



National Vulnerability Database CPE Dictionary Management Practices



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Agenda

- History
- CPE Dictionary Hosted by NVD
- CPE Dictionary Management Process
- Data Requirements
- Submission Interface
- Q&A





Goals

- Provide background about CPE Dictionary use at the NVD
- Provide visibility into the CPE Dictionary moderation process used within the NVD
- Convey acceptance criteria guidelines
- Identify current and future process workflows





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History

- Transition to CPE at NVD
 - Pre-CPE NVD proprietary product naming
 - CPE 2.1 NVD implemented initial CPE support
 - SCAP 1.0 CPE 2.2 NVD identified as the primary source of CPE names
 - SCAP 1.2 CPE 2.3 NVD updated support based on SCAP requirements
- Transition of CPE Dictionary Moderation Responsibilities





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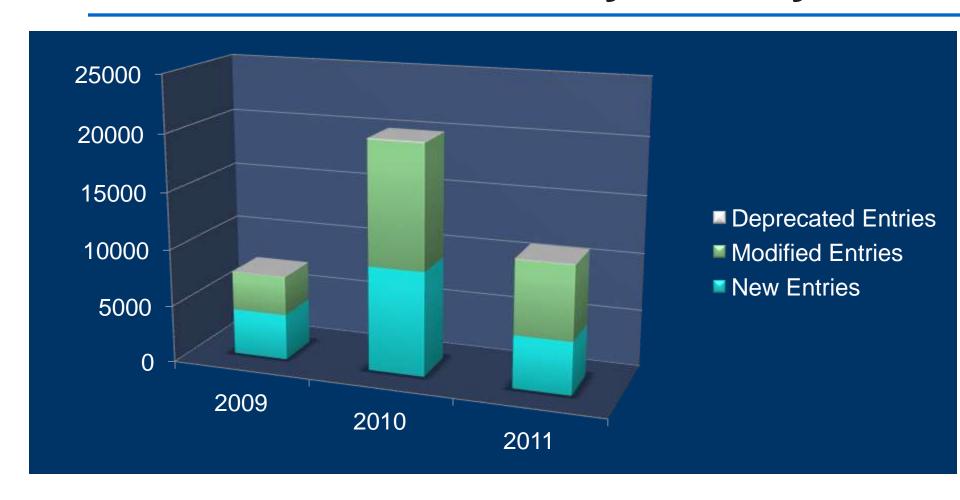
CPE Dictionary hosted by NVD

- Collection of CPE names
 - Input from public and private sector
 - Not comprehensive
- CPE is a component of SCAP
 - Dictionary is a source for names
- Downloadable Dictionary feed in XML format
- Searchable web interface
- As of today, 35,222 names in the Dictionary
- International character support (titles)





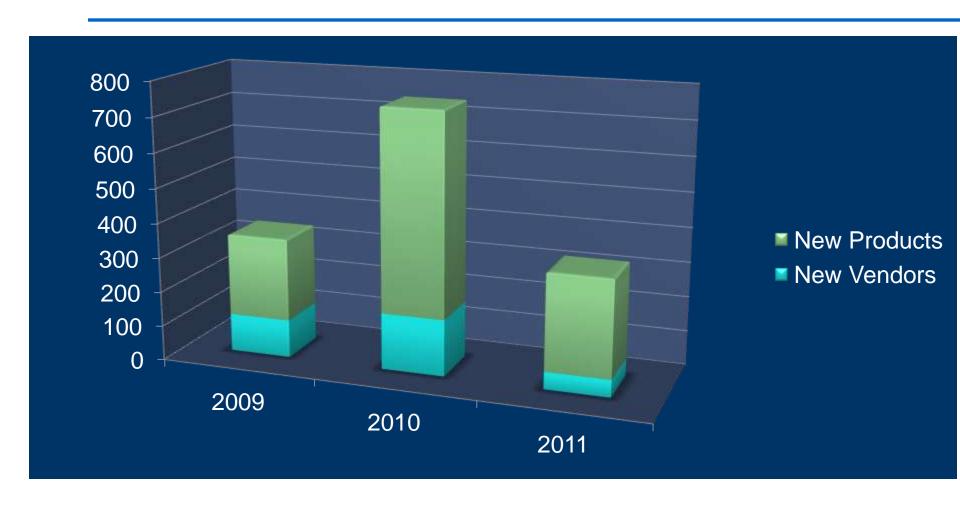
2009 to 2011 Dictionary Activity







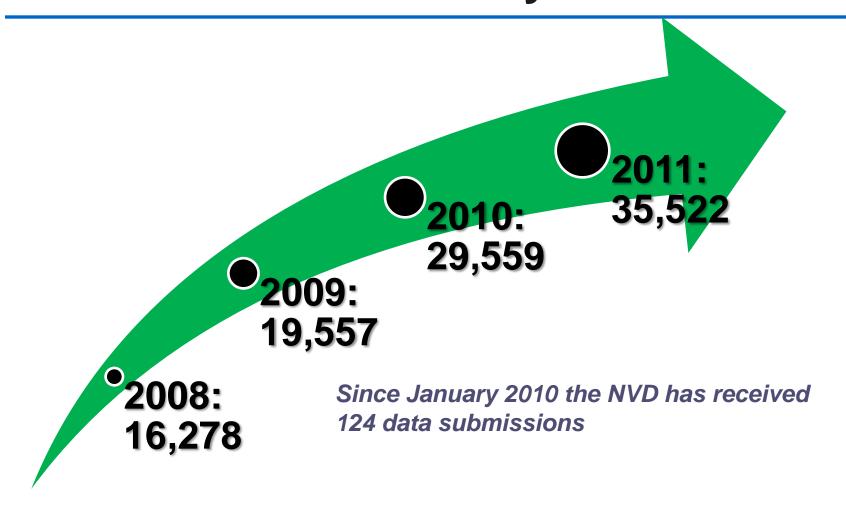
2009 to 2011 Vendor & Product Growth







State of CPE Dictionary







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CPE Dictionary Management Process

Community Engagement

Name Collection

Name Review

Name Moderation

Name Publication





Community Engagement

 NIST engages with the CPE community to gather CPE Name contributions







Name Collection

 NIST accepts contributions of CPE Names and metadata in XML CPE Dictionary file format through the email: cpe_dictionary@nist.gov

Name Collection

Name Review

Name Moderation

Name Publication





Name Review

 NIST evaluates the community proposed names based upon data requirements







Name Moderation

 NIST may revise submissions and propose revisions to submitters based upon further research

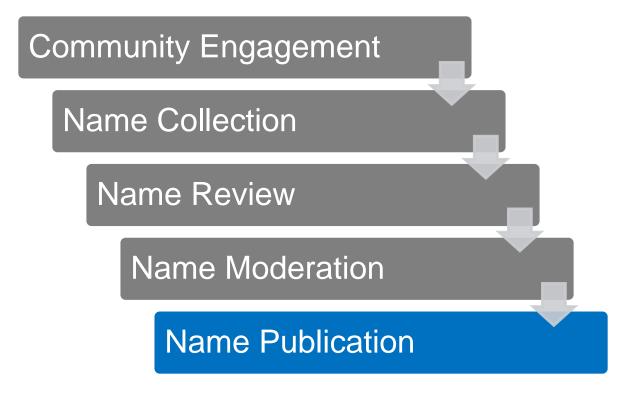






Name Publication

 Analyst imports the accepted name contribution into the Dictionary







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Data Requirements – Consistency

- To support the CPE matching feature consistency is critical
 - Within a product line / family
 - Within a vendor
 - Within the Official CPE Dictionary





Data Requirements – "MUSTS"

Submissions must:

- Meet the naming requirements defined in the specification
- Meet the dictionary requirements defined in the specification
- Validate against the CPE Dictionary XML schema





Data Requirements – "MUSTS" cont.

Submissions must also:

- Provide part:vendor:product:version
- New submissions must meet matching requirements in Dictionary specification
- Comprise all known information that can be encoded in a CPE name





URI Component Specifics – Vendor

- Vendor component guidelines
 - Based upon DNS name
 - Most widely used organization name
 - Software developer or maintainer name





URI Component Specifics – Product

- Product component guidelines
 - Attempt to identify most technically correct product name within component
 - Avoid use of acronyms and abbreviations





URI Component Specifics – Version

- Version component guidelines
 - Vendor version information
 - Use of change log files, release announcements
 - Avoid use of "rollup" versions (e.g. 7 vs. 7.0)





Provenance Data

- Name instantiation = decision
- Reference points
 - Vendor URL
 - Vendor change log
 - Vendor history file
 - Release announcements
 - Vendor archive of past releases





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CPE Dictionary Management Process

Community Engagement

Name Collection

Name Review

Name Moderation

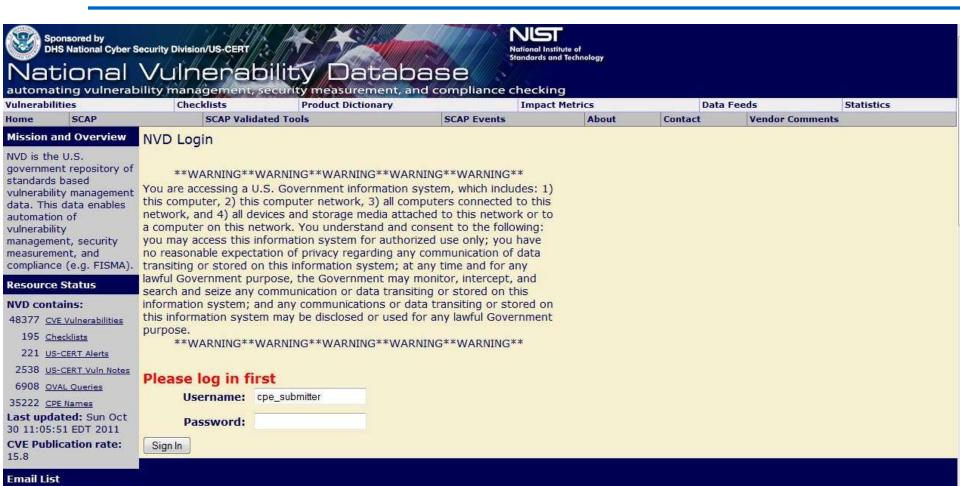
Name Publication

Process doesn't need to change to support the new interface





Submission Interface Demo – CPE Console Login







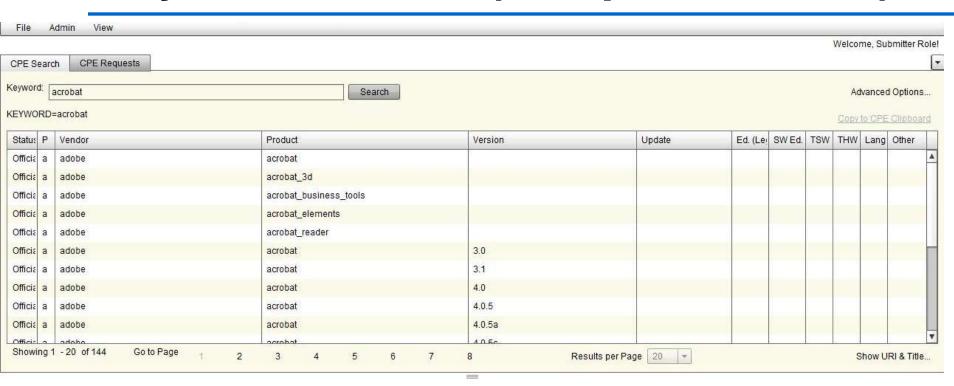
Submission Interface Demo – CPE Console Dashboard

File A	dmin View									
CPE Searc	h CPE Requests						Wel	come,	Submi	itter Role
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	or .									
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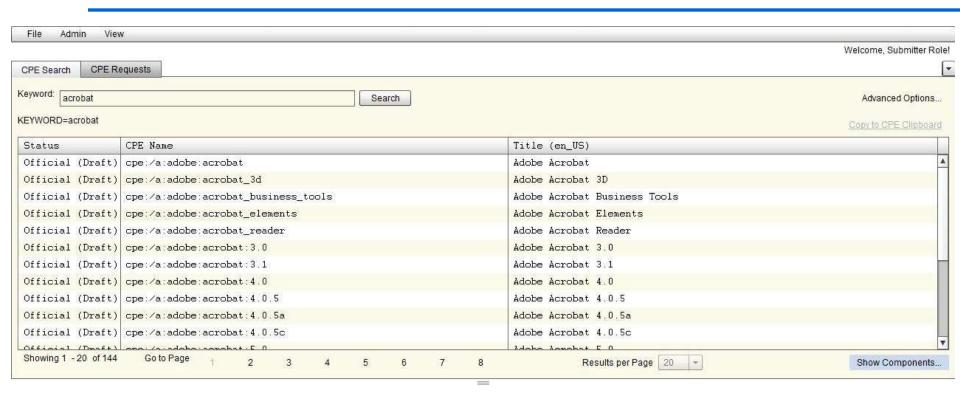
Submission Interface Demo – Keyword Search (component view)







Submission Interface Demo – Keyword Search (URI / Title view)







Submission Interface Demo – Advanced Search Options

File Ad	Imin View									
							Wel	icome,	Submi	tter Role!
CPE Search	CPE Requests									•
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								Show	URI 8	k Title





Submission Interface Demo – Advanced Search Options cont.

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roduct	Cisco	1	Target HW							
		Edition	Target HW Other							
Product Persion										
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Product /ersion endor=cisc Status P Officia h	co, part=h Vendor cisco	Edition (Legacy) Product 2000_wireless_lan_controller	Other	Update	Ed. (Le	SW Ed.	TSW			
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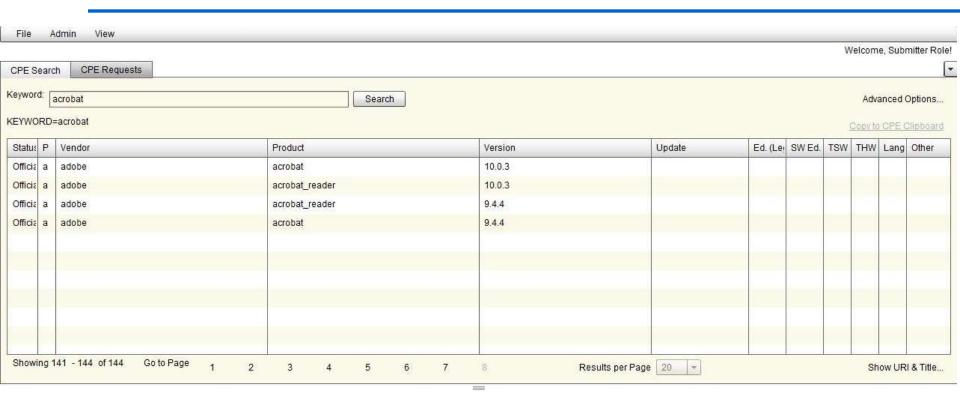
Submission Interface Demo – Advanced Search Options cont.

				Welcome, Submitter Role
CPE Search	CPE Requ	uests		
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vendor=cisco Status Official Official	(Draft)	(Legacy) CPE Name cpe:/h:cisco:2000_wireless_lan_controller	Title (en_US) Cisco 2000 Series Wireless LAN Controller	Copy to CPE Clipboard
vendor=cisco Status Official Official Official	(Draft) (Draft) (Draft)	(Legacy) CPE Name cpe:/h:cisco:2000_wireless_lan_controller cpe:/h:cisco:2100_wireless_lan_controller	Title (en_US) Cisco 2000 Series Wireless LAN Controller Cisco 2100 Series Wireless LAN Controller	Copy to CPE Clipboard
Status Official Official Official Official	(Draft) (Draft) (Draft) (Draft)	CPE Name cpe:/h:cisco:2000_wireless_lan_controller cpe:/h:cisco:2100_wireless_lan_controller cpe:/h:cisco:2700_wireless_location_appliance	Title (en_US) Cisco 2000 Series Wireless LAN Controller Cisco 2100 Series Wireless LAN Controller Cisco 2700 Wireless Location Appliance	Copy to CPE Clipboard





Submission Interface Demo – Tabbed Page Navigation







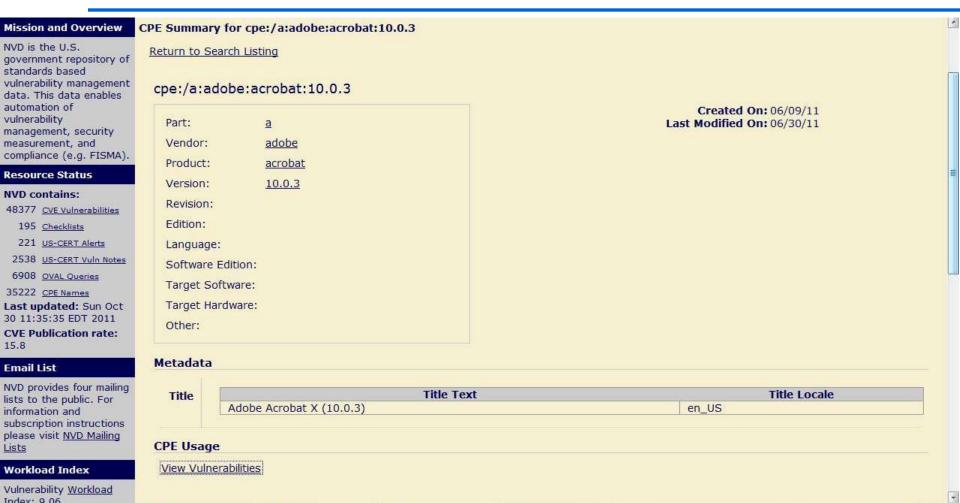
Submission Interface Demo – CPE Details View

File		Admin V	ew								W	elcome	. Subm	nitter Role!
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	Me	tadata Us	age	-22			-0							
CPE Detail	Titl	e	Adobe Acrobat X (10.0.3)		en_US									





Submission Interface Demo – CPE Details View (webpage)







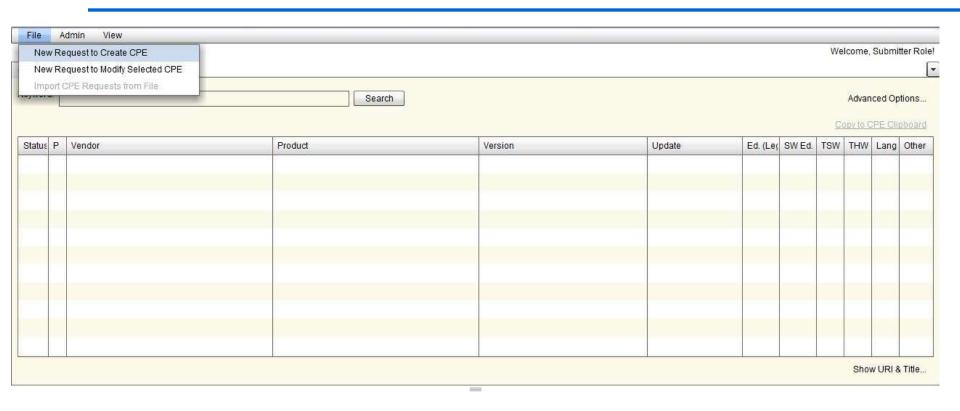
Submission Interface Demo – CPE Details View (console)

File	Α	dmin	View											
						CPE Search http://web.nvd.nist.gov/v	riew/cpe/search?cid=2					Welco	me, Sul	bmitter Role
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Officia	а	adobe			acrobat_reader		9.4.4							
Officia	а	adobe			acrobat		9.4.4							
Show	ng 1	141 - 14	4 of 144	Go to Page 1	2 3 4	5 6 7	В	Results per Page 20 +	10		<u> </u>	5	Show U	IRI & Title
	cn	e./a.a/	lohe:s	erobat:10.0.3					CPE	URI			Copy to	Clipboard
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16				d 06/30/2011 Status Official (Draft)				NVDID	14895	21				
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CPE Detall	ID Description													
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100														- 22





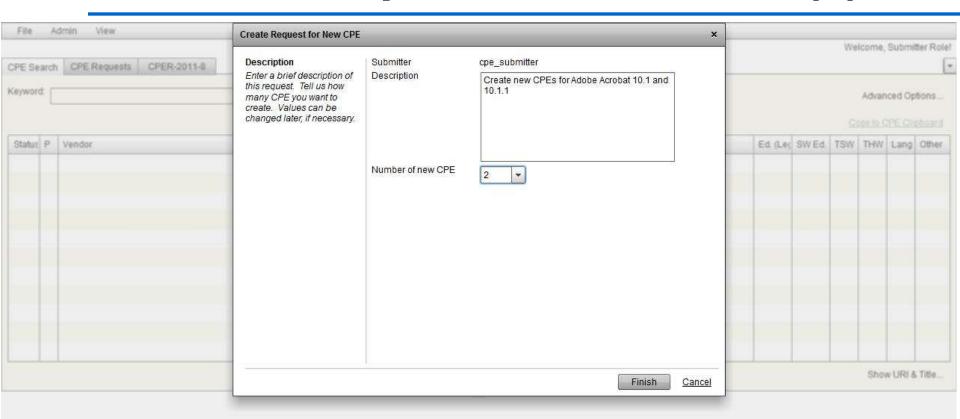
Submission Interface Demo – New Request to Create CPE







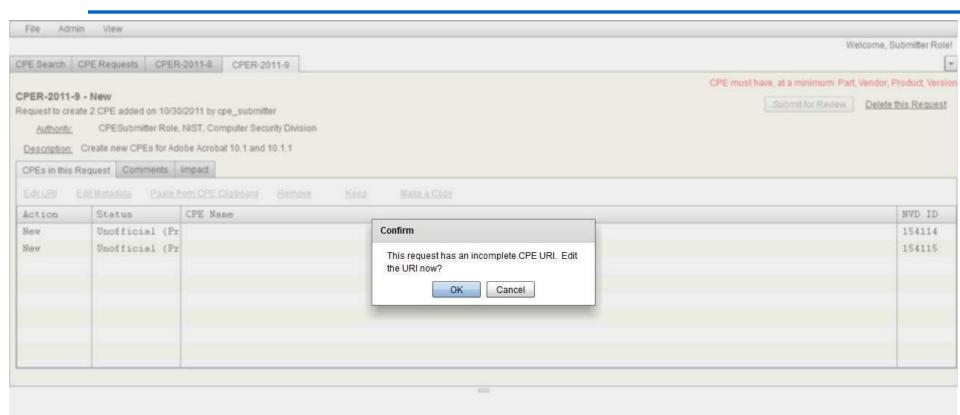
Submission Interface Demo – Enter Description and Number (2)







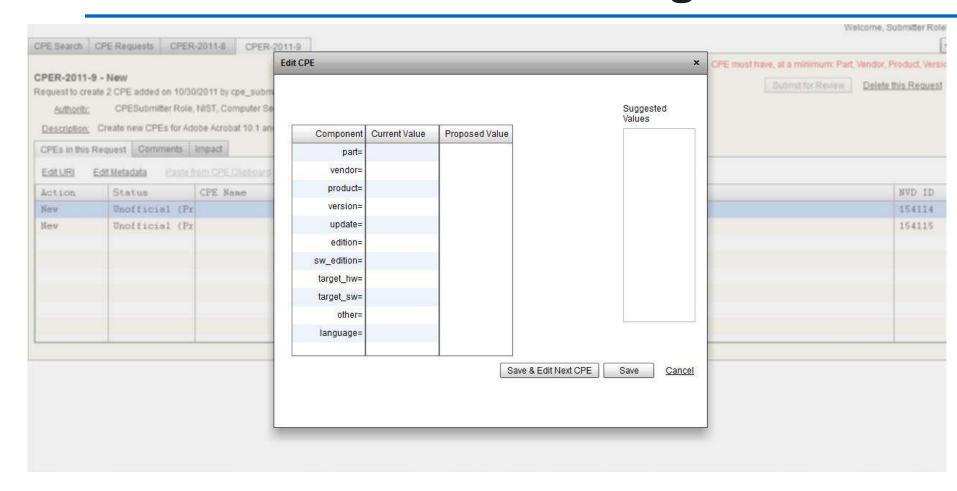
Submission Interface Demo – Edit URI Confirm Dialog







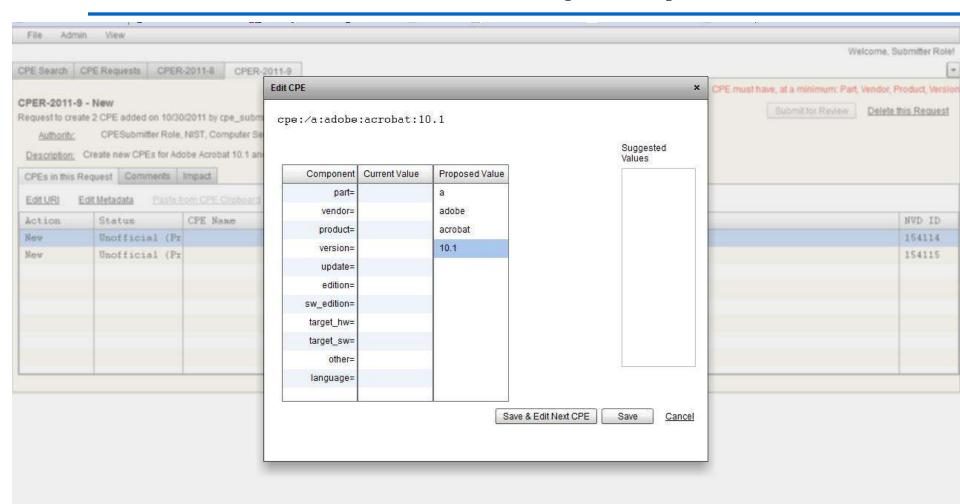
Submission Interface Demo – Edit CPE Attributes Dialog







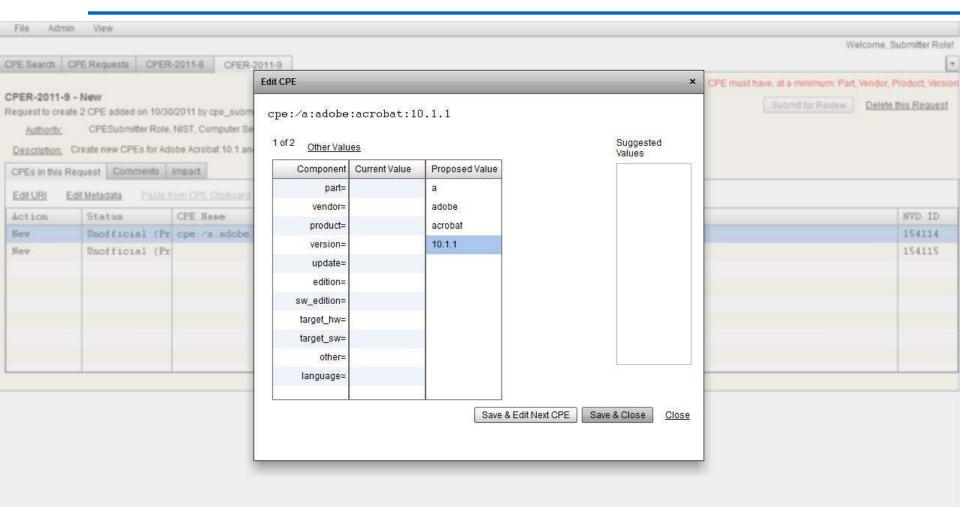
Submission Interface Demo – Add CPE Attributes (10.1)







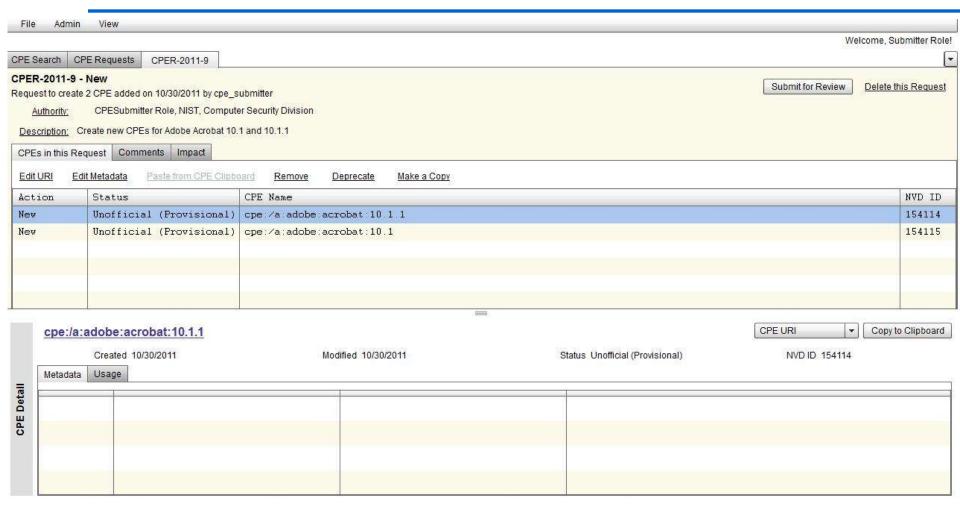
Submission Interface Demo – Add CPE Attributes (10.1.1)







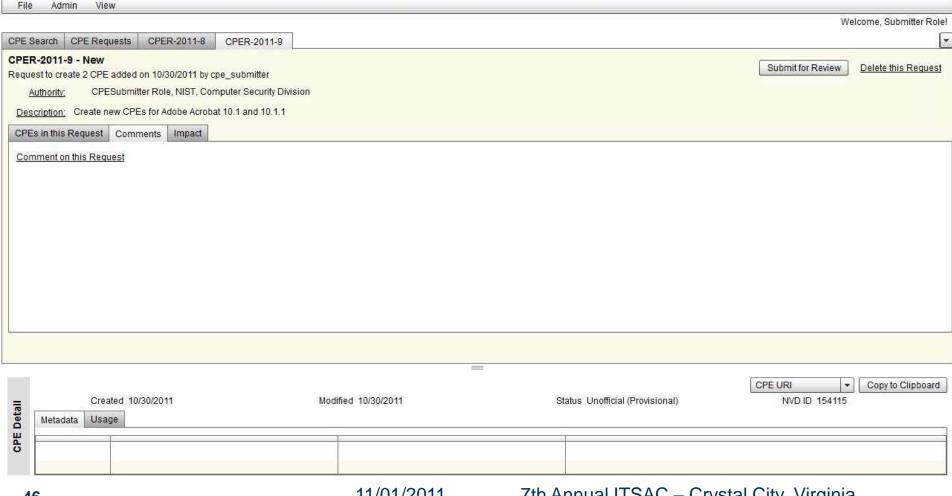
Submission Interface Demo – View Names in Request







Submission Interface Demo – Comments Tab View







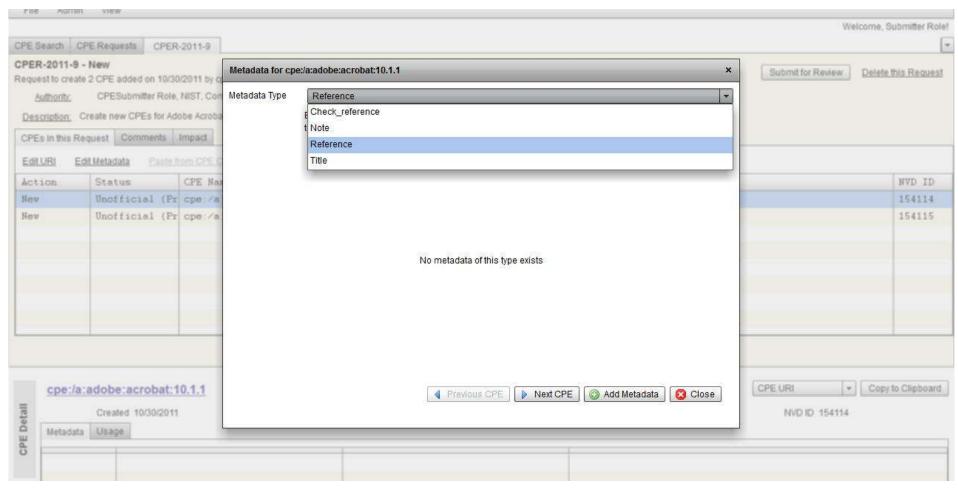
Submission Interface Demo – Impact Tab View

File Admin	view							
					Welcome, Submitter R			
CPE Search CPE	Requests CPER-2011-8	CPER-2011-9						
Authority:	CPE added on 10/30/2011 by of CPESubmitter Role, NIST, Colate new CPEs for Adobe Acrob.	mputer Security Division			Submit for Review Delete this Reque			
Vı	ulnerability	Checklist	CCE		Refre			
ID	Description		30					
CVE-2011-2442	Adobe Reader and Acrobat	t 8.x before 8.3.1, 9.x before 9.4.6, and	10.x before 10.1.1 allow attack	kers to execute arbitrary code via unspecified vectors, rel	lated to a "logic error vulnerability."			
CVE-2011-2441	Multiple stack-based buffer	iple stack-based buffer overflows in CoolType.dll in Adobe Reader and Acrobat 8.x before 8.3.1, 9.x before 9.4.6, and 10.x before 10.1.1 allow attackers to execute arbitrary code via unspecified vectors.						
CVE-2011-2440 Use-after-free vulnerability in Adobe Reader and Acrobat 8.x before 8.3.1, 9.x before 9.4.6, and 10.x before 10.1.1 allows attackers to execute arbitrary code via unspecif					ode via unspecified vectors.			
CVE-2011-2439	Adobe Reader and Acrobat 8.x before 8.3.1, 9.x before 9.4.6, and 10.x before 10.1.1 allow attackers to execute arbitrary code via unspecified vectors, related to a "memory leakage condition vulnerability."							
CVE-2011-2438	Multiple stack-based buffer unspecified vectors.	overflows in the image-parsing librar	y in Adobe Reader and Acroba	at 8.x before 8.3.1, 9.x before 9.4.6, and 10.x before 10.1.	1 allow attackers to execute arbitrary code via			
	1		Double-click on ar	n item to view it.				
Showing 1 - 12		Go	to Page		Results per Page 20 💌			
<u> </u>	Created 10/30/2011 Usage	Modified 1	0/30/2011	Status Unofficial (Provisional)	CPE URI ▼ Copy to Clipboar			





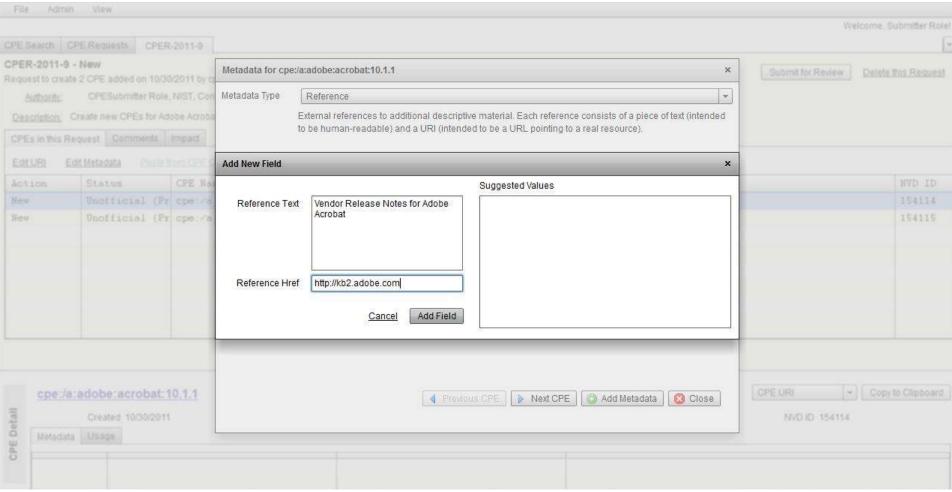
Submission Interface Demo – Edit Metadata (Add Reference)







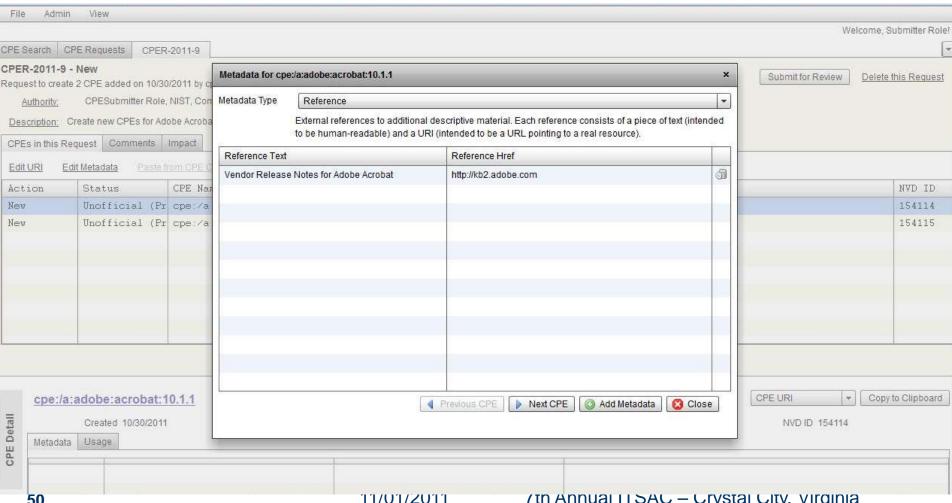
Submission Interface Demo – Edit Metadata (Add Reference Data)







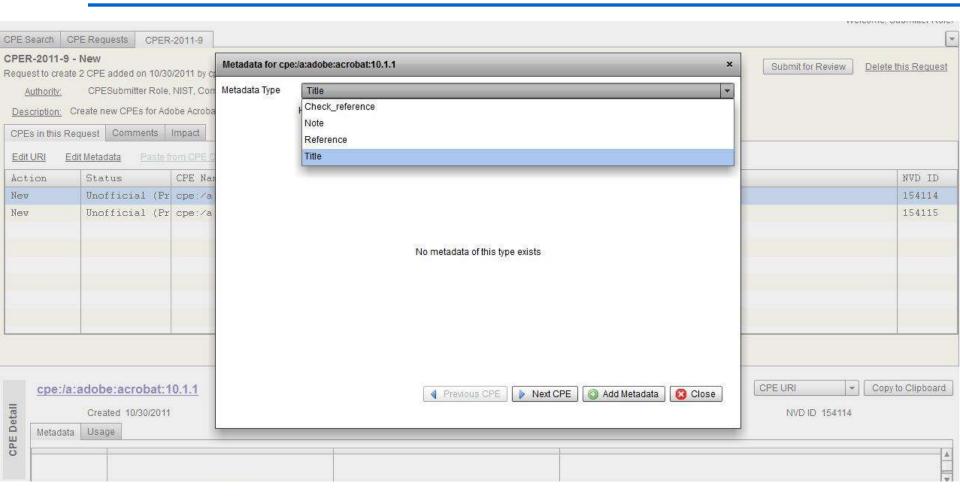
Submission Interface Demo – Edit Metadata (View Reference)







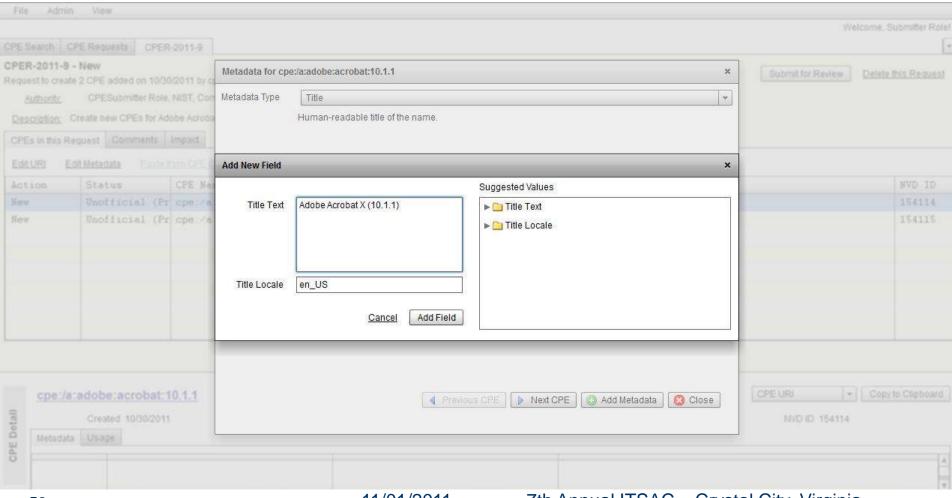
Submission Interface Demo – Edit Metadata (Add Title)







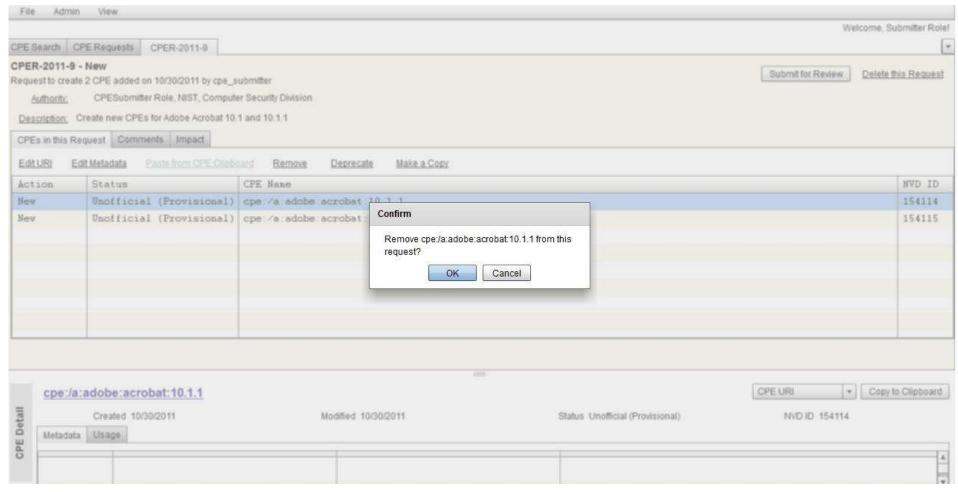
Submission Interface Demo – Edit Metadata (Add Title Data)







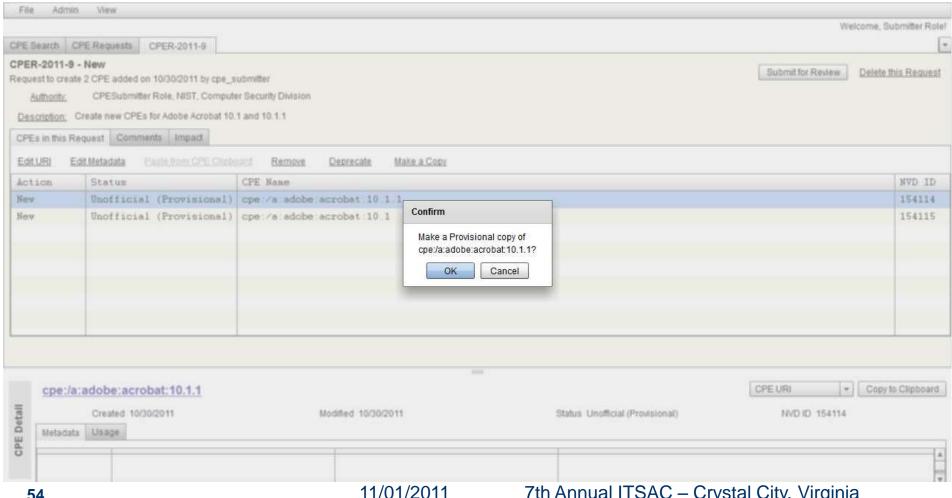
Submission Interface Demo – Remove CPE From Request







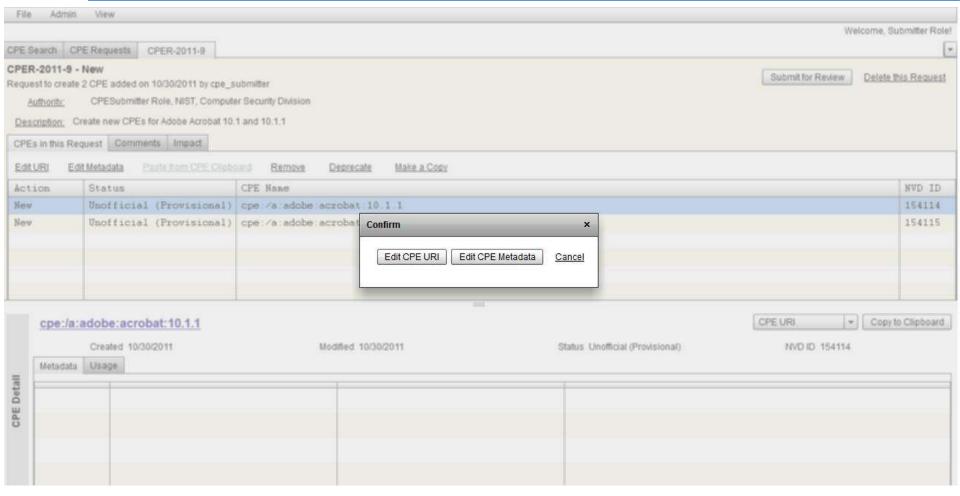
Submission Interface Demo – Make a Copy







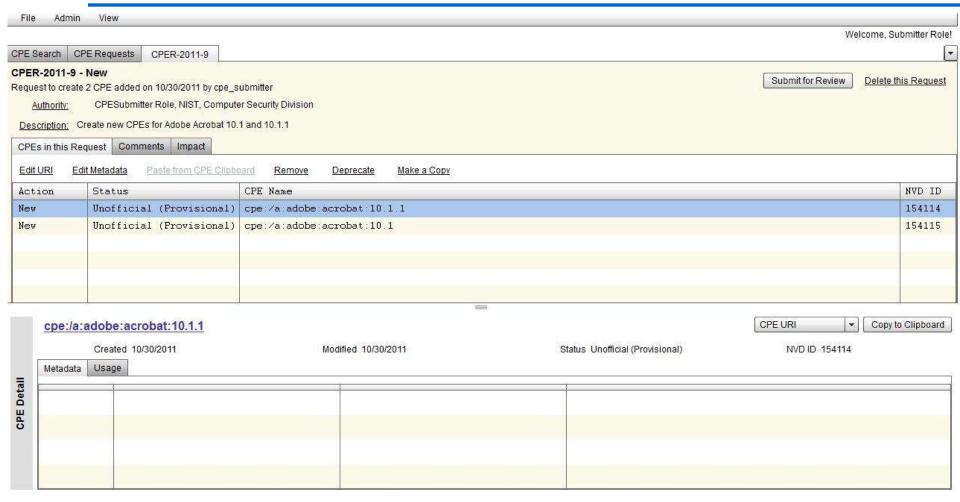
Submission Interface Demo – Name Preview – On Double-Click







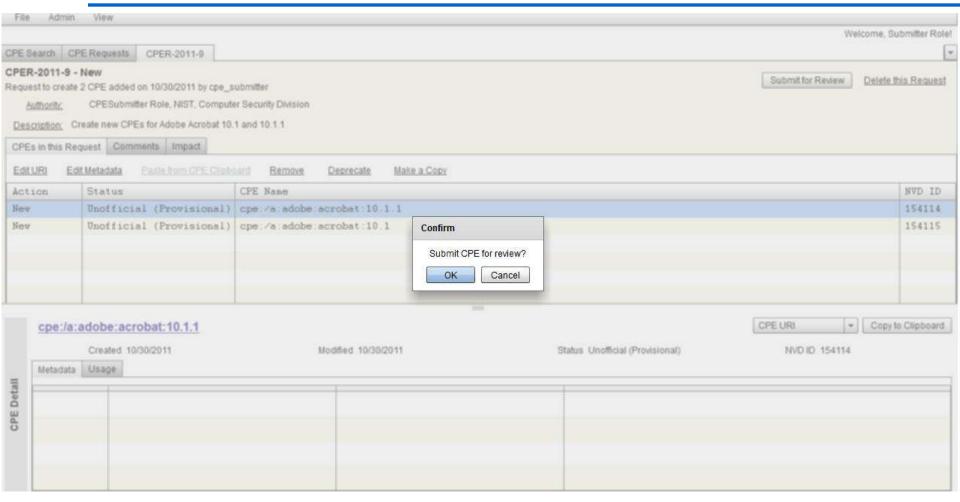
Submission Interface Demo – Name Preview – Submit for Review







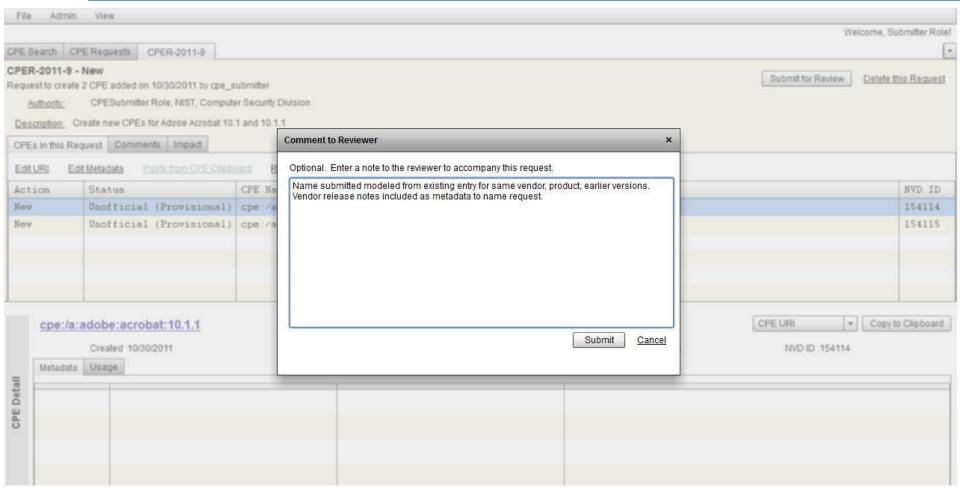
Submission Interface Demo – Submit CPE for Review







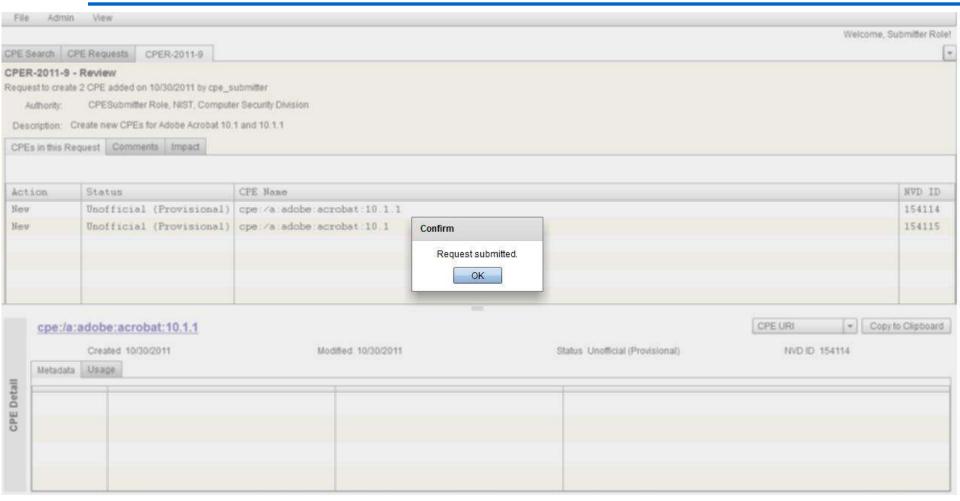
Submission Interface Demo – Comment to Reviewer (Optional)







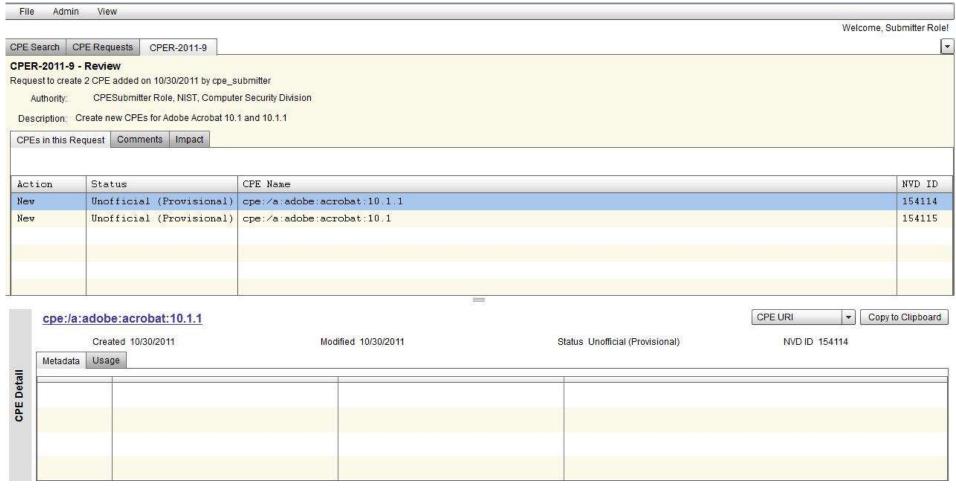
Submission Interface Demo – Submitted Request Confirmation







Submission Interface Demo – Submitted Name Restricted







Submission Interface Demo – Requests Tab

File	le Admin View			
CPE	Search CPE Requests			Welcome, Submitter Role!
CPE	Requests			
Shov	Wing Requests In Review			▼ Refresh
Red	PER-2011-9 - Review equest to create 2 CPE added on 10/30/2011 by cpe_submitter eate new CPEs for Adobe Acrobat 10.1 and 10.1.1			
_	cpe:/a:adobe:acrobat:10.1.1 Created 10/30/2011 Metadata Usage	Modified 10/30/2011	Status Unofficial (Provisional)	CPE URI ▼ Copy to Clipboard NVD ID 154114
CPE Detail				





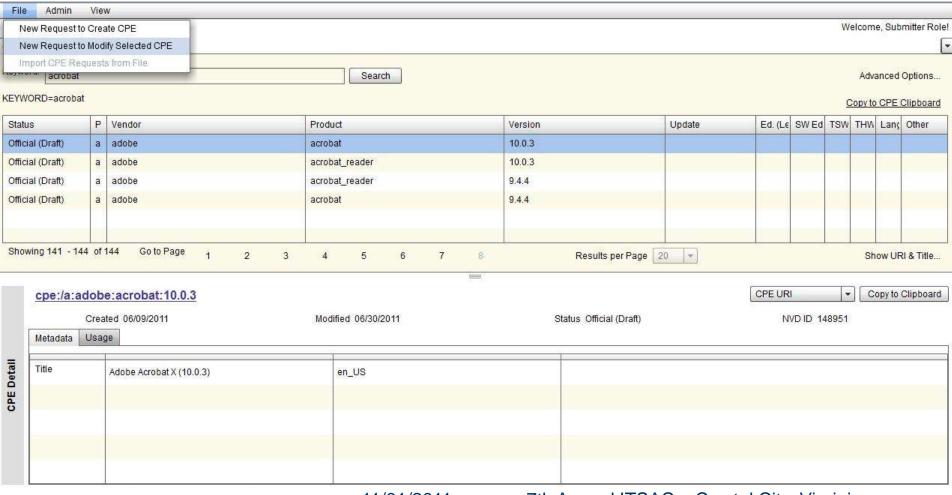
Submission Interface Demo – Requests Tab (Dialog Drop-Down)

File	Admin View			
				Welcome, Submitter Role!
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CPE Rec	uests			
Showing	Requests In Review			▼ Refresh
	New/Rejected Requests			
CPER-	Requests In Review			
	Completed Requests			
9	cpe:/a:adobe:acrobat:10.1.1			CPE URI ▼ Copy to Clipboard
	Created 10/20/2011	Modified 10/20/2011	Status Unofficial (Provisional)	N/D ID 154114





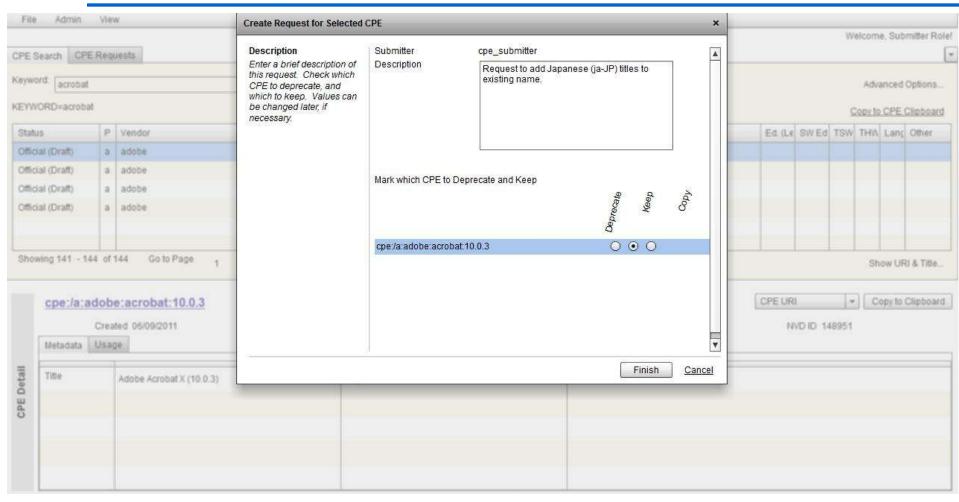
Submission Interface Demo – Request to Modify Selected CPE







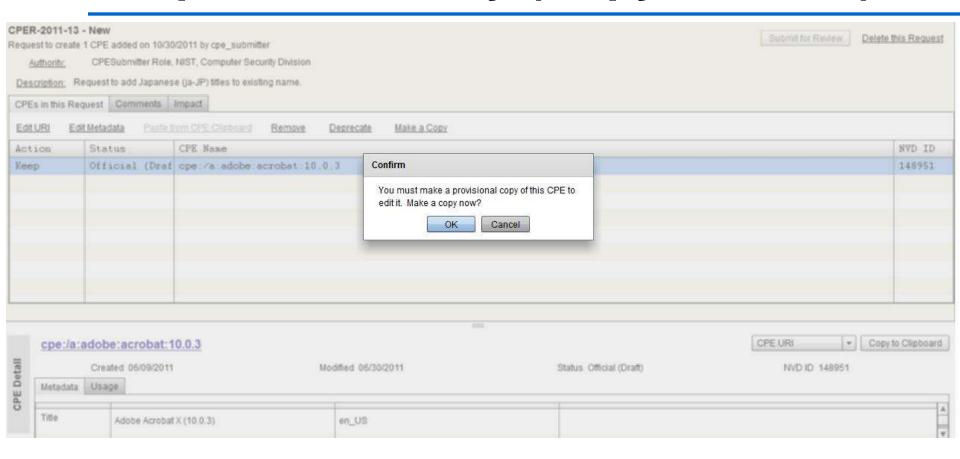
Submission Interface Demo – Request to Modify (Description)







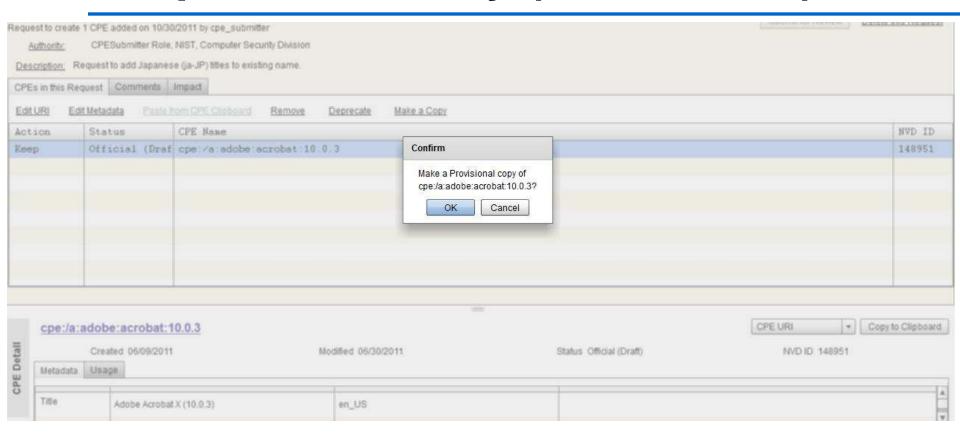
Submission Interface Demo – Request to Modify (Copy Confirm)







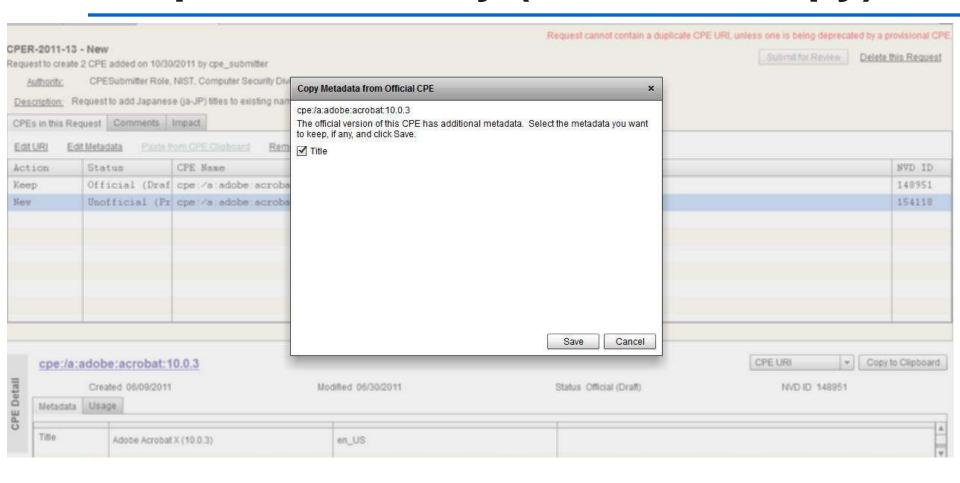
Submission Interface Demo – Request to Modify (Provisional)







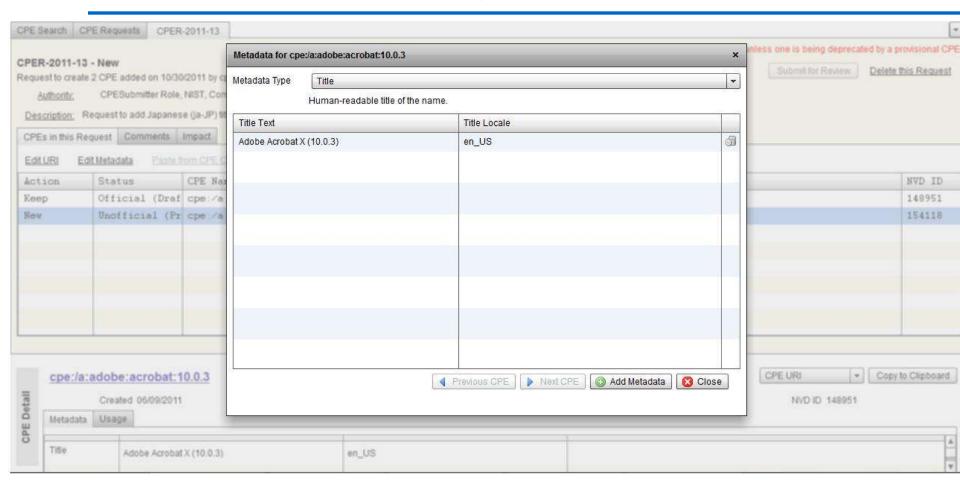
Submission Interface Demo – Request to Modify (Metadata Copy)







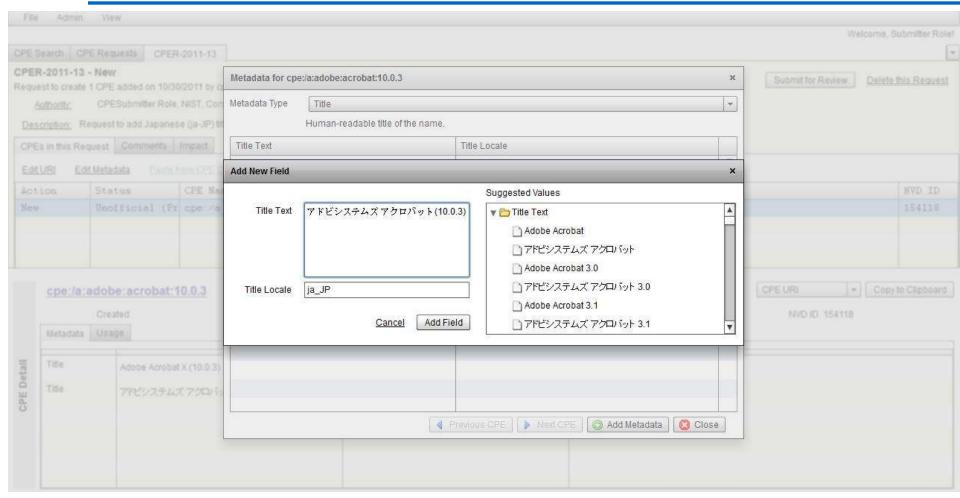
Submission Interface Demo – Request to Modify (View Title)







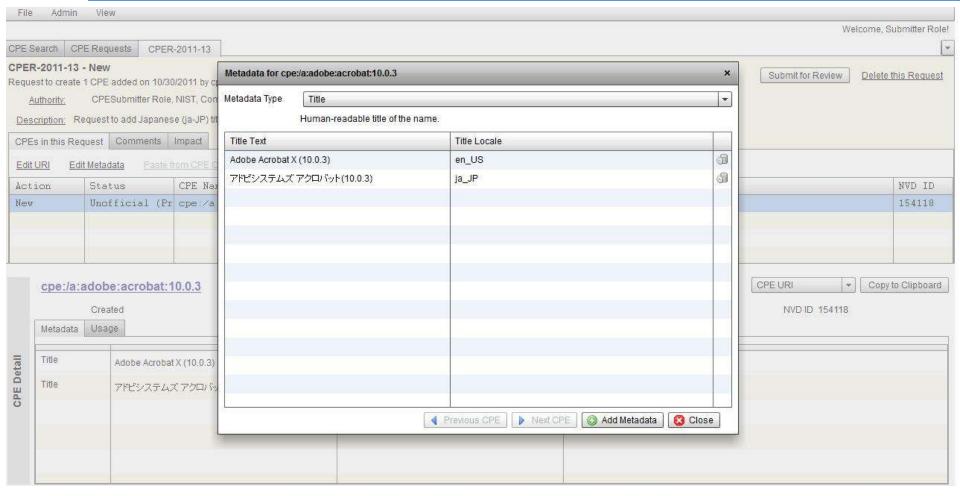
Submission Interface Demo – Request to Modify (Add Title)







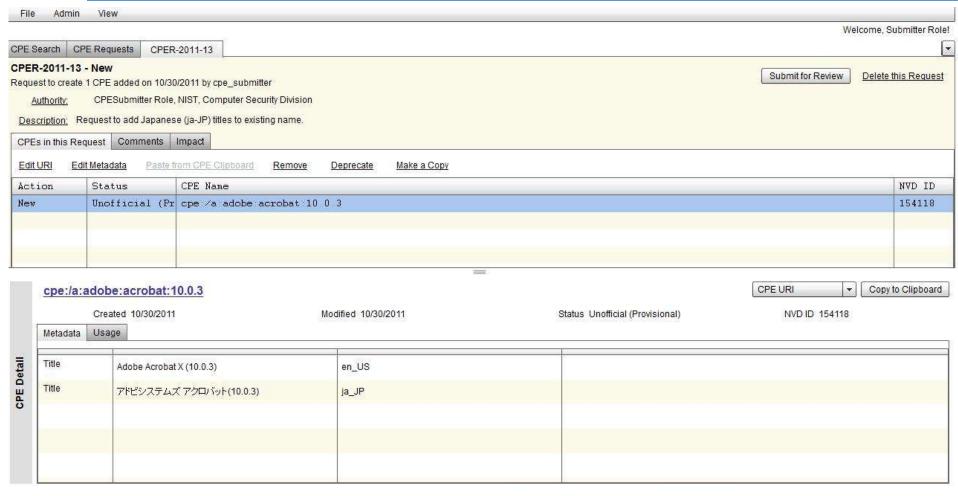
Submission Interface Demo – Request to Modify (Title Review)







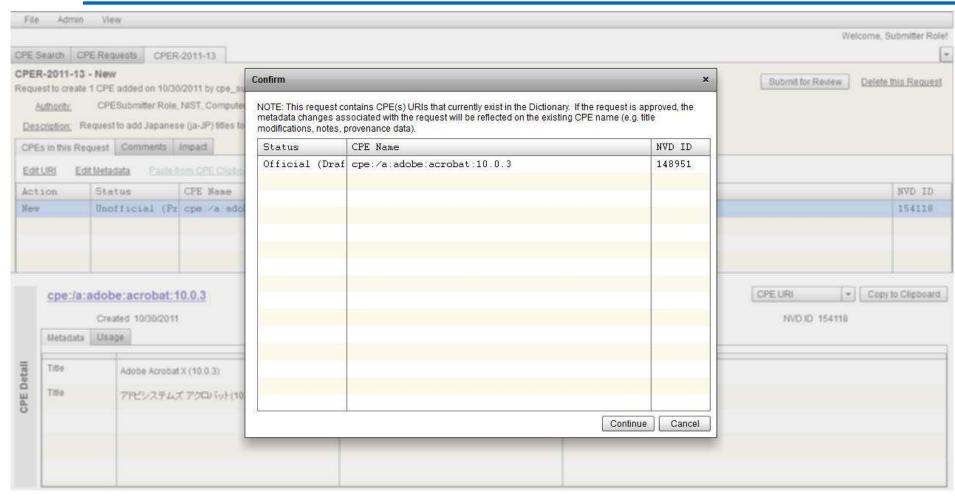
Submission Interface Demo – Request to Modify (Title Review)







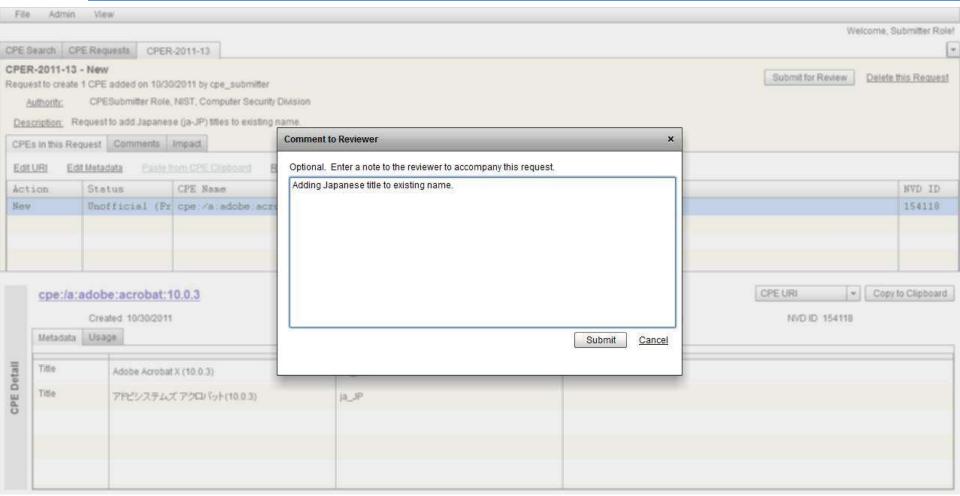
Submission Interface Demo – Request to Modify (Final Confirm)







Submission Interface Demo – Request to Modify (Final Comment)







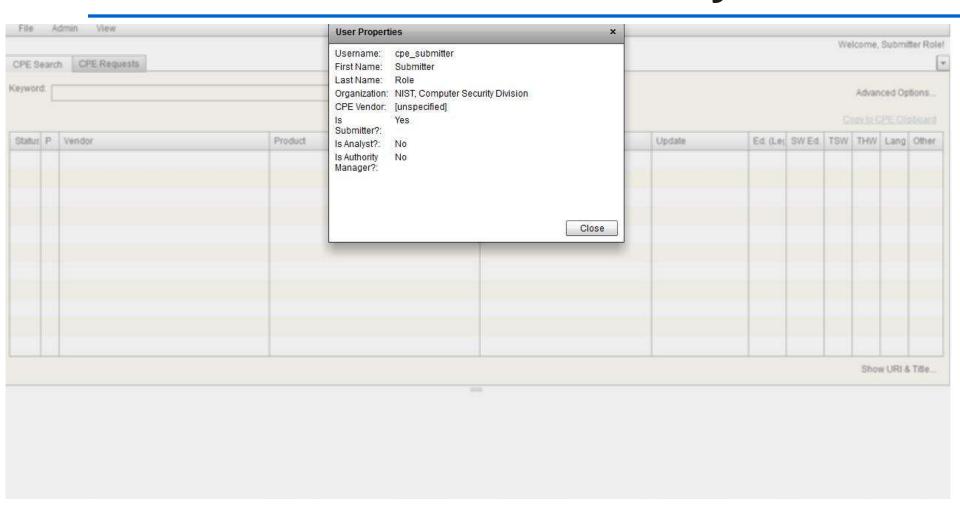
Submission Interface Demo – Miscellaneous Functionality

File	A	dmin View						10/0	lcomo	Quhmi	tter Role
CPE S	earct	User Info h CPE Requests						we	icome,	Subiiii	iller Kole
Keywor	d: _		Search					C			otions
Status	Р	Vendor	Product	Version	Update	Ed. (Les	SW Ed.	TSW	THW	Lang	Other
					*						
- 13			3		<u> </u>	**		3	Shov	v URI 8	k Title





Submission Interface Demo – Miscellaneous Functionality







Steps towards improvement

- Process adoption by the CPE community
 - External name submission via web interface
 - Planned development activities to support automated name contribution
 - Continue import of NVD vulnerability product data
- Industry collaboration
- Vendor adoption





Resources

- National Vulnerability Database: http://nvd.nist.gov
- CPE 2.2 Dictionary: http://nvd.nist.gov/cpe.cfm
- Archived CPE 2.2 Dictionaries:
 http://static.nvd.nist.gov/feeds/xml/cpe/dictionary
- CPE 2.2 Dictionary Statistics: http://nvd.nist.gov/cpe-stats.cfm
- CPE 2.2 Dictionary Search Engine: http://web.nvd.nist.gov/view/cpe/search
- General CPE Information from MITRE: <u>http://cpe.mitre.org/index.html</u>





Specifications

- CPE Specification 2.2:
 http://cpe.mitre.org/specification/index.html
- CPE Naming Specification Version 2.3 NISTIR 7695: http://csrc.nist.gov/publications/nistir/ir7695/NISTIR-7695-CPE-Naming.pdf
- CPE Matching Specification Version 2.3 NISTIR 7696: http://csrc.nist.gov/publications/nistir/ir7696/NISTIR-7696-CPE-Matching.pdf
- CPE Dictionary Specification Version 2.3 NISTIR 7697: http://csrc.nist.gov/publications/nistir/ir7697/NISTIR-7697-CPE-Dictionary.pdf
- CPE Language Specification Version 2.3 NISTIR 7698: http://csrc.nist.gov/publications/nistir/ir7698/NISTIR-7698-CPE-Language.pdf





Questions & Answers / Feedback



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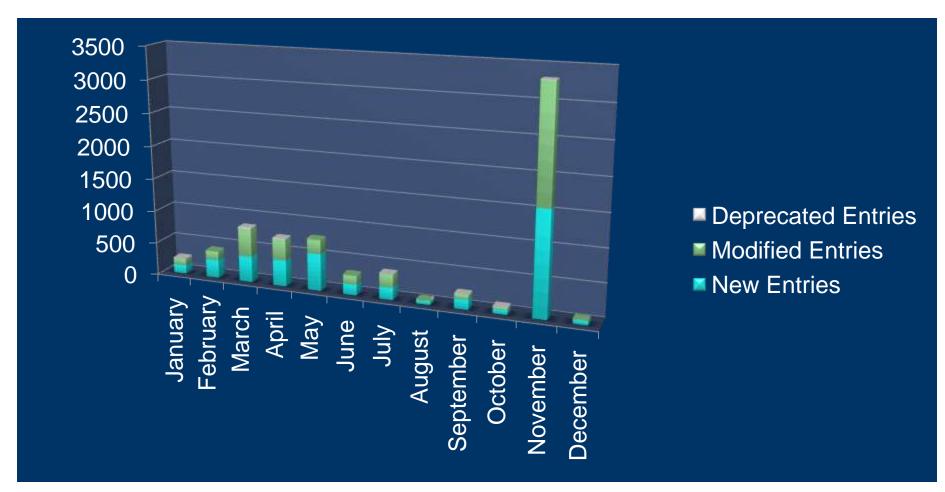


Backup Slides





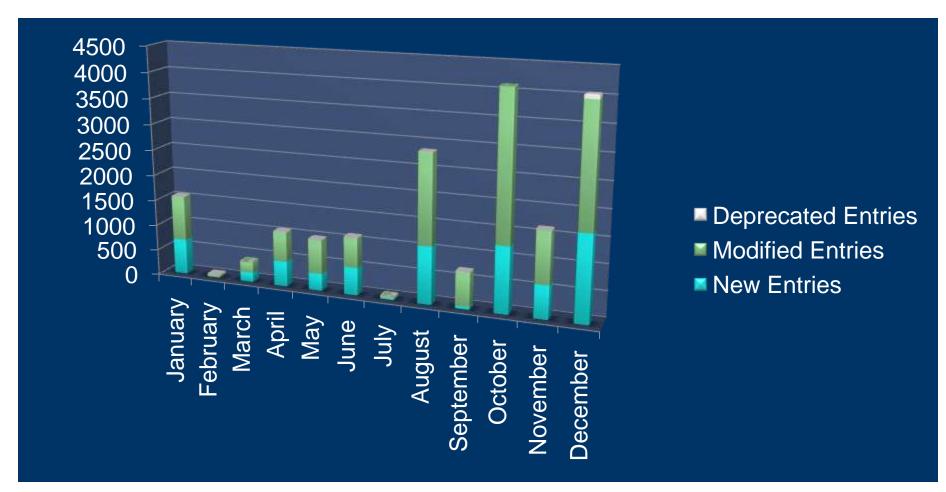
2009 CPE Dictionary Growth Statistics







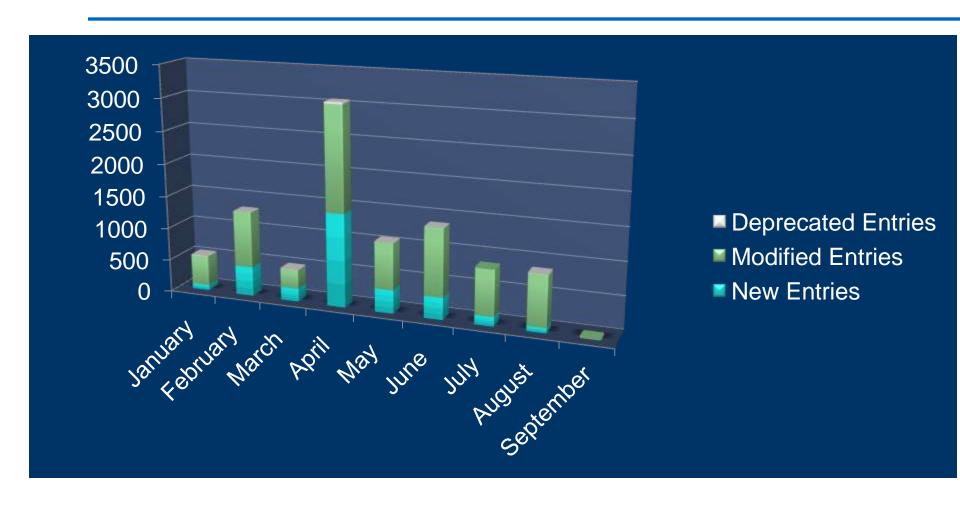
2010 CPE Dictionary Growth Statistics







2011 CPE Dictionary Growth Statistics







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