

SWID Tags



Moving Software Identification From Art to Science

Steve Klos
Executive Director, TagVault.org

Software Identification Tag (SWID Tag) (ISO/IEC 19770-2:2009)

ISO/IEC 19770-2 SWID Tags

19770-2 specifies a simple XML structure defining data elements used to consistently identify software products

An instance of 19770-2, e.g. for a product, is also called a “SWID Tag”

A SWID tag is installed and managed on a computing device together with the software product

SWID tags have 7 mandatory and 30 optional XML elements and unlimited extended elements

Stop software discovery through archeology

TagVault.org Certified SWID Tags

Focus on software identification first, compliance second

Publisher defined values are registered and validated

Normalized values

Digital signatures for authoritative data

Minimum required data specified by certification level

Support for multiple certification agencies

Integration with other key systems/processes (CPE/SCAP for example)

Change software identification from an inconsistent mess to providing authoritative and consistent data that enables automation

```
<software_id>  
  <product_name>Open Office</product_name>  
  <unique_id>cpe:2.3:a:OpenOrg_Corporation:Open_Office:3.5.2.0</unique_id>  
  <tag_creator_regid>regid.1986.12.org.open</tag_creator_regid>  
  ...  
</software_id>
```

Software Identification

Implications for the Software Lifecycle



Security



Validate
Install
Files

Installation Media
Validation

App 1 SWID Tag	
Name	
Version	
Publisher	
Digital Sig	
Package_footprint	

Patch SWID Tag	
Name	
Version	
Publisher	
Digital Sig	
Package_footprint	

App 2 SWID Tag	
Name	
Version	
Publisher	
Digital Sig	
Package_footprint	

Patch Not
Installed

System File List	
My_app.exe	SHA2 Hash
App_file2.com	SHA2 Hash
Driver.sys	SHA2 Hash
Rogue_file.exe	no hash

App/System
Security

App 2 SWID Tag	
Name	
Version	
Publisher	
Digital Sig	
Package_footprint	

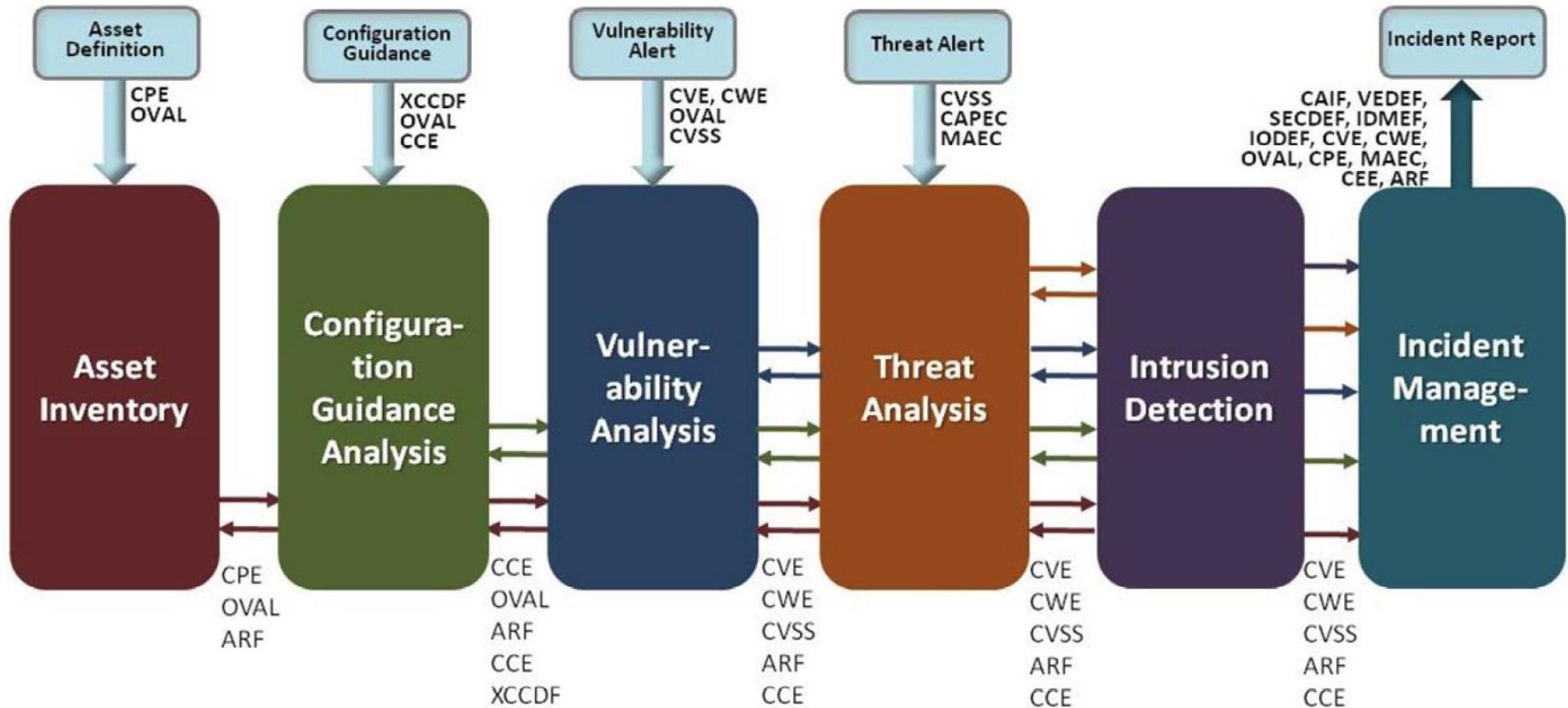
Trusted Apps
(internet access not
required)

App 1 SWID Tag	
Name	
Version	
Publisher	
Digital Sig	
Package_footprint	

Digital Signatures
& Timestamps

Security/Logistics (SCAP)

Source
of Image



Rich structure and architecture

Key issues – limited industry support, manual processing requirements

Gov & Industry – Similar Issues

- ✘ Authoritative identity for device software (enumerate CPE items)
 - ✓ SWID Tags can automate CPE creation and provide authoritative identification details
 - ✓ SWID Tags specify software installed on a device (industry working on retroactive solutions)
- ✘ Common Vulnerability Enumerations do not have direct associations with patches that can be installed to resolve vulnerabilities
 - ✓ SWID tags provide unique references for patches
 - ✓ SWID tag automatically specify the products patches are associated with
 - ✓ SWID tags provide instant relationship between patch release and related product(s)
- ✘ Limited/no publisher support for supply-side or operational security
 - ✓ SWID tags provide secure install media validation
 - ✓ SWID tags can validate installed executable files for sensitive applications
- ✘ No uniquely reference for purchase process or inventory consolidation
 - ✓ SWID Unique ID's provided by publisher – same product regardless of license
 - ✓ SWID based inventory is exactly the same regardless of discovery tool used
- ✓ No need to connect to the network for most validation procedures
 - ✓ Still required to check revocation of digital certificate
- ✓ Security can be upgraded as new techniques become available (i.e. SHA₃)

Option – Automate CPE Name Creation

Using registered and certified data

More Info coming soon on this topic – this data not finalized!

- Publisher Issues

- Product name
- SW_Edition
- Language
- Hardware

Unique_ID is a string type and shall follow the specified structure:

The string "cpe"

A colon ':'

The version of the cpe standard " 2.3"

A colon ':'

The type of software referenced by this SWID tag "a" = application, "o" = OS

A colon ':'

The software_creator.name value

A colon ':'

The product_title value

A colon ':'

The version.numeric.major value

A period '.'

The version.numeric.minor value

A period '.'

The version.numeric.build value

A period '.'

The version.numeric.review value

A colon ':' + a dash '-' for every other CPE value (7 additional fields specified)

- Tool provider Issues

- Require normalized values

- TagVault.org in process to become ISO sanctioned registration authority

- Normalized & registered
- Validated and certified
- Digitally signed

cpe:2.3:a:TagVault.org:TagVault.org_Tag_Creation_and_Signing_Utility:1.0.0.0::-:~::~:~::~:

Suites/Bundles/Editions

For IT - Worst Invention Since CTRL-ALT-DEL

Source - Wikipedia

- ISV View – Marketing Bundle
- User View – Related Products

- Reality – An IT Nightmare
 - Problems with identification
 - Problems with licensing
 - Patches are for underlying products, not suites
 - License Optimization is problematic
 - Application ID overload for IT practitioners

- Requirement – Identification of individual applications with link to suites and relationships to patches – SWID tags provide this!

Adobe Creative Suite 5.5					
Software	Design		Web	Production	Master
	Standard	Premium	Premium	Premium	Collection
Photoshop CS5	✓				
Photoshop CS5 Extended		✓	✓	✓	✓
Illustrator CS5	✓	✓	✓	✓	✓
InDesign CS5.5	✓	✓			✓
Acrobat X Pro	✓	✓	✓		✓
Flash Catalyst CS5.5		✓	✓	✓	✓
Flash Professional CS5.5		✓	✓	✓	✓
Flash Builder 4.5 Premium Edition			✓		✓
Dreamweaver CS5.5		✓	✓		✓
Fireworks CS5		✓	✓		✓
Contribute CS5			✓		✓
Premiere Pro CS5.5				✓	✓
OnLocation CS5				✓	✓
Encore CS5				✓	✓
After Effects CS5.5				✓	✓
Adobe Audition CS5.5				✓	✓
Shared features, services, and applications					
Bridge CS5	✓	✓	✓	✓	✓
Device Central CS5.5	✓	✓	✓	✓	✓
CS Live	✓	✓	✓	✓	✓
Dynamic Link				✓	✓

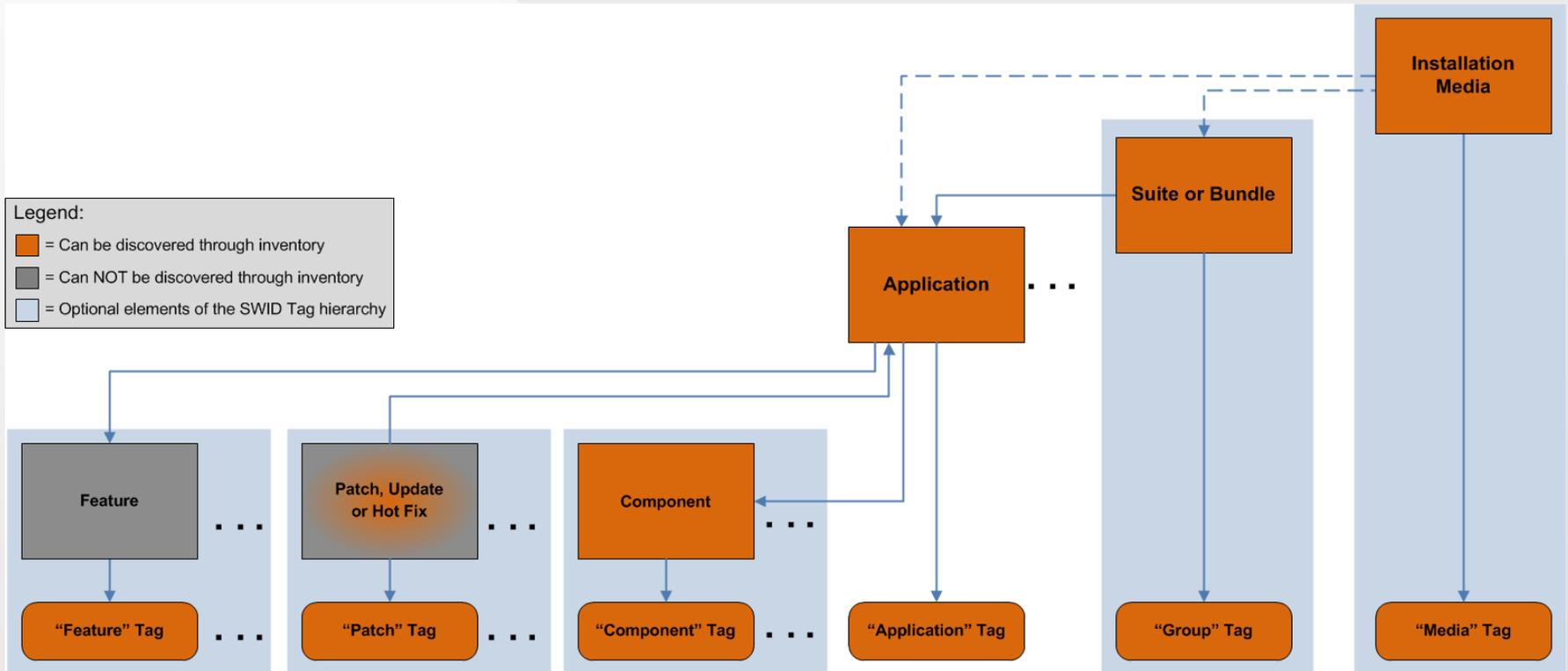
Patches

Need – Clear Applications Requirements

- Patches target specific applications
 - Publishers ID all applicable environments
 - Generally target specific apps
 - SWID Tags available for patches as well with relationships
 - Includes specific targets
- Office 2000 SP3 applies to**
- Microsoft Access 2000 SR1
 - Microsoft Access RunTime 2000 SR1
 - Microsoft Excel 2000 SR1
 - Microsoft FrontPage® 2000 SR1
 - Microsoft Office 2000 Developer
 - Microsoft Office 2000 SR1 Premium
 - Microsoft Office 2000 SR1 Professional
 - Microsoft Office 2000 SR1 Small Business Office
 - Microsoft Office 2000 SR1 Standard
 - Microsoft Outlook® 2000 SR1
 - Microsoft PowerPoint® 2000 SR1
 - Microsoft Publisher 2000 SR1
 - Microsoft Word 2000 SR1

Software Relationships

Defining the structure



Software Relationships

Defining the structure

(G) Adobe Creative Suite 5 Master Collection

+ Applications

- | |-- **Photoshop CS5 Extended**
- | |-- **Illustrator CS5**
- | |-- InDesign CS5
- | |-- Acrobat X Pro
- | |-- Flash Catalyst CS5
- | |-- Flash Professional CS 5
- | |-- Flash Builder 4.5 Premium Edition
- | |-- **Dreamweaver CS5**
- | |-- Fireworks CS5
- | |-- Contribute CS5
- | |-- Adobe Premier Pro CS5
- | |-- After Effects CS5
- | |-- Adobe Audition CS5
- | |-- Adobe OnLocation CS5
- | |-- Encore CS5
- | |-- **Bridge CS5**
- | |-- **Device Central CS5**
- | |-- Media Encoder CS5

+ Components

- | |-- **Adobe Air**
- | |-- **Extended Script Toolkit**
- | |-- **Extension Manager**
- | |-- **Adobe Community Help**

Adobe Flash Player

Adobe Shockwave Player

SWID Tags Provide

- Consistency
- Normalized values
- Authoritative data
- Self contained
- Support for Security, Logistics and Compliance
- Industry Support (building – need is absolutely recognized)

- Software Identification - not just for SAM anymore!

Analysis of Software ID tools

Whitepaper under development

- Details issues discovered during the 6 product evaluation
- Draft form – release and publication expected later this week

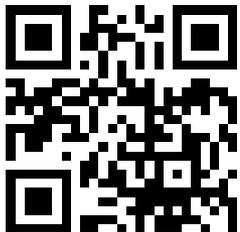


Whitepaper -
Software Identification
Analysis

Licensors can make a difference

- Identify teams that need accurate software identification
- Work with other teams to identify how a single source of ID data will lower costs
- Identify top risk and cost areas (security, logistics, compliance)

- Talk to your contracting/procurement teams
- Provide TagVault.org & WG21 RFP and contracting recommendations



Specify SWID tags in RFPs



Include SWID Tags in contracts

TagVault.org



IEEE-ISTO

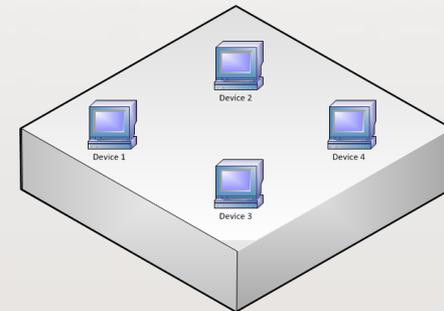
Industry Standards and Technology Organization
affiliated with the IEEE and the IEEE Standards Association

- Certification authority for software identification tags (working to be ISO sanctioned)
- Non-profit
- Member driven
- Focus on market requirements (Authoritative and consistent)
- Supporting the SAM Eco-system
 - Certification process
 - Software tag repository
 - Software tools and services
 - best practices

Software Discovery Tool Analysis

Is Normalization Really Necessary?

- 4 Test Devices
 - One system has base OS + MSIE 8.0
 - Other systems built off base
 - No “tricks” used during installation
- **25** current products from **9** different publishers
 - Mix and match installations
 - Primary focus on current Microsoft and Adobe products
- 6 Discovery products tested
 - 5 Commercial, 1 Open source
 - 1 Product included raw and “interpreted” inventory
- All Inventory data normalized into one database
- Tool zero (`o`) – results you would get with SWID tag data



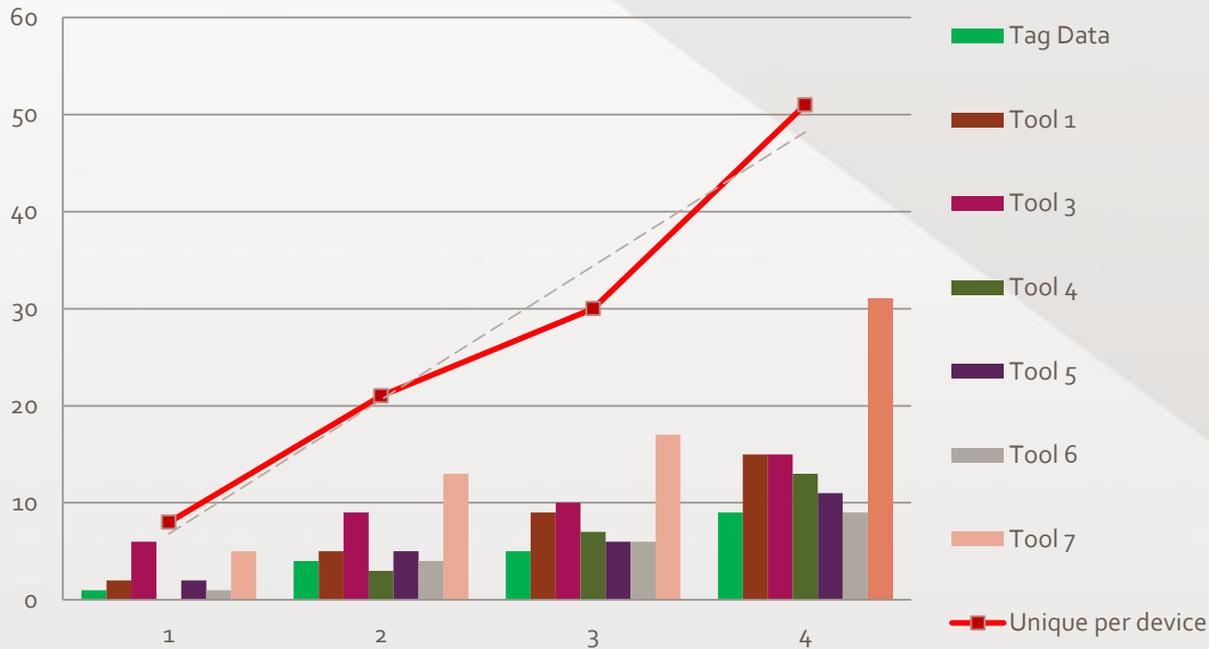
Virtual Machine
Test Devices

6 products resulted in 7 different answers

Unique Vendors Discovered

Unique Vendors per tool per device

(note tool 2 did not report vendor names)



Unique Microsoft Names

Microsoft
 Microsoft Corp.
 Microsoft Corporation

27

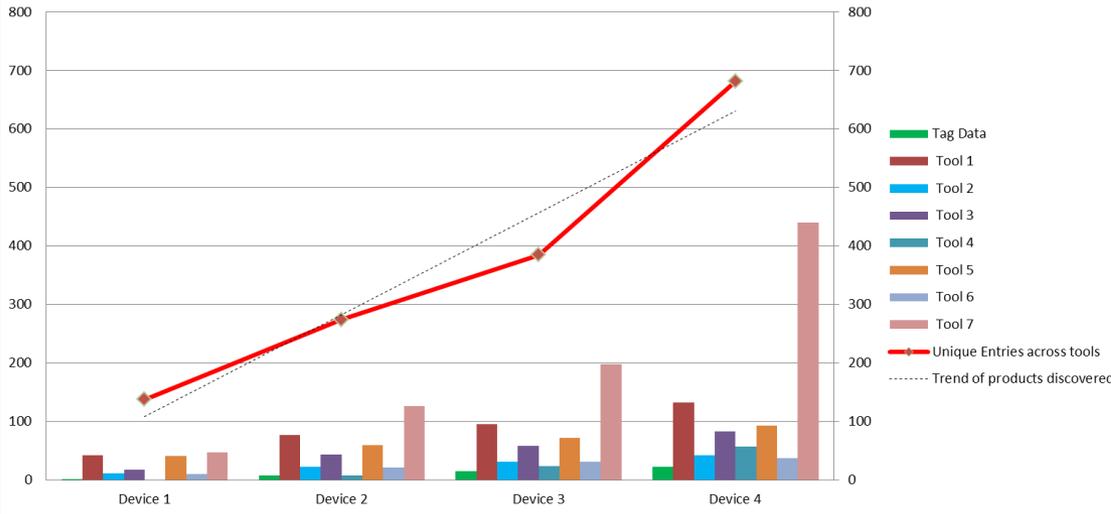
Unique Adobe Names

Adobe
 Adobe Systems
 Adobe Systems Inc.
 Adobe Systems Incorporated
 Adobe Systems, Incorporated.
 Adobe Systems, Inc
 Adobe Systems, inc.
 Adobe Systems, Incorporated
 Macromedia, Inc.

21

Compliance/ID issues

Unique products discovered



Unique Adobe Names

- Adobe
- Adobe Systems
- Adobe Systems Inc.
- Adobe Systems Incorporated
- Adobe Systems, Incorporated.
- Adobe Systems, Inc
- Adobe Systems, Inc.
- Adobe Systems, Incorporated
- Macromedia, Inc.

> 21

Adobe Products – Device 4

Product Name	Valid	Tool ID
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	1
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	2
Adobe Creative Suite 5 Master Collection (trial)	<input checked="" type="checkbox"/>	3
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	4
Adobe Creative Suite 5 Design Standard 5.0	<input checked="" type="checkbox"/>	5
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	6
Individual Adobe products listed	<input checked="" type="checkbox"/>	7

Adobe Creative Suite 5 Master Collection

- + Applications
 - | |-- Photoshop CS5 Extended
 - | |-- Illustrator CS5
 - | |-- InDesign CS5
 - | |-- Acrobat X Pro
 - | |-- Flash Catalyst CS5
 - | |-- Flash Professional CS 5
 - | |-- Flash Builder 4.5 (from min connection)
 - | |-- Dreamweaver CS5
 - | |-- Fireworks CS5
 - | |-- Contribute CS5
 - | |-- Adobe Premier Pro CS5
 - | |-- After Effects CS5
 - | |-- Adobe Audition CS5
 - | |-- Adobe OnLocation CS5
 - | |-- Encore CS5
 - | |-- Bridge CS5
 - | |-- Device Central CS5
 - | |-- Media Encoder CS5
- + Components
 - | |-- Adobe Air
 - | |-- Extended Script Toolkit
 - | |-- Extension Manager
 - | |-- Adobe Community Help

23 items

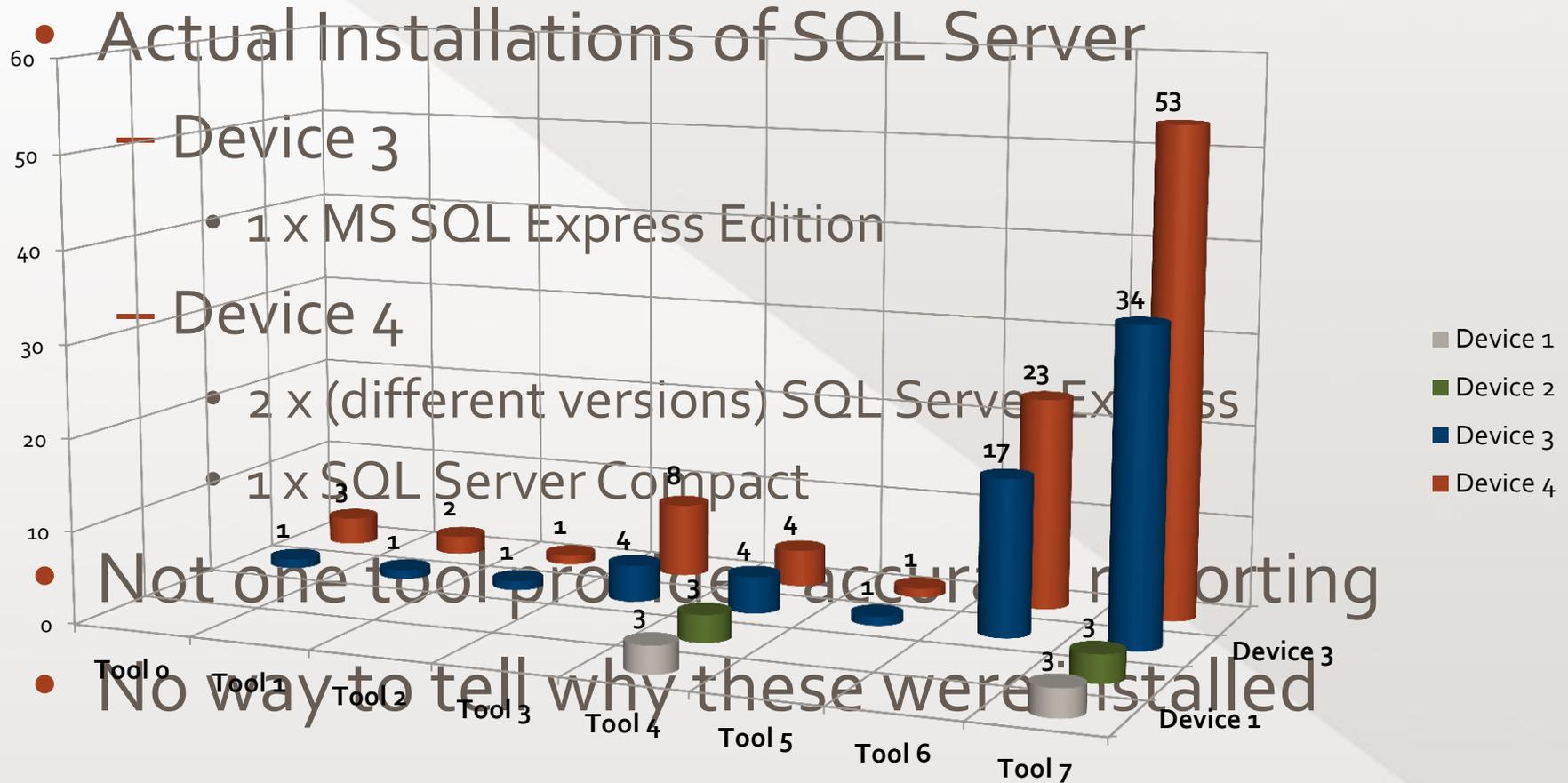
or -

1 item

Adobe Flash Player

Adobe Shockwave Player

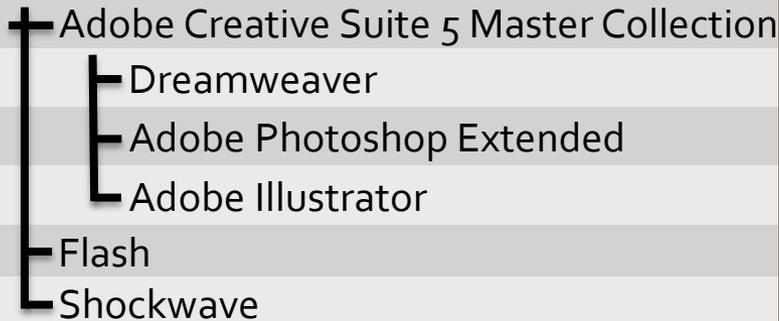
SQL Items Discovered



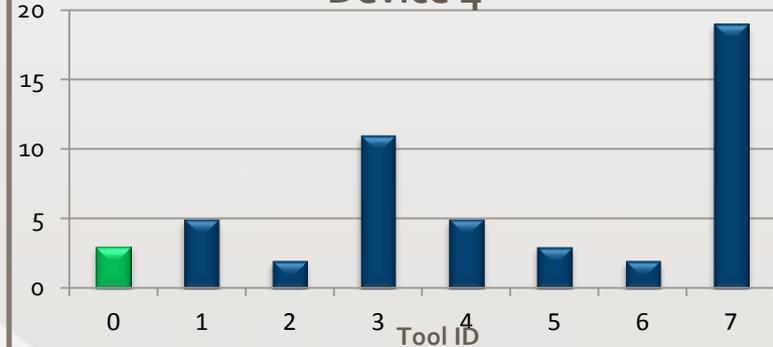
Adobe Inventory

Compliance Disaster in the making

Actual Adobe Products Installed



Adobe Products Discovered –
Device 4



Adobe Products – Device 4

Product Name	Valid	Tool ID
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	1
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	2
Adobe Creative Suite 5 Master Collection (trial)	<input checked="" type="checkbox"/>	3
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	4
Adobe Creative Suite 5 Design Standard 5.0	<input checked="" type="checkbox"/>	5
Adobe Creative Suite 5 Master Collection	<input type="checkbox"/>	6
Individual Adobe products listed	<input checked="" type="checkbox"/>	7

**\$1,300 Mistake
(per installation)**

- Adobe Systems
- Adobe Systems Inc.
- Adobe Systems Incorporated
- Adobe Systems, Inc.
- Adobe Systems, Incorporated

Adobe Compliance with Tags

Discovery as it should be

Adobe Data from SWID Tag

Product Title	Adobe Creative Suite 5 Master Collection
Product Version	0.0
Software Licensor	Adobe Systems Incorporated
Unique ID	MasterCollection-CS5-Win-GM
Activation Status	unlicensed
Channel Type	TRIAL
Customer Type	TRIAL
Serial Number	922987045608161713283357

- Not perfect yet
- **Significantly** better than any tool tested
- Should include list of products in suite (complex_of)
- Each installed component needs its own tag
- Tag needs to be removed at uninstall

Adobe Identification with Tags

Compliance, Security, Logistics

- Need to know major apps
 - Master Collection
 - Flash
 - Shockwave
- Expand individual apps
 - License optimization
- See any components installed
 - Where did a software component come from
- ID apps for patching

Adobe Creative Suite 5 Master Collection

+ Applications

- | |-- Photoshop CS5 Extended
- | |-- Illustrator CS5
- | |-- InDesign CS5
- | |-- Acrobat X Pro
- | |-- Flash Catalyst CS5
- | |-- Flash Professional CS 5
- | |-- Flash Builder 4.5 Premium Edition
- | |-- **Dreamweaver CS5**
- | |-- Fireworks CS5
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- | |-- Media Encoder CS5

+ Components

- | |-- **Adobe Air**
- | |-- **Extended Script Toolkit**
- | |-- **Extension Manager**
- | |-- **Adobe Community Help**

Adobe Flash Player

Adobe Shockwave Player

Adobe Report Views

Additional IT Roles

Security View

Photoshop CS5 Extended	✓ patched
Illustrator CS5	✓ patched
Dreamweaver CS5	✓ patched
Bridge CS5	✓ patched
Device Central CS5	✓ patched
Adobe Air	✓ patched
Extended Script Toolkit	✓ patched
Extension Manager	✓ patched
Adobe Community Help	✓ patched
Adobe Flash Player	✓ patched
Adobe Shockwave Player	✓ patched

Policy Compliance View

Approved

Photoshop CS5 Extended
Illustrator CS5
Dreamweaver CS5
Adobe Community Help

Not analyzed

Bridge CS5
Device Central CS5
Adobe Air
Extended Script Toolkit
Extension Manager

Not Approved

Adobe Flash Player
Adobe Shockwave Player

Software Compliance Organizations

Supporting Organizations

“BSA supports industry and standards body efforts to standardize and normalize the information and processes required by all Software ecosystem members to more efficiently and effectively implement software asset management programs. A clear example of this support is demonstrated by the BSA created SAM Advantage program that aligns with the ISO/IEC 19770-1 Revised Standard.”

Peter Beruk
Senior Director of Compliance Marketing
BSA

“HP sees ISO 19770-2 tags as the de facto industry standard and has adopted it in its inventory discovery product, DDMI. HP is also seeing significant market demand for this standard in recent customer RFPs.”

Daniel Galecki
Product Line Manager – ITAM
Hewlett Packard

“We fully expect certified software asset tags to become the standard for software publishers and SAM tool vendors. In the near future, enterprise customers will demand that all software vendors provide certifiable software asset tagging and deployment reporting methods with their products!”

Timothy Willey
Sr. Director, Pricing and Licensing Strategy
Symantec

Questions?



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