 6,735,693 B1, issued May 11, 2004 (Ex. 1004, "Hamlin").
[4] US Patent No. 7,278,016 B1, issued Oct. 2, 2007 (Ex. 1005, "Detrick").

a Reply (Paper 41, "PO Exclude Reply").

Patent Owner also filed a Motion to Seal Exhibits 2042, 2043, and 2044 (Paper 23, "Mot. to Seal"), which is addressed herein.

An oral hearing was conducted on May 11, 2015. A transcript of the oral hearing is included in the record. Paper 46 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(c). This decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of claims 1–15. For the reasons discussed below, Petitioner has demonstrated by a preponderance of the evidence that claims 1–15 are unpatentable.

A. Related Proceedings

Petitioner indicates the '995 patent currently is the subject of a related proceeding between the parties in the U.S. District Court for the District of Delaware titled *Enova Tech. Corp. v. Seagate Tech. (US) Holdings, Inc.*, No. 1:13-cv-1011-LPS, which was filed on June 5, 2013. Pet. 1; Paper 7, 2. Petitioner also indicates the '995 patent was the subject of a prior federal district court proceeding in the U.S. District Court for the District of Delaware, No. 1:10-cv-00004-LPS ("*Enova v. WD*"), which closed on March 4, 2013. Pet. 1. Additionally, related U.S. Patent No. 7,900,057 B2 is the subject of an *inter partes* review in Cases IPR2014-01178, IPR2014-01297, and IPR2014-01449.

B. The '995 Patent

The '995 patent describes a cryptographic device that performs encryption/decryption during data transfers between a data generating device and a data storage device. Ex. 1001, 3:22–24. Figure 4 (reproduced below)

depicts schematically the architecture of cryptographic device 43 described in the ’995 patent. *Id.* at 4:30–32.

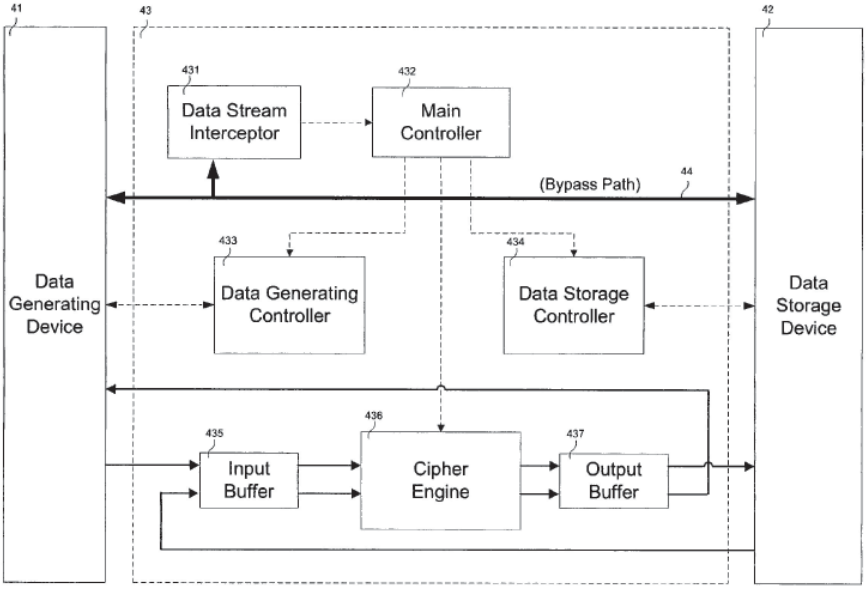

FIG. 4

Figure 4 shows cryptographic device 43 operatively coupled between data generating device 41 and data storage device 42 for use during data transfer. *Id.* at 4:32–35. The ’995 patent indicates that data generating device 41 may be “a desktop/notebook computer, microprocessor . . . or any other device capable of generating data.” *Id.* at 4:35–38. The ’995 patent adds that data storage device 42 may be “a computer hard drive, tape drive . . . magnetic tape . . . or any other device capable of storing data for retrieval purposes.” *Id.* at 4:38–44. Further, cryptographic device 43 is described as adapted to “perform transparently data encryption and decryption during data transfers between data generating device 41 and data storage device 42 with no impact on overall system performance.” *Id.* at 4:45–49.

Additionally, Figure 4 shows that cryptographic device 43 includes data stream interceptor 431 operatively coupled to a main controller 432.

Ex. 1001, 4:50–52. Main controller 432 communicates control signals to data generating controller 433, data storage controller 434, and cipher engine 436. *Id.* at 4:52–54. Main controller 432 receives input from data stream interceptor 431 and determines whether an incoming data stream, which may include command/control and/or data signals, is to be encrypted, decrypted, or passed through unmodified. *Id.* at 4:55–58. The '995 patent discloses that data stream interceptor 431 is adapted to distinguish between command/control and data signal transfers, and is configured to pass through certain command/control signals via bypass data path 44, and intercept other command/control signals which are transmitted to main controller 432. *Id.* at 4:58–65. Main controller 432 also "instructs data generating controller 433 and data storage controller 434 to perform specific data transfer protocols . . . of data generating device 41 and data storage device 42, respectively, according to the intercepted command/control signals." *Id.* at 4:65–5:4.

As discussed previously, Figure 4 shows cipher engine 436. "Main controller 432 also transmits control signals to cipher engine 436 to notify the same of an incoming data stream." Ex. 1001, 5:4–6. Cipher engine 436 is programmed to transparently encrypt/decrypt streaming data during data transfer between data generating device 41 and data storage device 42. *Id.* at 5:6–11.

C. Illustrative Claim

Of the challenged claims, claims 1, 5, 9, 13, 14, and 15 are independent. Claim 9 is illustrative of the subject matter of the '995 patent, and is reproduced below:

9. A cryptographic device, comprising:

> at least one data stream interceptor that distinguishes between command/control and data signal transfers;
>
> a main controller receiving input from said at least one data stream interceptor and determining whether incoming data would be encrypted, decrypted or passed through based on the received input from said at least one data stream interceptor;
>
> at least one data generating controller adapted to perform at least one data transfer protocol with at least one data generating device on command from said main controller;
>
> at least on data storage controller adapted to perform at least one data transfer protocol with at least one data storage device on command from said main controller; and
>
> at least one cipher engine adapted to transparently encrypt or decrypt at least one data stream between said at least one data generating device and said at least one data storage device on command from said main controller.

Ex. 1001: 6:45–64.

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner contends that the level of ordinary skill in the art is a bachelor's degree in electrical or computer engineering or computer science, and two years of experience in a relevant field of computer data storage, data transmission, and encryption "or . . . equivalent knowledge and experience." Pet. 13 (citing Ex. 1006 ¶¶ 15–17). Patent Owner disagrees and urges a different level of ordinary skill in the art as a bachelor's degree in electrical and/or computer engineering, plus either a master's degree in one of those fields or two years of industrial experience in the technical fields of Application-Specific Integrated Circuit (ASIC) design, hard drive data transfer protocols, and encryption standards, or equivalent knowledge and experience. PO Resp. 12–13. Patent Owner further argues that a "person of

ordinary skill in the art of the '995 patent should have experience with hardware systems and related prior art, which persons with a pure software background and a computer science degree do not necessarily have." *Id.* at 13.

To determine the level of ordinary skill in the art in this case, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, and the sophistication of the technology. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986). Also, we are guided by the level of ordinary skill in the art as reflected by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d. 1350, 1355 (Fed. Cir. 2001).

We are persuaded by the parties' contentions that the level of skill in the art would include a bachelor's degree in electrical or computer engineering or computer science and either a master's degree or two years of experience in a relevant field such as computer data storage, data transmission (e.g., data transfer protocols), and encryption. Pet. 13; PO Resp. 13. We, however, do not agree with Patent Owner that the relevant field of experience must include hardware encryption experience and excludes persons having a software background or a degree in computer science. PO Resp. 13; Ex. 2013 ¶ 42. Although the Specification of the '995 patent and the challenged claims disclose a "cryptographic device," we do not agree with Patent Owner that the use of "device" in this manner excludes software-based encryption. Indeed, the '995 patent teaches that encryption can be performed by either conventional software-based applications or hardware devices available. Ex. 1001, 1:35–2:3. Additionally, Petitioner's declarant, Dr. Darrell Long, testifies that

> [p]ersons of ordinary skill in the art at the time of the filing of the '995 Application also understood that encryption was typically implemented using one of two methods: software-based encryption or hardware-based encryption. Software-based encryption typically relied on software in the host computer, executed by the host [central processing unit (CPU)], to run the necessary encryption algorithm. It was well-known at the time of the filing of the '995 Application that software-based encryption was typically slower than hardware-based encryption, as it used the host computer's CPU to perform the encryption. Hardware-based encryption, in contrast, was typically faster as it was performed by dedicated hardware, such as dedicated PCMCIA [Personal Computer Memory Card International Association] cards plugged into the host or external ASIC-based devices.

Ex. 1006 ¶ 32 (citing Ex. 1001, 1:38–40).

Moreover, the level of skill in the art as reflected in the prior art of record encompasses both software-based and hardware-based encryption. For example, Nolan does not restrict encryption methods to software applications or hardware devices and describes the use of key-based "[m]odern encryption algorithms." Ex. 1002, 5:3–5.[5] Thus, when considering the entire evidence of record, we conclude that a person of ordinary skill in the art at the time of the '995 patent would have had a bachelor's degree in electrical or computer engineering or computer science and either a master's degree or two years of experience in a relevant field such as computer data storage, data transmission (e.g., data transfer protocols), and encryption.

[5] All page numbers of Exhibit 1002 refer to the page numbers located at the bottom, right-hand portion.

B. Weight Given to Petitioner's Declarant, Dr. Long

Patent Owner asserts that Petitioner's declarant, Dr. Long, is not qualified to provide expert testimony in this proceeding because Dr. Long does not have sufficient experience with hardware. PO Resp. 12. Specifically, Patent Owner asserts that Dr. Long has experience in computer data transmissions, data storage, and data security at the systems level, but lacks hardware encryption experience. *Id.* at 13. Patent Owner further asserts that Dr. Long's testimony is entitled to little weight because he does not fully understand the SCSI-2 Specification and provides "erroneous information that confuses and oversimplifies critical aspects of the SCSI-2 Specification." *Id.* at 14; *see id.* at 16. Patent Owner further contends Dr. Long's business affiliation with Petitioner indicates Dr. Long's testimony is biased.

First, we do not agree with Patent Owner that Dr. Long is not qualified to provide expert testimony because he does not have hardware-based encryption experience. As discussed above, we determine that the level of skill in the art at the time of the filing of the '995 patent does not exclude persons having software-based instead of hardware-based encryption experience. Moreover, we note that generally, arguments that the scientific or technical experience and knowledge of Dr. Long do not match the alleged level of skill in the art are unpersuasive as there is no requirement of a perfect match between the expert's experience and the field of the art in question. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1373 (Fed. Cir. 2010).

Second, a declarant may be qualified as an expert if the declarant's scientific, technical, or other specialized knowledge will help the trier of fact

to understand the evidence or to determine a fact in issue. Fed. R. Evid. 702. Patent Owner has not filed a motion to exclude on the basis of competency of Petitioner's expert witness, Dr. Long, and, therefore, we do not undertake an analysis of whether Dr. Long is, indeed, qualified under the Federal Rules of Evidence. We do note, however, that Dr. Long has experience in the field of computer data transmissions, data storage, and data security, including experience with security and encryption for hard disk drives. Ex. 1006 ¶ 5; *see also* Ex. 1014 (Dr. Long's Curriculum Vitae).

Additionally, we are capable of discerning from the testimony and the evidence presented the expertise and any potential bias of a witness, and then attributing the appropriate weight to the witness's testimony. *See, e.g.*, *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1465 (Fed. Cir. 1998) ("a witness's pecuniary interest in the outcome of a case goes to the probative weight of testimony, not its admissibility"). With these considerations in mind, we now turn to the construction of certain claim terms.

C. Claim Construction

In an *inter partes* review, "[a] claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Technologies, LLC*, No. 2014-1301, 2015 WL 4097949, at *7–*8 (Fed. Cir. July 8, 2015) ("We conclude that Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA" and "the standard was properly adopted by PTO regulation."), *reh'g en banc denied*, 2015 WL 4100060 (Fed. Cir. July 8, 2015). There is a "heavy presumption" that a claim term carries its ordinary and customary meaning.

CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002); *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. data stream interceptor that distinguishes between command/control and data signal transfers (claims 1, 5, 9, and 13–15)

For purposes of our Decision to Institute, we determined that the phrase "data stream interceptor that distinguishes between command/control and data signal transfers" should be construed as "one or more components adapted to intercept at least one data stream and distinguish the command or control signals *in the data stream* from the data signals" as proposed by the Petitioner. Dec. to Inst. 7–8 (citing Pet. 10; Ex. 1001, 4:32–35, 55–65).

In its Patent Owner Response, Patent Owner asserts that its construction for "data stream interceptor" as proposed in the Preliminary Response is based on the plain language of the claims and is consistent with the claim construction in the district court in *Enova v. WD*. PO Resp. 9–10 (citing Exs. 2001–2002). Specifically, Patent Owner proposes the construction of "one or more components adapted to intercept at least one data stream and distinguish between command/control signal transfers and data signal transfers." Prelim. Resp. 10–11 (citing Ex. 2001, 7). Patent Owner further asserts that the term "interceptor" requires "some level of examination of the data stream itself by, for example *extracting some of the data in the data stream*, which then allows the data stream interceptor to distinguish which parts of the data stream are command/control signal transfers" and data signal transfers. PO Resp. 19 (emphasis added). Patent Owner adds that the "interceptor" must do something more than allow the "passing through" of signals. *Id.*; Tr. 36:22–37:21, 38:23–39:19.

In the Reply, Petitioner responds that it has not argued that "intercepting" is synonymous with "passing through" via a bypass line. Reply 1; Tr. 9:5–10:3. Rather, Petitioner argues that it used the phrase "passing through" in the Petition to refer to receiving and acting on information. *Id.* Petitioner adds that "the broadest reasonable construction of intercept is simply are you . . . receiving it and doing something with it." Tr. 8:6–8. According to Petitioner, this is the ordinary and customary meaning of "intercept," which is consistent with the Specification's disclosure that the "data stream interceptor intercepts commands and sends them to the main controller." *Id.* at 8:11–20; *see* Reply 2. Petitioner further argues the Specification of the '995 patent does not limit what "intercepting" covers or give the term a special meaning such as "'examining' or 'extracting' signals." Reply 2; Tr. 7:21–8:8.

Based on the complete record before us, we agree with the parties that the broadest reasonable interpretation of the term "intercept" is the plain, ordinary, and customary meaning, which is *to receive and act upon*. The Specification does not expressly define "interceptor"; however, the plain, ordinary, and customary meaning of "intercept" is "to receive (a communication or signal directed elsewhere) usually secretly" and "to stop, seize, or interrupt in progress or course or before arrival." MERRIAM WEBSTER'S COLLEGIATE DICTIONARY (Frederick C. Mish et al., 10th ed. 1997) (Ex. 3002). This definition is consistent with the Specification, which discloses "interceptor 431 is configured to pass through certain command/control signals via a bypass data path 44, and intercept other command/control signals which are transmitted to main controller 432." Ex. 1001, 4:55–65.

We further note that, in discussing the prior art references, Patent Owner asserts that the "distinguishing function of the data stream interceptor cannot be independent from the intercepting and from the data stream itself," and the distinguishing of signals cannot occur before a data stream is present. PO Resp. 20–25; *see* Tr. 44:12–46:14. Essentially, Patent Owner asserts that the claim language requires a specific manner of distinguishing in a data stream. However, we do not agree that the term "distinguishes" requires any such limitation. The literal language of the claim does not limit how the data stream interceptor distinguishes the signals in the data stream. This is consistent with the Specification, which also does not limit how signals are distinguished. Ex. 1001, 4:58–65. Moreover, Patent Owner conceded that, for the purposes of this proceeding, it agrees with the Board's construction in the Decision to Institute. Tr. 46:15–25. Thus, we discern no sufficient reason to alter or depart from our claim construction of the phrase "data stream interceptor that distinguishes between command/control and data signal transfers" as "one or more components adapted to intercept at least one data stream and distinguish the command or control signals in the data stream from the data signals." We do, nonetheless, clarify that the plain, ordinary, and customary meaning of "intercept" applies and that distinguishing signals in the data stream can be performed in any manner.

2. "transparently" (claims 1, 5, 9, and 13–15)

In the Decision to Institute, we determined that the broadest reasonable interpretation of "transparently" is "functionally invisible" because this construction is consistent with the ordinary and customary meaning of "transparent" as would be understood by one with ordinary skill in the art in light of the '995 patent. Dec. to Inst. 9–11 (citing Ex. 1001,

3:34–36; Ex. 3001, 3).

Patent Owner argues that its proposed construction of "functionally, data transfers appear to be performed directly between the data generating device and the data storage device" (Prelim. Resp. 13–14) is directly supported by the Specification as describing transparent encryption. PO Resp. 10–11 (citing Ex. 1001, 3:62–4:2, 4:21–29). As we noted in the Decision to Institute, Patent Owner's proposal is more restrictive than the claim language, which does not recite explicitly that data transfers appear to be performed directly between the data generating device and data storage device. Moreover, Patent Owner's proposed construction ignores the Specification's disclosure that an "invisible" cryptographic device also functionally performs data transfers "directly between data generating device 13 and/or data storage device 11, respectively." Ex. 1001, 3:30–34. Although the Specification does not expressly define "transparently," it does describe the disclosed cryptographic device as an "invisible" data transfer bridge connecting data generating device 13 and data storage device 11. Ex. 1001, 3:34–36. This disclosure is consistent with the ordinary and customary meaning of "transparently," which is "[i]n computer use, of, pertaining to, or characteristic of a device, function, or part of a program that works so smoothly and easily that it is invisible to the user." Ex. 3001, 3. Accordingly, we maintain that the broadest reasonable interpretation of "transparently" is "functionally invisible."

3. "input" (claims 1, 5, 9, and 13–15)

In the Decision to Institute, we did not adopt Patent Owner's proposed construction of "input" and determined that the claim term does not require *input distinguishing between command/control and data signal transfers*,

but rather encompasses either command/control or data signals. Dec. to Inst. 11–12. In response, Patent Owner contends that our construction is inconsistent with the district court's construction in *Enova v. WD*. PO Resp. 11. Specifically, Patent Owner argues that the district court's construction provides a link between "input" and the determination of whether to encrypt/decrypt or pass through each signal. *Id.* (citing Ex. 1001, 4:55–61). Patent Owner asserts that the district court's construction requires "input" resulting from the distinguishing to be sent to and used in some way by the main controller in determining. *Id.* at 11–12 (citing Ex. 2002, 2).

Although the district court's claim construction in *Enova v. WD* is informative and provides some guidance on the interpretation of the term "input," we are not bound by the district court's findings. Rather, we apply the broadest reasonable interpretation standard in this proceeding, under which we determined in the Decision to Institute that the term "input" does not require a specific type of input. This interpretation is consistent with the Specification, which teaches "[m]ain controller 432 receives input from data stream interceptor 431 and determines whether an incoming data stream, which may include command/control and/or data signals, is to be encrypted, decrypted or passed through unmodified." Ex. 1001, 4:55–58. The Specification does not limit the described input to a type of information such as that which distinguishes between signals. Based on the entire record before us, we discern no reason to alter our claim construction for "input" for this Final Written Decision.

4. *"A cryptographic device operatively coupled between a data generating device and a data storage device for use during data transfer" (claim 13);*

   A cryptographic device integrated within a data storage device for use during data transfer with a data generating device (claim 14); and

   A cryptographic device integrated within a data generating device for use during data transfer with a data storage device (claim 15).

For the Decision to Institute, we concluded that the limitations recited in the body of claims 13, 14, and 15 essentially are identical except for the language of the preambles, which indicate the location of the cryptographic device and provide the only difference in claim scope between claims 13, 14, and 15. Dec. to Inst. 13. We further determined that the preambles are essential to understand the scope of claims 13, 14, and 15, and operate as claim limitations. *Id.* In Patent Owner's Response, Patent Owner reserved the right to challenge our construction, but did not explain how the preambles should be construed. PO Resp. 11. Accordingly, based on the complete record before us, we maintain that the preambles of claims 13, 14, and 15 are limiting.

D. Claims 1–13 – Obviousness over Nolan (Ex. 1002) and SCSI-2 (Ex. 1003)

Petitioner argues claims 1–13 are unpatentable under 35 U.S.C. § 103(a) over Nolan and SCSI-2. Pet. 15–40. Patent Owner contests Petitioner's position. PO Resp.17–46. As explained below, we have considered the arguments and evidence presented by both parties, and we determine Petitioner has shown by a preponderance of the evidence that claims 1–13 are unpatentable over Nolan and SCSI-2.

1. Summary of Nolan (Ex. 1002)

Nolan describes an apparatus for encrypting computer data before storage. Ex. 1002, 5:1–2. Figure 1 (reproduced below) shows a block diagram of an apparatus for encryption that is designed for use with tape drives that use a Small Computer System Interface (SCSI). *Id.* at 8:8–10, 13–15.

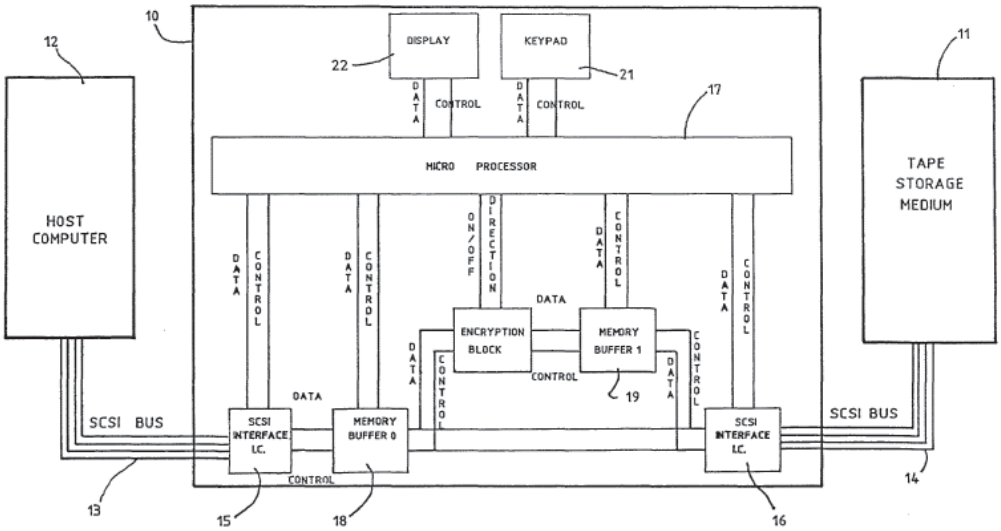

FIG 1

Figure 1 shows encryption/decryption apparatus 10 connected to host computer 12 and tape storage medium 11 via a SCSI BUS. Encryption and decryption apparatus 10 includes host computer interface 15 and tape drive interface 16 on respective sides. Ex. 1002, 8:25–26.

Encryption/decryption apparatus 10 includes an encryption block and microprocessor 17. Under the control of the microprocessor 17, host computer interface 15, tape drive interface 16, and the encryption block transfer data to or from host memory buffer 18 or target memory buffer 19. *Id.* at 8:27–9:8. Whether a particular memory block responds to a request signal is controlled by microprocessor 17. Microprocessor 17 can switch on

and off the flow of data into and out of a particular memory buffer from a particular source or destination. *Id.* at 9:13–18. Microprocessor 17 also sets the encryption block to encrypt or decrypt, and transfers data through the encryption block from a memory buffer. *Id.* at 9:25–6:2.

Additionally, Nolan's Figure 2 shows a flow diagram of the main program steps performed by microprocessor 17. Ex. 1002, 10:12–13. After initiation 30 and 31, microprocessor 17 reads the common encryption key stored on the tape and stores it in encryption/decryption apparatus 10. *Id*. at 10:14–16. "[M]icroprocessor 17 waits for a command to be sent from the host computer, step 32" ("Wait for Input SCSI Command"). *Id*. at 10:17–18. If the command involves tape movement, "the anticipated amount of movement is calculated and stored, step 35." *Id.* at 10:21–23. "The microprocessor then ascertains whether any transfer of encrypted data is required, steps 36 and 37." *Id.* at 10:23–25. "If not, the command is executed, step 38." *Id.* "If it does involve the transfer of encrypted data then the stored encryption key is modified by the current tape position, step 39." *Id.* at 10:26–29.

2. Summary of SCSI-2 (Ex. 1003)

SCSI-2 describes SCSI as a local input/output (I/O) bus that can be operated over a wide range of data rates. Ex. 1003, 35.[6] "When two SCSI devices communicate on the SCSI bus, one acts as an initiator and the other acts as a target. The initiator originates an operation and the target performs the operation." *Id.* at 59.

[6] All page numbers for SCSI-2 refer to the page number located in the bottom, right-hand corner.

SCSI-2 discloses that the SCSI architecture includes eight distinct phases: (a) BUS Free phase, (b) ARBITRATION phase, (c) SELECTION phase, (d) RESELECTION phase, (e) COMMAND phase, (f) DATA phase, (g) STATUS phase, and (h) MESSAGE phase. Ex. 1003, 68. SCSI-2 adds that the SCSI bus "can never be in more than one phase at any given time." *Id.* SCSI-2 also refers to the COMMAND, DATA, STATUS, and MESSAGE phases, collectively, as information transfer phases because "they are all used to transfer data or control information via the DATA BUS." Ex. 1003, 71.

SCSI-2 also discloses that SCSI bus signals include an I/O signal, a C/D (CONTROL/DATA) signal, and a MSG (MESSAGE) signal. Ex. 1003, 61. The C/D signal is "driven by a target that indicates whether CONTROL or DATA information is on the DATA BUS. True indicates CONTROL." *Id.* SCSI-2 further discloses "[e]ach signal driven by an SCSI device shall have" a lower voltage of 0 to 0.5 volts for signal assertion and a higher level voltage of 2.5 to 5.25 volts for signal negation. *Id.* at 54. Additionally, the C/D, I/O and MSG signals are used to distinguish between the different information transfer phases. *Id.* at 71. The "target drives these three signals and therefore controls all changes from one phase to another." *Id.* Table 8 (reproduced below) shows the use of C/D, I/O, and MSG signals. *Id.* at 72.

Table 8 - Information transfer phases

Signal			Phase name	Direction of transfer	Comment
MSG	C/D	I/O			
0	0	0	DATA OUT	Initiator to target \	Data
0	0	1	DATA IN	Initiator from target /	phase
0	1	0	COMMAND	Initiator to target	
0	1	1	STATUS	Initiator from target	
1	0	0	*		
1	0	1	*		
1	1	0	MESSAGE OUT	Initiator to target \	Message
1	1	1	MESSAGE IN	Initiator from target /	phase
Key: 0 = False, 1 = True, * = Reserved for future standardization					

As shown in Table 8, during the DATA phase, the C/D signal indicates False. *Id.* During the COMMAND phase, the C/D signal indicates True. *Id.*

3. Analysis

Below we discuss independent claim 9, which is illustrative of challenged claims 1–8 and 10–13. Claim 9 recites a cryptographic device comprising "at least one data stream interceptor that distinguishes between command/control and data signal transfers." Ex. 1001, 6:46–47.

Petitioner asserts that Nolan's disclosure of SCSI Interface 15 implemented using the details of SCSI-2 teaches this limitation. Pet. 19. More particularly, Petitioner points to Figure 1 of Nolan to show all data streams originating from host computer 12 travel over SCSI bus 13 and are intercepted by SCSI Interface 15 when entering encryption/decryption apparatus 10. *Id.* Petitioner further argues Nolan's SCSI Interface 15 distinguishes between command/control signals and data signals by using the C/D signal disclosed in SCSI-2. *Id.* at 20.

Additionally, Petitioner asserts a person of ordinary skill in the art would have been motivated to combine Nolan's cryptographic device with SCSI-2, because Nolan explicitly teaches the use of SCSI to transfer data

between the host computer and the storage medium. Pet. 17 (citing Ex. 1002, 4:13–15). Petitioner's declarant, Dr. Long, also testifies that:

> The embodiment in Figure 1 of Nolan is implemented using multiple "SCSI bus[es]" and "SCSI Interface[s]" 15 and 16. (*Id.* at Figure 2.) The specification repeats that Nolan can be implemented using "SCSI commands" (*see* Figure 2) and other features detailed in the "SCSI-1 and SCSI-2" protocols (*id.* at 8:25). In my opinion, these teachings would have directed one of ordinary skill to look to the SCSI-2 Specification for specific details of how the SCSI protocol operates in Nolan.

Ex. 1006 ¶ 58.

Patent Owner argues that the combination of Nolan and SCSI-2 does not teach a data stream interceptor that intercepts data streams and performs the claimed distinguishing function. PO Resp. 17. Patent Owner first asserts that Petitioner argues SCSI Interface 15 intercepts data streams because data from host computer 12 travels over SCSI bus 13 and "pass through" SCSI Interface 15. *Id.* at 18. Patent Owner contends that "passing through" and "intercepting" are different functions in the context of the '995 patent (*id.* at 19 (citing Ex. 2013 ¶ 83)), and intercepting the data stream as claimed requires "examination of the data stream itself by, for example, extracting some of the data in the data stream, which then allows the data stream interceptor to distinguish which parts of the data stream are command/control signal transfers and which parts of the data stream are data signal transfers." *Id.* at 19 (citing Ex. 2013 ¶ 84); Tr. 36:22–37:9.

In its Reply, Petitioner responds that it used the phrase "passing through" in the Petition to describe that "all information [in Nolan] passes through in the sense that the information arrives at SCSI interface, it's interpreted, reviewed, and acted on." Reply 1; *see* Tr. 9:11–16. As an

example, Petitioner asserts that Nolan's SCSI Interface 15 does not have a bypass path and, therefore, intercepts all commands and sends them to the microprocessor. Reply 2; *see* Tr. 8:20–22. During oral argument, Petitioner clarifies that the '995 patent teaches an "almost identical" manner of interception in that the data stream interceptor *intercepts* commands and sends them to the main controller. Tr. 8:17–20.

First, we do not agree with Patent Owner that the ordinary and customary meaning of "intercept" requires examination of a data stream and extraction of data in the data stream. *See supra*, Section II.C.1.,Claim Construction. As discussed previously, we find that the ordinary and customary meaning of "intercept," is "to receive and act upon." Consistent with this interpretation, the Specification of the '995 patent describes data stream interceptor 431 as intercepting command/control signals, which are transmitted to main controller 432. Ex. 1001, 4:61–64. Thus, the scope of the term "intercept," as described in the '995 patent, encompasses *receiving* command/control signals and *transmitting* those signals elsewhere such as main controller 432. *See id.*

Second, turning to the disclosure in Nolan relied upon by Petitioner, SCSI Interface 15 performs interception in nearly the same manner as described by the '995 patent, namely, by receiving information from host computer 12 through SCSI bus 13 and transmitting data to host memory buffer 18 and commands to microprocessor 17. Ex. 1002, Fig. 1, 8:27–9:1. Moreover, according to Patent Owner and Patent Owner's declarant, Dr. Thomas Conte, "Nolan discloses that commands are sent to the microprocessor 17 and that data is sent to host memory buffer 18." Ex. 2013 ¶ 95 (citing Ex. 1002, 10:14–18, 5:9–19); PO Resp. 33. Thus, based on the

complete record, we agree with Petitioner that Nolan discloses a "data stream interceptor" that receives information and then transmits commands to a microprocessor and transmits data to a memory buffer.

Alternatively, Petitioner asserts that one of ordinary skill in the art would have understood that SCSI Interface 15 is adapted to route signals from entering data streams to internal registers for temporary storage and then to different locations within apparatus 10. Reply 1–2 (citing Ex. 1006 ¶¶ 76–78); Tr. 11:14–12:9. Petitioner relies on the testimony of Dr. Long and Exhibits 1017 and 1019 to show that a person of ordinary skill in the art would have possessed this background knowledge at or around the time the application leading to the '995 patent was filed. Reply 1–2 (citing Ex. 1006 ¶¶ 76–77). Patent Owner contends that Nolan does not provide this disclosure. PO Resp. 33–34. Despite Patent Owner's contention to the contrary, we credit the testimony of Dr. Long and the disclosures in Exhibits 1017 and 1019 and we find that knowledge of temporary registers may be imputed to a hypothetical person of ordinary skill for purposes of an obviousness analysis. *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (non-applied art or evidence may be considered as background information known to a person of ordinary skill in the art). Accordingly, based on Petitioner's alternative reasoning, we also agree that Nolan discloses a "data stream interceptor."

Next, Patent Owner argues that the combination of Nolan and SCSI-2 does not teach the distinguishing function of the "data stream interceptor." PO Resp. 19–34. Patent Owner argues that the selection of "Information Transfer Phases," as described in SCSI-2, by Nolan's SCSI Interface 15 does not distinguish between command/control and data signal transfers because

SCSI Interface 15 presumes the incoming signals will correspond to the information transfer phase that has been selected previously. PO Resp. 20–22 ("SCSI Interface 15 knows, based on the information transfer phase it has set, what kind of signal is incoming and can act accordingly. It need not 'distinguish' between signal types when that signal has already been divided into neat buckets for it."); Tr. 40:20–23 ("We think that SCSI interface 15 is commanding or setting the data transfer phase, and that it does not do any distinguishing through these voltages.").

Patent Owner further argues that, during a SCSI data transmission, the selection of an information transfer phase, such as COMMAND or DATA (represented by a C/D signal) on a control wire, is subsequently followed by the transmission of a data stream on the DATA BUS. PO Resp. 22–24. Specifically, Patent Owner argues that SCSI-2 teaches the transmission of a data stream over the DATA BUS does not occur until after the C/D signal is set (information transfer phase selected) and a REQ/ACK handshake protocol is satisfied. *Id.* at 23–24. Patent Owner asserts that the C/D signal on the control wire is not part of the data stream that is transferred over the DATA BUS cables and SCSI Interface 15 cannot distinguish command or control signals in the data stream from the data signals because there is no data stream at the time the C/D signal is driven by SCSI Interface 15. *Id.* at 23–24.

In response, Petitioner argues that the claims do not restrict how or when distinguishing may occur and that SCSI Interface 15 distinguishes the type of incoming signal based on the information transfer phrase selected. Reply 4–6 ("The '995 Patent places no restrictions on which signals may be used to perform the distinguishing function, and provides no particular

method for distinguishing."). Petitioner adds that, "even if a timing limitation were justified, the SCSI-2 Specification teaches that the C/D signals are maintained throughout each phase so that Nolan's SCSI Interface 15 continues to distinguish command/control signals from data signals as those signals travel on the DATA BUS." *Id.* at 5 (citing Ex. 1003, 71 n.25, 431, Fig. A1).

We agree with Petitioner and find that the ordinary and customary meaning of "distinguishes," as recited in claim 9, does not require a specific manner of distinguishing. *See supra* Section II.C.1., Claim Construction. For example, the claim language does not require the recited data stream interceptor to distinguish command/control signals and data signals by using signals in the data stream. Further, the claim language does not impose a timing requirement as to when the distinguishing must or cannot occur.

Additionally, Patent Owner asserts that SCSI-2 does not distinguish between command/control signals and data signals because the SCSI-2 does not distinguish user data from non-user data. PO Resp. 26–29. Patent Owner argues that the use of the term "DATA" in SCSI-2 is not the same as the "data signals" recited in the claims of the '995 patent because both user data and non-user data are transferred during the "DATA" phase. PO Resp. 26–27 (citing Ex. 2013 ¶¶ 73, 93). Patent Owner's declarant, Dr. Conte, further testifies that SCSI-2 discloses

> certain commands, such as INQUIRY, result in "data" sent across the bus during a DATA phase that is not in fact user data but other data, which Dr. Long defines as a control signal (responsive to the inquiry from another device). In the case of INQUIRY, it includes information about the SCSI target's capabilities as well as vendor information. *See supra* ¶ 73. This is clearly not user data or data signals as claimed. Second, there are commands in the SCSI-2 protocol that include

> parameters that are sent from the initiator to the target during the DATA OUT phase, such as the COPY command. A person of ordinary skill in the art would consider these command parameters as "command signals," rather than "data signals," within the meaning of the '995 patent.

Ex. 2013 ¶ 93. Patent Owner adds that Nolan also does not distinguish between user data and non-user because it discloses an embodiment in which all data sent through the data bus would be encrypted, including commands. PO Resp. 29 (citing Ex. 1002, 12:18–20). Patent Owner further argues that Petitioner's declarant, Dr. Long, has not explained sufficiently how a skilled artisan would distinguish between user data and non-user data based on Nolan and SCSI-2. *Id.* at 28.

In response, Petitioner asserts that the '995 Patent "requires only that the interceptor be adapted to distinguish command or control signals from data signals—*i.e.*, user data—in at least one data stream, which SCSI Interface 15 does in the data streams for the READ(6) and WRITE(6) operations using the C/D line, as discussed above." Reply 6. Petitioner further contends that Patent Owner's citation to an alternative embodiment in Nolan does not diminish Nolan's disclosure of other embodiments where SCSI Interface 15 implemented with SCSI-2 would perform the claimed distinguishing function. *Id.* at 7.

First, we agree with Petitioner that Nolan's description of one embodiment with complete encryption/decryption of data does not discount Nolan's concurrent disclosure of other embodiments in which encryption/decryption is optional. *See* Ex. 1002, 5:20–28. Second, we agree with Petitioner that the claim language "data stream interceptor that distinguishes between command/control and data signal transfers" does not

require the interceptor to distinguish between user data and non-user date. We also agree with Petitioner that SCSI-2's READ(6) and WRITE(6) operations describe at least one instance where information transfer phases distinguish between command/control signals and data signals. Pet. 19 (citing Ex. 1006 ¶¶ 99–107); Reply 6 n.2, 8 n.3 (citing Ex. 1006 ¶ 105; Ex. 1029, 61:10–17; 62:6–23; 67:6–11; 68:1–10.

A better understanding of SCSI-2's READ(6) and WRITE (6) operations can be derived by looking at, for example, Table 22 of SCSI-2 reproduced below.

Table 122 - READ(6) command

Bit / Byte	7	6	5	4	3	2	1	0
0	Operation code (08h)							
1	Logical unit number			(MSB)				
2	Logical block address							
3								(LSB)
4	Transfer length							
5	Control							

Table 2 shows the command block of READ(6). Ex. 1003, 197. During cross-examination, Patent Owner's declarant, Dr. Conte, testified that the READ(6) command block, shown in Table 22, is an example of a SCSI-2 command used to transfer user data from a storage device to a host computer. Ex. 1029, 61:10–17. Dr. Conte further testified that "there's no additional parameters to the READ(6) command beyond what's in the 6 bytes in the command block." and that the READ(6) command is sent during the command phase of a data transfer operation. *Id.* at 62:6–63:7. Dr. Conte also agreed that user data would be sent in a data phrase of the data transfer operation. *Id.* at 63:8–15. Additionally, Dr. Conte acknowledged that the fourth paragraph on page 102 of SCSI-2 describes: (1) an example of a single SCSI-2 command, such as a READ command; and (2) transfer of the command descriptor block during the COMMAND phase and transfer of

data during the DATA IN phase. *Id.* at 65:7–66:17. Thus, we agree with Petitioner that operation of the READ(6) command involves the selection of COMMAND phase to transmit the READ command and the selection of the DATA IN phase to transmit data.

At the oral hearing, Patent Owner argued that the Petition did not contain the READ(6) and WRITE(6) arguments because Petitioner relied generally on the C/D wire "theory" without limiting that theory to read or write commands. Tr. 47:12–48:12. However, when discussing how Nolan's SCSI Interface 15 is capable of distinguishing between command/control signals and data signals on page 19 of the Petition, Petitioner refers to paragraphs 99–107 of Dr. Long's declaration. The relevant portion of paragraph 105 states:

> when data is being sent from the host computer, encrypted, and written on the tape drive, SCSI Interface 15 distinguishes the "write" command sent from the host computer from data sent from the host computer. Likewise, when data is being read from the tape drive, decrypted, and sent to the host computer, SCSI Interface 15 distinguishes the "read" command sent from the host computer from data.

Ex. 1006 ¶ 105.

Moreover, Patent Owner was given an opportunity to address the READ(6) and WRITE(6) arguments at the oral hearing. Tr. 47:12–51:23. At the oral hearing, Patent Owner argued that Petitioner's theory that SCSI-2's C/D wire distinguishes between command/control and signals and data signals is not supported by the description of the READ(6) and WRITE(6) commands because SCSI-2 discloses other commands, i.e., INQUIRY and COPY commands, where command signals are transmitted during the DATA phase. Tr. 47:3–50:9. We do not agree with Patent Owner's

arguments because, as discussed above, Petitioner has explained sufficiently that SCSI-2 teaches the C/D wire distinguishes command/control and data signal for at least one data stream, which is shown in SCSI-2's READ(6) and WRITE(6) operations.

In the Patent Owner Response, Patent Owner further argues that SCSI-2's INQUIRY and COPY commands demonstrate that the status of the C/D wire cannot distinguish between data signals and control/command signals sent during a DATA phase. PO Resp. 30–33. Patent Owner additionally argues that Petitioner's reliance on temporary registers for the distinguishing functionality is not supported by the references. *Id.* at 33–34. We do not agree with Patent Owner's arguments. Instead, upon considering the complete record before us, we agree with Petitioner that the operation of SCSI-2's READ(6) and WRITE(6) commands teaches sufficiently how the signal of the C/D wire distinguishes between data signals and control/command signals.

Claim 9 further recites "a main controller receiving input from said at least one data stream interceptor and determining whether incoming data would be encrypted, decrypted or passed through based on the received input from said at least one data stream interceptor." Ex. 1001, 6:48–52.

Petitioner argues Nolan's disclosure of microprocessor 17 receiving input from SCSI Interface 15 meets this limitation. Pet. 23–24. Petitioner explains that Nolan's Figure 1 shows that microprocessor 17 receives input from SCSI Interface 15. *Id.* at 24. Petitioner's declarant, Dr. Long, adds "SCSI bus 13 connects host computer 12 to SCSI Interface 15 and transfers data through SCSI bus 13 using the SCSI protocol." Ex. 1006 ¶ 124 (citing Ex. 1002, Fig. 1, 4:17–26). Petitioner further argues Figure 2 of Nolan

shows a flowchart with a "WAIT FOR INPUT SCSI COMMAND," shown as step 32. Pet. 24. Petitioner explains that microprocessor 17 receives the input SCSI command from SCSI Interface 15, and "whenever input received from SCSI Interface 15 indicates a data transfer (step 36), microprocessor 17 makes a determination as to whether encryption or decryption is required (step 37)." *Id*. at 24–25.

Patent Owner argues Nolan's microprocessor 17 does not determine whether to encrypt or decrypt data based on a SCSI command received from SCSI Interface 15. PO Resp. 35–36 (citing Ex. 2013 ¶ 101) ("That the microcontroller 17 may make a determination of whether to encrypt or decrypt 'whenever input [is] received' does not show that any such determination is based on that input."); Tr. 59:14–18. Referring to Figure 2 of Nolan, Patent Owner asserts Petitioner does not provide a link between the alleged "input," a host SCSI command, and the decision to encrypt because tape movement is the only determination Nolan discloses as based on the command, and whenever input received from SCSI Interface 15 indicates a data transfer (Fig. 2, step 36), microprocessor 17 makes a determination as to whether encryption or decryption is required (Fig. 2, step 37). PO Resp. 36–37 (citing Ex. 1002, Fig. 2, 10:18–25). Additionally, Patent Owner argues that Nolan does not describe how step 37, "ENC/DEC REQUIRED?" (Ex. 1002, Fig. 2), is performed, but asserts that this step is likely based on checking a configuration setting provided by a user (e.g., through keypad 21). PO Resp. 39–42. Patent Owner also refers to examples disclosed in Detrick and Hamlin, describing encryption based on user configured settings, as showing that one of ordinary skill in the art would not have understood Nolan as teaching encryption based on the SCSI input

command. *Id.* at 41–42. Patent Owner further asserts that the INQUIRY command disclosed in SCSI-2 demonstrates a command that may require tape movement in Nolan without requiring encryption/decryption of the control information. *Id.* at 37–38 (citing Ex. 2013 ¶ 102); Tr. 57:17–58:10.

In response, Petitioner argues "the only input in Figure 2 [of Nolan] for the tape movement (step 33), data transfer (step 36), and encryption/decryption of the transferred data (step 37) is the SCSI command, indicating that each decision is based on the SCSI command." Reply 11 (citing Ex. 1002, Fig. 2).

We agree with Petitioner that Nolan sufficiently teaches microprocessor 17 determines "whether incoming data would be encrypted, decrypted or passed through based on the received input from said at least one data stream interceptor" because the claim language does not require that the recited determination is based *directly* or *wholly* on the received input (i.e., SCSI command at step 32). Figure 2 of Nolan is reproduced below.

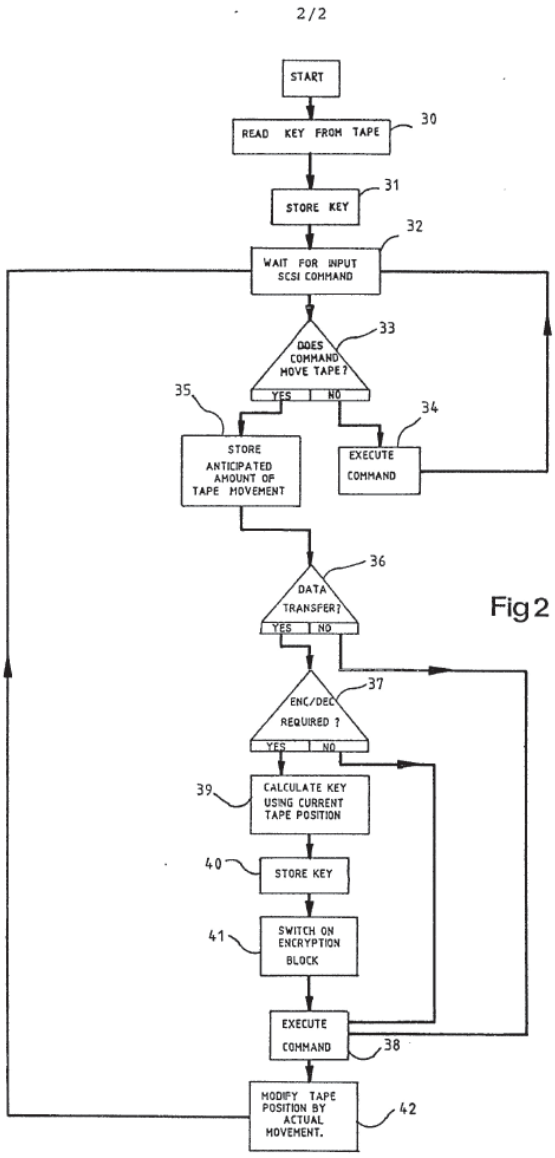

Fig 2

Figure 2 shows a flow diagram of the main program steps *controlling* the microprocessor 17. Ex. 1002, 6:12–13 (emphasis added). Figure 2 indicates, at step 32, microprocessor 17 waits for a SCSI command to be sent from the host computer. *Id.* at 6:17–18. If the SCSI command requires tape movement (step 33), microprocessor 17 continues to step 35 to determine the amount of tape movement, and then to steps 36 and 37 to "ascertain[] whether any transfer of encrypted data is required." *Id.* at 6:21–

25. Accordingly, microprocessor 17 may perform step 37, "ENC/DEC REQUIRED," only after microprocessor 17 receives the SCSI command at step 32, and determines the SCSI command involves tape movement at step 33 and data transfer at step 36. Although encryption or decryption determination at step 37 does not occur directly after step 32, receipt of the SCSI command prompts microprocessor 17 to determine whether to perform steps 33 and 35–37.

Furthermore, we do not agree with Patent Owner's arguments regarding SCSI-2's INQUIRY command, Nolan's alternative embodiment (e.g., keypad 21), or Detrick and Hamlin's teachings. As Patent Owner acknowledges, these arguments are based on "speculation," which we do not find detracts from or otherwise undermines Nolan's description of the embodiment shown in Figure 2. *See* Tr. 61:6–8.

Patent Owner further argues that based on the claim construction adopted by the district court in *Enova v. WD*, Nolan does not teach that the SCSI command is "input" that distinguishes between command/control and data signal transfers. PO Resp. 42–43. We have not adopted Patent Owner's construction for "input" and, therefore, do not agree that Nolan must teach a microprocessor receives input resulting from the distinguishing function performed by the data stream interceptor.

Claim 9 also recites

> at least one data generating controller adapted to perform at least one data transfer protocol with at least one data generating device on command from said main controller;

> at least on data storage controller adapted to perform at least one data transfer protocol with at least one data storage device on command from said main controller[.]

Ex. 1006, 6:53–60.

Petitioner argues that SCSI Interface 15 and 16 meet these limitations, because Nolan teaches that host computer interface 15 (also called SCSI Interface 15) "can, under the control of the microprocessor 17, transfer data directly to or from a host memory buffer 18," and SCSI Interface 16 transfers data between the tape storage medium and host memory buffer or target memory buffer under the control of microprocessor 17. Pet. 26 (citing Ex. 1002, 8:27–9:1). More specifically, Petitioner argues that Figure 1 of Nolan teaches that data transfers from memory buffers 18 and 19 by SCSI Interfaces 15 and 16 continue to the host computer and target. Reply 12–13. Petitioner further asserts that SCSI Interface 15 performs a data transfer protocol with the data generating device (host computer 12) on command from the main controller (microprocessor 17). Pet. 26 (citing Ex. 1002, Fig. 1, 4:17–26; Ex. 1006 ¶ 124). Petitioner also explains that "SCSI Interface 16 in Nolan (also called target tape drive interface 16), when implemented using the SCSI-2 Specification, performs a data transfer protocol with the data storage device (tape storage medium 11) on command from the main controller (microprocessor 17)." Pet. 27 (citing Ex. 1006 ¶ 128).

Patent Owner argues that Nolan does not teach SCSI Interface 15 is a data generating controller that performs a data transfer protocol with a data generating device because Nolan only describes moving data to internal memory buffers. PO Resp. 44 (citing Ex. 2012, 143:3–25; Ex. 2013 ¶ 108). For similar reasons, Patent Owner contends Nolan does not teach SCSI

Interface 16 is a data storage controller that performs a data transfer protocol with a data storage device. PO Resp. 45–46.

We agree with Petitioner's position. During cross-examination, Patent Owner's declarant, Dr. Conte, confirmed that SCSI Interfaces 15 and 16 communicate with the host computer and tape drive. Ex. 1029, 77:7–82:10; *see* Ex. 2013 ¶ 54. Moreover, we agree with Petitioner that Nolan's Figure 1, and accompanying description, discloses the use of the SCSI protocol with SCSI Interface 15 and 16 to communicate with memory buffers and the host computer 12 and tape storage medium 11, respectively. For example, Nolan teaches that host computer 12 is connected by SCSI cable 13 to encryption/decryption apparatus 10. Ex. 1002, 4:17–21. Nolan further teaches that SCSI Interface 15, under the control of microprocessor 17, can transfer data into or out of memory buffer 18. *Id.* at 4:25–5:1. As shown in Figure 1, data from host computer 12 can be transferred to memory buffer 18 via SCSI bus 13 and SCSI Interface 15. *Id.* at Fig. 1. Similar operations are disclosed for SCSI Interface 15, memory buffer 19, and tape storage medium 11.

Claim 9 also recites "at least one cipher engine adapted to transparently encrypt or decrypt at least one data stream between said at least one data generating device and said at least one data storage device on command from said main controller." Ex. 1001, 6:61–64. Petitioner argues "Nolan discloses a cipher engine—encryption block 20—situated within Nolan's cryptographic device ('apparatus 10') between the data generating device (host computer 12) and the data storage device (tape storage medium 11)." Pet. 29. Petitioner's declarant, Dr. Long, testifies that encryption block 20 performs data transfers transparently, because "[l]ike the cipher

engine in the '995 Patent, Nolan's encryption block 20 has its own dedicated microprocessor 17 as part of the encryption/decryption apparatus 10," and "Nolan's cryptographic device also uses the SCSI bus lines 13 and 14 that normally would have connected the host computer 12 directly to tape storage medium 11 without alteration." *Id.* at 30 (quoting Ex. 1006 ¶ 133). Patent Owner does not address separately the cipher engine limitation in its Patent Owner Response. Applying our claim construction for the term "transparently," we are satisfied that the disclosure in Nolan meets the cipher engine limitation.

Upon review of Petitioner's evidence and analysis, and taking into account Patent Owner's secondary consideration arguments discussed below, we determine that Petitioner has shown by a preponderance of the evidence that claim 9 is unpatentable under 35 U.S.C. § 103 over Nolan and SCSI-2. Further, Petitioner provides detailed explanations of how each limitation of claims 2–13 is taught or suggested by the combination of Nolan and SCSI-2. Pet. 31–40. Patent Owner does not address separately these claims in its Patent Owner Response. *See generally* PO Resp. 17–46. We, therefore, adopt Petitioner's explanations and supporting evidence as our own. Accordingly, we conclude after considering the complete record (including Patent Owner's secondary consideration arguments) that Petitioner has established by a preponderance of the evidence that claims 2–13 would have been obvious over Nolan and SCSI-2.

E. Claim 14 – Obviousness over Nolan, SCSI-2, and Hamlin (Ex. 1004)

Petitioner argues claim 14 is unpatentable under 35 U.S.C. § 103(a) over Nolan, SCSI-2, and Hamlin. Pet. 40–44. Specifically, Petitioner contends claims 13 and 14 contain the same limitations, except

that claim 14's preamble recites "[a] cryptographic device *integrated within a data storage device for use during data transfer with a data generating device*." *Id.* at 40 (emphasis added). As discussed above, we treat the preamble of claim 14 as limiting. *See supra* Section II.C.1.,Claim Construction. Patent Owner contests Petitioner's position. PO Resp. 47–48. As explained below, we have considered the arguments and evidence presented by both parties, and we determine Petitioner has shown by a preponderance of the evidence that claim 14 is unpatentable over Nolan, SCSI-2, and Hamlin.

1. Summary of Hamlin (Ex. 1004)

Hamlin is directed to the "need for a disk drive comprising a tamper resistant cryptosystem which is protected from an attacker employing chosen plaintext attacks." Ex. 1004, 2:3–5. Hamlin discloses "[a] disk drive comprising a disk for storing encrypted data." Ex. 1004, Abstract. Hamlin teaches second circuit 100, including encryption circuitry 110, that is housed within the disk drive. *Id.* at 2:66–3:3, Fig. 1.

2. Analysis

Petitioner argues Hamlin discloses encryption circuitry 110 connected to interface 104, which is "connected to receive user data from a host computer." Pet. 44 (citing Ex. 1004, Fig. 2, 4:18–22). Petitioner further asserts encryption circuit 110 is housed within disk drive, which is a data storage device. *Id.* at 43. Petitioner asserts that a person of ordinary skill in the art would have recognized the physical security of Nolan's cryptographic device (implemented using the SCSI-2 Specification), and particularly access to Nolan's SCSI bus, could be enhanced by housing Nolan's cryptographic device within a storage device, as taught by Hamlin. *Id.* at 44.

Patent Owner argues that Nolan and SCSI-2 does not disclose the recited data stream interceptor or main controller, and Hamlin does not supply the missing teaching. PO Resp. 47. For the same reasons discussed above with respect to claim 9, we agree with the Petitioner that the teachings in Nolan and SCSI-2 satisfy the data stream interceptor and main controller limitations recited in claim 14.

Patent Owner further contends that Nolan teaches the use of a keypad and display to configure apparatus 10 for encryption, and a person of ordinary skill in the art would not have combined a keyboard and display with Hamlin's disk drive (e.g., Figure 3 of Hamlin) because this would require incorporating a keypad and display inside Hamlin's circuit-based system. PO Resp. 47–48. Patent Owner also argues that Hamlin teaches away from using a keypad to enter a cryptographic key because this introduces potential vulnerabilities into Hamlin's system. *Id.* at 48.

Claim 14, however, does not require a keyboard or display, and Petitioner has not proposed the use of a keyboard or display with Hamlin's system. Petitioner explains that Hamlin teaches housing encryption circuitry within a disk drive improves system security, and that, based on this teaching, one of ordinary skill in the art would have recognized the security benefits of locating Nolan's cryptography device within a storage device. Pet. 44 (citing Ex. 1006 ¶ 177–178). Moreover, "[i]t is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements," but instead turns on "whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole." *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012).

Accordingly, upon review of Petitioner's evidence and analysis, and taking into account Patent Owner's secondary consideration arguments discussed below, we determine that Petitioner has shown by a preponderance of the evidence that claim 14 is unpatentable under 35 U.S.C. § 103 over Nolan, SCSI-2, and Hamlin.

F. Claim 15 – Obviousness over Nolan, SCSI-2, and Detrick (Ex. 1005)

Petitioner argues claim 15 is unpatentable under 35 U.S.C. § 103(a) over Nolan, SCSI-2, and Detrick. Pet. 44–49. Specifically, Petitioner contends claims 13 and 15 contain the same limitations, except that claim 15's preamble recites "a cryptographic device *integrated within a data generating device for use during data transfer with a data storage device*." *Id.* at 45 (emphasis added). As discussed above, we treat the preamble of claim 15 as limiting. *See supra* Section II.C.1.,Claim Construction. Patent Owner contests Petitioner's position. PO Resp. 48–50. As explained below, we have considered the arguments and evidence presented by both parties, and we determine Petitioner has shown by a preponderance of the evidence that claim 15 is unpatentable over Nolan, SCSI-2, and Detrick.

1. Summary of Detrick (Ex. 1005)

Detrick is directed to "implementing encryption and decryption of data stored from a computing system to a storage medium." Ex. 1005, 1:9–10. Figure 1 (reproduced below) shows an "embodiment of a computing system implementing encryption/decryption capabilities." *Id.* at 2:61–63.

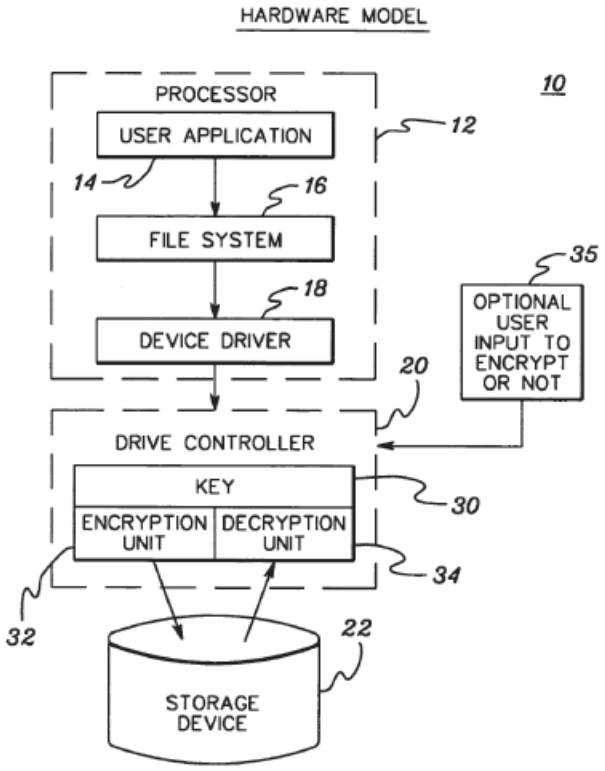

fig. 1

Figure 1 shows computing system 10 with processor 12 and drive controller 20. "The hardware encryption and decryption could be either in the drive controller 20 (as shown), or in the drive itself." *Id.* at 3:50–52. Detrick states driver controller 20 can "regulate the flow of data to and from a disk drive, floppy drive, etc." *Id.* at 3:65–67. Detrick discloses "[c]ommon types of drive controllers include . . . SCSI." *Id.* at 4:1–2.

2. Analysis

Petitioner asserts Figure 1 of Detrick shows encryption/decryption hardware housed within a data generating device. Pet. 48. Petitioner's declarant, Dr. Long, testifies:

> [a] person of ordinary skill in the art at the time of the filing of the '995 Application would have recognized from the teachings of Detrick that the physical security of Nolan's cryptographic

> device (implemented using the SCSI-2 Specification), and particularly access to Nolan's SCSI bus, could be enhanced by housing Nolan's cryptographic device within a data generating device such as a computer.

Id. at 48–49 (quoting Ex. 1006 ¶ 193).

Patent Owner argues again that Nolan and SCSI-2 does not disclose the recited data stream interceptor or main controller, and Hamlin does not supply the missing teaching. PO Resp. 49–50. Similarly, Patent Owner asserts that one of ordinary skill in the art would not place Nolan's apparatus 10 with keyboard and monitor inside a host computer. *Id.* at 49.

For the same reasons discussed above with respect to claims 9 and 14, we agree with Petitioner that the teachings in Nolan and SCSI-2 satisfy the data stream interceptor and main controller limitations recited in claim 15. We also find that Petitioner has explained sufficiently how the combination of Nolan, SCSI-2, and Detrick teach or suggest the remaining limitations of claim 15. Based on the current record, and taking into account Patent Owner's secondary consideration arguments discussed below, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 15 would have been obvious over Nolan, SCSI-2, and Detrick.

G. Secondary Considerations

As discussed above we have determined that: (1) Nolan and SCSI-2 teach or suggest the subject matter recited in claims 1–13; (2) Nolan, SCSI-2, and Hamlin teach or suggest the subject matter recited in claim 14; and (3) Nolan, SCSI-2, and Detrick teach or suggest the subject matter recited in claim 15. Nonetheless, our inquiry continues because Patent Owner argues that secondary considerations in the form of industry praise, commercial

success, copying, and licensing establish the nonobviousness of claims 1–15. PO Resp. 50–59.

Secondary considerations, when present, must always be considered as part of an obviousness inquiry. *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012). Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the patent's invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the challenged claims would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Secondary considerations may include any of the following: long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, and praise. *See Graham*, 383 U.S. at 17–18; *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

To be relevant, evidence of nonobviousness must be reasonably commensurate in scope with the claimed invention. *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (citing *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971)); *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). More fundamentally, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). "Nexus" is a legally and factually sufficient connection between the

objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the Patent Owner. *Id.*; *see In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

1. Industry Praise

Patent Owner argues that its line of encryption ASCIs "X-Wall" products (i.e., X-Wall SE, Enigma, IDE-to-IDE version X-Wall CO, SATA-to-SATA version X-Wall MX, and SATA-to-USB version X-Wall FX) embody the claimed invention of the '995 patent, and have generated industry praise. PO Resp. 52–53 (citing Ex. 2013 ¶ 127). We have reviewed the materials and find that Patent Owner has not established a sufficient nexus between the claimed cryptographic device and the alleged industry praise of Patent Owner's products.

First, Patent Owner asserts that

> Rocstor, a provider of fast, high-capacity data storage and encryption security solutions, describes Enova as "a leading ASIC design engineering company focused on bringing innovative encryption security solutions to market" and praises "Enova's leading-edge hardware based encryption products address the increasing requirement for privacy and confidentiality, satisfying the growing demand for maximum security."

PO Resp. 52 (citing Ex. 2018, 1). Although Exhibit 2018 discusses general features of Patent Owner's X-Wall products, Patent Owner does not identify any praise due to specific elements that are recited in the challenged claims. *See* PO Resp. 52–53; Ex. 2018.

Second, Patent Owner cites a 2002 Computerworld article that allegedly praises Enova's X-Wall SE product. PO Resp. 52. Patent Owner asserts that Computerworld describes the X-Wall SE as sitting "between the PC motherboard and the hard disk, encrypting all data flowing to the hard disk," and the operation of X-Wall SE as "transparent to the user." PO Resp. 52 (citing Ex. 2019, 1; *see* Ex. 2013 ¶ 123, Exs. 2029–2030).

As an initial matter, we do not agree the Computerworld article's description of the X-Wall SE product amounts to praise. Rather, the Computerworld article simply describes the X-Wall SE's: (1) location between the PC motherboard and the hard disk; and (2) operation as transparent. However, the article does not on its face attribute any advantage or benefit to these features. Ex. 2019. Thus, we are not persuaded that Exhibit 2019 provides praise for X-Wall SE. *See Bayer Healthcare Pharms., Inc. v. Watson Pharms., Inc.*, 713 F.3d 1369, 1377 (Fed. Cir. 2013) (finding that brief discussions of Patent Owner's product in journal articles "fall well short of demonstrating true industry praise").

Furthermore, to the extent that the Computerworld article touts advantages of the X-Wall SE product, Patent Owner does not does not explain sufficiently where these product features are recited in the challenged claims. For example, in his Declaration, Dr. Conte describes X-Wall SE as performing transparent encryption, which requires "no special software or changes to the host computer or disk drive." Ex. 2013 ¶ 123 (citing Exs. 2037, 2030). However, Dr. Conte and Patent Owner do not explain how the challenged claims require no special software or changes to the host computer or disk drive. As an example, claim 9 recites "at least one cipher engine adapted to *transparently* encrypt or decrypt at least one data

stream between said at least one data generating device and said at least one data storage device on command from said main controller." Ex. 1001, 6:46–47 (emphasis added). Nonetheless, Patent Owner has not explained sufficiently how transparent operation, as described in the Computerworld article, relates to the recited function of "transparently encrypt or decrypt." Moreover, even assuming the transparent operation discussed in the Computerworld article describes "transparently" encrypting or decrypting, as claimed, Petitioner has demonstrated that this feature, as discussed above, is disclosed by Nolan. *See* Pet. 29–30 (citing Ex. 1006 ¶ 133). Under these circumstances, any evidence of secondary considerations stems from what was known in the prior art, so that there can be no nexus. *Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1369 (Fed. Cir. 2011) ("If [secondary considerations are] due to an element in the prior art, no nexus exists.").

Third, Patent Owner asserts its products embodying the invention of the '995 patent have received industry awards. PO Resp. 52. Patent Owner argues that its Enigma I product received an Editor's Choice Award and an "Excellent" rating from PC Magazine for Enigma I's "[s]imple, seamless full-disk encryption for any USB mass storage device." *Id.* at 52–53 (citing Ex. 2013 ¶ 127; Ex. 2017, 1). Patent Owner also asserts that Enigma I won a TAITRONICS Technology Innovation Award in 2012. *Id.* at 53 (citing Ex. 2013 ¶ 127; Ex. 2015, 1). Additionally, Patent Owner asserts that its X-Wall MX product was awarded a 2012 Business World Golden Bridge Award in the Encryption Solutions Innovations category. PO Resp. 53 (citing Ex. 2020).

Turning first to the PC Magazine award, we do not agree that Patent Owner has established a sufficient nexus between the "Editor's Choice

Award"/"Excellent" rating of Enigma I and the claimed features of the '995 patent. PC Magazine describes several "pros" and "benefits" of Enigma I, including "[s]imple, seamless full-disk encryption for any USB mass storage device." Ex. 2017, 1. Patent Owner attributes the advantage of a "[s]imple, seamless full-disk encryption for any USB mass storage device" to the claimed elements of the '995 patent, but does not explain specifically what claimed features provide this advantage. In his declaration, Dr. Conte testifies that Enigma's encryption is "totally transparent," as it uses the patented methods of the '995 patent. Ex. 2013 ¶ 127. However, Dr. Conte does not indicate how "transparent" encryption relates to the "simple, seamless full-disk encryption" discussed in the PC Magazine article. *Id.* Moreover, even assuming Patent Owner and Dr. Conte attribute "simple, seamless full-disk encryption" to transparent encryption, as claimed, Petitioner has demonstrated that this feature, as discussed above, is disclosed by Nolan. *See* Pet. 29–30 (citing Ex. 1006 ¶ 133).

We also are not persuaded by Patent Owner's reliance on a TAITRONICS Technology Innovation Award given to Enigma I or the Business World Golden Bridge Award for X-Wall MX in 2012. Ex. 2015, 1; Ex. 2020, 6. Exhibit 2015 provides no discussion of the Enigma product other than listing "Enigma" as a product receiving a TAITRONICS award. Ex. 2015, 1. Similarly, for Business World Golden Bridge Award, Exhibit 2020 only lists X-Wall MX without any discussion or description of X-Wall MX. Ex. 2020, 6. As a consequence, we are unable to determine whether the Enigma product or X-Wall MX include features recited in the challenged claims.

Fourth, Patent Owner relies on its previous business relationship with Petitioner and Petitioner's description of Petitioner's own products as evidence of industry praise. PO Resp. 54–56. Patent Owner argues that Petitioner was aware of industry praise for Patent Owner's products and sought out Patent Owner's assistance to bring hardware encryption products to market. *Id*. at 53. Patent Owner further asserts that Petitioner purchased Patent Owner's X-Wall products and used them in Petitioner's hard disk drives, including Petitioner's Momentus drive. *Id.* at 53–55 (citing Ex. 2027 ¶¶ 15–17, Answer to Complaint). According to Patent Owner, by using Patent Owner's products, Petitioner touted and advertised the advantages of hardware-based full disk encryption and transparent encryption. *Id.* at (citing Exs. 2006–2008, 2013 ¶ 127; Ex. 2027 ¶¶ 15–19, 22). Patent Owner further asserts that Petitioner extended the '995 patent's hardware encryption technology to Petitioner's BlackArmor product (*id.* at 56–57), and that "Seagate's chief technologist, Dr. Robert Thibadeau, praised the patented hardware encryption technology Enova provided to Seagate" (*id.* at 54 (citing Ex. 2005, 3–6)).

To start, Patent Owner's assertions are unpersuasive because Patent Owner cites to unsubstantiated allegations made in its Complaint, from the related district court proceeding between the parties, which Petitioner has denied in a responsive Answer. PO Resp. 54–56 (citing Ex. 2005; Ex. 2027). For example, in response to paragraph 17 of the Complaint, Petitioner admitted that it published a press release on June 8, 2005, describing its Momentus drive as having hardware-based full disk encryption, but denied the other allegations of paragraph 17. Ex. 2027 ¶ 17. Patent Owner has not cited to the underlying press release at issue in

paragraph 17, and we decline to comb through the submissions in this proceeding to confirm the presence of the referenced press release in the record and ascertain its contents.

As a further example, Patent Owner argues that Petitioner's statements regarding its "BlackArmor" product apply to claimed elements of the '995 patent. PO Resp. 56–57 (citing Ex. 2021, 1; Ex. 2027 ¶ 25). Presumably, Patent Owner's assertion is based on the allegation that Petitioner's BlackArmor product infringes the '995 patent. Ex. 2005 ¶ 30. Petitioner disputes Patent Owner's allegations (Ex. 2027 ¶ 30) and Patent Owner has not established that the BlackArmor product infringes the '995 patent or incorporates any claimed elements of the '995 patent. Additionally, Patent Owner cites to Exhibit 2021, which shows "BlackAmor" listed as a CES winner. Ex. 2021, 1. But Exhibit 2021 provides no discussion of the BlackAmor product features. Thus, Patent Owner has not established that Black Armor received this award due to the claimed elements of the '995 patent.

Dr. Conte's testimony also does not establish that the allegations made in the Complaint and Answer of the related district court proceeding establish nexus. Dr. Conte relies on unsubstantiated allegations in Patent Owner's Complaint that Dr. Thibadeau praised Patent Owner's patented hardware (Ex. 2005, 3–6); however, Petitioner has denied these allegations (Ex. 2027 ¶ 14). Ex. 2013 ¶ 127. In addition, Dr. Conte confirmed in his cross-examination testimony that he has not analyzed Petitioner's products other than reviewing Petitioner's public statements and taking a photograph of the Momentus drive. Ex. 1029, 118:25–120:11.

Next, we are not persuaded by Patent Owner's contention that Petitioner's own statements regarding hardware-based encryption and transparent encryption establish a nexus for industry praise of claimed elements in the '995 patent. PO Resp. 54–56 (citing Exs. 2006–2008). For example, Patent Owner relies on the testimony of Dr. Conte to assert that Petitioner's statements regarding Petitioner's own Momentus product amount to industry praise of the claimed elements in the '995 patent because the "hardware-based encryption FDE feature" of the Momentus product is accomplished through the claimed limitation of "whether incoming data would be encrypted or passed through based on the received input," and the "transparency" feature of the product is provided by the "cipher engine adapted to transparently encrypt." PO Resp. 55 (citing Ex. 2013 ¶ 127). However, Petitioner's statements discussing its own products (e.g., Momentus) and are not attributed to Patent Owner's encryption products or any claimed element of the '995 patent. Exs. 2007–2008, 2013. Further, as discussed above, Dr. Conte admitted during cross-examination that he has not conducted an analysis of Petitioner's hard disk drive products with encryption beyond considering Petitioner's "public statements" and removing the cover of one of Petitioner's device to take a "picture" of it. Ex. 1029, 118:25–120:11.

With respect to the referenced "picture," we also do not agree that Dr. Conte's "picture" establishes a sufficient nexus. The "picture" is shown as photos at paragraph 127 of Dr. Conte's declaration. Ex. 1029, 118:25–120:2. In one of the photos, we discern a chip bearing the description "Enova X-Wall CO." Ex. 2013 ¶ 127. Dr. Conte testifies that "X-Wall CO is a revised version of the X-Wall SE . . . [and] [l]ike the SE, it practices the

claimed transparent encryption of the ’995 patent." *Id.* ¶ 124. In describing X-Wall SE, Dr. Conte testifies that it "intercepts IDE data streams and transparently encrypts the data. As it performs the transparent encryption of the invention, it requires no special software or changes to the host computer or disk drive." *Id.* ¶ 123 (citing Ex. 2030, 2; Ex. 2037, 3). Dr. Conte's descriptions of both X-Wall SE and X-Wall CO do not explain how the challenged claims recite performing transparent encryption with "no special software or changes to the host computer or disk drive." Ex. 2013 ¶¶ 123–124.

Moreover, even assuming that Petitioner's statements are attributable to claimed elements of hardware-based encryption and transparency, Petitioner has demonstrated that these elements are disclosed in Nolan and SCSI-2, as discussed above. Indeed, the ’995 patent itself acknowledges that hardware-based encryption was known and conventional as of the filing date. Ex. 1001, 1:35–40. In addition, to the extent that Patent Owner asserts that there is a difference between hardware-based encryption and hardware-based *full disc* encryption, Patent Owner and Dr. Conte have not explained sufficiently how such a difference establishes a nexus between Petitioner's Momentus product and the claimed invention of the ’995 patent. For example, Petitioner's presentation shown in Ex. 2007 describes several features of full disc encryption including: (1) a closed encryption device for which encryption cannot be turned off (*id.* at 3); (2) FDE functionality (*id.* at 6); and (3) "FDE Keys and IDs" (*id.* at 7). However, Patent Owner has not explained sufficiently what aspects of full disc encryption are tied to the claimed elements of the ’995 patent. *See, e.g.*, Ex. 2007, 1–12.

Accordingly, based on the entire record, we determine that Patent Owner has not established a sufficient nexus between the merits of the claimed invention and industry praise of either Patent Owner's products or Petitioner's products.

2. Commercial Success

As evidence of commercial success, Patent Owner relies on its previous business relationship with Petitioner and Petitioner's alleged praise and advertisement of Patent Owner's encryption devices. PO Resp. 53–57. For the same reasons discussed above, we are not persuaded Patent Owner has established a sufficient nexus between the merits of the claimed invention and either Patent Owner's own products or Petitioner's products.

In addition, we are not persuaded by Patent Owner's arguments regarding the sales of Petitioner's products constitute evidence of commercial success. PO Resp. 56–57. Patent Owner asserts that: (1) Petitioner's "efforts to bring its FDE drives to market were successful because of Enova's key technological assistance and supply of X-Wall ASICs"; (2) "[i]n February 2011, Seagate 'announced that it has shipped more than 1 million self-encrypting laptop and enterprise hard drives'"; and (3) "Seagate further explained that '[s]ales of the Seagate® hard drives with built-in encryption continue to surge as more computer makers offer the drives to protect against unauthorized access to sensitive data.'" *Id.* at 56–57 (citing Ex. 2009, 1; Ex. 2027 ¶ 26).

Initially, we note "[e]vidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the claimed invention and the commercial success." *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006). To show how

commercial success supports nonobviousness, Patent Owner must prove that the sales were a direct result of the unique characteristics of the invention, and not a result of economic and commercial factors unrelated to the quality of the patented subject matter. *In re Applied Materials, Inc.*, 692 F.3d 1289, 1299–1300 (Fed. Cir. 2012). In addition, "if the commercial success is due to an unclaimed feature of the device," or "if the feature that creates the commercial success was known in the prior art, the success is not pertinent." *Ormco*, 463 F.3d at 1312; *see also Huai-Hung Kao*, 639 F.3d at 1070 (requiring a determination of "whether the commercial success of the embodying product resulted from the merits of the claimed invention as opposed to the prior art or other extrinsic factors").

Here, Patent Owner fails to provide sufficient proof of such a relationship between any alleged sales and the unique characteristics of the invention embodied in the challenged claims. First, Patent Owner has not established that the products described in Petitioner's statements include features claimed in the '995 patent. PO Resp. 56–57. Patent Owner simply relies on allegations made in the Complaint of the related district court proceeding, which, as we explained above, Petitioner has denied. *Id.; see also* Ex. 2027 ¶ 27 (denying infringement of the '995 patent). Further, Petitioner's statements in Exhibit 2009 also do not establish that the sales of Petitioner's "self-encrypting laptop and enterprise hard drives" have any relationship to the merits of the claimed invention. Additionally, Dr. Conte admitted that he did not conduct any economic analysis of either Patent Owner's products or Petitioner's products. Ex. 1029, 115:24–118:12; 120:13–25; 121:9–122:1.

Moreover, even if the Petitioner's product sales are considered in the context of commercial success, "evidence related solely to the number of units sold provides a very weak showing of commercial success, if any." *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996). According to the Federal Circuit, "the more probative evidence of commercial success relates to whether the sales represent 'a substantial quantity in th[e] market.'" *Applied Materials*, 692 F.3d at 1300 (quoting *Huang*, 100 F.3d at 140). Patent Owner offers no evidence of the size of the market to which to compare Petitioner's sales. Accordingly, we are not persuaded that Patent Owner's alleged objective indicia of commercial success shows non-obviousness.

3. Copying and Licensing

Patent Owner further argues that copying and licensing of the '995 patent by others is objective indicia of non-obviousness. Specifically, Patent Owner argues that Initio Corporation ("Initio") marketed and sold infringing products incorporating the patented invention of the '995 patent to major hard drive manufactures. PO Resp. 57–58 (citing Ex. 2004; Ex. 2032). Patent Owner contends the resolution of *Enova v. WD* "confirms Initio's infringement of the '995 patent" because "Initio admitted in a consent judgment that its products practice the '995 patent and further began marking its products with the '995 patent number." *Id.* at 58 (citing Ex. 2004, 2). Patent Owner additionally argues that Western Digital and Buffalo, Inc. each incorporated Initio encryption circuits in their hard drives, and that both parties entered agreements with Patent Owner to resolve their disputes in *Enova v. WD*. *Id.* at 58–59 (citing Ex. 2024; Ex. 2042–45). Patent Owner adds that both Initio and Western Digital license the '995 patent from Patent Owner.

Patent Owner's reliance on Initio's consent judgement in *Enova v. WD* does not establish that Initio copied the claimed invention or infringed the '995 patent based on the unique aspects of the claimed subject matter. It is not sufficient that a product or its use merely be within the scope of a claim in order for objective evidence of nonobviousness tied to that product or use to be given substantial weight. Like other types of objective evidence, evidence of copying must be shown to have nexus. *Wm. Wrigley Jr. Co. v. Cadbury Adams USA LLC*, 683 F.3d 1356, 1364 (Fed. Cir. 2012). Moreover, a showing of copying is only equivocal evidence of nonobviousness in the absence of more compelling objective indicia of other secondary considerations. *Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1380 (Fed. Cir. 2000). Copying could result from lack of concern about patent property, contempt for the patent, or accepted practices in the industry, among others. *Cable Elec. Prods., Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1028 (Fed. Cir. 1985), *overruled on other grounds by Midwest Indus., Inc. v. Karavan Trailers, Inc.*, 175 F.3d 1356, 1359 (Fed. Cir. 1999).

We also are not persuaded by Patent Owner's arguments regarding licensing and settlement. Patent Owner relies on Exhibits 2042, 2043, and 2044. These exhibits are almost entirely redacted. In fact, they are redacted to the point that even the parties involved in the agreements have been obscured. Exs. 2042–44; Tr. 70:21–71:8. Thus, because we cannot verify Patent Owner's assertions regarding these agreements, we find that these agreements do not provide objective evidence of nonobviousness.

4. Summary

Accordingly, on balance, we determine that Petitioner's strong evidence of obviousness, which includes that claims 1–13 would have been

obvious based on Nolan and SCSI-2; claim 14 would have been obvious based on Nolan, SCSI-2, and Hamlin; and claim 15 would have been obvious based on Nolan, SCSI-2, and Detrick, under 35 U.S.C. § 103(a), outweighs the evidence of secondary considerations of nonobviousness submitted by Patent Owner,

H. Petitioner's Motion to Exclude

Petitioner seeks to exclude Exhibits 2004–2009, 2015, 2017–2032, 2037–2047, and paragraphs 117–130 of Exhibit 2013. Pet. Mot. Exclude 1. In particular, Petitioner argues that Patent Owner "has failed to establish the nexus necessary to show the relevance of this evidence." *Id.* at 1–13. We need not reach the merits of Petitioner's Motion to Exclude because, as explained above, even if the disputed evidence is considered, Patent Owner has not shown that the evidence of secondary considerations of nonobviousness it submitted outweighs the strong evidence of obviousness presented by Petitioner. Accordingly, Petitioner's Motion to Exclude is *dismissed as moot*.

I. Patent Owner's Motion to Exclude

Patent Owner asserts that Petitioner's reliance on Exhibit 1028 in Petitioner's Reply improperly adds a new reference and new basis to Petitioner's obviousness challenges presented in the Petition and discussed in the Board's Decision to Institute. PO Mot. to Exclude 1–7. Patent Owner seeks to exclude Exhibit 1028 because it asserts Petitioner was required to present Exhibit 1028 earlier in the proceeding. *Id.* We do not rely on the disputed evidence in rendering this Final Written Decision. Therefore, Patent Owner's Motion to Exclude is *dismissed as moot*.

J. Patent Owner's Motion to Seal

Patent Owner filed a Motion to Seal Exhibits 2042, 2043, and 2044 under 37 C.F.R. § 42.54. Paper 23. In its Motion, Patent Owner asserts that the redacted exhibits are "confidential" agreements reached between the Patent Owner and third parties Initio, Western Digital, and Buffalo, Inc., each of which are not involved in this proceeding. Mot. to Seal 1. With its Motion to Seal, Patent Owner filed confidential redacted versions of Exhibits 2042, 2043, and 2044, but did not file confidential unredacted copies of the same. Patent Owner indicated that it intended to file unredacted versions of the agreements, but had not received the consent of the third parties to do so. Mot. to Seal 2; *See* Tr. 70:21–71:7.

The standard for granting a motion to seal is "for good cause." 37 C.F.R. § 42.54. Patent Owner, as the moving party, has the burden of proof in showing entitlement to the requested relief. 37 C.F.R. § 42.20(c). We need to know why the information sought to be sealed constitutes the Patent Owner's confidential information.

In reviewing the "confidential" version of these exhibits, we note that each exhibit has been heavily redacted, leaving only a handful of lines per each exhibit. As we explained in the oral hearing, these unredacted portions do not provide sufficient detail to verify the contents of these exhibits. *See, e.g.*, Tr. 70:21–71:7. Thus, we cannot confirm Patent Owner's assertions regarding the confidentiality of these exhibits, nor can we grant Patent Owner's Motion to Seal for good cause. Accordingly, we deny Patent Owner's Motion to Seal Exhibits 2042, 2043, and 2044.

Additionally, Patent Owner has submitted a revised proposed protective order (Ex. 2049) that reflects the terms of a protective order

entered in the parties' co-pending district court proceeding. Mot. to Seal 3. Patent Owner represents that it has conferred with Petitioner regarding the terms of the proposed protective order; however, no agreement has been made. *Id.*

We note that the Office Patent Trial Practice Guide states the following concerning protective orders:

> (a) Purpose. This document provides guidance on the procedures for filing of motions to seal and the entry of protective orders in proceedings before the Board. The protective order governs the protection of confidential information contained in documents, discovery, or testimony adduced, exchanged, or filed with the Board. The parties are encouraged to agree on the entry of a stipulated protective order. *Absent such agreement, the default standing protective order will be automatically entered.*

Office Patent Trial Practice Guide, 77 Fed. Reg. 48756, 48769 (Aug. 14, 2012) (App'x B (emphasis added)). As we cannot ascertain that the contents of the redacted Exhibits 2042, 2043, and 2044 constitute the Patent Owner's confidential information, we do not grant Patent Owner's request to enter its proposed protective order. We do, however, enter the default Protective Order provided in Appendix B of the Trial Practice Guide.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–15 of the '995 patent are held unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *dismissed as moot*;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed as moot*;

FURTHER ORDERED that Petitioner's Motion to Seal is *denied*;

FURTHER ORDERED that the Board's default Protective Order appearing in the Office Trial Practice Guide, 77 Fed. Reg. 48,756, 48,769–71 (Aug. 14, 2012), is hereby *entered* in this proceeding; and

FURTHER ORDERED that any party to the proceeding seeking judicial review of this Final Written Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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