Interested in learning
more about security?

SANS Institute
InfoSec Reading Room

This paper is from the SANS Institute Reading Room site. Reposting is not permitted without express written permission.

TEACH, the DMCA and Distance Education

When the World Intellectual Property Organization (WIPO) Copyright Treaty of 1996 was finally ratified by the United States, our version became known as the Digital Millennium Copyright Act (DMCA). The extension of traditional copyright laws in broad and unusual ways, that is the DMCA, was maligned in both the legal and Internet communities. With a total of five sections, or titles, the DMCA covers a broad range of copyright rules and regulations relating to almost every conceivable incarnation of literary and artistic...

Copyright SANS Institute
Author Retains Full Rights

AD
Embed Security Into the Software Development Lifecycle
Sponsored By VERACODE
Download the Report by Securosis

TEACH, the DMCA and Distance Education

Katie E. Flowers
GSEC Certification
Option 1
Version 1.4b
April 2003

© SANS Institute 2003, Author retains full rights

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

Beginning with the Paris Convention for the Protection of Industrial Property, in 1883, and the Berne Convention, in 1886, there has been a steady stream of treaties, regulations and laws at the international level to protect all manner of literary and artistic works. Berne lead to the World Intellectual Property Organization (WIPO). Once the WIPO Copyright Treaty of 1996 was finally ratified by the United States, our version became known as the Digital Millennium Copyright Act (DMCA). The extension of traditional copyright laws in broad and unusual ways, that is the DMCA, was maligned in both the legal and Internet communities. With a total of five sections, or titles, the DMCA covers a broad range of copyright rules and regulations relating to almost every conceivable incarnation of literary and artistic works which come in contact with the digital medium.

However, one topic legislators were interested in amending after the inception of the DMCA was that of distance education. Law makers, here in the United States, have attempted to address this topic as it relates to our copyright law with the Technology, Education and Copyright Harmonization Act (TEACH). TEACH, specific to the United States, is not an internationally accepted amendment to the WIPO Copyright Treaty. By reviewing the technological requirements of TEACH, the titles of the DMCA and the history of both acts this paper will show that while TEACH, to date, has not been publicly recognized as an amendment to the DMCA it can truly be viewed as such in the United States with regards to the issue of distance education.

THE BERNE CONVENTION

The origins of international copyright law can be traced back to the Berne Convention. Formally known as the Berne Convention for the Protection of Literary and Artistic Works, it was adopted in 1886 in Berne, the capital of Switzerland. It was the first convention, or treaty, to establish the recognition of copyrights between member nations. Berne stipulated that each member state "would recognize as copyrighted works authored by nationals of other contracting states."[1] Under Berne copyright is automatic; it does not require registration or a copyright notice. Among the many provisions of Berne was the minimum term of copyright protection (life of the author plus fifty years). This provision allowed for member nations to provide longer terms of protection with their own acts of legislation.

The United States did not become a member nation of the Berne Convention until 1988 because it would have necessitated a major revamp of U.S. copyright law. By 1988 the necessary changes had been made and the United States became a member nation, mainly due to its campaign for the

[1] http://www.wikipedia.org/wiki/Berne_Convention

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

inclusion of "strong intellectual property provisions in the GATT."[2] As a side note GATT, or the General Agreement on Tariffs and Trade, serves as the foundation of the World Trade Organization (WTO) trading system.[3]

WORLD INTELLECTUAL PROPERTY ORGANIZATION

Starting in 1967, the Berne Convention was administered by the World Intellectual Property Organization (WIPO). By 1974 WIPO had become an agency of the United Nations, "with a mandate to administer intellectual property matters recognized by the member States of the UN."[4] As well as administering intellectual property matters WIPO also oversees the administration of 23 treaties. Among those treaties is the WIPO Copyright Treaty (WCT) which was adopted on December 20, 1996, in Geneva. Consisting of 25 articles the treaty dealt with, among other things, the issue of reproduction of images and how it relates to "the storage of a protected work in digital form in an electronic medium…"[5], as well as the international copyright protection afforded to photographic images, computer software, written works and sound recordings which exist in the digital medium. Of the 179 member nations of WIPO, 41 have become party to the WCT. The United States, after implementing their own version of the treaty due to issues of constitutional law, became a full signatory on March 6, 2002.[6]

THE DIGITAL MILLENNIUM COPYRIGHT ACT

As previously mentioned the United States did not become a full signatory to the WCT until 2002 mainly due to issues of constitutional law. Simply put, the U.S. constitution does not allow the nation to be subject to laws implemented by foreign states or legislative bodies. In order to become a full signatory the U.S. had to first implement similar guidelines at the federal level, hence the creation of the Digital Millennium Copyright Act (DMCA). Enacted in 1998 the DMCA is seen by many as the "most comprehensive reform of United States copyright law in a generation."[7] Since its inception the DMCA, and its resulting side effects, have been a matter of great contention between legislators and the Internet community. Divided into five titles the DMCA addresses, among others, issues "concerning the circumvention of copyright protection systems, fair use in a digital environment, and online service provider (OSP) liability…"[8]

Title I of the DMCA, in a nutshell, implements the WCT. In order to accomplish this, changes were made to U.S statute and two additional

---

[2] http://www.wikipedia.org/wiki/Berne_Convention
[3] http://www.wikipedia.org/wiki/GATT
[4] http://www.wipo.org/about-wipo/en/index.html?wipo_content_frame=/about-wipo/en/gib.htm
[5] http://www.wipo.int/treaties/ip/wct/statements.html
[6] http://www.wipo.int/treaties/documents/english/pdf/s-wct.pdf
[7] http://www.educause.edu/issues/dmca.html
[8] http://www.educause.edu/issues/dmca.html

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

prohibitions were added to Title 17 of the U.S Code "one on circumvention of technological measures used by copyright owners to protect their works and one on tampering with the copyright management information."[9] Civil and criminal remedies/penalties for violation of the new prohibitions were also added.

According to the WCT member nations are required to "provide protection to certain works from other member countries or created by nationals of other member countries."[10] The protection must be of the same level that is provided to native works. This required extension of U.S. copyright law was accomplished with section 102(b) of the DMCA. WCT also requires that member nations are obligated to "prevent circumvention of technological measures used to protect copyrighted works, and to prevent tampering with the integrity of copyright management information."[11] The addition of chapter 12 to Title 17 of the U.S. Code via section 103 of the DMCA fulfilled this requirement.

In addition to implementing the WCT Title I of the DMCA also allows for a number of exceptions, including law enforcement and non-profit organizations, when it comes to the matter of circumvention of access control measures. Six of the exceptions are:

1. Nonprofit library, archive and educational institution exception (section 1201(d)).
2. Reverse engineering (section 1201 (f)).
3. Encryption research (section 1201 (g)).
4. Protection of minors (section 1201 (h)).
5. Personal privacy (section 1201 (i)).
6. Security testing (section 1201 (j)).[12]

Title II of the DMCA provides the guidelines for limitation of online service providers' liability as it relates to online copyright infringement. These guidelines were established by the addition of section 512 to the Copyright Act. Section 512 accomplished this by creating four categories based upon the conduct of the service provider:

1. Transitory communications;
2. System caching;
3. Storage of information on systems or networks at direction of users; and
4. Information location tools.[13]

[9] http://www.loc.gov/copyright/legislation/dmca.pdf
[10] http://www.loc.gov/copyright/legislation/dmca.pdf
[11] http://www.loc.gov/copyright/legislation/dmca.pdf
[12] http://www.loc.gov/copyright/legislation/dmca.pdf
[13] http://www.loc.gov/copyright/legislation/dmca.pdf

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

Rules regarding the application of the limitations, as they relate to nonprofit educational institutions, are also addressed in section 512. Even if the service provider is unable to qualify for any of the limitations they still may not be liable for copyright infringement. Those reporting the supposed infringement must prove that the provider has infringed. The provider, in response, may use any of the available defenses under copyright law (fair use, etc.). Section 512 "also contains a provision to ensure that service providers are not placed in the position of choosing between limitations on liability…and preserving the privacy of their subscribers…"[14]

When it comes to computer maintenance and repair Title III of the DMCA adds no new prohibitions, but instead, expands the exemption relating to computer programs that is already established in section 117 of the Copyright Act. The amendment to section 117 "permits the owner…of a computer to make or authorize the making of a copy of a computer program in the course of maintaining or repairing that computer."[15] However the copy must be automatically made when the computer is booted up, and only if the computer is already home to an authorized copy of the program. Upon completion of the maintenance or repair the copy cannot be used again and must be immediately destroyed.

All the other provisions that couldn't be easily categorized were massed together as Title IV, the home of miscellaneous provisions. Along with provisions dealing with ephemeral recordings, exemptions for nonprofit libraries and archives, webcasting amendments and assumption of contractual obligations the issue of distance education is briefly addressed. Rather then define exactly what distance education is, and the entities who qualify for exemption with relation to it, section 403 of Title IV simply "directs the Copyright Office to consult with affected parties and make recommendations to Congress on how to promote distance education through digital technologies."[16] Section 403 required the Copyright Office to report to Congress within six months of the DMCA's enactment with its list of recommendations from affected parties. They were also instructed to consider the following issues:

- The need for a new exemption;
- Categories of works to be included in any exemption;
- Appropriate quantitative limitations on the portions of works that may be used under any exemption;
- Which parties should be eligible for any exemption;
- Which parties should be eligible recipients of distance education material under any exemption;

[14] http://www.loc.gov/copyright/legislation/dmca.pdf
[15] http://www.loc.gov/copyright/legislation/dmca.pdf
[16] http://www.loc.gov/copyright/legislation/dmca.pdf

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

- The extent to which use of technological protection measures should be mandated as a condition of eligibility for any exemption;
- The extent to which the availability of licenses should be considered in assessing eligibility for any exemption; and
- Other issues as appropriate.[17]

While legislators appeared to have an interest in expanding the DMCA to allow the use of copyrighted materials in distance education they seemed rather reluctant to tackle the issue themselves. Copyright law exemption for distance education was left to its own devices and, hopefully, the chance of being fully realized in further federal legislation.

With a name like the Digital Millennium Copyright Act one would infer that it dealt solely with items related to the digital medium (i.e., computers, software, the Internet). Then you happen to run across Title V which just doesn't seem to keep with the "digital" theme of the DMCA. Title V, more commonly known as the Vessel Hull Design Protection Act (VHDPA), amends Title 17 of the U.S. Code. As the name implies this portion of the DMCA is devoted to sea faring vessels by "protecting original designs of certain useful articles that make the article attractive or distinctive in appearance. For purposes of the VHDPA, "useful articles" are limited to the hulls (including decks) of vessels no longer than 200 feet."[18] Unlike most provisions of the DMCA the VHDPA was sunset legislation. It expired on October 28, 2000, two years after the DMCA was enacted.

TECHNOLOGY, EDUCATION AND COPYRIGHT HARMONIZATION ACT

While U.S. copyright law allowed exemptions for educators to display and perform any copyrighted work, when it came to distance education and the digital medium the law was quite a bit more restrictive. With the inception of the DMCA the Copyright Office was mandated, via section 403 of Title IV, to report to Congress with recommendations to implement the use of "digital technologies in distance education."[19] By March 2001 the Copyright Office had reported its recommendations to Congress and a bill, based on those recommendations, was introduced. On November 2, 2002, the Technology, Education and Copyright Harmonization Act (TEACH) was signed into law by the President. By his action U.S. copyright law exemptions were finally extended to distance education which incorporated the digital medium.

Although the act itself does not provide a definition of distance education Senate history provides a semblance of one: "digital distance education…whether in the traditional sense, when instructor and student are separated in place and perhaps time, or in new hybrids of traditional classroom

[17] http://www.loc.gov/copyright/legislation/dmca.pdf
[18] http://www.loc.gov/copyright/legislation/dmca.pdf
[19] http://www.utsystem.edu/ogc/intellectualproperty/teachact.htm

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

education combined with online components…"[20] One concession that TEACH does acknowledge is that "many activities that are lawful in the physical classroom are legal in the digital classroom."[21]

In order to qualify for the exemptions afforded under TEACH an entity must be an accredited nonprofit educational institution and take actions to "prevent copyrighted works from being used in ways that may infringe their copyrights."[22] To accomplish this TEACH imposes a set of technological requirements that must be met by accredited institutions.

As with most federal legislation the technological requirements of TEACH are proposed in a very general manner. Based upon the legal definitions of "reasonably" and "technologically feasible" the requirements present a framework for educational institutions to follow. Institutions who qualify for the exemptions afforded under TEACH are not required to implement technological security methods that are 100% effective; it is theoretically impossible. Institutions will not be held liable for the failure of the methods they use as long as a good faith effort was made to implement technological security methods that meet the requirements of TEACH. There are four basic technological requirements of TEACH. The first is covered in section 110(c) which states:

> The transmission of material is made solely for (and, to the extent technologically feasible, the reception of such transmission is limited to):
>
> • students officially enrolled in the course for which the transmission is made; or
>
> • officers or employees of governmental bodies as a part of their official duties or employment[23]

The remaining three are covered in section 110(d)(ii) which states:

> The transmitting body or institution, in the case of digital transmissions,
>
> • applies technological measures that reasonably prevent:
>
> • retention of the work in accessible form by recipients of the transmission from the transmitting body or institution for longer than the class session <u>and</u>

[20] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf

[21] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf

[22] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf

[23] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

> • unauthorized further dissemination of the work in accessible form by such recipients to others, and
> • does not engage in conduct that could reasonably be expected to interfere with technological measures used by copyright owners to prevent such retention or unauthorized further dissemination[24]

Simply put, TEACH requires qualifying institutions to use technology in a way that will reasonably "limit access to copyrighted works to students currently enrolled in the class; limit access only for the time…necessary to complete the class session; prevent further copying of copyrighted works; and prevent further distribution of copyrighted works.[25] Keeping with the tradition of federal legislation TEACH tells the institutions what to do, but not how to do it.

The ultimate decision of what technology to use and who will be in charge of its implementation is left up to the institution itself. Multiple security technologies already used on a daily basis at institutions can easily meet the "reasonable" requirements stated in section 110(d)(ii) of TEACH. A personal identification number (PIN) is commonly used for course registration via online or phone services. PINs are "attribute-based access controls that do not reveal identity or personal information; they merely recognize characteristics that certify the student as eligible to register."[26] The PIN could very easily be used as a technological measure to allow only registered students to access copyrighted material online that is related to their course.

One of the most obvious security technologies that are used every day is the password. They are an "easy-to-implement technology"[27] that can be set to expire at the end of the course. As always, if poor logic is followed when creating the passwords (giving every student the same password) it will be easier for individuals not registered for the course to access the copyrighted materials. Flying in the face of security industry standards "TEACH does not require that each student have a unique password for access."[28] Requiring this would be at the sole discretion of the institution.

Another method currently in use today that meets the TEACH requirement of "reasonable" is the identification/smart card. These cards can be used to

---

[24] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf
[25] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf
[26] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf
[27] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf
[28] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

"interoperate with the institution's computer system…"[29] For further security access denial mechanisms will need to be implemented to stop non-registered students, or those who dropped the course, from accessing the copyrighted materials. Streaming media is also a medium that could be used. It "prevents unauthorized storing and copying of content."[30] This would cover the requirement that requires the use of technology to prevent the unauthorized dissemination and retention of copyrighted materials.

As is always required with the implementation of new technology considerations must be taken into account. With regards to the technological requirements of TEACH institutions should not implement technology that goes beyond the scope of the act's requirements. Identity-based access controls would be an example of this, as they can pose serious privacy concerns. Implementation of "technology that is overly restrictive negatively impacts other fundamental values and interests of the educational community such as privacy, access to information, and intellectual freedom."[31] Not all uses of copyrighted materials as they relate to education are covered by TEACH. When the exemptions afforded under TEACH do not apply to a situation institutions should rely on fair use when it comes to the use of copyrighted materials in the classroom. Although TEACH deals solely with the use of copyrighted materials in a digital medium via distance education it may not be applicable for all instances of distance education. Institutions should examine TEACH, fair use and all applicable exemptions afforded by copyright law when deciding what is appropriate for their distance education program. In their decision process to select and apply copyright protection technology institutions ought to consider, at the minimum, three issues:

> • First, the technological measures taken by the institutions should have a high likelihood of working. That is, they should work most of the time and they should reasonably protect copyrighted works.
>
> • Second, a "one-size fits all" solution does not exist.
>
> • Finally…employ only those measures necessary to meet the reasonableness requirement. Additional controls on copyrighted works (i.e., trusted systems) are not necessary and will negatively impact necessary information flow, privacy and intellectual freedom… [32]

[29] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf
[30] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf
[31] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf
[32] http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

Now that the DMCA and TEACH have been discussed the question must be asked: Is TEACH an extension of the DMCA in relation to the issue of distance education? To answer this one needs to go back to Title IV of the DMCA, specifically section 403. Although distance education was not defined the issue was left open for further legislative action pending a report of implementation recommendations from the Copyright Office. In the process of preparing their report the Copyright Office was directed to consider eight issues, three of which were:

> - Which parties should be eligible for any exemption;
> - Which parties should be eligible recipients of distance education material under any exemption;
> - The extent to which use of technological protection measures should be mandated as a condition of eligibility for any exemption;[33]

The Copyright Office's resulting report lead to TEACH which in turn addresses all three of the issues listed above.

The first issue asks which parties should be eligible for exemption. TEACH clearly states that accredited nonprofit educational institutions will receive exemption from copyright law relating to use of copyrighted materials in distance education. Issue two asks who will be an eligible recipient of the copyrighted materials for distance education purposes. Again TEACH clearly lays this out. Students who are officially enrolled in the distance education courses are allowed to be recipients of the copyrighted materials. The final issue asks to what extent security technology should be used to qualify for exemption. The technological requirements of TEACH list the guidelines of "reasonable" and "technologically feasible" methods institutions can implement to qualify for exemption. Although TEACH has not been publicly recognized as an amendment to Title IV, section 403 of the DMCA it can clearly be viewed as such. It is an extension of the DMCA as it pertains to distance education because it conforms to the issues the Copyright Office was mandated to address by Congress.

[33] http://www.loc.gov/copyright/legislation/dmca.pdf

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

BIBLOGRAPHY

"20. WIPO Copyright Treaty." 13 March 2003. URL: http://www.wipo.int/treaties/documents/english/pdf/s-wct.pdf (14 April 2003).

"Agreed Statements Concerning the WIPO Copyright Treaty." 20 December 1996. URL: http://www.wipo.int/treaties/ip/wct/statements.html (14 April 2003).

"Berne Convention for the Protection of Literary and Artistic Works." 5 March 2003. URL: http://www.wikipedia.org/wiki/Berne_Convention (14 April 2003).

"The Digital Millennium Copyright Act." URL: http://www.educause.edu/issues/dmca.html (15 April 2003).

"The Digital Millennium Copyright Act of 1998 U.S. Copyright Office Summary." December 1998. URL: http://www.loc.gov/copyright/legislation/dmca.pdf (15 April 2003).

"General Agreement on Tariffs and Trade." 15 April 2003. URL: http://www.wikipedia.org/wiki/GATT (15 April 2003).

"General Information." June 2001. URL: http://www.wipo.org/about-wipo/en/index.html?wipo_content_frame=/about-wipo/en/gib.htm (14 April 2003).

Harper, Georgia. "The TEACH Act Finally Becomes Law." 13 November 2002. URL: http://www.utsystem.edu/ogc/intellectualproperty/teachact.htm (16 April 2003).

"Technological Requirements of the TEACH Act." URL: http://www.ala.org/Content/NavigationMenu/Our_Association/Offices/ALA_Washington/Issues2/Copyright1/Distance_Education_and_the_TEACH_Act/teachdrm.pdf (16 April 2003).

© SANS Institute 2003, As part of the Information Security Reading Room. Author retains full rights.

Last Updated: September 4th, 2015

Upcoming SANS Training

Click Here for a full list of all Upcoming SANS Events by Location

SANS Crystal City 2015	Crystal City, VAUS	Sep 08, 2015 - Sep 13, 2015	Live Event
SANS Network Security 2015	Las Vegas, NVUS	Sep 12, 2015 - Sep 21, 2015	Live Event
SANS Seoul 2015	Seoul, KR	Sep 14, 2015 - Sep 19, 2015	Live Event
SANS Tallinn 2015	Tallinn, EE	Sep 21, 2015 - Sep 26, 2015	Live Event
SANS Baltimore 2015	Baltimore, MDUS	Sep 21, 2015 - Sep 26, 2015	Live Event
Data Breach Investigation Summit & Training	Dallas, TXUS	Sep 21, 2015 - Sep 26, 2015	Live Event
SANS Perth 2015	Perth, AU	Sep 21, 2015 - Sep 26, 2015	Live Event
SANS ICS Amsterdam 2015	Amsterdam, NL	Sep 22, 2015 - Sep 28, 2015	Live Event
SANS Bangalore 2015	Bangalore, IN	Sep 28, 2015 - Oct 17, 2015	Live Event
SANS Seattle 2015	Seattle, WAUS	Oct 05, 2015 - Oct 10, 2015	Live Event
SANS DFIR Prague 2015	Prague, CZ	Oct 05, 2015 - Oct 17, 2015	Live Event
SOS: SANS October Singapore 2015	Singapore, SG	Oct 12, 2015 - Oct 24, 2015	Live Event
SANS Tysons Corner 2015	Tysons Corner, VAUS	Oct 12, 2015 - Oct 17, 2015	Live Event
SANS Gulf Region 2015	Dubai, AE	Oct 17, 2015 - Oct 29, 2015	Live Event
SANS Tokyo Autumn 2015	Tokyo, JP	Oct 19, 2015 - Oct 31, 2015	Live Event
SANS Cyber Defense San Diego 2015	San Diego, CAUS	Oct 19, 2015 - Oct 24, 2015	Live Event
SANS Sydney 2015	Sydney, AU	Nov 09, 2015 - Nov 21, 2015	Live Event
SANS South Florida 2015	Fort Lauderdale, FLUS	Nov 09, 2015 - Nov 14, 2015	Live Event
SANS London 2015	London, GB	Nov 14, 2015 - Nov 23, 2015	Live Event
Pen Test Hackfest Summit & Training	Alexandria, VAUS	Nov 16, 2015 - Nov 23, 2015	Live Event
SANS Hyderabad 2015	Hyderabad, IN	Nov 24, 2015 - Dec 04, 2015	Live Event
SANS Cape Town 2015	Cape Town, ZA	Nov 30, 2015 - Dec 05, 2015	Live Event
SANS San Francisco 2015	San Francisco, CAUS	Nov 30, 2015 - Dec 05, 2015	Live Event
Security Leadership Summit & Training	Dallas, TXUS	Dec 03, 2015 - Dec 10, 2015	Live Event
SANS Milan 2015	OnlineIT	Sep 07, 2015 - Sep 12, 2015	Live Event
SANS OnDemand	Books & MP3s OnlyUS	Anytime	Self Paced