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Ricardo Langner

June 21, 2016 Version: My First Draft

### Clean Thesis Style University

# CleanThesis

Department of Clean Thesis Style Institute for Clean Thesis Dev Clean Thesis Group (CTG)

#### Documentation

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June 21, 2016

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The Clean Thesis Style

Documentation, June 21, 2016

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#### **Clean Thesis Style University**

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#### **Abstract**

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

## Abstract (different language)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

# Acknowledgement

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Introduction

definition of rootkit/bootkit
persistenz

Related Work

Background

general introduction to UEFI replace bios security

### 3.1 **UEFI**

#### 3.1.1 Boot Sequence

#### 3.1.2 UEFI/PI Firmware Images

flash device flash volume flash file system

#### 3.1.3 **Images**

file format application vs driver boot and runtime services boot service table protocols protocol handles

#### 3.1.4 Secure Boot

TPM spi write

### 3.2 Windows

- 3.2.1 Bitlocker
- 3.2.2 UAC
- 3.2.3 Signing

Attacks 4

common assumption read/write access to firmware image through exploit or physical access

- 4.1 No Secure Boot
- 4.2 Secure Boot
- 4.3 Secure Boot and Bitlocker

Discussion

attack assumption reflected to real world aplicability social engineering aspekt driver vorhanden und was mitbringen, debloating

#### 5.1 Rootkit classification

statisken zu bilocker und secureboot auf systemen industrie standard zur system security in firmen

### 5.2 Mitigations

hardware validated boot
inaccessible spi flash
tpm + pin detectability
googeln wie legitime recovery key prompt reaktion aussieht
enterprise policy on reovery key loss

#### 5.2.1 User awareness

vermitteln was das prompt bedeuten koennte
aber kann man einfach nicht anzeigen lassen
Security Flaw of entering a Recovery Password in an inheritly unsafe System
enterprise doesnt hand out recovery keys and instead receives hard drive

Conclusion

# List of Figures

## List of Tables

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# List of Listings

Example Appendix

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

### A.1 Appendix Section 1

This is the second paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Alpha	Beta	Gamma
0	1	2
3	4	5

**Tab. A.1.**: This is a caption text.

## A.2 Appendix Section 2

And after the second paragraph follows the third paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like

at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Alpha	Beta	Gamma
0	1	2
3	4	5

Tab. A.2.: This is a caption text.

After this fourth paragraph, we start a new paragraph sequence. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

## Declaration

You can put your declaration here, to declare that you have completed your work
solely and only with the help of the references you mentioned.

City, June 21, 2016	
	Ricardo Langner