

Apple Platform Configuration

Defaults, mobileconfig, plist, oh my!



Defaults domains

Overview of options

Configuration Profiles

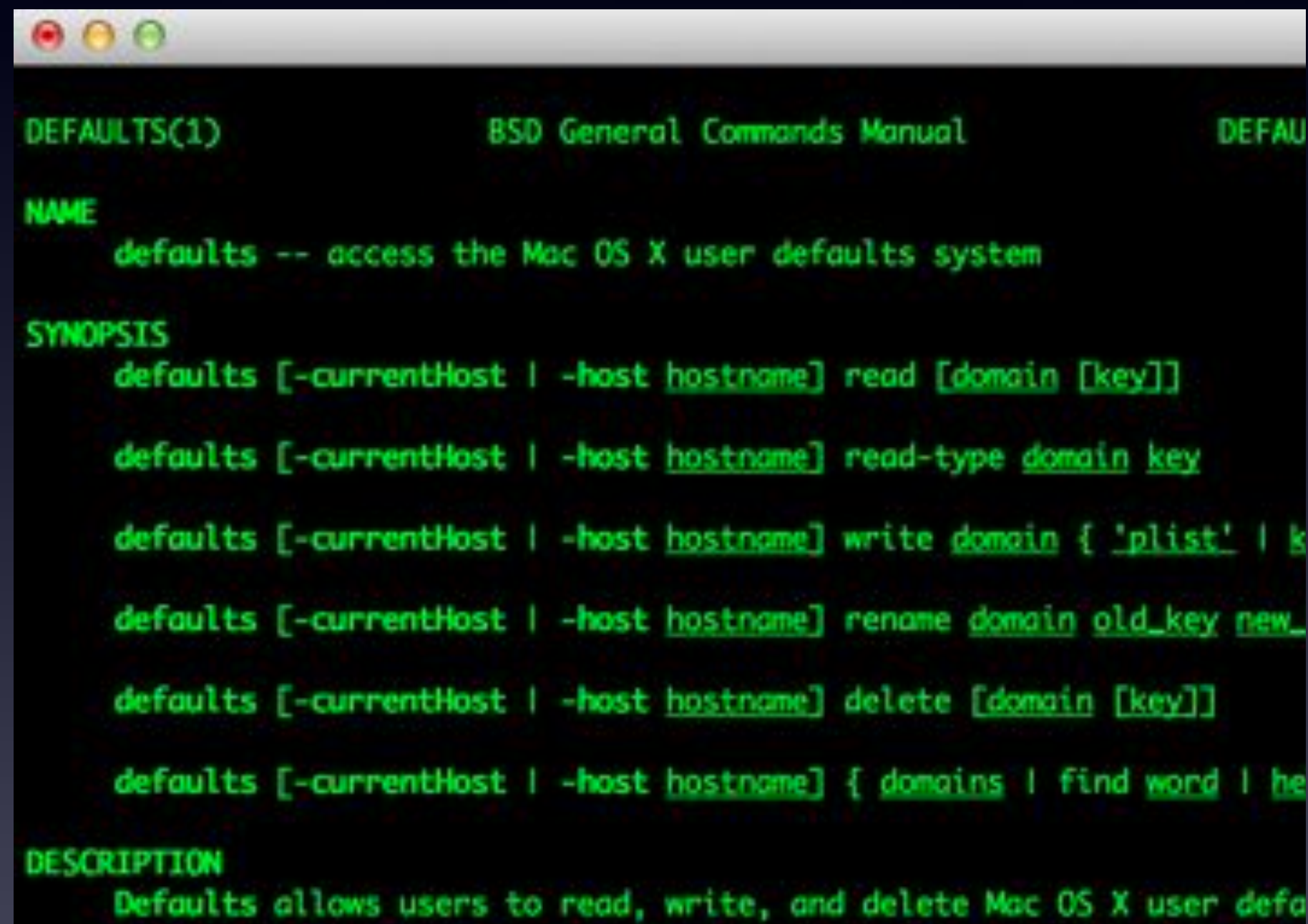
Property lists

SCAP-On-Apple

Defaults Domains

User Defaults

The Truth



```
DEFAULTS(1) BSD General Commands Manual DEFAULTS(1)

NAME
  defaults -- access the Mac OS X user defaults system

SYNOPSIS
  defaults [-currentHost | -host hostname] read [domain] [key]
  defaults [-currentHost | -host hostname] read-type domain key
  defaults [-currentHost | -host hostname] write domain { 'plist' | k
  defaults [-currentHost | -host hostname] rename domain old_key new_
  defaults [-currentHost | -host hostname] delete [domain] [key]
  defaults [-currentHost | -host hostname] { domains | find word | he

DESCRIPTION
  Defaults allows users to read, write, and delete Mac OS X user defa
```

Stores settings on OS X and iOS

Access with

- defaults
- UserDefaults
- CFPREFERENCES

User Defaults

User Domain Search Order



Domain	State
NSArgumentDomain	volatile
Application	persistent
NSGlobalDomain	persistent
Languages	volatile
NSRegistrationDomain	volatile

User Defaults

Application Domain Search Order



User	Application	Host
Current	Current	Current
Current	Current	Any
Current	Any	Current
Current	Any	Any

User Defaults

Application Domain Search Order



User	Application	Host
Any	Current	Current
Any	Current	Any
Any	Any	Current
Any	Any	Any

User Defaults

Plist File Locations

ApplicationGroup	Mine
CFBundleDevelopmentRegion	English
CFBundleExecutable	MyApp
CFBundleIconFile	MyAppIcon.icns
CFBundleIdentifier	com.me.myApp
CFBundleName	My Application
CFBundleGetInfoString	Copyright 2009, Me
CFBundleShortVersionString	1.0
CFBundleVersion	1.0
NSMainNibFile	MainMenu
NSPrincipalClass	MyClass

PLIST

Directory	User Equivalent	Host Equivalent
~/Library/Preferences/ByHost	Current	Current
~/Library/Preferences/	Current	Any
/Library/Preferences/ByHost	Any	Current
/Library/Preferences/	Any	Any

Configuration Options

Configuration Options



User configuration

Configuration Options

User configuration

Plist changes



ApplicationGroup	Mine
CFBundleDevelopmentRegion	English
CFBundleExecutable	MyApp
CFBundleIconFile	MyAppIcon.icns
CFBundleIdentifier	com.me.myApp
CFBundleName	My Application
CFBundleGetInfoString	Copyright 2009, Me
CFBundleShortVersionString	1.0
CFBundleVersion	1.0
NSMainNibFile	MainMenu
NSPrincipalClass	MyClass

PLIST

Configuration Options



User configuration

Plist changes

Managed Preferences

Configuration Options



User configuration

Plist changes

Managed Preferences

Configuration Profiles

Configuration Options



User configuration

Plist changes

Managed Preferences

Configuration Profiles

MDM

Mobile Device Management



Managed configuration profiles

Additional features

- Info query
- Remote lock
- Remote wipe

Availability: 10.7+

Configuration Profiles



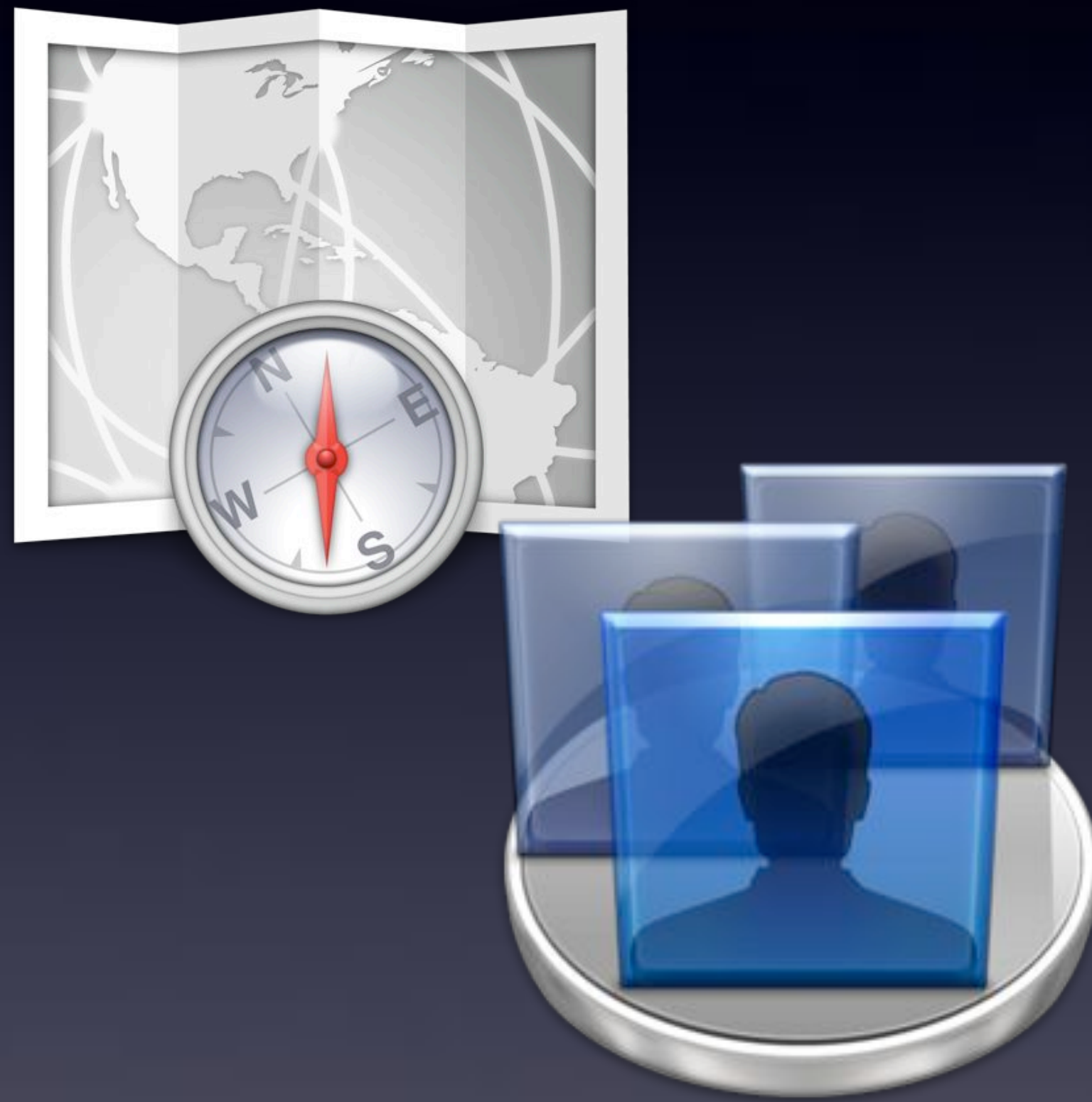
File container of defaults policy

- Give to users to install
- Install with script
- Install with MDM

Availability: 10.7+

Managed Preferences

MCX




Directory Service based defaults policy

Local or remote

Availability: 10.2+

Deprecated: 10.7

Property Lists



ApplicationGroup	Mine
CFBundleDevelopmentRegion	English
CFBundleExecutable	MyApp
CFBundleIconFile	MyAppIcon.icns
CFBundleIdentifier	com.me.myApp
CFBundleName	My Application
CFBundleGetInfoString	Copyright 2009, Me
CFBundleShortVersionString	1.0
CFBundleVersion	1.0
NSMainNibFile	MainMenu
NSPrincipalClass	MyClass

PLIST

Raw property list of defaults

Availability: NeXTSTEP+

User Configuration



Just ask the users to set things up

Availability: System 1+

Configuration Profiles

Configuration Profiles



File container of defaults policy

- Always applied to current host
- Can apply to specific user

Configuration Profiles

Controls



Accounts

- Email, Calendar, Contacts, VPN, Wi-Fi

Policies

- Passcode length, Directory services

Restrictions

- Functionality, applications, iCloud

Other settings

- Certificates, Web Clips, SCEP, MS CA

Configuration Profiles

DNA

XML-Based property list

- Multiple payloads in one profile



```
SCAP_LoginWindow_Settings.mobileconfig
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple Computer//DTD PLIST 1.0//EN" "http://www.apple
<plist version="1.0">
<dict>
  <key>PayloadContent</key>
  <array>
    <dict>
      <key>DisableGuestAccount</key>
      <true/>
      <key>EnableGuestAccount</key>
      <false/>
      <key>PayloadDisplayName</key>
      <string>Login Window: MCX Preferences</string>
      <key>PayloadEnabled</key>
```


Configuration Profiles


DNA

XML-Based property list

- Multiple payloads in one profile

Same format on OS X and iOS

- Many profiles can be platform shared

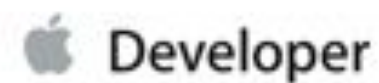


```
SCAP_LoginWindow_Settings.mobileconfig
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple Computer//DTD PLIST 1.0//EN" "http://www.apple
<plist version="1.0">
<dict>
  <key>PayloadContent</key>
  <array>
    <dict>
      <key>DisableGuestAccount</key>
      <true/>
      <key>EnableGuestAccount</key>
      <false/>
      <key>PayloadDisplayName</key>
      <string>Login Window: MCX Preferences</string>
      <key>PayloadEnabled</key>
```

Configuration Profiles

DNA

Configuration Profile
Reference



XML-Based property list

- Multiple payloads in one profile

Same format on OS X and iOS

- Many profiles can be platform shared

Comprehensive documentation

- On developer.apple.com

Configuration Profiles

DNA

Mobile Device
Management Protocol
Reference



XML-Based property list

- Multiple payloads in one profile

Same format on OS X and iOS

- Many profiles can be platform shared

Comprehensive documentation

- On developer.apple.com

Configuration Profiles

Required Profile Keys

Key	Type	Content
PayloadIdentifier	String	Reverse-DNS style identifier
PayloadUUID	String	Unique identifier for profile
PayloadType	String	Only supported value is "Configuration"
PayloadVersion	Number	Version of profile format. Currently "1"
PayloadScope	String	Scope is either "System" or "User" Availability: 10.8+

Configuration Profiles

Required Payload Keys

Key	Type	Content
PayloadType	String	Reverse-DNS style identifier of payload type
PayloadVersion	Number	Version of individual payload settings
PayloadIdentifier	String	Reverse-DNS style identifier for the specific payload
PayloadUUID	String	Unique identifier for payload

Configuration Profiles Creation



Profile Manager

Configuration Profiles Creation



Profile Manager

Apple Configurator

Configuration Profiles Creation



Profile Manager

Apple Configurator

iPhone Configuration Utility

Configuration Profiles Creation



Profile Manager

Apple Configurator

iPhone Configuration Utility

Text editors

Configuration Profiles

Delivery

Copy and double click in Finder



Configuration Profiles

Delivery

Copy and double click in Finder

Email to user to install



Configuration Profiles

Delivery



Copy and double click in Finder

Email to user to install

Client Management suite

Configuration Profiles

Delivery



Copy and double click in Finder

Email to user to install

Client Management suite

Shell script

Configuration Profiles

Delivery



Copy and double click in Finder

Email to user to install

Client Management suite

Shell script

Configuration Server

Configuration Profiles

Delivery



Copy and double click in Finder

Email to user to install

Client Management suite

Shell script

Configuration Server

MDM Service

Enforcement Assurance



Scripting

- profiles
- system_profiler

Enforcement Assurance



Scripting

- profiles
- system_profiler

GUI

- System Preferences
- System Information

Enforcement Assurance



Scripting

- profiles
- system_profiler

GUI

- System Preferences
- System Information


Remote

- MDM

Demo

Property List Files

Property List File



ApplicationGroup	Mine
CFBundleDevelopmentRegion	English
CFBundleExecutable	MyApp
CFBundleIconFile	MyAppIcon.icns
CFBundleIdentifier	com.me.myApp
CFBundleName	My Application
CFBundleGetInfoString	Copyright 2009, Me
CFBundleShortVersionString	1.0
CFBundleVersion	1.0
NSMainNibFile	MainMenu
NSPrincipalClass	MyClass

PLIST

On-disk representation of a property list

- XML
- Binary
- JSON

Property List File DNA




Contains only the “property list classes”

- String
- Number
- Boolean
- Date
- Data
- Array
- Dictionary

Property List Files

Controls



ApplicationGroup	Mine
CFBundleDevelopmentRegion	English
CFBundleExecutable	MyApp
CFBundleIconFile	MyAppIcon.icns
CFBundleIdentifier	com.me.myApp
CFBundleName	My Application
CFBundleGetInfoString	Copyright 2009, Me
CFBundleShortVersionString	1.0
CFBundleVersion	1.0
NSMainNibFile	MainMenu
NSPrincipalClass	MyClass

PLIST

Any Defaults Domain setting

- ONLY Defaults Domains

Preference List Files

Delivery



Copy file with Finder

Preference List Files Delivery



Copy file with Finder

Client Management suite

Preference List Files

Delivery



Copy file with Finder

Client Management suite

Shell script

Preference List Files Delivery



Copy file with Finder

Client Management suite

Shell script

Custom tools

Preference List Files

Delivery



Copy file with Finder

Client Management suite

Shell script

Custom tools

- AppleScript

Property List Files

Scripting



defaults

- Read and write through defaults domains

Property List Files

Scripting



defaults

- Read and write through defaults domains

plist_buddy

- Easy scripting of XML plist files

Property List Files

Scripting



defaults

- Read and write through defaults domains

plist_buddy

- Easy scripting of XML plist files

plutil

- Validate file syntax and convert formats

Property List Files

Custom Tools



NSUserDefaults

- Foundation, Objective-C, Scripting Bridges
- Cocoa Bindings

Property List Files

Custom Tools



NSUserDefaults

- Foundation, Objective-C, Scripting Bridges
- Cocoa Bindings

CFPreferences

- CoreFoundation & C

Property List Files

AppleScript



System Events Extension

- Property List Suite

Enforcement Assurance



Scripting

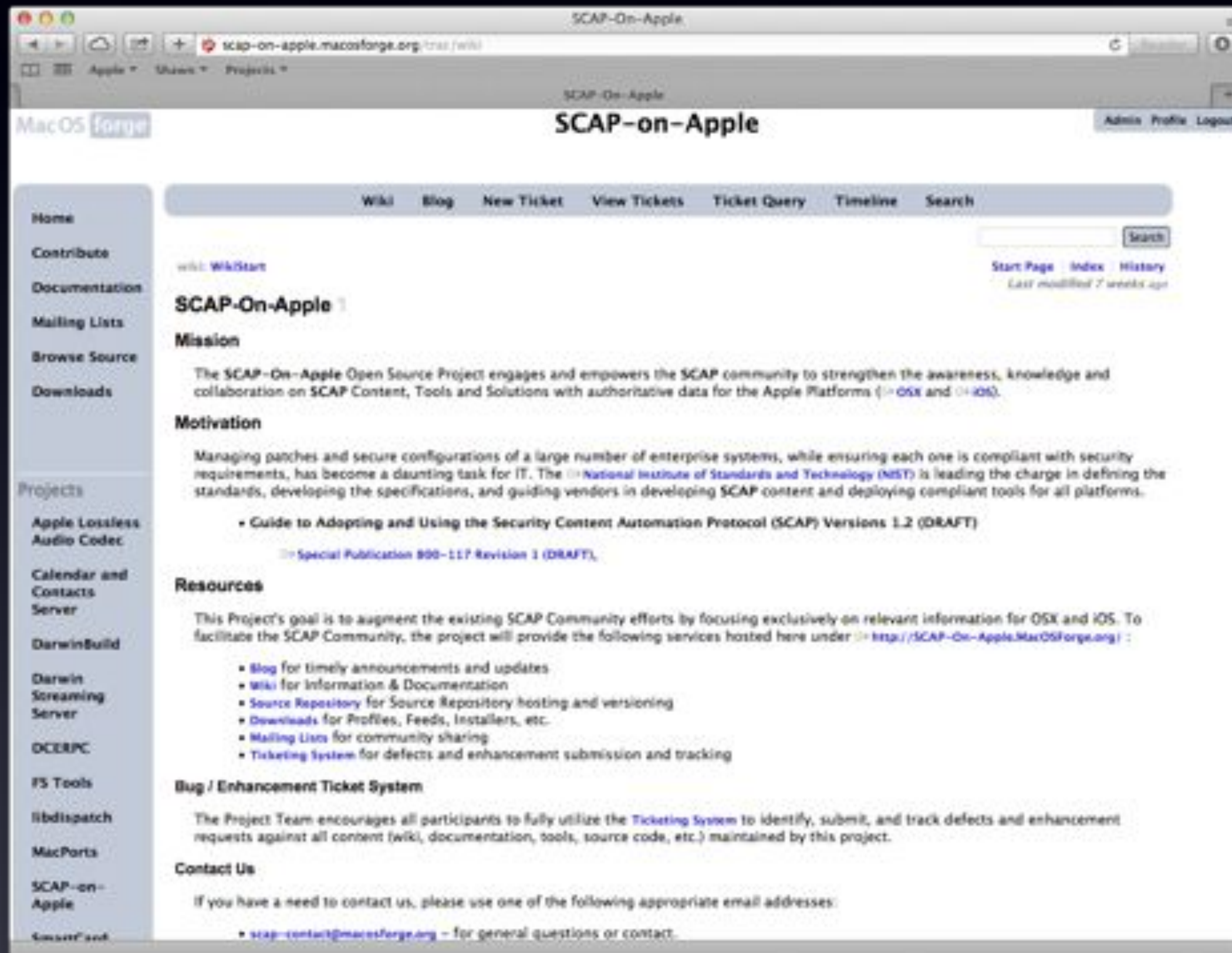
- defaults

Demo

SCAP-on-Apple

Intent

SCAP-On-Apple.MacOSForge.Org



Apple Open Source Project

- Dedicated Engineers
- Dedicated Project Resources

Technical Platform Education

- Subject Matter Expertise
- Authoritative Apple Information

Apple Platform Sandbox

- SCAP Repository, tools, documentation

Participants

Public & Private Sector



SCAP Community Collaboration

- Public, Private, Apple SMEs
- Apple (lead), NSA (iOS), NIST (OSX)
- Early and limited community involvement

Structure

Home

Contribute

Documentation

Mailing Lists

Browse Source

Downloads

Wiki Blog

New Ticket

- Project Wiki / Blog
- Platform Documentation
- Source Repository
- Ticketing System
- Downloads

Activity

Building Momentum



OS X 10.8

- NIST: Submit Settings (CCEs) - tickets
- Community: Review & Comment
- SCAP Experts: Acceptance into Repo

iOS 6

- NSA: Config Content / Guide generation
- Future: CCEs, NIST 800-53 refs, ...



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