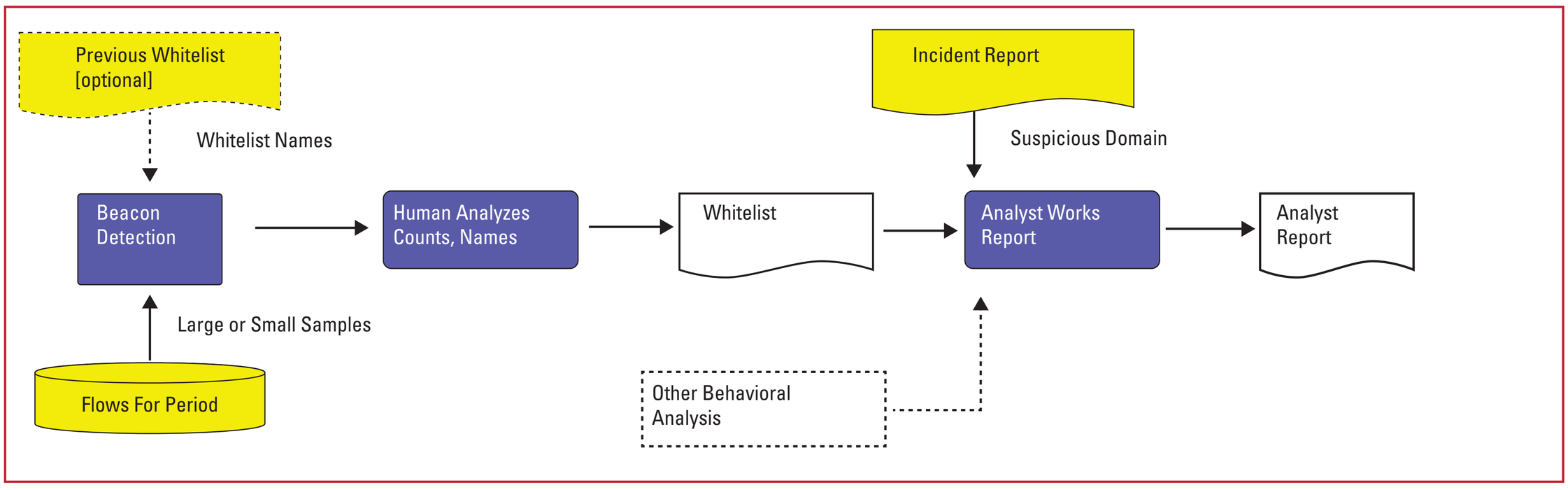
US-CERT

UNITED STATES COMPUTER EMERGENCY READINESS TEAM

Behavioral Whitelists of Beaconing Activity

US-CERT: Brian Allen, Robert Annand



What

- Create whitelists of beacons for use in incident analysis.

Why

Threat Discovery

- "Is something malicious on my network phoning home?"
- Which hosts on my network are 0wn3d?

Situational Awareness

- "What are the normal things that beacon on my network?" Why?
- Need to understand normal to spot abnormal.

How

Two approaches

Start small, work up

- One hour, well-known network, specific services
- Pull outbound traffic sample
- Run beacon detection programs on sample
- Create, maintain whitelists
  - Very specific, will miss things

Start big, work down

- Pull large sample
- Run beacon detection programs on sample
- Identify all beacons
- Create and maintain whitelist
  - lots of noise, false-positives

Issues

- Beacons within a single flow not visible
- Lots of beaconing over web ports
- Complete TCP connections
- Low and Slow
- Talk to asset owners: policy? What's normal?

So What?

Finding malware beacons directly

- But may still need to validate with AV, C2 server lists, etc.

Finding the normal (precursor for anomaly detection)

- NTP, AV updates, software updates, SNMP, regular data transfers. . .

This is one example of behavioral sets. Others might include

- Blacklists, High-Volume Webservers, destinations never seen before, proxies, clients, etc.

Enables analysts to ask questions like

- Tell me everything I know about this destination in terms of behavior over time.

Volumes, times, services and behaviors-of-interest will vary.