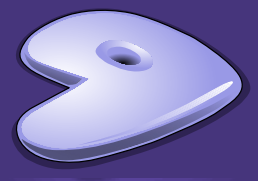

ELC 2015

Security Architecture in the IOT Age

By

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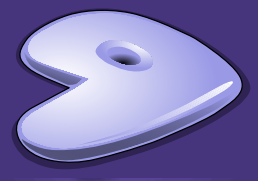
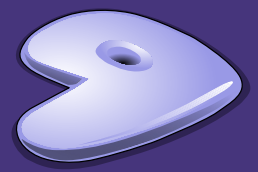


Why do I need to worry about the security of cheesy little embedded devices?

- Seriously?
  - Stuxnet *
  - Other recent/glaring examples (Sony, Anthem, etc)
- Refresher
  - Authentication
  - Integrity
  - Non-repudiation

* http://www.pbs.org/newshour/bb/science-july-dec10-computervirus_10-01/



What is all this about?

Where do you go for credible cybersecurity information?

- Vendors? Upstream docs? ISC2?
- ACM? IEEE?
- NIST? NSA? DoD?

Previous requirements and implementation guidance was scattered, duplicative, overlapping, conflicting...

Several factors have led to converge in all sectors, ie, federal govt, commercial, open source.

Although relatively recent, current cybersecurity guidance is now much more unified, standards-based, and integrated to fit within a modern risk management framework.

So where do we go?

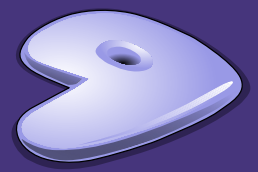
A great place to get started is the Information Assurance Support Environment site, “your one-stop shop for cybersecurity information”:

- http://iase.disa.mil/index2.html

Help page, FAQs, acronym list, more:

- http://iase.disa.mil/help/index.html

Contains information and guidance documents, training materials, and guides/tools for everything from requirements to technical implementation to risk management and operations.



Risk Management Framework

Date: Mar 28, 2014 New - "*Cybersecurity Guidance for DoD! - The new cybersecurity overarching guidance for DoD has been published. Included are two new DoD instructions"*:

DoDI 8500.01, "Cybersecurity," replacing previous information assurance (IA) guidance.

- http://www.dtic.mil/whs/directives/corres/pdf/850001_2014.pdf

DoDI 8510.01, "*Risk Management Framework (RMF) for DoD Information Technology (IT),*" replacing the previous DIACAP guidance with an assessment and authorization (A&A) process.

- http://www.dtic.mil/whs/directives/corres/pdf/851001_2014.pdf

RMF Training Video Presentation: Cybersecurity and Risk Management Framework Implementation - Date: May 8, 2014

- http://iase.disa.mil/rmf/videos/rmf_v3.wmv

RMF Training Slide Presentations: Cybersecurity and the Risk Management Framework - Date: April 4, 2014

- http://iase.disa.mil/rmf/01_RMF_for_DoD_IT_v3.pptx

Risk Management Framework Implementation - Date: April 4, 2014

- http://iase.disa.mil/rmf/02_RMF_for_DoD_IT_Implementation_v4.pptx

Security Requirements Guides

Security Requirements Guides (SRGs)

- http://iase.disa.mil/srgs/index.html

Security Requirement Guide (SRG) - "*A compilation of Control Correlation Identifiers (CCIs) grouped into more applicable, specific technology areas at various levels of technology and product specificity. An SRG provides DoD specificity to CCI requirements (organizationally defined parameters). An SRG is used by DISA FSO and vendor guide developers to build Security Technical Implementation Guides (STIGs). There are basically two types of SRGs. The first group are the four CORE SRGs which deal with Applications, Networking Devices, Operating Systems, and Policy. The second group are the Technology specific SRGs. A Technology specific SRG is a child of a CORE SRG. For example, the Database SRG was derived from the requirements in the Application SRG.*"

SRGs - Current List

Security Requirements Guides

- http://iase.disa.mil/srgs/u_updated_srg_tim_overview.ppt

Application Server SRG

Database Security Requirements Guide (SRG)

Domain Name System (DNS) SRG

Firewall SRG

Intrusion Detection and Prevention System SRG

Mobile Applications SRG

Mobile Application Store SRG

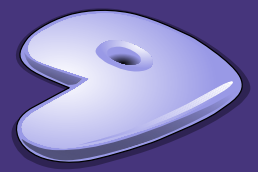
Mobile Policy SRG

Network Device Management SRG (Draft)

Router SRG (Draft)

UNIX OS SRG

Web Server SRG



Control Correlation Identifier (CCI)

Control Correlation Identifier (CCI)

- http://iase.disa.mil/cci/index.html

"*The Control Correlation Identifier (CCI) provides a standard identifier and description for each of the singular, actionable statements that comprise an IA control or IA best practice. CCI bridges the gap between high-level policy expressions and low-level technical implementations. CCI allows a security requirement that is expressed in a high-level policy framework to be decomposed and explicitly associated with the low-level security setting(s) that must be assessed to determine compliance with the objectives of that specific security control. This ability to trace security requirements from their origin (e.g., regulations, IA frameworks) to their low-level implementation allows organizations to readily demonstrate compliance to multiple IA compliance frameworks. CCI also provides a means to objectively rollup and compare related compliance assessment results across disparate technologies.*"

CCI List (draft)

A draft version of the CCI List conforming to CCI version 2 is now available, containing CCIs derived from NIST SP 800-53.

- http://iase.disa.mil/cci/u_cci_list.zip
- http://iase.disa.mil/cci/u_draft_cci_specification_v2r0.2.zip
- http://iase.disa.mil/cci/u_cci_process_v1r0.1.pdf
- http://iase.disa.mil/cci/u_cci_comment_matrix.xls

Security Technical Implementation Guides (STIGs)

Security Technical Implementation Guides

- http://iase.disa.mil/stigs/index.html

"*The Security Technical Implementation Guides (STIGs) and the NSA Guides are the configuration standards for DoD IA and IA-enabled devices/systems. Since 1998, DISA Field Security Operations (FSO) has played a critical role enhancing the security posture of DoD's security systems by providing the Security Technical Implementation Guides (STIGs). The STIGs contain technical guidance to "lock down" information systems/software that might otherwise be vulnerable to a malicious computer attack.*"

STIG Documents

STIG Viewing Guide Quick Ref

- http://iase.disa.mil/stigs/downloads/pdf/u_stig_viewer_quick_reference_guide_v1.0.1.pdf

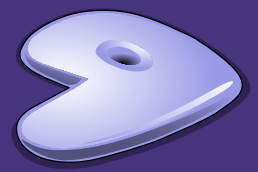
STIGs Master List (A to Z)

- http://iase.disa.mil/stigs/a-z.html

Automate everything:

Security Content Automation Protocol (SCAP) Content and Tools. Various SCAP benchmarks are available, but specific SCAP content is *PKI only

- http://iase.disa.mil/stigs/scap/index.html



Questions?

- Where next?
- Assess your infrastructure
- Understanding your architecture is key
  - *Classify* business/mission-critical systems
  - *Categorize* data sensitivity
  - *Define* your operational environment
  - *Map* requirements to controls
  - *Implement, Test, Verify*
  - *Monitor* operations, *Collect* & *Analyze* data
  - *Feedback* lessons learned, *Reassess* risk
- Integrate RMF with procurement / project management guidance and operations