

# Indicators of Compromise

draft-paine-smart-indicators-of-compromise

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# History

- Available on Datatracker:  
[https://tools.ietf.org/html/draft-paine-smart-indicators-of-compromis  
e-03](https://tools.ietf.org/html/draft-paine-smart-indicators-of-compromis-e-03)
- Presented -00 at secdispatch in IETF 109
- Revised based on feedback on list and in meeting
- Brought to OPSEC mailing list this year
- Thanks to Nancy Camwinget and Fernando Gont for their thorough reviews on -02

# Motivation

- To document this existing operational security practice as a baseline
- To share knowledge with protocol engineers on a commonly used technique in cyber defence
- To prevent this technique being accidentally ignored
  - Engineers can make protocol design choices that affect IoC availability
  - So we'd like the IETF community at large to know about IoC techniques
- To bring cyber defence expertise into the IETF and share it through an Informational RFC, and begin cross-pollination of industry experiences

# Draft introduction

## **Indicators of Compromise (IoCs) and Their Role in Attack Defence draft-paine-smart-indicators-of-compromise-03**

### Abstract

Cyber defenders frequently rely on Indicators of Compromise (IoCs) to identify, trace, and block malicious activity in networks or on endpoints. This draft reviews the fundamentals, opportunities, operational limitations, and best practices of IoC use. It highlights the need for IoCs to be detectable in implementations of Internet protocols, tools, and technologies - both for the IoCs' initial discovery and their use in detection - and provides a foundation for new approaches to operational challenges in network security.

# Draft structure

## Old

1. Introduction . . . . .	2
1.1. Requirements Language . . . . .	3
2. Terminology . . . . .	3
3. What are IoCs? . . . . .	3
4. Why use IoCs? . . . . .	4
4.1. IoCs can be used even with limited resource . . . . .	4
4.2. IoCs have a multiplier effect on attack defence effort . . . . .	5
4.3. IoCs are easily shareable . . . . .	5
4.4. IoCs can be attributed to specific threat actors . . . . .	5
4.5. IoCs can provide significant time savings . . . . .	6
4.6. IoCs allow for discovery of historic attacks . . . . .	6
4.7. IoCs underpin and enable multiple layers of the modern defence-in-depth strategy . . . . .	6
5. Pain, Fragility and Precision . . . . .	7
5.1. Pyramid of Pain . . . . .	7
5.2. Fragility . . . . .	9
5.3. Precision . . . . .	9
5.4. Comprehensive Coverage . . . . .	9
6. Defence in Depth . . . . .	10
7. Case Study: APT33 . . . . .	12
7.1. Overall TTP . . . . .	12
7.2. IoCs . . . . .	13
8. Conclusions . . . . .	13

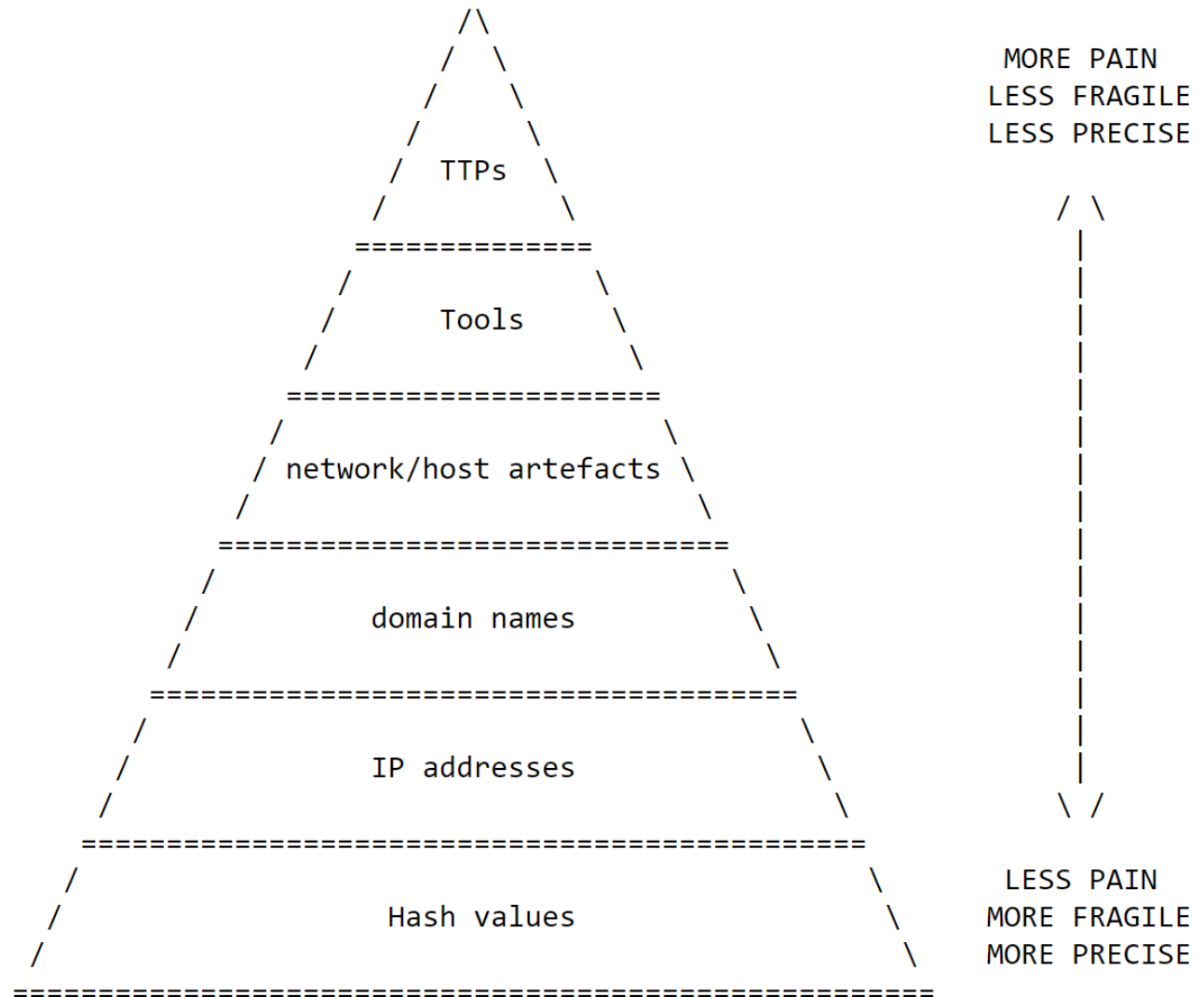
## New

1. Introduction . . . . .	3
1.1. Requirements Language . . . . .	3
2. Terminology . . . . .	3
3. IoC Fundamentals . . . . .	4
3.1. IoC Types and the Pyramid of Pain . . . . .	4
3.2. IoC Lifecycle . . . . .	8
3.2.1. Discovery . . . . .	8
3.2.2. Assessment . . . . .	8
3.2.3. Sharing . . . . .	9
3.2.4. Deployment . . . . .	9
3.2.5. Detection . . . . .	10
3.2.6. Reaction . . . . .	10
3.2.7. End of Life . . . . .	10
4. Using IoCs Effectively . . . . .	10
4.1. Opportunities . . . . .	10
4.1.1. IoCs underpin and enable multiple layers of the modern defence-in-depth strategy . . . . .	11
4.1.2. IoCs can be used even with limited resources . . . . .	11
4.1.3. IoCs have a multiplier effect on attack defence effort . . . . .	12
4.1.4. IoCs are easily shared . . . . .	13
4.1.5. IoCs can provide significant time savings . . . . .	13
4.1.6. IoCs allow for discovery of historic attacks . . . . .	13
4.1.7. IoCs can be attributed to specific threats . . . . .	14
4.2. Case Studies . . . . .	14
4.2.1. Introduction . . . . .	14
4.2.2. Cobalt Strike . . . . .	14
4.2.2.1. Overall TTP . . . . .	15
4.2.2.2. IoCs . . . . .	15
4.2.3. APT33 . . . . .	15
4.2.3.1. Overall TTP . . . . .	16
4.2.3.2. IoCs . . . . .	16
5. Operational Limitations . . . . .	17
5.1. Time and Effort . . . . .	17
5.1.1. Fragility . . . . .	17
5.1.2. Discoverability . . . . .	18
5.2. Precision . . . . .	19
5.2.1. Specificity . . . . .	19
5.2.2. Dual and Compromised Use . . . . .	19
5.3. Privacy . . . . .	20
5.4. Automation . . . . .	21
6. Best Practice . . . . .	21
6.1. Comprehensive Coverage and Defence-in-Depth . . . . .	21
6.2. Security Considerations . . . . .	24
7. Conclusions . . . . .	24

# What are IoCs?

- IPv4 and IPv6 addresses in network traffic.
- DNS domain names in network traffic, resolver caches or logs.
- TLS Server Name Indication values in network traffic.
- Code signing certificates in binaries or TLS certificate information (such as SHA256 hashes) in network traffic.
- Cryptographic hashes (e.g. MD5, SHA1 or SHA256) of malicious binaries or scripts when calculated from network traffic or file system artefacts.
- Attack tools (such as Mimikatz) and their code structure and execution characteristics.
- Attack techniques, such as Kerberos golden tickets, which can be observed in network traffic or system artefacts.

# Pyramid of pair



# IoC Lifecycle

- New section based on feedback
  - Discovery
  - Assessment
  - Sharing
  - Deployment
  - Detection
  - Reaction
  - End of Life



# Questions/Next Steps

- Further feedback and comments welcome from this group
- Is the work in scope for opsec?
- Would the group consider WG adoption?