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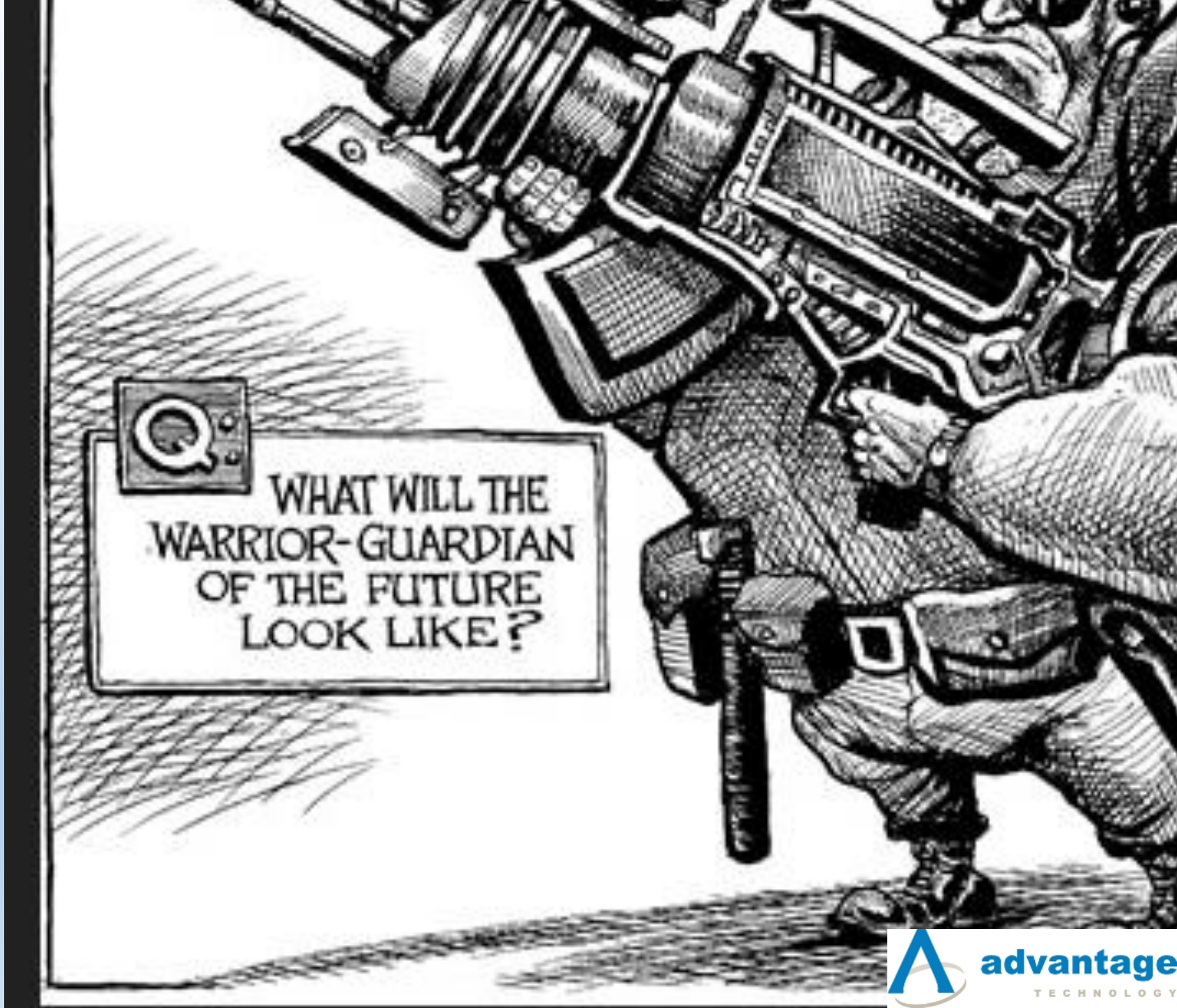
Cybersecurity:
Building Out With
Strategy

•#Whoami

Chris May

Director of Security

Advantage Technology



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Recent Headlines*

- Surveys: Employees at fault in majority of breaches
- Deeper Dive: Human Error Is to Blame for Most Breaches
- The Biggest Cybersecurity Threats Are Inside Your Company
- Employee Errors Cause Most Data Breach Incidents in Cyber Attacks
- CISOs blame lack of competent staff for data breaches
- Undertrained employees are organizations' biggest cyber security weakness
- Companies' Employees To Blame For Cyber-Attacks: Report
- Fed Employees and Contractors to Blame for Half of Cyber-attacks
- Organizations blame their own staff for cloud security incidents

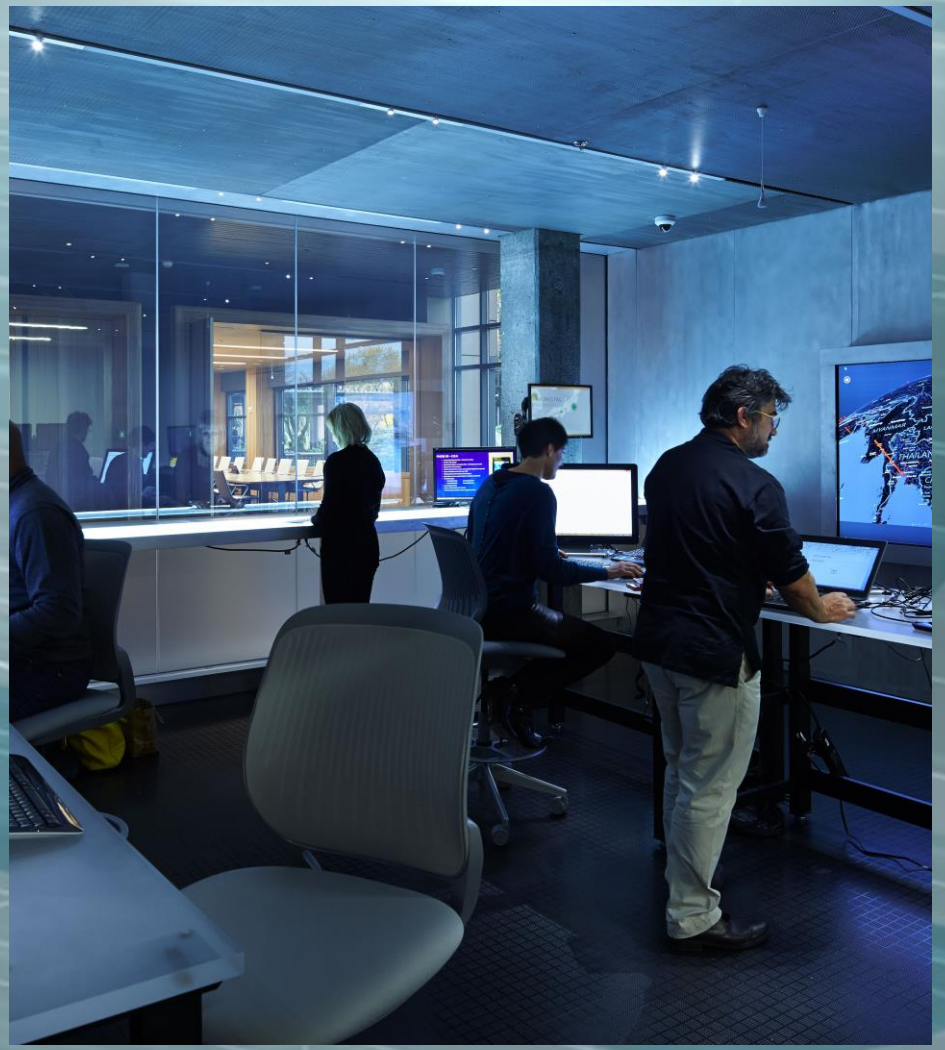
The Finger of Blame

“93 percent of all money is digital. That’s what is at risk here”

–Bill Nelson | Financial Services Information Sharing & Analysis Center

Agenda

- Overview of Cybercrime
- Today's Cyber Threats
- Cybercrime as a Service
- Best Practices

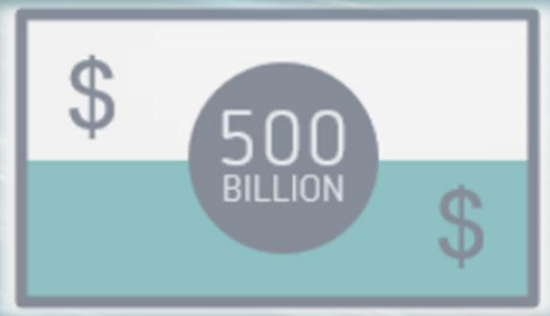


What is cybercrime?

Cybercrime is criminal activity involving the internet, a computer system, or computer technology.

50% of online adults

About half of online adults were cybercrime victims in the past year.



$500 billion

Cybercrime costs the global economy up to $500 billion annually.

20% of businesses

One in five small and medium businesses have been targeted.

What is **Blackhat** cybercrime?

Blackhat cybercrime is a form of malicious online behavior motivated by *profit* and a *predictable ROI*

Today's Cyber Threats

eCrime

- A botnet is a network of devices infected with malicious software that is centrally controlled
- "Good" malware cannot be detected by users

Phishing

- Email, Phone, SMS, FAX, Vmail, US Mail
- Campaigns can include spam, SMSishing, Vishing, etc.
- Credential Harvesting

Ransomware

- Got Bitcoin?
- It holds your PC or files for "ransom."
- Prevents you from using your PC
- Victim has to pay to regain access

Physical Security

- Access Cards
- ID Badges
- Delivery Personnel

Ransomware is the fastest growing threat…

How	Do	We	Prevent
• Train employees • Filter emails • Scan emails • Configure firewalls • Patch patch, patch • Good updated AV	• Manage the use of privileged accounts • Control access to network locations • Disable macros in emailed Office files • Implement Software Restriction Policies	• Disable Remote Desktop Protocol (RPD) • Use Whitelisting • Execute in a virtualized environment	• Physical and logical separation of networks

“Bad news isn't wine. It doesn't improve with age”

— Colin Powell | Retired four-star General United States Army

HELP!!

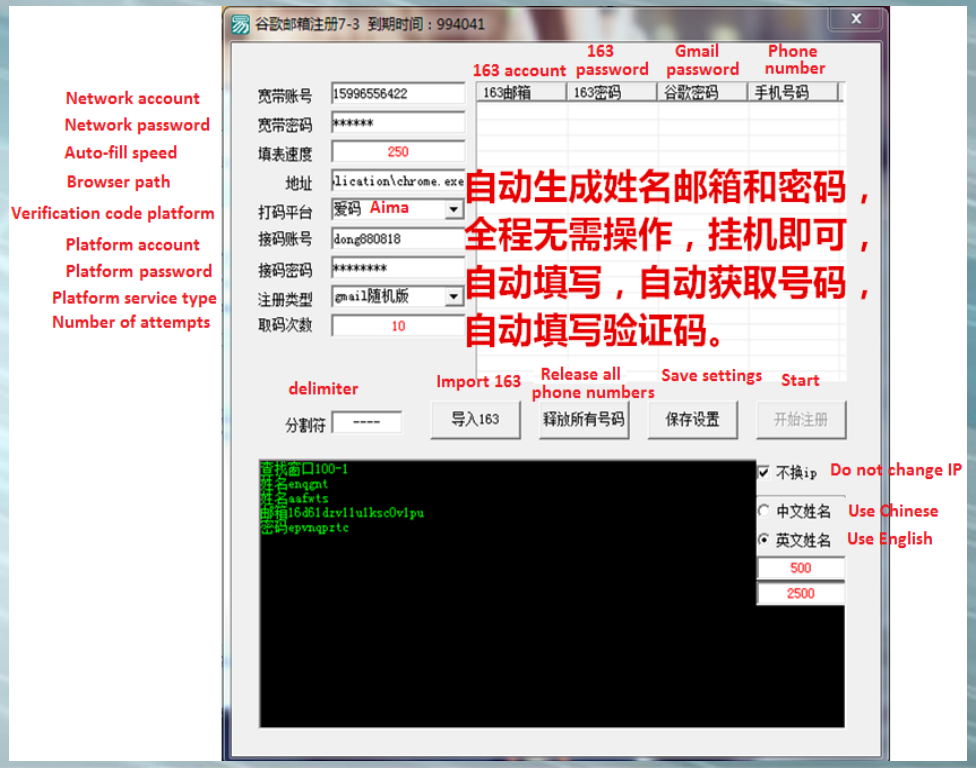
“If you spend more on coffee than on IT security, you will be hacked. What's more, you deserve to be hacked”

— Richard Clarke | Former White House Cyber Czar

It has never been easier for new entrants into the market

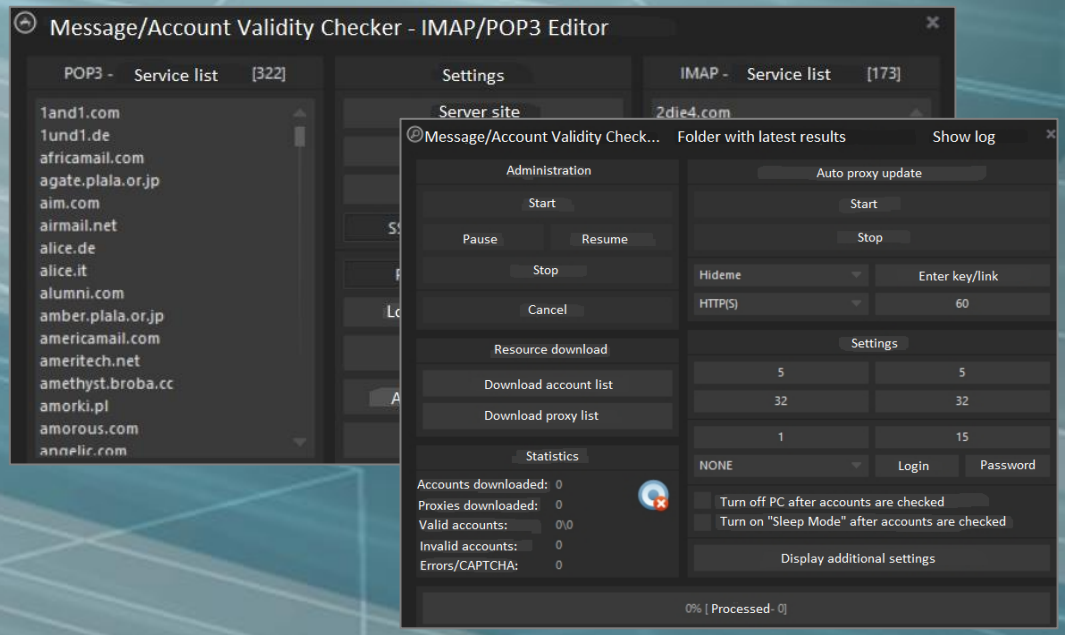
Cybercrime as a Service (CaaS): Crimekits and services available

Tools to create abuse accounts



Chinese **Gmail account creation tool**, interfaces with SMS and CAPTCHA solving services

Account Checkers

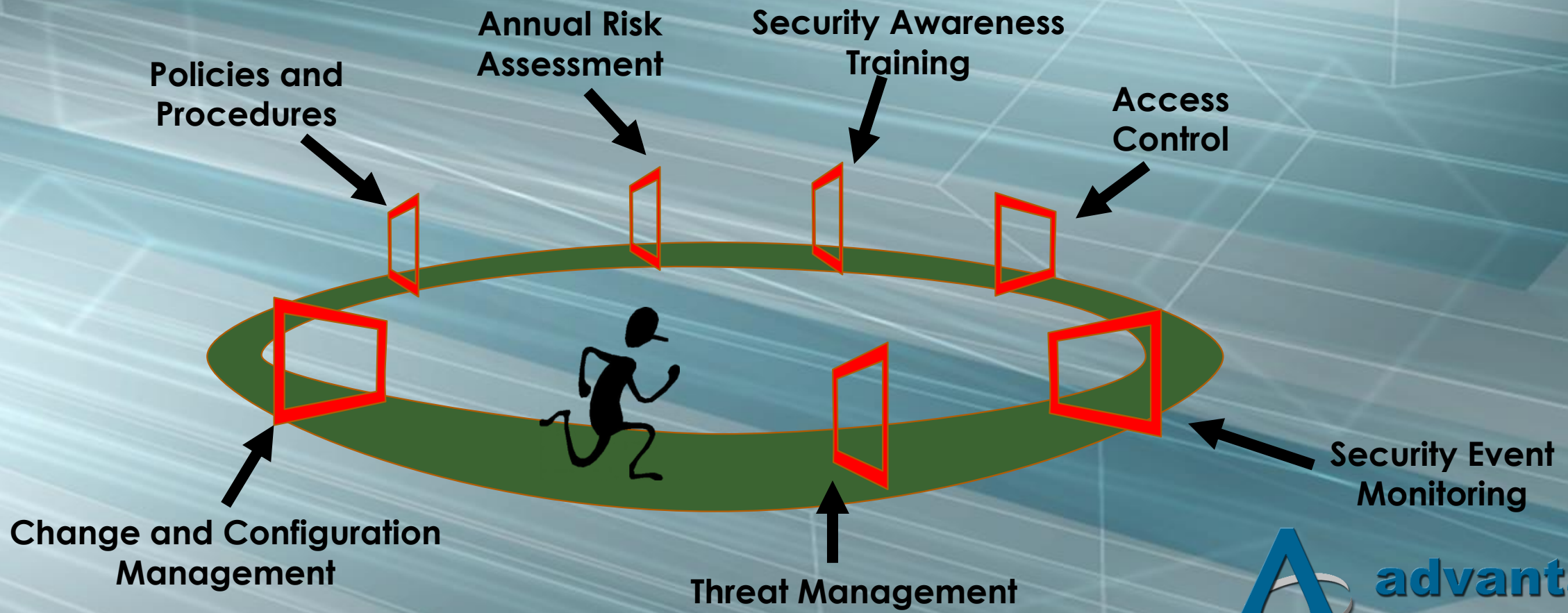


Russian checker **Private Keeper**. It is a universal checking tool supporting 17 different web services (PSN, PayPal, Skype, Twitter, etc.) and many email providers. It has an IMAP/POP3 server editor that supports "almost any email [illegible] to parse the content of messages and check email accounts [illegible]

Sources: Various

Best Practices To Safeguard Your Data

Information Security Process and Program



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Policies, Procedures and Information Security Program Consulting

- External CISO Advisory Services
- Staff Augmentation

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Vet your vendors

- Select service providers with strong security programs
- Make sure that they have adequate cyber insurance
- Contracts with vendors should have provisions related to audits/audit reports, insurance, breach notification, restrictions on use/disclosure of data, warranties about compliance with privacy obligations, & data return and disposal

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Security Awareness Training

- Instructor Led
- Testing
- Continuing Education
- On-line content

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Risk Analysis and Assessment

- Security Risk Assessments
  - NIST 800-53
- Vulnerability Scans
  - NESSUS
- Penetration Testing

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Risk assessment

Legal risk

- Sector specific enforcement (energy, health care, financial services, retail, etc.)
- FTC enforcement
- State AG enforcement
- Congressional investigations
- Class Action lawsuits

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Risk assessment

Legal assessment

- Policies/procedures
- Governance and implementation of policies
- Incident response plan
- Vendor selection
- Training
- Data mapping

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Risk assessment

National Institute of Standards and Technology

The National Institute of Standards and Technology (NIST) released a voluntary methodology to assess and reduce cyber risks in *critical infrastructure* sectors. It was updated in 2017.

Your security program should be proportional to the data you handle and the size and nature of the business.

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Risk assessment

NIST recommends that you:

- Perform an company-wide vulnerability assessment
- Implement a comprehensive information security program
- Review your program periodically
- Implement data security policies, like data classification, password strength, access control, encryption, data disposal, and patch management
- Implement an incident response plan

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Difference between Penetration Testing and Vulnerability Assessment?

- *Vulnerability Assessment:*
  - Typically is general in scope and includes a large assessment.
  - Predictable. (I know when those darn Security guys scan us)
  - Unreliable at times and high rate of false positives. (I've got a banner)
  - Vulnerability assessment invites debate among System Admins.
  - Produces a report with mitigation guidelines and action items.

- *Penetration Testing:*
  - Focused in scope and may include targeted attempts to exploit specific vectors (Both IT and Physical)
  - Unpredictable by the recipient. (Don't know the "how?" and "when?")
  - Highly accurate and reliable. (I've got root!)
  - Penetration Testing = Proof of Concept against vulnerabilities.
  - Produces a binary result: Either the team owned you, or they didn't.

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Scope of Penetration Testing

- Targeted Recon.
  - Targeted exploitation of vulnerable software.
- Social Engineering
  - Hi HelpDesk…I'm Mr. Jones…Can you tell me what my password is?
- Physical facilities audit
  - Hmm, I forgot my badge… but there's 200 yards of fence missing on the east side of the center
- Wireless War Driving
  - Detection of rogue or weakly encrypted AP's.
- Dumpster Diving
  - How much fun can I have in the dumpster…whoops…I've found someone's Tax forms with SSN.

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Why Bother?

- Active pen-testing teaches you things that security planning will not
  - What are the vulnerability scanners missing?
- Are your users and system administrators actually following their own policies?
  - host that claims one thing in security plan but it totally different in reality
    - Audit Physical Security
    - Just what is in that building no one ever goes in?
    - The strongest network based protections are useless if there is a accessible unlocked terminal, unlocked tape vault, etc.
- Raises security awareness
  - I better not leave my terminal unlocked because I know that those security guys are lurking around somewhere.
- Helps identify weakness that may be leveraged by insider threat or accidental exposure.
- Provides Senior Management a realistic view of their security posture
- Great tool to advocate for more funding to mitigate flaws discovered
- If I can break into it, so could someone else!

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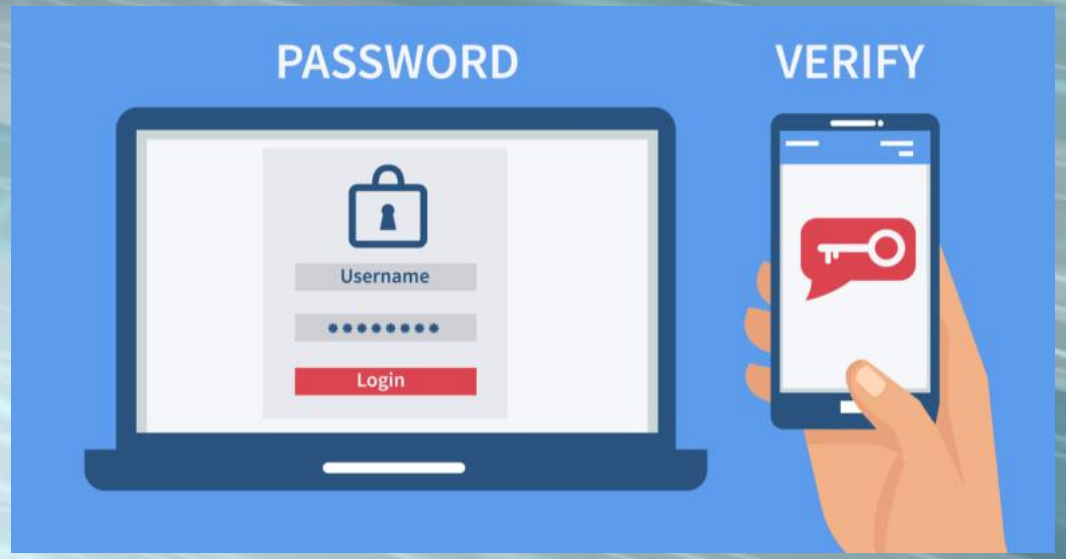
Authentication and Authorization



- Two factor or multi-factor authentication
  - Password and PIN
  - Biometrics
- Password managers
- Group Policies
  - Enforce “Least Privileges” rule

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SOMEONE FIGURED OUT MY PASSWORD,
NOW I HAVE TO RENAME MY DOG.

Change and Configuration Management

- Automation of configurations
  - Security Automation
- Patch management / automatic updates
- Change management software

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Threat Management

- Endpoint protection
  - Anti-virus
  - Spam filtering
  - Encryption
- Firewall
- Content Filtering
- Backup / Disaster recovery

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It’s OK,
You have a good backup, right?

Proper Backup Procedure

- Choose your application
- Scheduling
- Implementation
- Inventory (content and media)
- Verify
- Automate
- Secure

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Evolution of Security

Where most commercial companies want to be

SOC as a Service plays here

Where most commercial companies are today.

GAP

Containment and Remediation

Intrusion Containment

Remediation

Policy Update

Detection And Response

Log Aggregation & Correlation

Human / Threat Intelligence

Incident Detection & Response

Defense-in-Depth

Endpoint (AV, AEP)

DLP / SSL Inspection

Anti-DDoS/IPS/CASB

Perimeter

Firewalls

SPAM / Web Filters

WAF/Proxy

Basic

Passwords / AD

Patch Management

Backups

Prevention is not enough…

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What is the evolution?

NIST

53% cost per incident is spent in detection and response

240 days to detect a security incident

46 days to respond to security incident

1 Identify

- Asset Management
- Business Environment
- Governance
- Risk Assessment
- Risk Management Strategy

2 Protect

- Access Control
- Awareness and Training
- Data Security
- Information Protection Processes and Procedures
- Maintenance
- Protective Technology

3 Detect

- Anomalies and Events
- Security Continuous Monitoring
- Detection Process

4 Respond

- Response Planning
- Communications
- Analysis
- Mitigation
- Improvements

5 Recover

- Recovery Planning
- Improvements
- Communications

Requires People & Time

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Security Positions in the US are a Challenge:

Talent is very expensive with familiarity building a SOC (Security Operations Center)

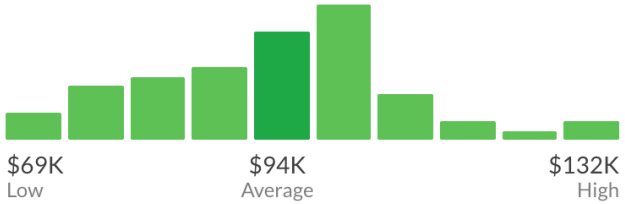
Senior Information Security Analyst Salaries

1,485 Salaries Updated Jul 13, 2018

Industries | Company Sizes | Years of Experience

Average Base Pay

$94,344 /yr



Additional Cash Compensation

Average	$6,291
Range	$1,223 - $16,981

How much does a Senior Information Security Analyst make?
The national average salary for a Senior Information Security Analyst is $94,344 in United States. Filter by... More

Information Security Architect Salaries

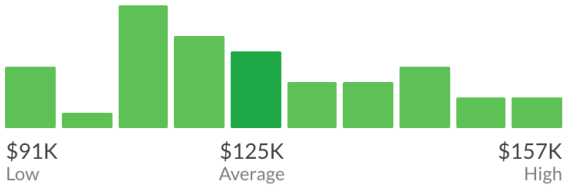
307 Salaries Updated Jun 5, 2018

Industries | Company Sizes | Years of Experience

To filter salaries for Information Security Architect, Sign In or Register.

Average Base Pay

$124,637 /yr



Additional Cash Compensation

Average	$xx,xxx
Range	$xx,xxx

How much does a Information Security Architect make?
The national average salary for a Information Security Architect is $124,637 in United States. Filter by... More

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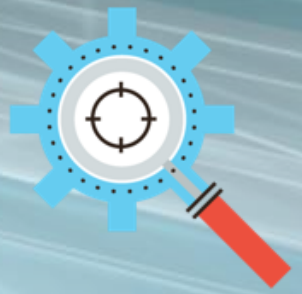
Solution: SOC-as-a-**Service**



Comprehensive

Unified Security with centralized view

24x7 Monitoring

Focused on Managed Detection and Response

Predictable Pricing

Fixed monthly price faster, better, cheaper

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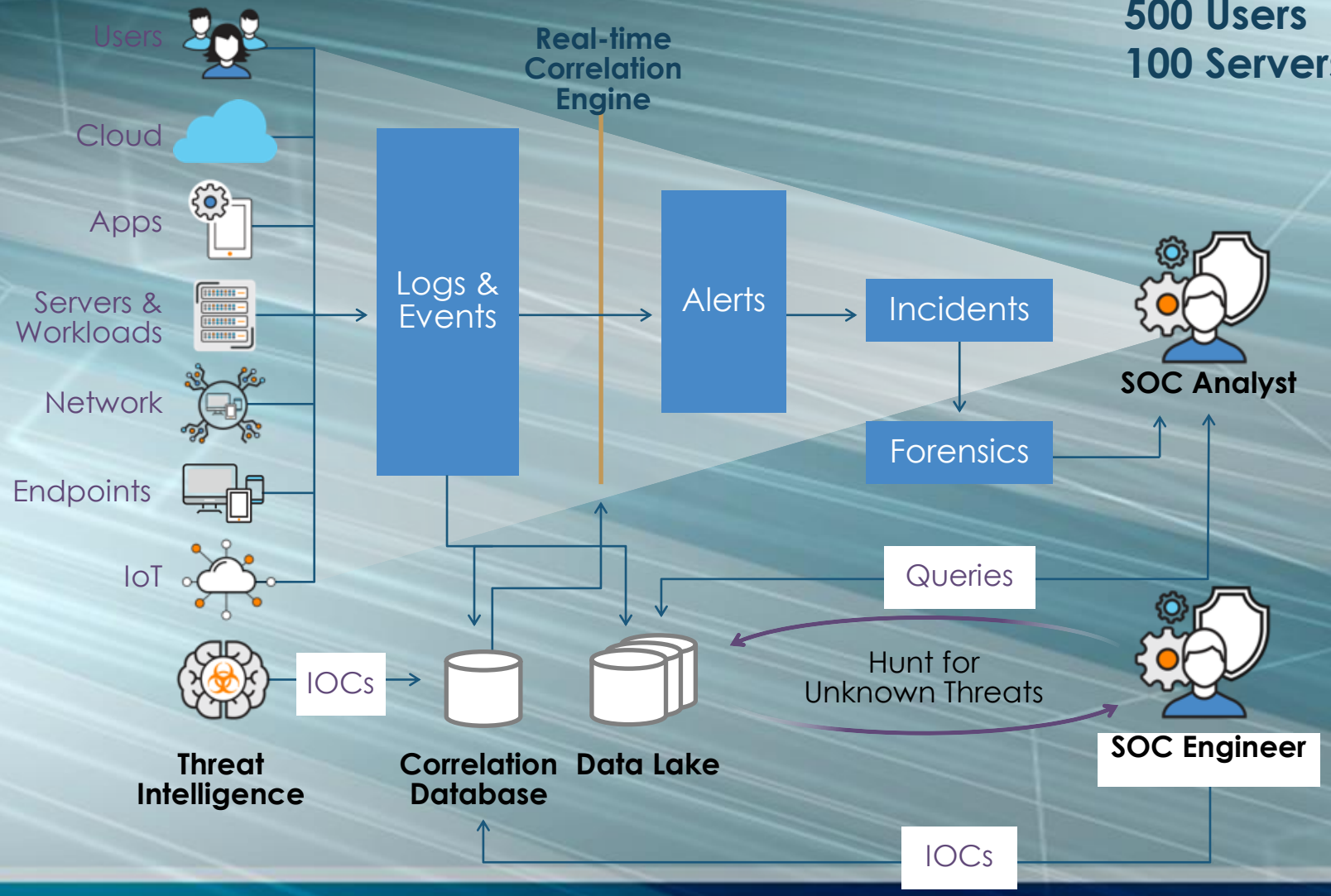
Backend Process



500 Users
100 Servers

~600M+ Observations/Week
~700-1000 Investigations/Week
~1-5 Incidents/Week

Real-time Correlation

- Analyze billions of events
- Real-time correlation against IOCs
- Reduced false positives

Forensics

- Search and research quickly
- Construct blast zone analysis and remediate

Hunt

- Hunt for unknown threats with deep analytics and machine learning
- Identify new IOCs to improve monitoring

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I finally realized it.
People are **prisoners**
of their phones,
that's why they are
called **cell** phones.

Spirit Science

Q & A