

UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS

MASSACHUSETTS BAY  
TRANSPORTATION AUTHORITY

Plaintiff

v.

Civil Action No. 08-11364-GAO

ZACK ANDERSON, RJ RYAN,  
ALESSANDRO CHIESA, and the  
MASSACHUSETTS INSTITUTE OF  
TECHNOLOGY

Defendants

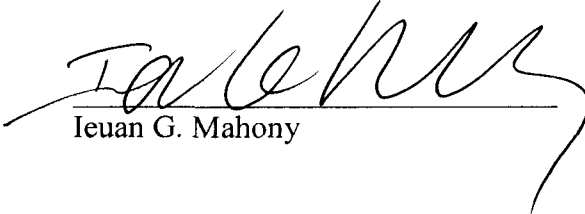
**THIRD SUPPLEMENTAL DECLARATION OF IEUAN G. MAHONY**

1. I am a partner at Holland & Knight, LLP, representing the Massachusetts Bay Transportation Authority ("MBTA") in this matter. The following further supplements my earlier Declarations in this matter.

2. Attached as Exhibit 1 is a true and accurate copy of the documents produced by the MIT Students in response to the plaintiff's Document Request Nos. 1.1 and 1.2.

3. Attached as Exhibit 2 an article published in the Boston Globe entitled "*Hacking Exposes a Deeper Clash*" by Michael Levenson dated August 18, 2008.

Signed under the penalties of perjury this 18th day of August, 2008.

  
Ieuan G. Mahony

CERTIFICATE OF SERVICE

I, Ieuan G. Mahony, Attorney for the Massachusetts Bay Transportation Authority in connection with the above-captioned proceeding, hereby certify that on this 18<sup>th</sup> day of August, 2008, the **Third Supplemental Declaration of Ieuan G. Mahony** was served via the ECF system on the following interested parties:

**Party**

**Counsel**

Zack Anderson, RJ Ryan,  
and Alessandro Chiesa  
(the "MIT Undergrads")

Emily Berger, Esquire  
Email: [emily@eff.org](mailto:emily@eff.org)

Jennifer Granick, Esquire  
Email: [jennifer@eff.org](mailto:jennifer@eff.org)

John Reinstein, Esquire  
Email: [reinstein@aclum.org](mailto:reinstein@aclum.org)

Thomas A. Brown  
Email: [tbrown@fr.com](mailto:tbrown@fr.com)

Cindy Cohn  
[cindy@eff.org](mailto:cindy@eff.org)

Lawrence K. Kolodney  
[kolodney@fr.com](mailto:kolodney@fr.com)

Marcia Hoffman  
[marcia@eff.org](mailto:marcia@eff.org)

Adam J. Kessel  
[kessel@fr.com](mailto:kessel@fr.com)

Massachusetts Institute  
of Technology ("MIT")

Jeffrey Swope, Esquire  
Email: [JSwope@eapdlaw.com](mailto:JSwope@eapdlaw.com)

/s/ Ieuan G. Mahony

# **EXHIBIT 1**

Subject: Call for papers proposal: The Anatomy of a Subway Hack: Breaking Crypto  
RFIDs and Magstripes of Ticketing Systems  
Date: Thu, 15 May 2008 02:38:45 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: talks@defcon.org

Attached is my submission for a talk at Defcon 16 this year. Please let me know if you need anything further. Thanks.

Looking forward to Defcon,  
Zack Anderson

```
*****  
*                                     *  
* THE ANATOMY OF A SUBWAY HACK:      *  
* BREAKING CRYPTO RFIDs AND MAGSTRIPES *  
* OF TICKETING SYSTEMS                *  
*                                     *  
* A Proposed Talk for Defcon 16      *  
*                                     *  
* Zack Anderson                      *  
* Alessandro Chiesa                  *  
* RJ Ryan                            *  
*                                     *  
*****
```

=====  
General Info  
=====

Date of Submission: May 14, 2008

Primary Speaker Name: Zack Anderson

Primary Speaker Title: Student at the Massachusetts Institute of Technology

Additional Speaker Titles: RJ Ryan and Alessandro Chiesa, both students at MIT

Primary Speaker Email: zacka@mit.edu

Primary Speaker Phone: 310-270-3995

Has The Speaker Previously Spoken At Defcon: No

Specific Day Or Time To Speak By: No, but an 11am slot is preferred

Not Submitting To BlackHat

MBTA0001

=====  
Presentation Information  
=====

Presentation Name: "The Anatomy of a Subway Hack: Breaking Crypto RFIDs and Magstripes of Ticketing Systems"

Time Requirement: 50 minutes

Is There a Demonstration: Several

Are We Releasing a New Tool: Yes

Are We Releasing a New Exploit: Not exactly an "exploit"

Is There Audience Participation: Haven't decided yet... perhaps.

Has This Presentation Been Given: Not at a public venue, but a short (15 minute) version was given to MIT students in May, 2008. This talk at Defcon will be more in-depth, cover other subway systems, and have several live demos.

Equipment Needs: Projector and a power source

More Than 1 Projector: Not necessary, but the redundant dual projection used at many Defcon talks would be nice so that the entire audience can see the slides.

Wireless Internet Access: Nice, but not necessary.

Whiteboard Requirement: No

Other Special Equipment: No, we will bring our own hardware for the demos.

=====  
Detailed Outline  
=====

I. Overview of subway fare collection systems

II. Description of Boston T subway system

III. Our Attacks On The Boston T

A. Physical Security

B. MIFARE RFID card attacks (on the CharlieCard)

1. Using the USRP and GNUradio to sniff raw data [code release]

2. Brute forcing attack on 48-bit key (using FPGAs) [POSSIBLE demo and code release (possible because as of today, the Verilog is not finished)]

3. Crafted challenge-response attack

4. Algebraic attacks [code release]

C. MagStripe Card Reverse Engineering and attacks (cloning and forgery attacks) on the CharlieTicket

1. Reverse engineering the data on the card [automated magstripe reverse-engineering tool release]

2. Forging a card (AKA how to get a lot of free money) [python script release and demo]

3. Cheap ways of cloning the card

4. How these techniques apply to other subway systems, and how some magcard systems differ

D. WiFi, Network, and Wireless Device security audit of the system

1. WiFi analysis of Operations headquarters

2. Using a frequency counter to identify wireless devices

3. WARCARTING: you've seen wardriving, warwalking, and warflying, but I guarantee, nobody has ever seen this - a shopping cart retrofitted with seven types of radio transceivers and high-gain WiFi antennas

E. Social Engineering Attacks on Personnel

IV. Emphasis on how these attacks can apply to several other systems

=====  
Abstract  
=====

Want free subway rides for life? In this talk we go over weaknesses in common subway fare collection systems. We focus on the Boston T subway, and show how we reverse engineered the data on magstripe card, we present several attacks to completely break the CharlieCard, a MIFARE Classic smartcard used in many subways around the world, and we discuss physical security problems. We will discuss practical brute force attacks using FPGAs and how to use software-radio to read RFID cards. We go over social engineering attacks we executed on employees, and we present a novel new method of hacking WiFi: WARCARTING. We will release several open source tools we wrote to perform these attacks. With live demos, we will demonstrate how we broke these systems.

=====  
Supporting Files  
=====

~~~ Sample Slides About This Talk ~~~

Note that these slides just cover some of the work we have done, our talk will touch on other subway systems as well.

<http://web.mit.edu/zacka/www/bostont/hackingTheT.pdf>

~~~ Whitepaper About The Material In The Talk ~~~

<http://web.mit.edu/zacka/www/bostont/attacksOnMBTASecurity.pdf>

~~~ Code And Tools ~~~

Our tools are not yet released. We plan on releasing them at Defcon.

=====

Speaker Bios

=====

~~~ Zack Anderson ~~~

Zack Anderson is studying electrical engineering and computer science at MIT. He is an avid hardware and software hacker, and has built several systems such as an autonomous vehicle for the DARPA Grand Challenge. Zack is especially interested in the security of embedded systems and wireless communications. He has experience building and breaking CDMA cellular systems and RFID. Zack has worked for a security/intelligence firm, and has multiple patents pending. He enjoys building systems as much as he enjoys breaking them.

~~~ RJ Ryan ~~~

RJ Ryan is researcher at MIT. His longtime passion for security has resulted in a number of hacks and projects, including a steganographic cryptography protocol. RJ works on a number of technical projects ranging from computer security to operating systems, distributed computation, compilers, and computer graphics. He enjoys learning how things work, and how to make things work for him.

~~~ Alessandro Chiesa ~~~

Alessandro Chiesa is a Junior at MIT double majoring in Theoretical Mathematics and in Electrical Engineering and Computer Science. Born and raised in Varese, Italy, he came to MIT with interests in computational algebraic geometry, machine learning, cryptography, and systems security. He has authored papers such as "Generalizing Regev's Cryptosystem", which proposes a new cryptosystem based on shortest vector problems in cyclotomic fields. He is currently working with Oracle's Database Security group.

===== Legal Stuff =====

~~~ Copyright Use Grant ~~~

I warrant that the above work has not been previously published elsewhere, or if it has, that I have obtained permission for its publication by DEF CON Communications, Inc. and that I will promptly supply DEF CON Communications, Inc. with wording for crediting the original publication and copyright owner.

If I am selected for presentation, I hereby give DEF CON Communications, Inc.

permission to duplicate, record and redistribute this presentation; including, but not limited to, the conference proceedings, conference CD, video, audio, hand outs(s) to the conference attendees for educational, on-line and all other purposes.

Yes, I, Zack Anderson, have read the above and agree to the Grant of Copyright Use.

~~~ Terms of Speaking Requirements ~~~

If I am selected to speak, I, (insert your name here), understand that I must complete and fulfill the following requirements or I will forfeit my honorarium:

1) I will submit a completed (and possibly updated) presentation, a copy of the tool(s) and/or code(s), and a reference to all of the tool(s), law(s), Web sites and/or publications referenced to at the end of my talk and as described in this CFP submission for publication on the conference CD by noon PST, June 30, 2008.

2) I understand if I fail to submit a completed presentation by June 30, 2008, I may be replaced by an alternate presentation or may forfeit my honorarium. This decision will be made by DEFCON and I will be informed in writing of my status.

3) I will include a detailed bibliography as either a separate document or included within the presentation of all resources cited and/or used in my presentation.

4) I will complete my presentation within the time allocated to me - not running over the time allocation.

5) I understand that DEFCON will provide 1 LCD projector, 1 screen, microphone, and video switch box. I understand that I am responsible for providing all other necessary equipment, including laptops and machines (with VGA output), to complete my presentation.

6) I will submit, within 5 days of the completion of the conference, any updated, revised or additional presentation(s) or materials that were used in my presentation but not included on the conference CD or conference proceedings.

I, Zack Anderson, have read the above and understand and agree to the terms as detailed in the Agreement to Terms of Speaking Requirements.

~~~ Terms of Speaking Renumeration ~~~

1) I understand that I will be responsible for my own hotel and travel expenses.

2) I understand that DEFCON will issue one payment per presentation.

3) I understand that in order to be paid, I must provide a valid name and snail mail address. US citizens will be paid with a company check. Non-US citizens will be paid via money order or company check.

4) I understand that the name and address that I provide to the onsite speaker liaison is where the payment will be sent.

5) I understand that I will be paid \$200 USD, 30 days from the end of the conference, after I have completed my presentation. I may choose to waive my \$200 speaking fee in exchange for 3 DEFCON Human badges.

6) I understand that should my talk be determined to be unsuitable (e.g. a vendor or sales pitch, a talk on the keeping of goats, etc) after I have presented, that I will not receive an honorarium.

I, Zack Anderson, have read the above and understand and agree to the terms as detailed in the Agreement to Terms of Speaking Remuneration or I will forfeit my honorarium.

Subject: RE: Call for papers proposal: The Anatomy of a Subway Hack: Breaking  
Crypto RFIDs and Magstripes of Ticketing Systems  
Date: Thu, 15 May 2008 13:32:28 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: 'Zack Anderson' <zacka@mit.edu>  
References: <482BDA75.4080600@mit.edu>

Hello,

Thank you for submitting your talk for DEFCON 16, if you have any questions,  
please feel free to contact me.

After we have completed the selection process, we will contact you with your  
status (denial or acceptance). Call for papers will not end until May 15,  
You should be hearing from us by June 1, 2008 if not earlier.  
Please be aware that if you are accepted we require full materials (slides,  
whitepapers, etc) submitted to us for publication by June 30, 2008. Please  
be sure to monitor your email for requests, periodic updates and reminders.

--

Nikita Caine, Administrator Of Khaos,Defcon.  
<http://www.defcon.org>  
[e] [Nikita@defcon.org](mailto:Nikita@defcon.org)  
[t] +1 206.280.2294  
PGP ID: 0x3550AC2D

"Like Shuffleboard only a lot less violent."

-----Original Message-----

From: Zack Anderson [<mailto:zacka@MIT.EDU>] Sent: Wednesday, May 14, 2008 11:39  
PM  
To: [talks@defcon.org](mailto:talks@defcon.org)  
Subject: Call for papers proposal: The Anatomy of a Subway Hack: Breaking  
Crypto RFIDs and Magstripes of Ticketing Systems

Attached is my submission for a talk at Defcon 16 this year. Please let me  
know if you need anything further. Thanks.

Looking forward to Defcon,  
Zack Anderson

MBTA0007

Subject: Recieved Acceptance letter? /DEFCON Speaker Info  
Date: Wed, 28 May 2008 21:17:46 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: <Nikita@defcon.org>

Hello Speakers,

I'm just checking in with you to make sure that each of you have a copy of your acceptance letter for DEFCON 16. If for some reason you do not, please email me. There have been many speakers selected this past week and I want to make sure that everyone is on the same page.

Also a few important things to note:

- Some of you are asking about the schedule, The schedule is not ready yet and will take us some time before we get a first draft online. I will message you again when the schedule goes online.
- If you have a specific time you cannot speak or need to speak by, please let me know now so we may arrange it best we can.
- If you submitted a paper with multiple time requirements and do not know which you have been selected for please message me. I cannot tell you when you are speaking but I can tell you for how long.
- If you have a Co-Speaker who is NOT listed on your CFP submission, please contact me immediately so they may be added to the speakers list.
- Presentation Materials are due JUNE 30<sup>th</sup> .
- Book Signing information due by June 15<sup>th</sup> .

Thanks much and as always if you have any questions, don't hesitate to ask.

--

Nikita Caine,

Administrator Of Khaos,Defcon.

<http://www.defcon.org>

[e] [Nikita@defcon.org](mailto:Nikita@defcon.org) <<mailto:Nikita@defcon.org>>

[e] [BarkingKitten@gmail.com](mailto:BarkingKitten@gmail.com) <<mailto:BarkingKitten@gmail.com>>

[T] 206-280-2294 (SMS preferred)

"Like Shuffleboard only a lot less violent."

MBTA0008



Subject: Defcon slides  
Date: Mon, 30 Jun 2008 23:57:16 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>

The slides for our talk are here:  
<http://web.mit.edu/zacka/www/subway/DefconSubwayHack.pdf>

Zack

Subject: Re: Revised abstract  
Date: Tue, 05 Aug 2008 22:29:35 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>  
References: <48988CC7.5060901@mit.edu>  
<5dba3ce20808051926m7555b2c5o4cb74c1ddda11117@mail.gmail.com>

Thanks so much!

Zack

Nikita Caine wrote:

This should be updated on the website soon if not already, however do note the webmaster is in las vegas at the moment, and your previous abstract will be what is printed on the program.

On Tue, Aug 5, 2008 at 10:24 AM, Zack Anderson <zacka@mit.edu> wrote:

Hi Nikita,

We met with a Sargent Detective of the Intelligence unit at the MBTA and a Special Agent of the cybercrimes division of the FBI yesterday. The meeting went well, and our legal counsel has advised us that we can definitely proceed with the talk. If you don't mind, can you change our abstract on the website to this:

"In this talk we go over weaknesses in common subway fare collection systems. We focus on the Boston T subway, and show how we reverse engineered the data on magstripe card, we present several attacks to completely break the CharlieCard, a MIFARE Classic smartcard used in many subways around the world, and we discuss physical security problems. We will discuss practical brute force attacks using FPGAs and how to use software-radio to read RFID cards. We survey 'human factors' that lead to weaknesses in the system, and we present a novel new method of hacking WiFi: WARCARTING. We will release several open source tools we wrote in the process of researching these attacks. With live demos, we will demonstrate how we broke these systems."

Thanks,  
Zack

----- Original Message -----

Subject: Revised abstract  
Date: Tue, 05 Aug 2008 13:24:23 -0400

MBTA00011

From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>

Hi Nikita,

We met with a Sargent Detective of the Intelligence unit at the MBTA and a Special Agent of the cybercrimes division of the FBI yesterday. The meeting went well, and our legal counsel has advised us that we can definitely proceed with the talk. If you don't mind, can you change our abstract on the website to this:

"In this talk we go over weaknesses in common subway fare collection systems. We focus on the Boston T subway, and show how we reverse engineered the data on magstripe card, we present several attacks to completely break the CharlieCard, a MIFARE Classic smartcard used in many subways around the world, and we discuss physical security problems. We will discuss practical brute force attacks using FPGAs and how to use software-radio to read RFID cards. We survey 'human factors' that lead to weaknesses in the system, and we present a novel new method of hacking WiFi: WARCARTING. We will release several open source tools we wrote in the process of researching these attacks. With live demos, we will demonstrate how we broke these systems."

Thanks,  
Zack

----- Original Message -----

Subject: Re: Defcon CD  
Date: Thu, 31 Jul 2008 22:33:37 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>  
References: <5dba3ce20807010045046a72b5bi6700c97871711870@mail.gmail.com>  
<489231BD.6030209@mit.edu>  
<5dba3ce20807311734n416e4aa6pd03a9c6b6728a838@mail.gmail.com>

We still plan on giving the talk. We left out a couple of key details from the slides, so for now I think we will be alright. We are meeting with the MBTA and legal counsel on Monday. I will keep you posted if anything changes, but expect us to give the talk.

Zack

Nikita Caine wrote:  
Zack,

The CD's have been printed and are on their way to Vegas, There is no way to change it at this point. Please let me know if you will be

MBTA00012

canceling your talk because of the investigation.

-Nikita

On Thu, Jul 31, 2008 at 2:42 PM, Zack Anderson <zacka@mit.edu> wrote:

Hi Nikita,

I was wondering if the Defcon CDs have already been produced. The MBTA informed us today that the FBI has mounted an investigation regarding the work we are going to present at Defcon about hacking subway systems. If still possible, we may want to adjust a couple of slides from our slide deck. I understand that in all probability, the CDs have already been made, but please let me know.

Thanks,  
Zack

Nikita Caine wrote:

This is just a confirmation to let you know that I received your presentation materials and you are checked off my list. I appreciate you meeting the deadline, if you come across any changes (typos, etc) please let me know, I will be compiling the presentation CD over the next few days so I may be able to slip in your updated materials. For those of you that sent in your choices in regards to badge vs check, I will be sending out an additional confirmation email within the next few days as well.

Thanks again,  
Nikita

----- Original Message -----

Subject: Defcon CD

Date: Thu, 31 Jul 2008 17:42:21 -0400

From: Zack Anderson <zacka@mit.edu>

To: Nikita Caine <barkingkitten@gmail.com>

References:

<5dba3ce20807010045046a72b5bi6700c97871711870@mail.gmail.com>

Hi Nikita,

MBTA00013

I was wondering if the Defcon CDs have already been produced. The MBTA informed us today that the FBI has mounted an investigation regarding the work we are going to present at Defcon about hacking subway systems. If still possible, we may want to adjust a couple of slides from our slide deck. I understand that in all probability, the CDs have already been made, but please let me know.

Thanks,  
Zack

Nikita Caine wrote:

This is just a confirmation to let you know that I received your presentation materials and you are checked off my list. I appreciate you meeting the deadline, if you come across any changes (typos, etc) please let me know, I will be compiling the presentation CD over the next few days so I may be able to slip in your updated materials. For those of you that sent in your choices in regards to badge vs check, I will be sending out an additional confirmation email within the next few days as well.

Thanks again,  
Nikita

----- Original Message -----

Subject: Re: Badges or Honorarium?  
Date: Wed, 02 Jul 2008 23:56:42 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>  
References: <014e01c8dcbf\$86081500\$92183f00\$@com>

We'd like an honorarium, please. You can make it out to:

Zack Anderson  
3 Ames St., #259  
Cambridge, MA 02142

Thanks!

Zack

Nikita Caine wrote:

Hello Speakers,

This is a mass email to let you know I do not have anything selected for you in regards to your choice between Honorarium or three Defcon badges. Please let me know your choices as early as possible, the earlier I know the better, I would prefer to know by this weekend. If you have already made your selection, I apologize for my disorganization in

MBTA00014

adding your name to this list by mistake. If that is the case, please let me know your choice again, and I will send you a separate confirmation email within the next few days.

If you will be accepting a check I will need to know the name it shall be made out to and a mailing address in case we fail to deliver it to you in hand at the show. If you change your mind at the show we can shred the check and give you badges, however we cannot write you a check at the show and you may have to wait up to 6 weeks to receive it via post.

Twenty Minute Turbo talks are excluded from this list, so if you found yourself on this list accidentally, please disregard. Also, please note you have one choice per full length talk.

Thanks much,

Nikita

----- Original Message -----

Subject: Defcon slides  
Date: Mon, 30 Jun 2008 23:57:16 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>

The slides for our talk are here:

<http://web.mit.edu/zacka/www/subway/DefconSubwayHack.pdf>

Zack

----- Original Message -----

Subject: Re: Please Confirm.  
Date: Sun, 29 Jun 2008 17:12:17 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>  
References: <01b301c8d802\$9abad990\$d0308cb0\$@com> <FECC7303-81C5-44C0-B704-42915C7D9555@mit.edu>  
<5dba3ce20806271349kd6a5013113e6a5f74356bd4b@mail.gmail.com>  
<48670CF3.4020604@mit.edu>  
<5dba3ce20806291401o425ccc14126ae581009c3b313@mail.gmail.com>  
<5dba3ce20806291407g73279183n2f1538c9c17d72d3@mail.gmail.com>

Hey,

MBTA00015

1pm on Sunday is great. Thanks.

Zack

Nikita Caine wrote:

Perhaps I spoke too , I have you for a 1pm slot. I did not really want your talk that late in the day so i hope this works out.

-Kita

On Sun, Jun 29, 2008 at 2:01 PM, Nikita Caine <barkingkitten@gmail.com> wrote:

This registers a latent memory with me, sorry about that. The only thing I can do as of now is switch you with the last talk in that track that day. Things are crazy with the schedule and I'm sorry about that, I truly am.

I hope that helps.

On Sat, Jun 28, 2008 at 9:17 PM, Zack Anderson <zacka@mit.edu> wrote:

Hi Nikita,

I just checked the schedule and spoke to Alessandro (the other speaker in my talk). He has a family obligation Saturday evening, and won't be back in Vegas until 10am on Sunday. That's going to be pushing it for an 11am talk. Is there any way we can reschedule for a 12pm slot on Sunday, or slightly after that? Really sorry about the inconvenience. Also, can you fix my name on the schedule from "Zac" to "Zack." Thanks!

Zack

Nikita Caine wrote:

Thanks much. :-)

On Fri, Jun 27, 2008 at 1:46 PM, Zack Anderson <zacka@mit.edu> wrote:

Hi Nikita,

You'll have our materials by the 30th.

Zack

On Jun 26, 2008, at 11:05 PM, "Nikita Caine" <barkingkitten@gmail.com> wrote:

Seemed as if my first attempt bounced to you, must have been formatting errors on my end..although could've also been entirely imaginary as well.

Thanks much.

From: Nikita Caine [mailto:barkingkitten@gmail.com]

MBTA00016

Sent: Thursday, June 26, 2008 7:47 PM  
To: 'Nikita@defcon.org'  
Subject: Please Confirm.

Hello speakers,

This is a Mass Mailing to let you know that I have gotten the schedule approved, I am working on it now so it should be online very soon. I know you are all very anxious. If you are concerned about not getting the slot you requested please let me know and I will verify your time slot for you.

You should also be aware that the deadline to make changes to your abstract

& bio is fast approaching, in four days we will take the information from the defcon speakers page to prepare the printed program. Please review it and let us know if you need to make any changes to your description or bio.

Also, I need everyone to reply to this email to confirm the following:

You

know you are speaking, and you know the presentation materials are due in four days. 6-30-08. I expected a higher amount of presentation materials turned by now, so I am just making a final reminder and checking in with you

to make sure we are on the same page. Please reply, with a simple or ack or

be as elaborate as you would like.

I hope everyone is doing well, and I look forward to your response. Thank you very much in advance for your response and for all the hard work you do

making this Defcon filled with great content!

-Nikita Caine

206-280-2294

----- Original Message -----

MBTA00017

Subject: Re: Please Confirm.  
Date: Sun, 29 Jun 2008 00:17:55 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>  
References: <01b301c8d802\$9abad990\$d0308cb0\$@com> <FECC7303-81C5-44C0-B704-42915C7D9555@mit.edu>  
<5dba3ce20806271349kd6a5013113e6a5f74356bd4b@mail.gmail.com>

Hi Nikita,

I just checked the schedule and spoke to Alessandro (the other speaker in my talk). He has a family obligation Saturday evening, and won't be back in Vegas until 10am on Sunday. That's going to be pushing it for an 11am talk. Is there any way we can reschedule for a 12pm slot on Sunday, or slightly after that? Really sorry about the inconvenience. Also, can you fix my name on the schedule from "Zac" to "Zack."  
Thanks!

Zack

Nikita Caine wrote:  
Thanks much. :-)

On Fri, Jun 27, 2008 at 1:46 PM, Zack Anderson <zacka@mit.edu> wrote:

Hi Nikita,  
You'll have our materials by the 30th.

Zack  
On Jun 26, 2008, at 11:05 PM, "Nikita Caine" <barkingkitten@gmail.com>  
wrote:

Seemed as if my first attempt bounced to you, must have been formatting errors on my end..although could've also been entirely imaginary as well.  
Thanks much.

From: Nikita Caine [mailto:barkingkitten@gmail.com]  
Sent: Thursday, June 26, 2008 7:47 PM  
To: 'Nikita@defcon.org'  
Subject: Please Confirm.

Hello speakers,

This is a Mass Mailing to let you know that I have gotten the schedule

MBTA00018

approved, I am working on it now so it should be online very soon. I know you are all very anxious. If you are concerned about not getting the slot you requested please let me know and I will verify your time slot for you. You should also be aware that the deadline to make changes to your abstract & bio is fast approaching, in four days we will take the information from the defcon speakers page to prepare the printed program. Please review it and let us know if you need to make any changes to your description or bio.

Also, I need everyone to reply to this email to confirm the following: You know you are speaking, and you know the presentation materials are due in four days. 6-30-08. I expected a higher amount of presentation materials turned by now, so I am just making a final reminder and checking in with you to make sure we are on the same page. Please reply, with a simple or ack or be as elaborate as you would like.

I hope everyone is doing well, and I look forward to your response. Thank you very much in advance for your response and for all the hard work you do making this Defcon filled with great content!

-Nikita Caine

206-280-2294

----- Original Message -----

Subject: Re: Please Confirm.

Date: Fri, 27 Jun 2008 16:46:30 -0400

From: Zack Anderson <zacka@mit.edu>

To: Nikita Caine <barkingkitten@gmail.com>

References: <01b301c8d802\$9abad990\$d0308cb0\$@com>

Hi Nikita,

You'll have our materials by the 30th.

Zack

On Jun 26, 2008, at 11:05 PM, "Nikita Caine" <barkingkitten@gmail.com <mailto:barkingkitten@gmail.com>> wrote:

Seemed as if my first attempt bounced to you, must have been formatting errors on my end..although could've also been entirely imaginary as well. Thanks much.

MBTA00019

\*From:\* Nikita Caine [mailto:barkingkitten@gmail.com  
<mailto:barkingkitten@gmail.com>]  
\*Sent:\* Thursday, June 26, 2008 7:47 PM  
\*To:\* 'Nikita@defcon.org <mailto:Nikita@defcon.org>'  
\*Subject:\* Please Confirm.

Hello speakers,

This is a Mass Mailing to let you know that I have gotten the schedule approved, I am working on it now so it should be online very soon. I know you are all very anxious. If you are concerned about not getting the slot you requested please let me know and I will verify your time slot for you. You should also be aware that the deadline to make changes to your abstract & bio is fast approaching, in four days we will take the information from the defcon speakers page to prepare the printed program. Please review it and let us know if you need to make any changes to your description or bio.

Also, I need everyone to reply to this email to confirm the following: You know you are speaking, and you know the presentation materials are due in four days. 6-30-08. I expected a higher amount of presentation materials turned by now, so I am just making a final reminder and checking in with you to make sure we are on the same page. Please reply, with a simple or ack or be as elaborate as you would like.

I hope everyone is doing well, and I look forward to your response. Thank you very much in advance for your response and for all the hard work you do making this Defcon filled with great content!

-Nikita Caine

206-280-2294

----- Original Message -----

Subject: Re: Recieved Acceptance letter? /DEFCON Speaker Info  
Date: Thu, 29 May 2008 01:42:44 -0400  
From: Zack Anderson <zacka@mit.edu>  
To: Nikita Caine <barkingkitten@gmail.com>  
References: <001e01c8c143\$0aed42b0\$20c7c810\$@com>

Hi Nikita,

I did not receive the acceptance letter. Please forward it when you get a chance.  
Thanks!

MBTA00020

Zack

Nikita Caine wrote:

Hello Speakers,

I'm just checking in with you to make sure that each of you have a copy of your acceptance letter for DEFCON 16. If for some reason you do not, please email me. There have been many speakers selected this past week and I want to make sure that everyone is on the same page.

Also a few important things to note:

- Some of you are asking about the schedule, The schedule is not ready yet and will take us some time before we get a first draft online. I will message you again when the schedule goes online.
- If you have a specific time you cannot speak or need to speak by, please let me know now so we may arrange it best we can.
- If you submitted a paper with multiple time requirements and do not know which you have been selected for please message me. I cannot tell you when you are speaking but I can tell you for how long.
- If you have a Co-Speaker who is NOT listed on your CFP submission, please contact me immediately so they may be added to the speakers list.
- Presentation Materials are due JUNE 30<sup>th</sup> .
- Book Signing information due by June 15<sup>th</sup> .

Thanks much and as always if you have any questions, don't hesitate to ask.

--

Nikita Caine,

Administrator Of Khaos,Defcon.

<http://www.defcon.org>

[e] [Nikita@defcon.org](mailto:Nikita@defcon.org) <<mailto:Nikita@defcon.org>>

[e] [BarkingKitten@gmail.com](mailto:BarkingKitten@gmail.com) <<mailto:BarkingKitten@gmail.com>>

[T] 206-280-2294 (SMS preferred)

"Like Shuffleboard only a lot less violent."

MBTA00021

----- Original Message -----

Subject: Re: Revised abstract  
Date: Tue, 5 Aug 2008 19:26:19 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: Zack Anderson <zacka@mit.edu>  
References: <48988CC7.5060901@mit.edu>

This should be updated on the website soon if not already, however do note the webmaster is in las vegas at the moment, and your previous abstract will be what is printed on the program.

On Tue, Aug 5, 2008 at 10:24 AM, Zack Anderson <zacka@mit.edu> wrote:  
Hi Nikita,

We met with a Sargent Detective of the Intelligence unit at the MBTA and a Special Agent of the cybercrimes division of the FBI yesterday. The meeting went well, and our legal counsel has advised us that we can definitely proceed with the talk. If you don't mind, can you change our abstract on the website to this:

"In this talk we go over weaknesses in common subway fare collection systems. We focus on the Boston T subway, and show how we reverse engineered the data on magstripe card, we present several attacks to completely break the CharlieCard, a MIFARE Classic smartcard used in many subways around the world, and we discuss physical security problems. We will discuss practical brute force attacks using FPGAs and how to use software-radio to read RFID cards. We survey 'human factors' that lead to weaknesses in the system, and we present a novel new method of hacking WiFi: WARCARTING. We will release several open source tools we wrote in the process of researching these attacks. With live demos, we will demonstrate how we broke these systems."

Thanks,  
Zack

----- Original Message -----

Subject: Re: Defcon CD  
Date: Thu, 31 Jul 2008 17:34:22 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: Zack Anderson <zacka@mit.edu>  
References: <5dba3ce20807010045046a72b5bi6700c97871711870@mail.gmail.com>  
<489231BD.6030209@mit.edu>

MBTA00022

Zack,

The CD's have been printed and are on their way to Vegas, There is no way to change it at this point. Please let me know if you will be canceling your talk because of the investigation.

-Nikita

On Thu, Jul 31, 2008 at 2:42 PM, Zack Anderson <zacka@mit.edu> wrote:  
Hi Nikita,

I was wondering if the Defcon CDs have already been produced. The MBTA informed us today that the FBI has mounted an investigation regarding the work we are going to present at Defcon about hacking subway systems. If still possible, we may want to adjust a couple of slides from our slide deck. I understand that in all probability, the CDs have already been made, but please let me know.

Thanks,  
Zack

Nikita Caine wrote:

This is just a confirmation to let you know that I received your presentation materials and you are checked off my list. I appreciate you meeting the deadline, if you come across any changes (typos,etc) please let me know, I will be compiling the presentation CD over the next few days so I may be able to slip in your updated materials. For those of you that sent in your choices in regards to badge vs check, I will be sending out an additional confirmation email within the next few days as well.

Thanks again,  
Nikita

----- Original Message -----

Subject: Badges or Honorarium?  
Date: Wed, 2 Jul 2008 20:47:28 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: <talks@defcon.org>

Hello Speakers,

MBTA00023

This is a mass email to let you know I do not have anything selected for you in regards to your choice between Honorarium or three Defcon badges. Please let me know your choices as early as possible, the earlier I know the better, I would prefer to know by this weekend. If you have already made your selection, I apologize for my disorganization in adding your name to this list by mistake. If that is the case, please let me know your choice again, and I will send you a separate confirmation email within the next few days.

If you will be accepting a check I will need to know the name it shall be made out to and a mailing address in case we fail to deliver it to you in hand at the show. If you change your mind at the show we can shred the check and give you badges, however we cannot write you a check at the show and you may have to wait up to 6 weeks to receive it via post.

Twenty Minute Turbo talks are excluded from this list, so if you found yourself on this list accidentally, please disregard. Also, please note you have one choice per full length talk.

Thanks much,

Nikita

----- Original Message -----

Subject: Thank you for submitting your presentation materials  
Date: Tue, 1 Jul 2008 00:45:53 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: talks@defcon.org

This is just a confirmation to let you know that I received your presentation materials and you are checked off my list. I appreciate you meeting the deadline, if you come across any changes (typos, etc) please let me know, I will be compiling the presentation CD over the next few days so I may be able to slip in your updated materials. For those of you that sent in your choices in regards to badge vs check, I will be sending out an additional confirmation email within the next few days as well.

Thanks again,  
Nikita

----- Original Message -----

Subject: Re: Please Confirm.  
Date: Sun, 29 Jun 2008 14:07:55 -0700  
From: Nikita Caine <barkingkitten@gmail.com>

MBTA00024

To: Zack Anderson <zacka@mit.edu>  
References: <01b301c8d802\$9abad990\$d0308cb0\$@com> <FECC7303-81C5-44C0-B704-42915C7D9555@mit.edu>  
<5dba3ce20806271349kd6a5013113e6a5f74356bd4b@mail.gmail.com>  
<48670CF3.4020604@mit.edu>  
<5dba3ce20806291401o425ccc14126ae581009c3b313@mail.gmail.com>

Perhaps I spoke too , I have you for a 1pm slot. I did not really want your talk that late in the day so i hope this works out.  
-Kita

On Sun, Jun 29, 2008 at 2:01 PM, Nikita Caine <barkingkitten@gmail.com> wrote:  
This registers a latent memory with me, sorry about that. The only thing I can do as of now is switch you with the last talk in that track that day. Things are crazy with the schedule and I'm sorry about that, I truly am.  
I hope that helps.

On Sat, Jun 28, 2008 at 9:17 PM, Zack Anderson <zacka@mit.edu> wrote:  
Hi Nikita,

I just checked the schedule and spoke to Alessandro (the other speaker in my talk). He has a family obligation Saturday evening, and won't be back in Vegas until 10am on Sunday. That's going to be pushing it for an 11am talk. Is there any way we can reschedule for a 12pm slot on Sunday, or slightly after that? Really sorry about the inconvenience. Also, can you fix my name on the schedule from "Zac" to "Zack." Thanks!

Zack

Nikita Caine wrote:

Thanks much. :-)

On Fri, Jun 27, 2008 at 1:46 PM, Zack Anderson <zacka@mit.edu> wrote:

Hi Nikita,  
You'll have our materials by the 30th.

Zack

On Jun 26, 2008, at 11:05 PM, "Nikita Caine" <barkingkitten@gmail.com> wrote:

Seemed as if my first attempt bounced to you, must have been formatting errors on my end..although could've also been entirely imaginary as well.  
Thanks much.

From: Nikita Caine [mailto:barkingkitten@gmail.com]  
Sent: Thursday, June 26, 2008 7:47 PM  
To: 'Nikita@defcon.org'  
Subject: Please Confirm.

Hello speakers,

This is a Mass Mailing to let you know that I have gotten the schedule approved, I am working on it now so it should be online very soon. I know you are all very anxious. If you are concerned about not getting the slot you requested please let me know and I will verify your time slot for you.

You should also be aware that the deadline to make changes to your abstract & bio is fast approaching, in four days we will take the information from the defcon speakers page to prepare the printed program. Please review it and let us know if you need to make any changes to your description or bio.

Also, I need everyone to reply to this email to confirm the following:

You

know you are speaking, and you know the presentation materials are due in four days. 6-30-08. I expected a higher amount of presentation materials turned by now, so I am just making a final reminder and checking in with you

to make sure we are on the same page. Please reply, with a simple or ack or

be as elaborate as you would like.

I hope everyone is doing well, and I look forward to your response. Thank you very much in advance for your response and for all the hard work you do

making this Defcon filled with great content!

-Nikita Caine

206-280-2294

MBTA00026

----- Original Message -----

Subject: Re: Please Confirm.  
Date: Sun, 29 Jun 2008 14:01:09 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: Zack Anderson <zacka@mit.edu>  
References: <01b301c8d802\$9abad990\$d0308cb0\$@com> <FECC7303-81C5-44C0-B704-42915C7D9555@mit.edu>  
<5dba3ce20806271349kd6a5013113e6a5f74356bd4b@mail.gmail.com>  
<48670CF3.4020604@mit.edu>

This registers a latent memory with me, sorry about that. The only thing I can do as of now is switch you with the last talk in that track that day. Things are crazy with the schedule and I'm sorry about that, I truly am.  
I hope that helps.

On Sat, Jun 28, 2008 at 9:17 PM, Zack Anderson <zacka@mit.edu> wrote:  
Hi Nikita,

I just checked the schedule and spoke to Alessandro (the other speaker in my talk). He has a family obligation Saturday evening, and won't be back in Vegas until 10am on Sunday. That's going to be pushing it for an 11am talk. Is there any way we can reschedule for a 12pm slot on Sunday, or slightly after that? Really sorry about the inconvenience. Also, can you fix my name on the schedule from "Zac" to "Zack." Thanks!

Zack

Nikita Caine wrote:

Thanks much. :-)

On Fri, Jun 27, 2008 at 1:46 PM, Zack Anderson <zacka@mit.edu> wrote:

Hi Nikita,  
You'll have our materials by the 30th.

Zack

On Jun 26, 2008, at 11:05 PM, "Nikita Caine" <barkingkitten@gmail.com> wrote:

Seemed as if my first attempt bounced to you, must have been formatting errors on my end..although could've also been entirely imaginary as well.

MBTA00027

Thanks much.

From: Nikita Caine [mailto:barkingkitten@gmail.com]  
Sent: Thursday, June 26, 2008 7:47 PM  
To: 'Nikita@defcon.org'  
Subject: Please Confirm.

Hello speakers,

This is a Mass Mailing to let you know that I have gotten the schedule approved, I am working on it now so it should be online very soon. I know you are all very anxious. If you are concerned about not getting the slot you requested please let me know and I will verify your time slot for you.

You should also be aware that the deadline to make changes to your abstract

& bio is fast approaching, in four days we will take the information from the defcon speakers page to prepare the printed program. Please review it and let us know if you need to make any changes to your description or bio.

Also, I need everyone to reply to this email to confirm the following:

You

know you are speaking, and you know the presentation materials are due in four days. 6-30-08. I expected a higher amount of presentation materials turned by now, so I am just making a final reminder and checking in with you

to make sure we are on the same page. Please reply, with a simple or ack or

be as elaborate as you would like.

I hope everyone is doing well, and I look forward to your response. Thank you very much in advance for your response and for all the hard work you do

making this Defcon filled with great content!

-Nikita Caine

206-280-2294

MBTA00028

----- Original Message -----

Subject: Re: Please Confirm.  
Date: Fri, 27 Jun 2008 13:49:26 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: Zack Anderson <zacka@mit.edu>  
References: <01b301c8d802\$9abad990\$d0308cb0\$@com> <FECC7303-81C5-44C0-B704-42915C7D9555@mit.edu>

Thanks much. :-)

On Fri, Jun 27, 2008 at 1:46 PM, Zack Anderson <zacka@mit.edu> wrote:  
Hi Nikita,  
You'll have our materials by the 30th.

Zack  
On Jun 26, 2008, at 11:05 PM, "Nikita Caine" <barkingkitten@gmail.com>  
wrote:

Seemed as if my first attempt bounced to you, must have been formatting errors on my end..although could've also been entirely imaginary as well.  
Thanks much.

From: Nikita Caine [mailto:barkingkitten@gmail.com]  
Sent: Thursday, June 26, 2008 7:47 PM  
To: 'Nikita@defcon.org'  
Subject: Please Confirm.

Hello speakers,

This is a Mass Mailing to let you know that I have gotten the schedule approved, I am working on it now so it should be online very soon. I know you are all very anxious. If you are concerned about not getting the slot you requested please let me know and I will verify your time slot for you. You should also be aware that the deadline to make changes to your abstract & bio is fast approaching, in four days we will take the information from the defcon speakers page to prepare the printed program. Please review it

MBTA00029

and let us know if you need to make any changes to your description or bio.

Also, I need everyone to reply to this email to confirm the following: You know you are speaking, and you know the presentation materials are due in four days. 6-30-08. I expected a higher amount of presentation materials turned by now, so I am just making a final reminder and checking in with you to make sure we are on the same page. Please reply, with a simple or ack or be as elaborate as you would like.

I hope everyone is doing well, and I look forward to your response. Thank you very much in advance for your response and for all the hard work you do making this Defcon filled with great content!

-Nikita Caine

206-280-2294

----- Original Message -----

Subject: FW: Please Confirm.  
Date: Thu, 26 Jun 2008 20:05:04 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: <Nikita@defcon.org>

Seemed as if my first attempt bounced to you, must have been formatting errors on my end..although could've also been entirely imaginary as well. Thanks much.

\*From:\* Nikita Caine [mailto:barkingkitten@gmail.com]  
\*Sent:\* Thursday, June 26, 2008 7:47 PM  
\*To:\* 'Nikita@defcon.org'  
\*Subject:\* Please Confirm.

Hello speakers,

This is a Mass Mailing to let you know that I have gotten the schedule approved, I am working on it now so it should be online very soon. I know you are all very anxious. If you are concerned about not getting the slot you requested please let me know and I will verify your time slot for you. You should also be aware that the deadline to make changes to your abstract & bio is fast approaching, in four days we will take the information from the defcon speakers page to prepare the printed program. Please review it and let us know if you need to make any changes to your description or bio.

MBTA00030

Also, I need everyone to reply to this email to confirm the following: You know you are speaking, and you know the presentation materials are due in four days. 6-30-08. I expected a higher amount of presentation materials turned by now, so I am just making a final reminder and checking in with you to make sure we are on the same page. Please reply, with a simple or ack or be as elaborate as you would like.

I hope everyone is doing well, and I look forward to your response. Thank you very much in advance for your response and for all the hard work you do making this Defcon filled with great content!

-Nikita Caine

206-280-2294

----- Original Message -----

Subject: Reminder: Presentation Materials Due 6-30-08 ( This may very well be a duplicate)

Date: Thu, 19 Jun 2008 20:44:45 -0700

From: Nikita Caine <barkingkitten@gmail.com>

To: nikita@defcon.org

I'm REALLY Sorry to spam your mail box, but I came back with 100+ failed delivery's, I did something wrong and with so many it will be hard to sort it out in a timely fashion.....I know a lot of you got the first mail just fine, but I need to be sure, sorry once again.

Original Message:

Hello Speakers!

This is just a friendly reminder to let you know presentation materials are due 6-3-08. Please let me know if you will be late, if you do not let me know and don't arrange something with me beforehand I may not be able to get your materials on the CD in time. You may continue to update your slides AFTER the deadline; the most recent versions will be made available online after the show. What you turn in on the 30th will go on the Defcon CD.

Also, if you will be accepting the three badges instead of honorarium please tell me now. If you would like your check at the show, please provide me with the name it should be made out to and the address it can be mailed to in case we fail to deliver it in hand at the show.

I know many of you are anxious to know when you are speaking, unfortunately I can not tell you for certain at this time. We are, I really mean it, working on the schedule. Hopefully we will have this done soon, when we do, I will send another mass mail out to you to.

MBTA00031

If by some freak chance, this is the first you have heard from me and have no idea what's going on, first check your spam box, you are accepted to speak at DEFCON 16, then message me for more info :-)

I hope everyone has a great weekend and I look forward to seeing you guys and gals in Vegas, only a few more months to go!

Nikita  
206-280-2294  
nikita@defcon.org  
barkingkitten@gmail.com

----- Original Message -----

Subject: DEFCON 16 Talk Accepted!  
Date: Wed, 28 May 2008 23:15:03 -0700  
From: Nikita Caine <barkingkitten@gmail.com>  
To: <zacka@mit.edu>

Hello,

Congratulations! DEFCON is pleased to accept you as a speaker at DEFCON 16. Please bear in mind the website is not fully updated yet. We will begin creating the schedule shortly and will be communicating with you often to give you updates and remind you of deadlines. If you have any questions please don't hesitate to ask.

Please note that we require your full materials (slides, whitepapers, etc) submitted to us for publication by June 30, 2008.

You may find your talk, abstract and bio online at: <https://www.defcon.org/html/defcon-16/dc-16-speakers.html> If it is not online now, it should be up within the next few days.

Once you get to the Rivera you will need to check in with me to receive your badge. I will notify you at a later date to remind you when and where. I will need a full name and mailing address that your check should be made out to for your honorarium. You can either provide me with that info now, or at your check in.

If you wish to maintain your privacy there are other options. You can donate your honorarium to charity, popular choices are often the EFF, the Toxic BBQ and The Missing and Exploited Children's Foundation. Also, If you would like to exchange your honorarium for badges, please let us know. Those who wish to exchange the cash honorarium for badges will receive three Human badges which can only be picked up by the

primary speaker of the presentation.

MBTA00032

If you have published a book within the last 18 months and would like to be considered for a book signing, please let us know the title, publisher and date of publication. You will be notified if you are selected to do a book signing. We will need this information by June 15th.

Please be sure to monitor your email for requests, periodic updates and reminders. Once again congrats, If you need anything, don't hesitate to ask. I look forward to meeting you in Vegas again this year!

--

Nikita Caine,

Administrator Of Khaos,Defcon.

<http://www.defcon.org>

[e] [Nikita@defcon.org](mailto:Nikita@defcon.org) <<mailto:Nikita@defcon.org>>

[e] [BarkingKitten@gmail.com](mailto:BarkingKitten@gmail.com)

[T] 206-280-2294

"Like Shuffleboard only a lot less violent."

# **EXHIBIT 2**

**boston.com**

THIS STORY HAS BEEN FORMATTED FOR EASY PRINTING

## T hacking exposes a deeper clash

The Boston Globe

### Where agency sees attack, MIT students talk of constructive exploration

By Michael Levenson, Globe Staff | August 18, 2008

Recent inventions to emerge from the workshop of Zack Anderson include the "Killbot," a radio-controlled robot with a "1,500,000-candlepower spotlight to blind the victim," a bullhorn "to terrify victims," and a spinning drill bit "to bore through obstacles."

Anderson, a 21-year-old electrical engineering major at MIT, has also designed a security system for his workshop that features sirens, flashing lights, and a digitally altered recording of his voice bellowing "Intrusion detected! Initiating auto-lockdown sequence!" and "releasing toxin into atmosphere!"

Impressive stuff. But it's not generating half the attention as his project for Professor Ronald L. Rivest's Computer and Network Security class last semester. That endeavor, for which he earned an A, has gotten the fresh-faced senior from Beverly Hills, Calif., a visit from an FBI agent, an MBTA sergeant detective, nationwide press attention, and a starring role in a federal lawsuit.

Anderson, along with his freshman-year roommate, R. J. Ryan, 22, and another student in the class, Alessandro Chiesa, 20, claimed in their project to have developed a way to hack into the MBTA's recently installed \$180 million automated fare-collection system and provide fellow hackers with "free rides for life."

Not surprisingly, the T was not pleased to learn of the development. The agency, which is strapped for cash and contemplating a fare increase in 2010, successfully sued the students to prevent them from presenting their findings at DEFCON, a hacker's convention that recently drew more than 6,000 people to the Riviera Hotel and Casino in Las Vegas.

The trio face a hearing in Boston's federal court tomorrow when a temporary restraining order keeping them from releasing their findings expires.

The T, which did not return calls for this story, has said the students' findings could cause "significant damage to the transit system." The agency has also sued MIT, saying the institute failed to teach its undergraduates "to responsibly disclose information concerning perceived security flaws."

The students strongly disagree, and their case has electrified the cowboy community of hackers, where the line is often blurry between those who break into a system so the system's flaws can be exposed and patched and those who crack into a network merely to create mischief.

"It was all the discussion at DEFCON," said Dave Marcus, security research and communications director at McAfee Avert Labs in Santa Clara, Calif., who attended the Aug. 8-10 convention. "Anytime you suppress research, it goes through the research community like wildfire. We can all feel like 'the man' is coming down on us as security researchers."

Anderson said the MBTA should consider his project an opportunity to improve security. He says the students omitted enough key details from their 87-page PowerPoint presentation, titled "anatomy of a subway hack," that others would not be able to program free rides onto their CharlieCards. The students also say that after they were visited by FBI agent Jacob Shaver and MBTA Sergeant Richard Sullivan on Aug. 4, they gave the MBTA a confidential "vulnerability assessment" so the agency could fix the gaps in its fare-collection system.

"It wasn't to enable others to get a free fare or cause any sort of havoc," Anderson said, calling over the Internet from Mexico, where he was on vacation last week. "It was really to show how major the issues are in this system, which also might resonate in many other systems around the world."

Anderson - who got his first computer (a Compaq Presario) in the fourth grade, taught himself QBasic, a programming language, in the sixth grade, and started building robots in the eighth grade - said part of the motivation for the hack was the challenge.

"I've always been interested in electronics," said Anderson, who grew up scouring alleyways for discarded machines. "Ever since I was a little kid, I would take things apart to see how they work."

These days, he proudly calls himself a hacker.

"If a lot of people think hacker, they think of someone who illegally breaks into systems," he said. "I don't at all think that's what hacker means. I think hacking is a culture of curiosity and exploration and learning and building and creating new things."

Hackers say they generally divide into three camps: do-gooder "white hats," nefarious "black hats," and "grey hats," who fall somewhere in between. Some say the MIT students' project might fall in the middle of the ethical gray scale.

"I can understand the MBTA's response," said Joe Grand, a 32-year-old hacker who calls himself Kingpin and was part of a 1990s hacker crew in Boston called L0pht Heavy Industries. "Nobody likes to have their work broken and publicly announced. I also agree that people need to know about systems that are broken. So there is definitely a fine line."

The students' PowerPoint presentation includes photos of MBTA police badges and hats that they purportedly bought on eBay, diagrams showing how to reprogram a CharlieCard to contain \$653 in value, and cheeky warnings that "this is very illegal! So the following is for educational use only!"

Eleven computer scientists have signed a letter arguing that to block the project "could have a devastating chilling effect" on future research.

"Discussing vulnerabilities and discussing problems that are out there improves security as a whole," Anderson said. "When you put things out in the open, other researchers can look at them and see how these things can be fixed."

Chiesa declined to comment for this article. Ryan did not respond to messages. But Anderson said the trio hopes to resolve the battle with the T and move on to other projects.

He said he eventually wants a career "building and growing companies," and noted that he is working on a new endeavor, a socially conscious start-up company that will seek to convert heat from a car's shock absorbers into energy for the engine.

"Definitely," he said. "It's a lot more rewarding to work on a problem that's going to help people."

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