DNS Firewalls with BIND: ISC RPZ and the IID Approach

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About the Presenters

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Chairman and Founder
Internet Systems Consortium

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President and CTO
IID (Internet Identity)

Logistics

- Webinar is 1 hour long
- A recording will available in 3 business days at http://www.isc.org/webinars
- Participants are muted
- Use the Q&A Tab to submit questions

Agenda

- Building DNS Firewalls with RPZ – Paul Vixie
- DNS Firewall – Rod Rasmussen
- Q&A Session

Building DNS Firewalls With RPZ

Paul Vixie

Internet Systems Consortium

DNS firewalls

- A DNS firewall examines responses to queries, passes some, blocks others.
- Responses can be “examined” for any content.
- “Block” action can discard, modify, or replace the original response.

The hard part

- The essence of a DNS firewall is simple.
- What's hard? Maintenance.
- How to provide the data that guides its behavior?
- How to update that data easily?
- How to share that data with others?

More about RPZ

- DNS firewall rules carried inside DNS zones.
- Rules published, subscribed, shared by normal DNS zone transfer protocol
  - Including IXFR, NOTIFY, TSIG.
  - So, propagation is timely, efficient, and authentic.

RPZ inspection capabilities

- If the name being looked up is X.
- If the response contains any IP address in range X.
- If a listed name server name is X.
- If any returned name server IP address is in range X.

RPZ action capabilities

- Synthesize NXDOMAIN.
- Synthesize CNAME.
- Synthesize NODATA.
- Synthesize an answer.
- Answer with the truth.

Implications

- Controlled Balkanization.
- Open market for (many) producers and (many) consumers.
- Differentiated service at a global scale.
- Instantaneous takedown.

Status

- RPZ is open and unencumbered.
- Implemented only in BIND (so far).
- Performance reasonable (~15%).
- New features backward compatible.
- ISC standard not an IETF standard.
- We hope for other implementations.

DNS Firewalls

Rod Rasmussen
IID (Internet Identity)
President and CTO

Critical Internet Security Problems

- Malware command-and-control
- Malware infection sites
- APT attacks
- Phishing and spear phishing

Solution

- DNS Firewall
- Over 80% of malware uses DNS to communicate. Using a DNS firewall is an easy way to stop this.
- Network professionals and security pros working together for mutual benefit

ActiveTrust® Resolver

- Leverages “big data” on Internet security events to create intelligence that prevents enterprise employee and system connections to known malicious Internet locations
- IID identifies and takes down thousands of malicious Internet locations a week
- Brings in data feeds and works with hundreds of global law enforcement, security vendors, security researchers
- Instantly alerts SOC/NOC of problems on enterprise networks via unique “TrapTrace” feature

ActiveTrust® Resolver

Collective Intelligence

- Latest actionable intelligence on malicious Internet locations
- Share findings from unique customer relationships – one of the best networks around
- Aggregates many of the most robust threat intelligence streams in the industry

ActiveTrust® Resolver

Feed Delivery

- Real-time threat updates via RPZ push capability
- Daily pre-determined malicious domains
- Feed empowers your own DNS infrastructure to provide robust security network wide with no new overhead

ISC

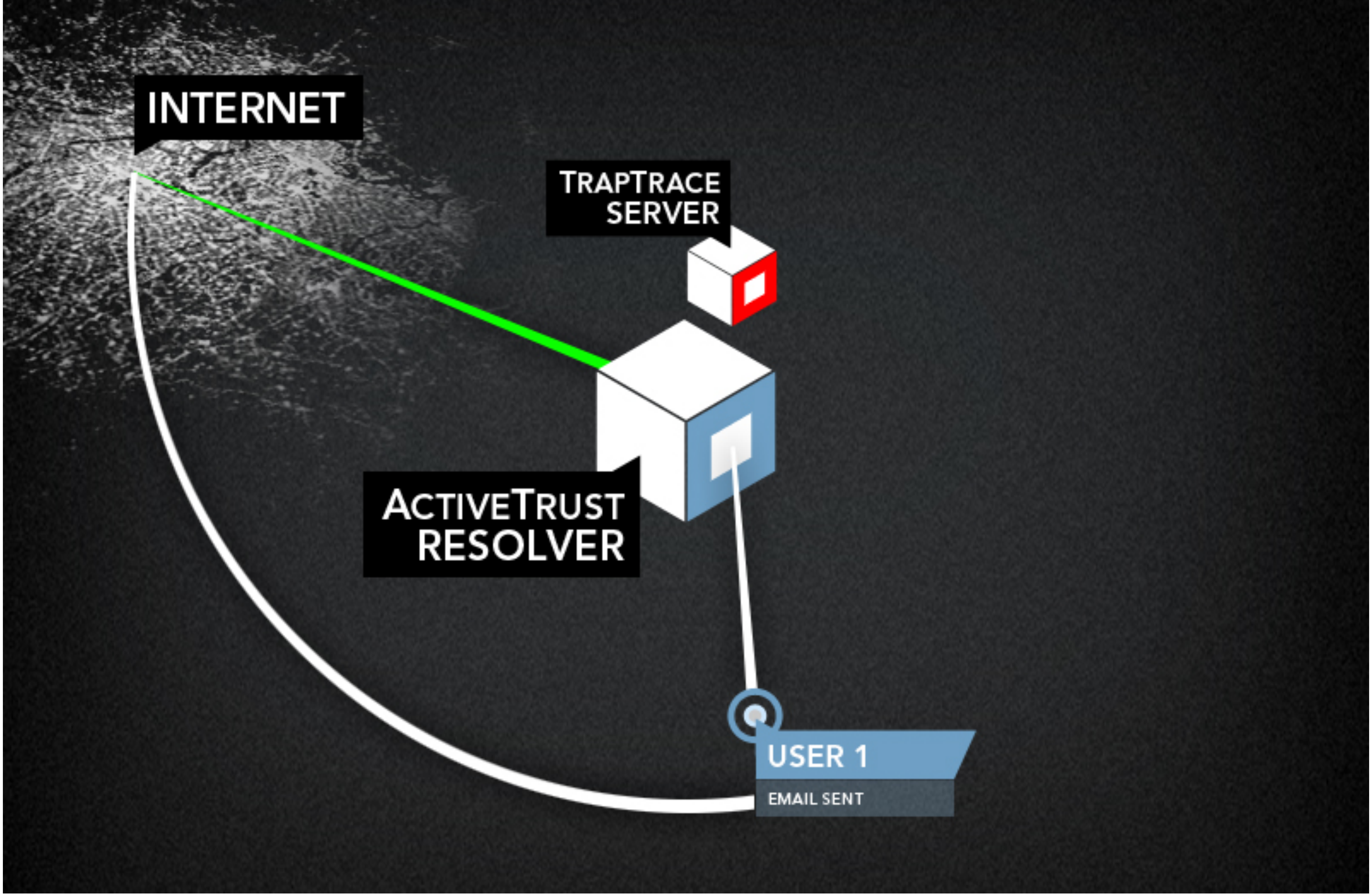
IID

ActiveTrust® Resolver

TrapTrace

- RPZ redirection enables enterprise security personnel to instantly be notified when a compromised machine tries to:
  - Access a command-and-control server
  - Transmit sensitive data to a known drop zone
  - Connect to spear phishing site

ACTIVELY SECURING THE EXTENDED ENTERPRISE



INTERNET

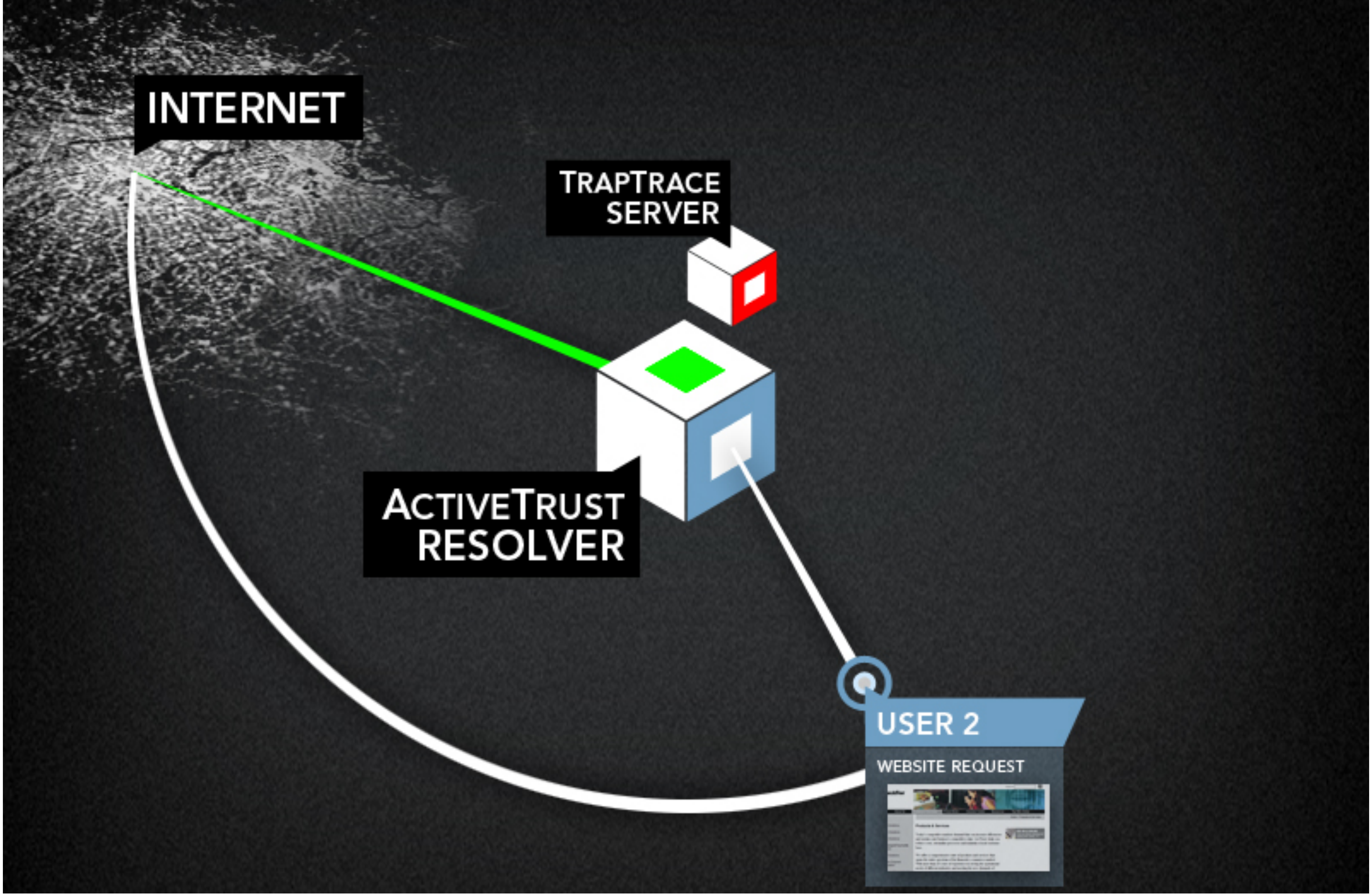
TRAPTRACE SERVER

ACTIVETRUST RESOLVER

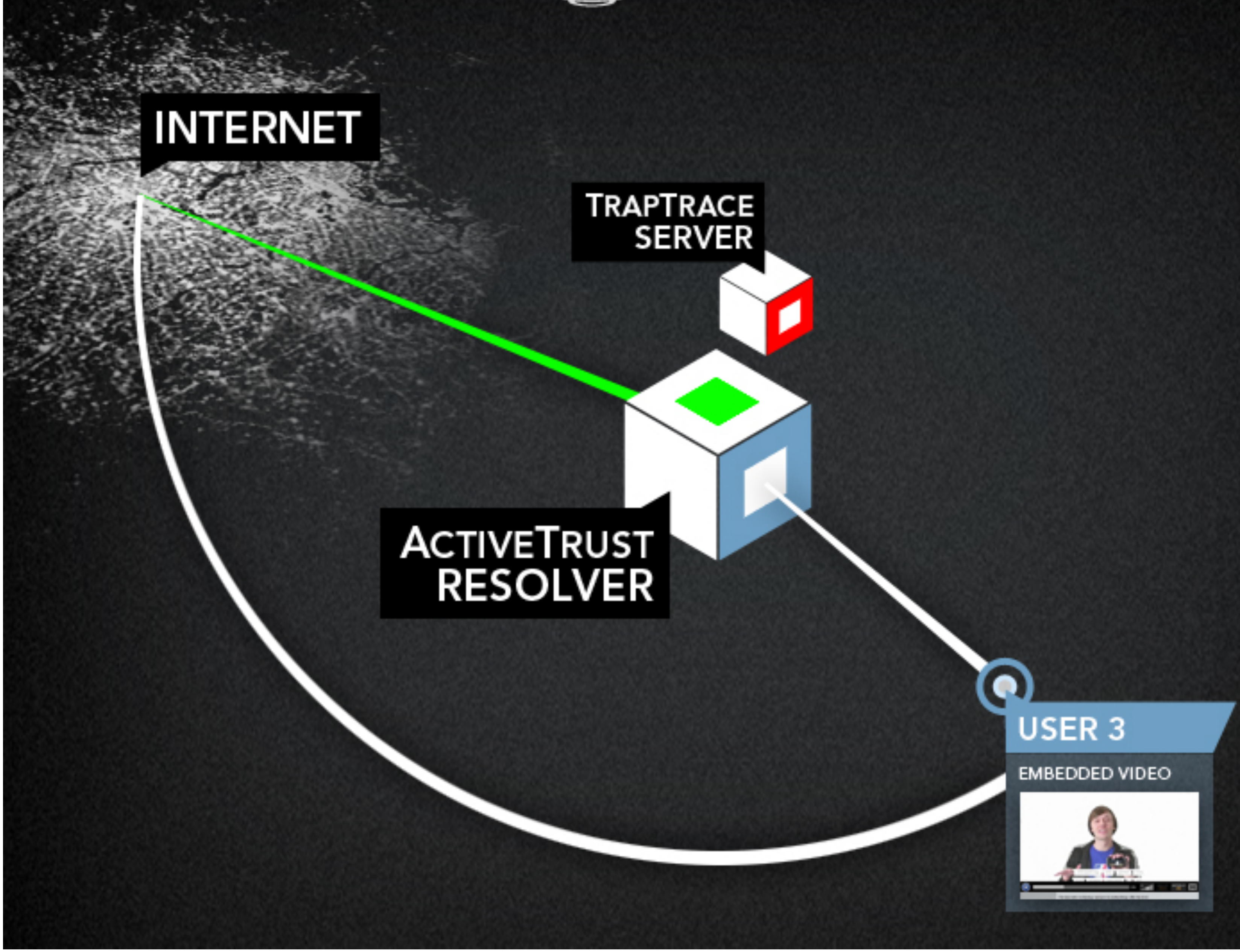
USER 1

EMAIL SENT

ACTIVELY SECURING THE EXTENDED ENTERPRISE



ACTIVELY SECURING THE EXTENDED ENTERPRISE



INTERNET

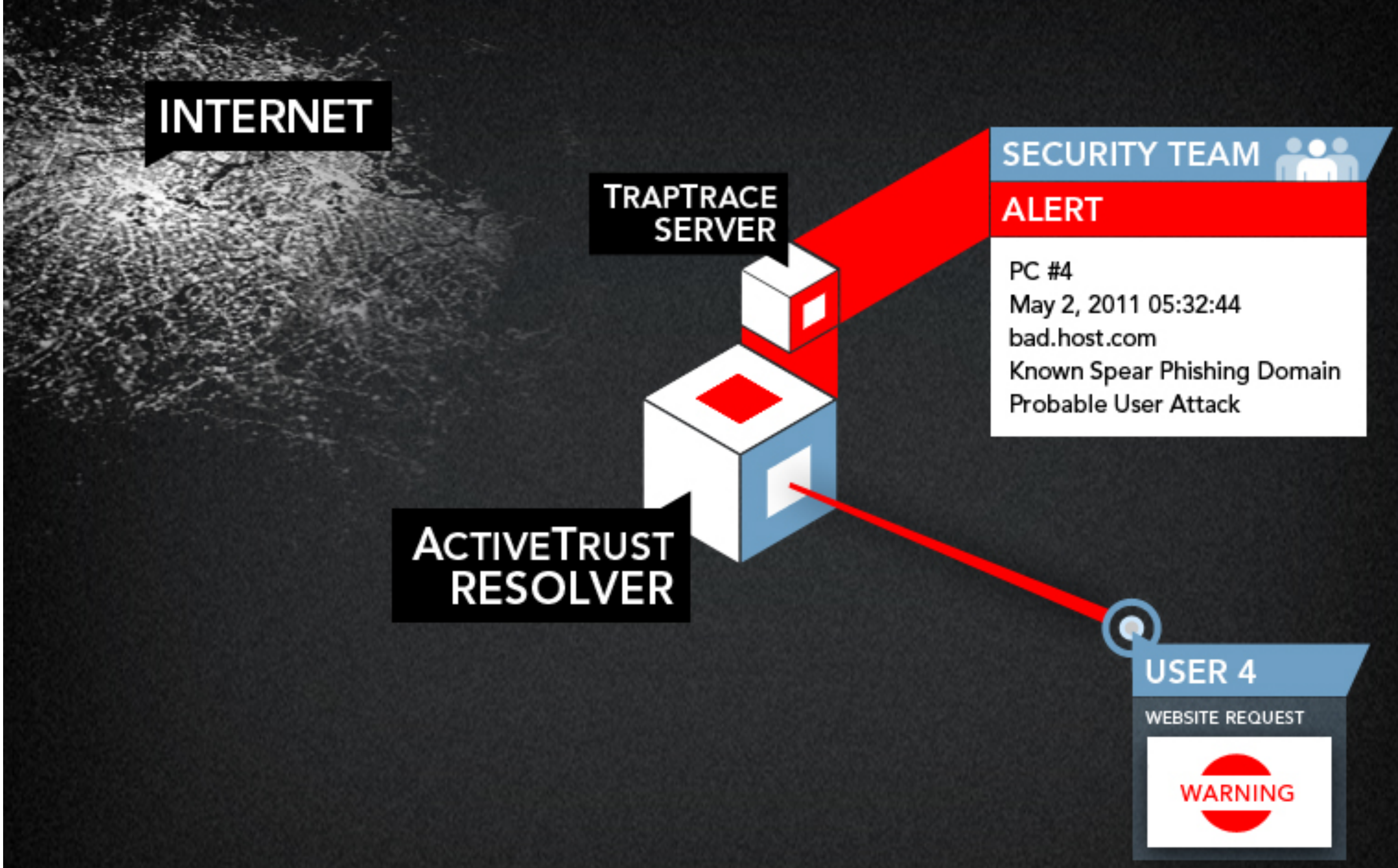
TRAPTRACE SERVER

ACTIVETRUST RESOLVER

USER 3

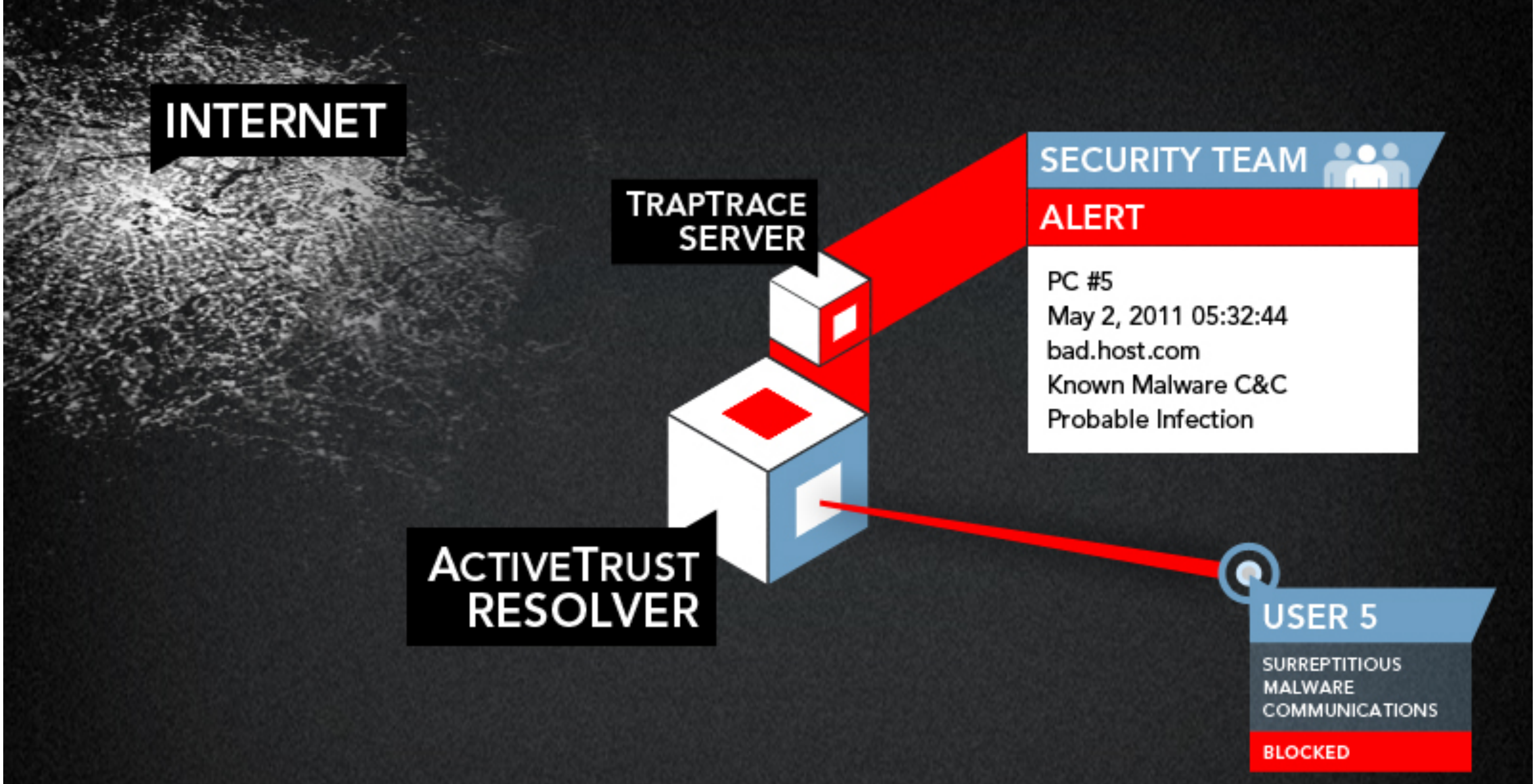
EMBEDDED VIDEO

IID ACTIVELY SECURING THE EXTENDED ENTERPRISE



PC #4
May 2, 2011 05:32:44
bad.host.com
Known Spear Phishing Domain
Probable User Attack

ACTIVELY SECURING THE EXTENDED ENTERPRISE



INTERNET

TRAPTRACE SERVER

ACTIVETRUST RESOLVER

SECURITY TEAM

ALERT

PC #5
May 2, 2011 05:32:44
bad.host.com
Known Malware C&C
Probable Infection

USER 5

SURREPTITIOUS MALWARE COMMUNICATIONS

BLOCKED

Use Cases: Malware and APT Attacks

- Malware command-and-control
- APT attacks

Summary

- Over 80% of malware uses DNS to communicate. Using a DNS firewall is an easy way to stop this.
- IID provides solution with actionable intelligence via RPZ feeds and unique TrapTrace feature
- By bridging gap between network administrators and security professionals, DNS firewalls are protecting real customers against real threats
- IID and ISC are ready to help

Take Action

- Go to www.internetidentity.com/solutions/activetrust-resolver
- Email dnsfirewall@internetidentity.com

Questions

About IID

Trust IID to proactively protect against the latest cyber threats:

- Five of the top six banks in the U.S.
- Largest government agencies worldwide
- Leading financial services firms, e-commerce, social networking and ISP companies

Headquartered in Tacoma, Washington

www.internetidentity.com

About ISC

- Non-profit dedicated to Internet infrastructure
- Software: BIND9, (BIND10,) ISC DHCP, …
- Operations: F-Root, Hosted@ISC, …
- Protocols: about two dozen IETF RFC’s
- Policy: Internet governance (e.g., SOPA)
- Commercial services:
  - support, training, feature development
  - registry services for new gTLD’s
  - DNS hosting (public-facing or “secondary”)

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