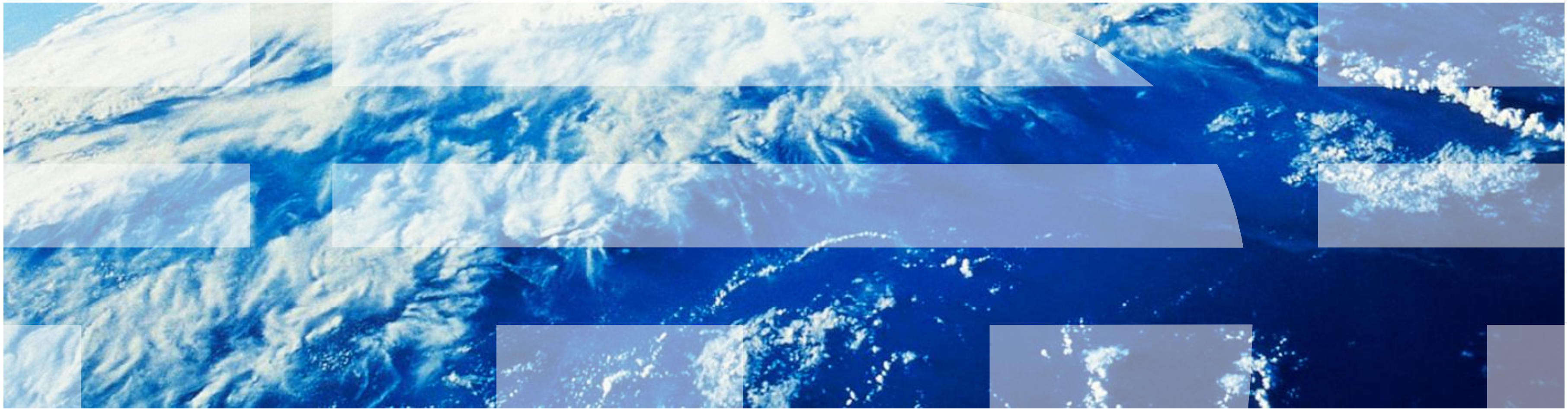
IBM Worklight Foundation V6.2.0
Integrating with other products

Securing your Worklight applications with IBM Worklight Application Scanning



18 July 2014

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- Introduction
- Install Worklight Application Scanning to IBM Worklight Foundation
  - Install the AppScan Source for Development Eclipse plug-in
  - Install the AppScan Source for Development Eclipse plug-in into Eclipse
- Scan your Worklight project
- Open the findings in IBM Worklight Foundation
  - Explore the findings
  - Open finding details in the Trace view
  - View the vulnerability in the source code and fix it in place

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Introduction

- Worklight® Application Scanning scans your Worklight projects and assesses them for security vulnerabilities.
- Worklight Application Scanning supports native client-side Android and iOS source code, in addition to most user-written JavaScript client-side code. Worklight Application Scanning does not scan server-side JavaScript code such as Worklight Adapter code.
- To learn how to download Worklight application scanning, see the IBM Worklight Application Scanning page at
  - http://www.ibm.com/support/docview.wss?uid=swg24037819
- **Note:** Worklight Application Scanning is also referred to as the **AppScan® Source for Development Eclipse** plug-in.

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Installing Worklight Application Scanning to IBM Worklight Foundation

- To install Worklight Application Scanning, you use the IBM Security AppScan Source installer.
  - In the installer, Worklight Application Scanning is called AppScan Source for Development.
- After you install Worklight Application Scanning, you must install it into the Eclipse development environment on which IBM Worklight Foundation is installed.

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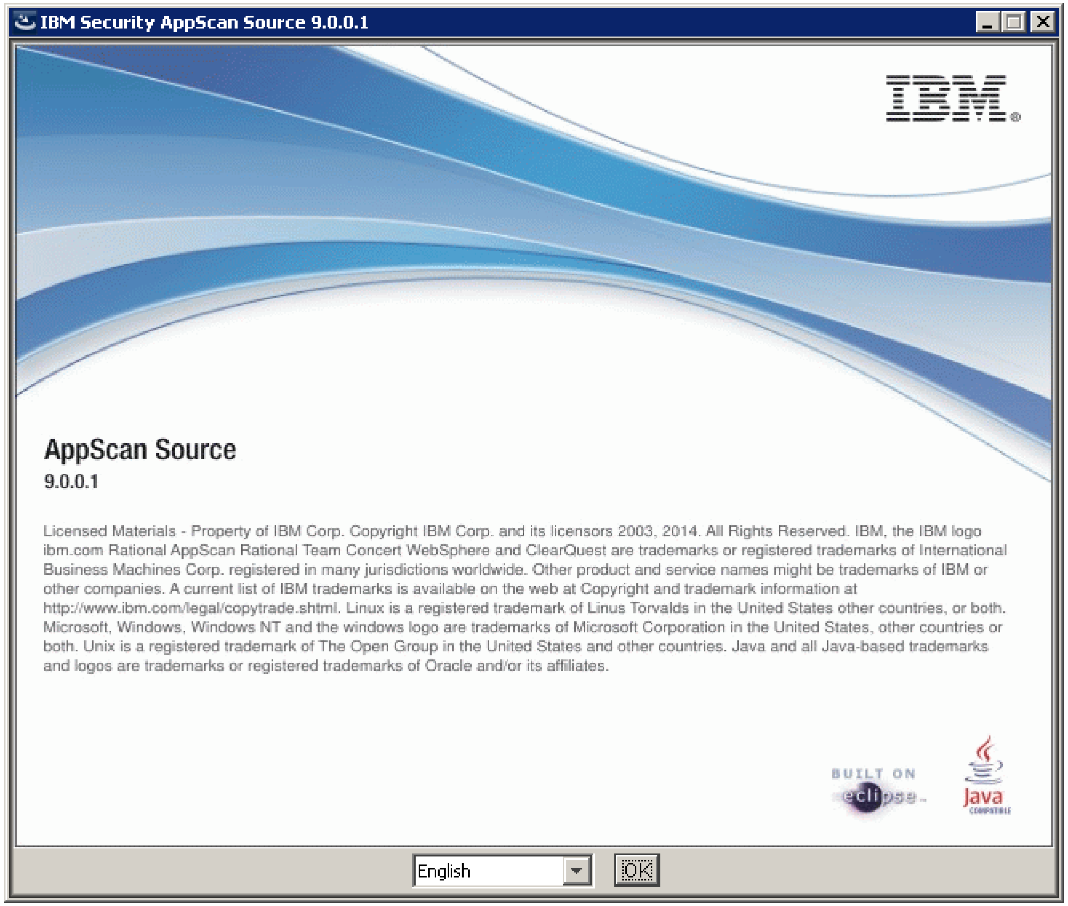
Install the AppScan Source for Development Eclipse plug-in (1 of 4)

- In the first installation panel, select the national language that you want to read in the subsequent installation panels.



AppScan Source

9.0.0.1

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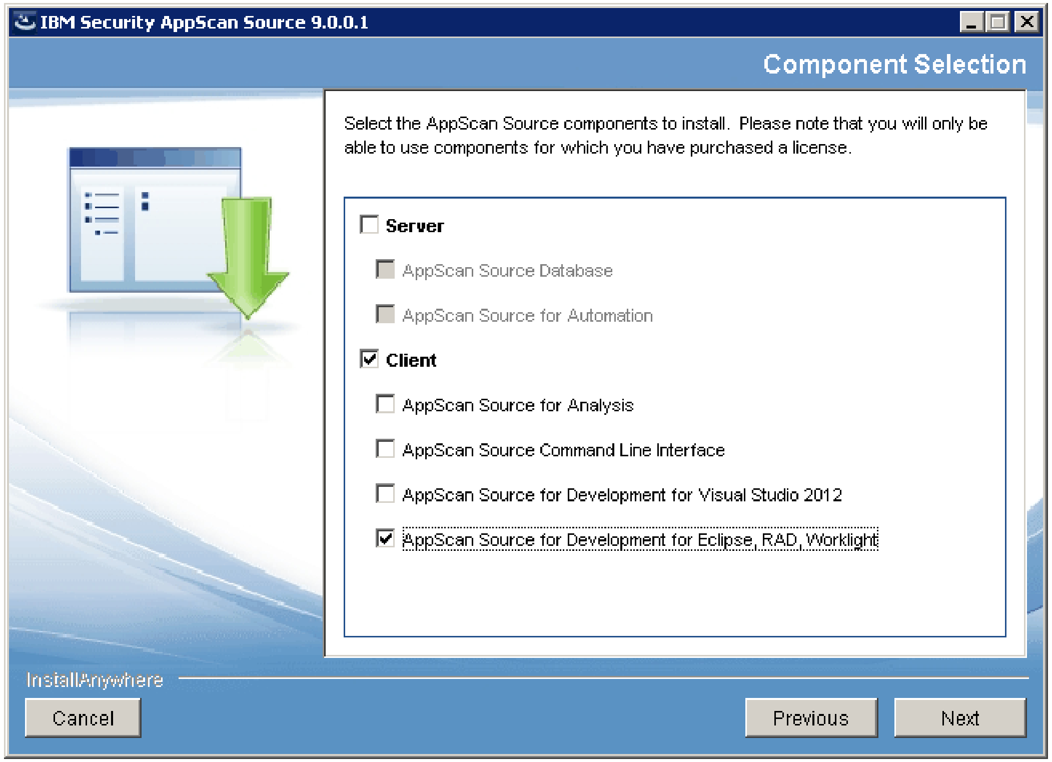
Install the AppScan Source for Development Eclipse plug-in (2 of 4)

- After clicking **Next** in the Welcome panel, select the **AppScan Source for Development for Eclipse, RAD, Worklight** option in the Component Selection panel:



Select the AppScan Source components to install. Please note that you will only be able to use components for which you have purchased a license.

□ Server

□ AppScan Source Database

□ AppScan Source for Automation

☑ Client

□ AppScan Source for Analysis

□ AppScan Source Command Line Interface

□ AppScan Source for Development for Visual Studio 2012

☑ AppScan Source for Development for Eclipse, RAD, Worklight

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Install the AppScan Source for Development Eclipse plug-in (3 of 4)

- The subsequent installation panels are self-explanatory:
  - In the Installation Target Specification page, specify the installation directory.
  - In the language pack selection panel, select the language packs to install. When you install a language pack, the AppScan Source user interface displays in that language when it runs on an operating system with that locale.
  - Review and accept the terms of the license agreement and then click **Next** to continue.
  - Review the summary of installation options before proceeding. If you are satisfied with your installation choices, click **Install**.

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Install the AppScan Source for Development Eclipse plug-in (4 of 4)

- In the Installation Complete panel, you can initiate product activation immediately after exiting the Installation Wizard by selecting **Launch IBM Security AppScan Source License Manager**. Click **Done** to complete the standard installation and exit the Installation Wizard.
- In the License Manager utility:
  - To apply a license file, click **Import** and then browse to your downloaded AppScan Source license.
  - To apply a floating license, click **Configure license servers** and then click **Add**. Enter the information for the host computer that contains the floating license.

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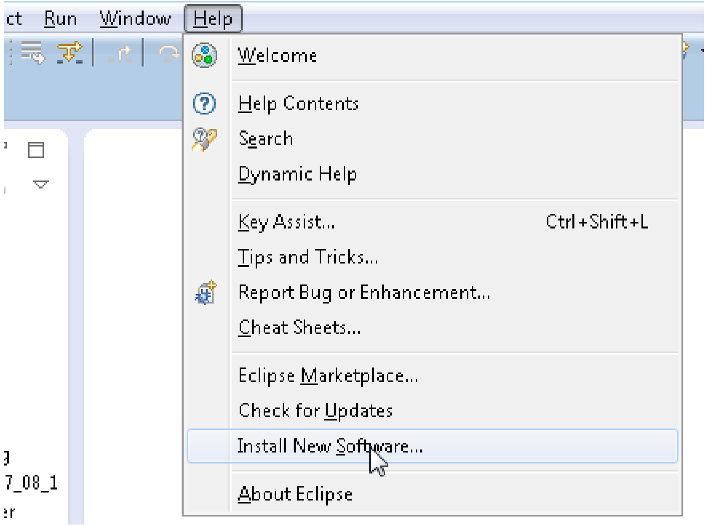
Install the AppScan Source for Development Eclipse plug-in into Eclipse (1 of 5)

- **Prerequisite:** The application of the AppScan Source for Development Eclipse plug-in depends on the application of some Eclipse tools: the Graphical Editing Framework (GEF) and Draw2d. Before you proceed, make sure that these tools are installed.
- In the Eclipse client to which you have installed IBM Worklight Foundation, select **Help > Install New Software**:



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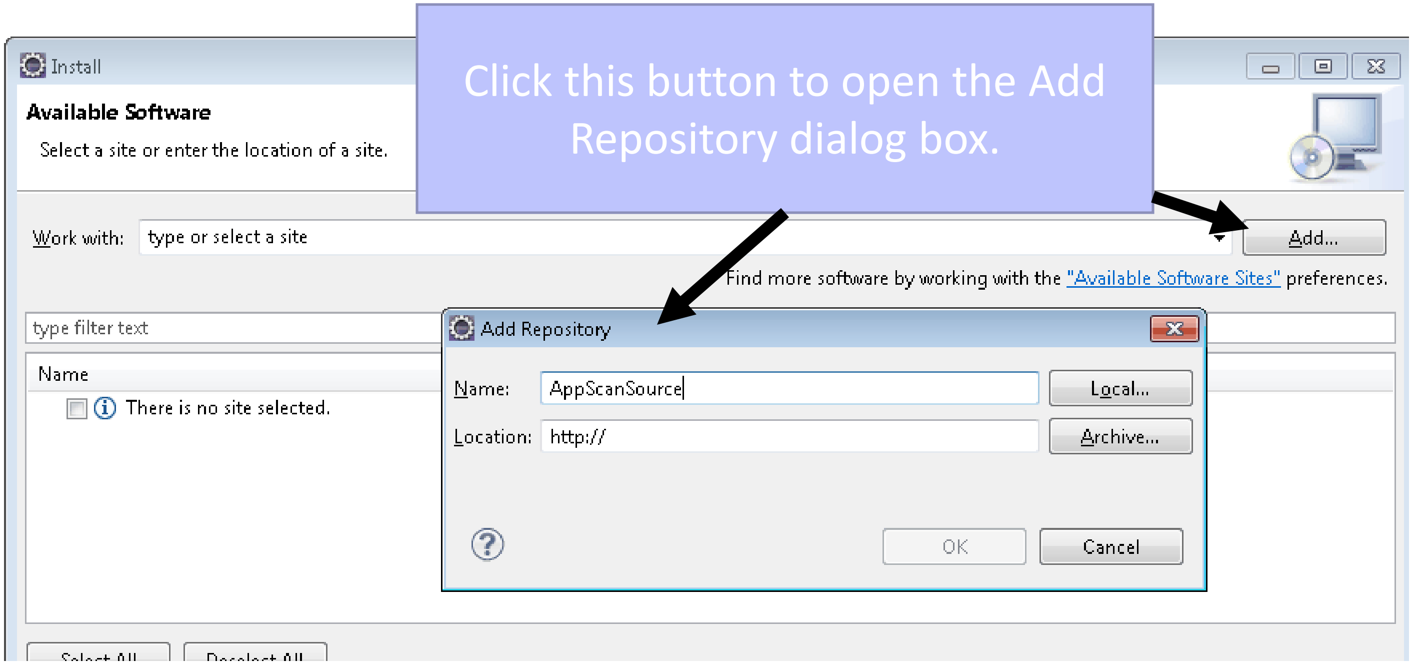
Install the AppScan Source for Development Eclipse plug-in into Eclipse (2 of 5)

- In the Install dialog box page, under Available Software, click **Add** and then, in the Add Site dialog box, specify a name for the update site:



Click this button to open the Add Repository dialog box.

Install

Available Software

Select a site or enter the location of a site.

Work with: type or select a site

Find more software by working with the "Available Software Sites" preferences.

Add Repository

Name: AppScanSource

Location: http://

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Install the AppScan Source for Development Eclipse plug-in into Eclipse (3 of 5)

- To add a site in the Add Repository dialog box, follow these instructions, depending on your operating system:
  - **Windows and Linux**:
    1. Click **Local**.
    2. In the Browse for Folder dialog box, navigate to the AppScan Source installation.
    3. Click **OK** to return to the Add Site dialog box.
    4. Click **OK** to add the update site.
  - **OS X**:
    1. In the **Location** field, enter `file:/Applications/AppScanSource.app/`
    2. Click **OK** to add the update site.

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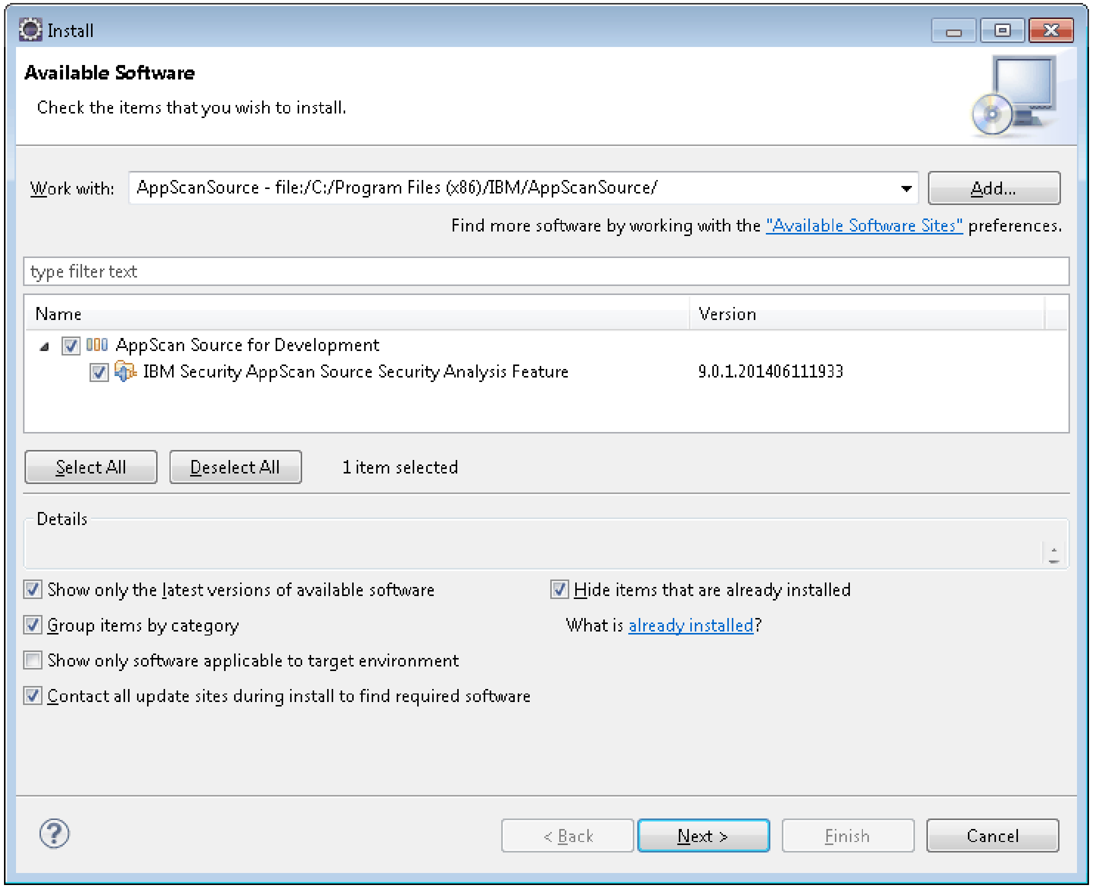
Install the AppScan Source for Development Eclipse plug-in into Eclipse (4 of 5)

- Select the check box next to the **IBM Security AppScan Source Security Analysis Feature** local site and click **Next**.



Install

Available Software

Check the items that you wish to install.

Work with: AppScanSource - file:/C:/Program Files (x86)/IBM/AppScanSource/ Add...

Find more software by working with the "Available Software Sites" preferences.

type filter text

Name	Version
☑ AppScan Source for Development	
☑ IBM Security AppScan Source Security Analysis Feature	9.0.1.201406111933

Select All Deselect All 1 item selected

Details

☑ Show only the latest versions of available software

☑ Group items by category

□ Show only software applicable to target environment

☑ Contact all update sites during install to find required software

☑ Hide items that are already installed

What is already installed?

< Back Next > Finish Cancel

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Install the AppScan Source for Development Eclipse plug-in into Eclipse (5 of 5)

The remaining pages are self-explanatory:

1. In the Install Details page, review the item to be installed and click **Next**.
2. Review and accept the terms of the license agreement and click **Finish**.
3. When prompted, restart Eclipse. The **Security Analysis** menu appears after the installation completes.

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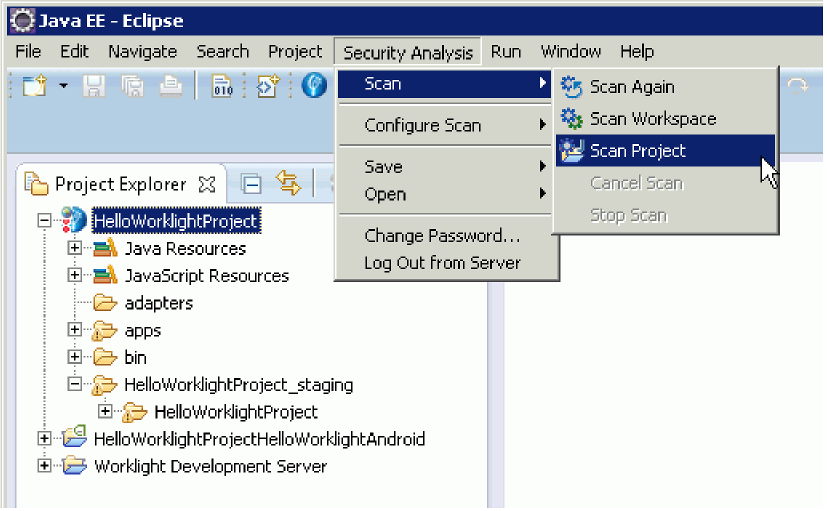
Scan your Worklight project (1 of 6)

- **Prerequisite**: Before you scan a Worklight project that contains modified files, you must rebuild the project by using Worklight.
- To start a scan of your workspace or of a selected project, use the **Security Analysis** menu.



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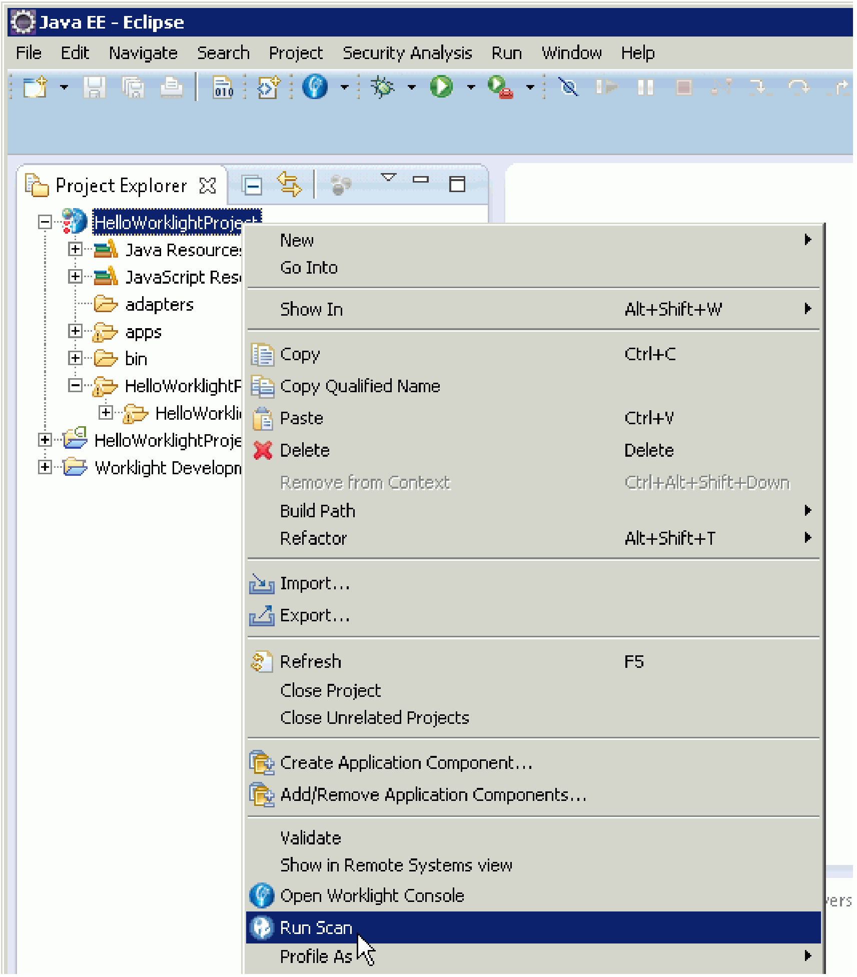
Scan your Worklight project (2 of 6)

- You can also start a project scan from its context menu: right-click the project and select **Run Scan**.



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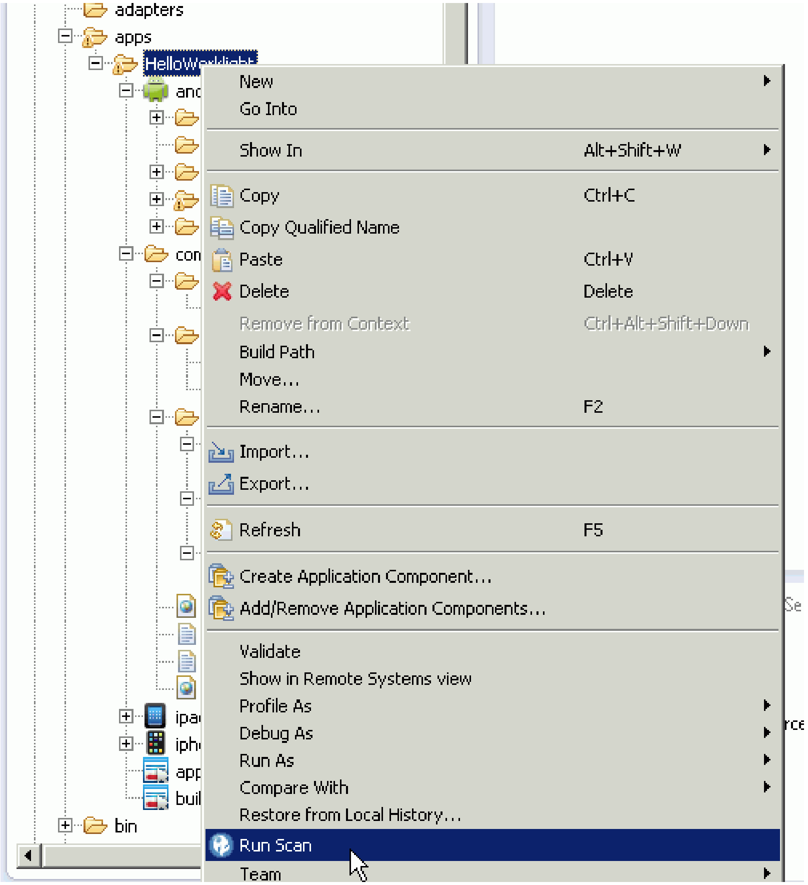
Scan your Worklight project (3 of 6)

- You can also scan an individual application.



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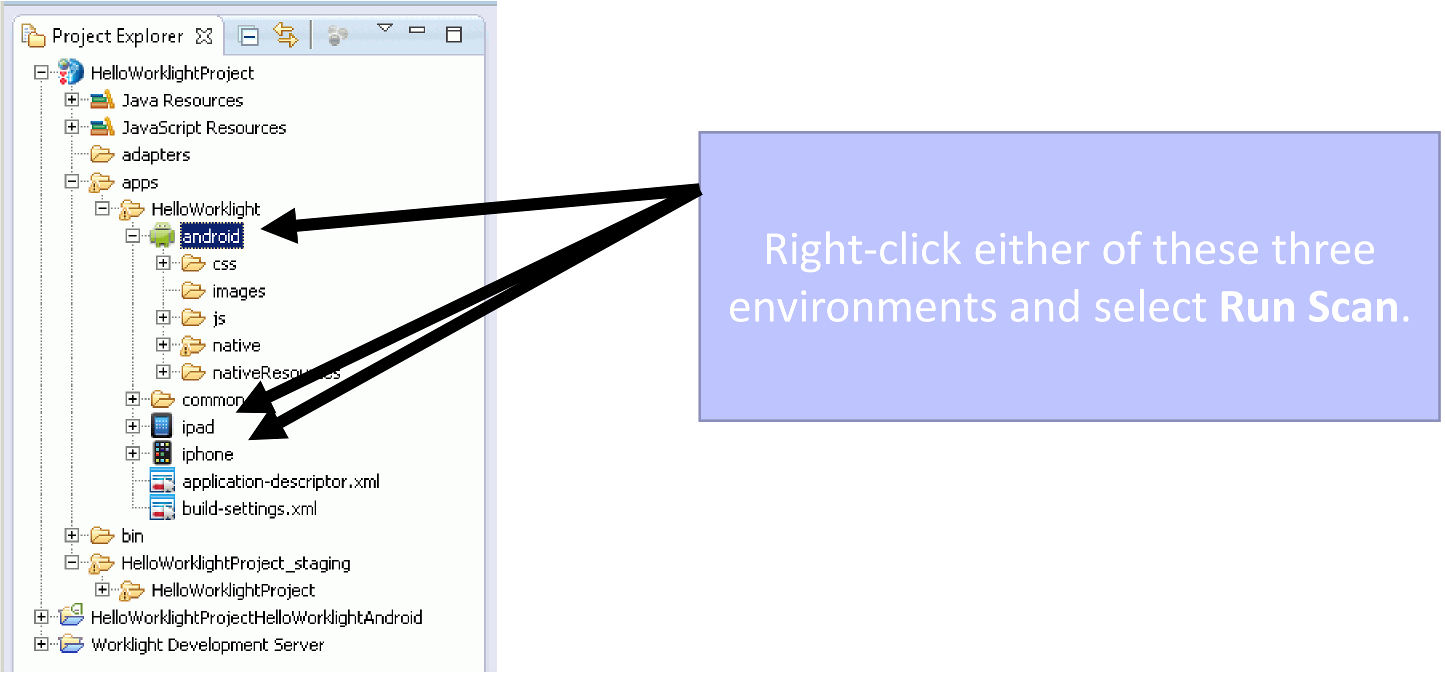
Scan your Worklight project (4 of 6)

- You can also scan the **android**, **ipad**, and **iphone** environments.



Right-click either of these three environments and select **Run Scan**.

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Scan your Worklight project (5 of 6)

- On OS X, you can scan the **ipad** or **iphone** environments, or any Xcode project beneath one of those environments.

  1. Make sure that the project for the iOS device is built a single time in Xcode.
  2. In Xcode, open the project and select **iOS Device** as the active scheme.
  3. Select **Product > Build For > Profiling**.

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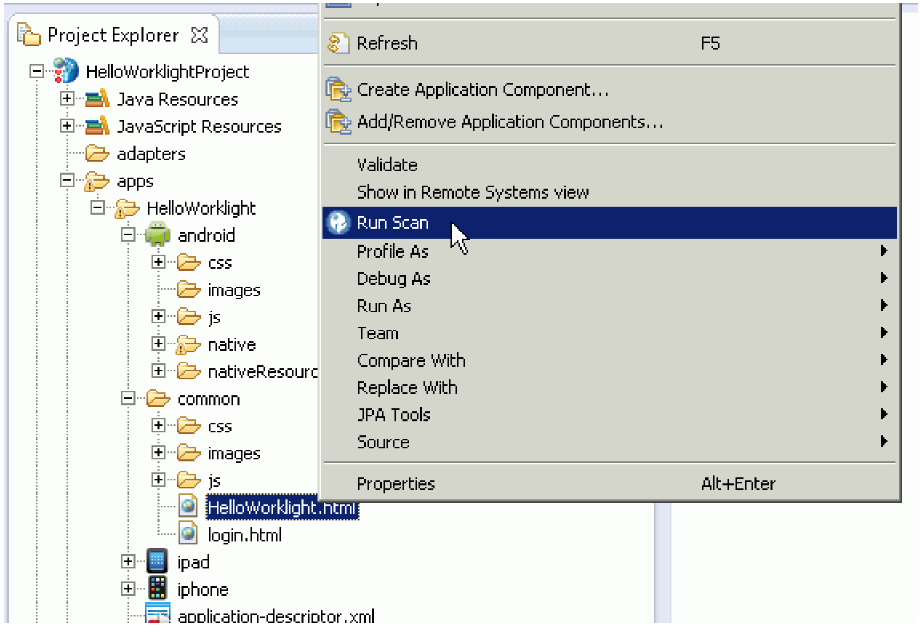
Scan your Worklight project (6 of 6)

- You can even scan individual files.



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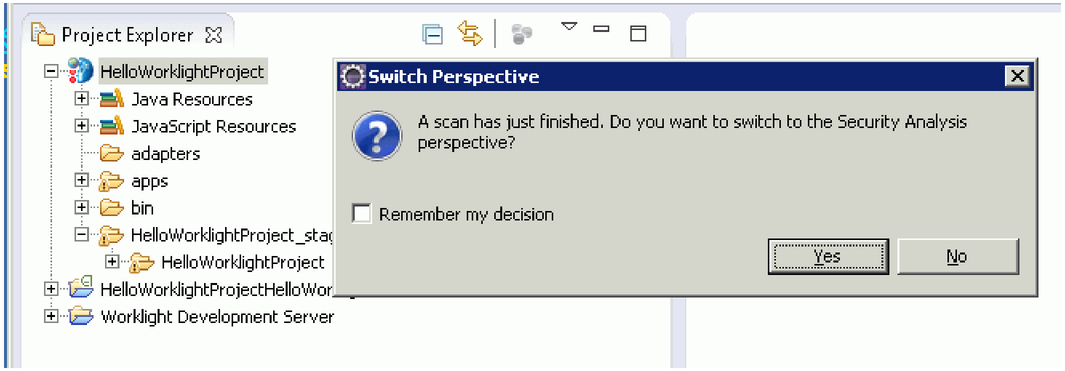
Open the findings in IBM Worklight Foundation

- When the scan completes, you can open the results in Worklight Foundation.



Switch Perspective

A scan has just finished. Do you want to switch to the Security Analysis perspective?

□ Remember my decision

- The Security Analysis perspective in the AppScan Source for Development Eclipse plug-in offers a variety of views. Use them to explore and sort security findings.

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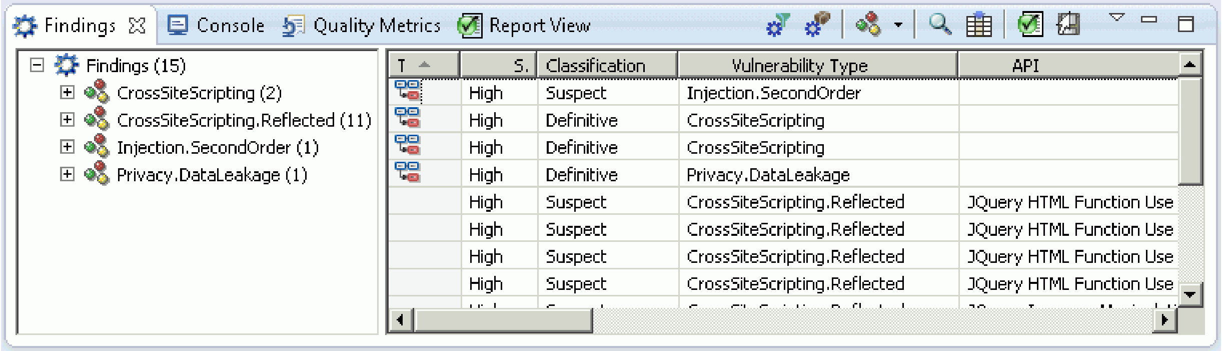
Explore the findings (1 of 4)

- The Findings view displays all the security vulnerabilities that were discovered during the scan:



- Findings (15)
  - CrossSiteScripting (2)
  - CrossSiteScripting.Reflected (11)
  - Injection.SecondOrder (1)
  - Privacy.DataLeakage (1)

T	S.	Classification	Vulnerability Type	API
	High	Suspect	Injection.SecondOrder	
	High	Definitive	CrossSiteScripting	
	High	Definitive	CrossSiteScripting	
	High	Definitive	Privacy.DataLeakage	
	High	Suspect	CrossSiteScripting.Reflected	JQuery HTML Function Use
	High	Suspect	CrossSiteScripting.Reflected	JQuery HTML Function Use
	High	Suspect	CrossSiteScripting.Reflected	JQuery HTML Function Use
	High	Suspect	CrossSiteScripting.Reflected	JQuery HTML Function Use

- From the Findings view, you can open the finding in the code editor, exclude findings, modify findings, view findings with different groupings, and search the findings for specific items.

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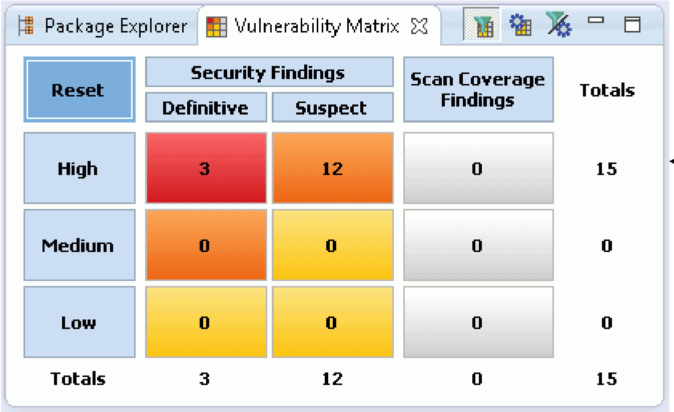
Explore the findings (2 of 4)

- In some views, such as the Vulnerability Matrix and Assessment Summary views, you can get an overall picture of all findings. You can also filter findings from these views:



Reset	Security Findings		Scan Coverage Findings	Totals
	Definitive	Suspect		
High	3	12	0	15
Medium	0	0	0	0
Low	0	0	0	0
Totals	3	12	0	15

You can select the graphical elements of these views to filter the findings in the Findings view.

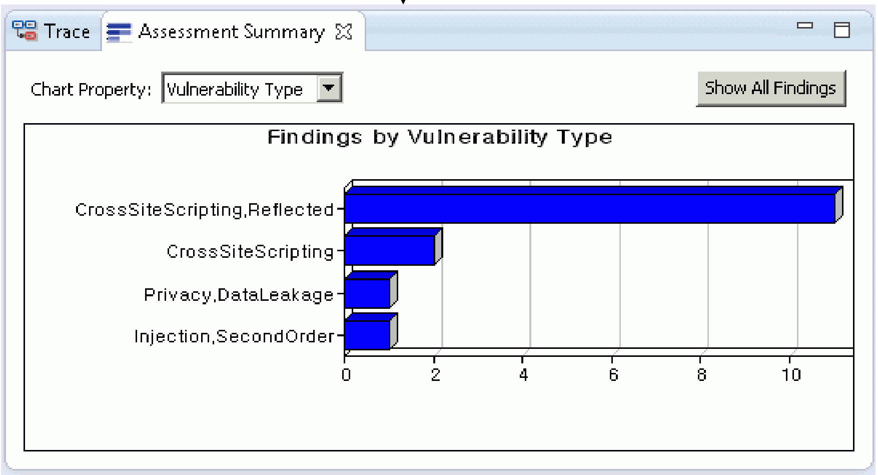


Chart Property: Vulnerability Type

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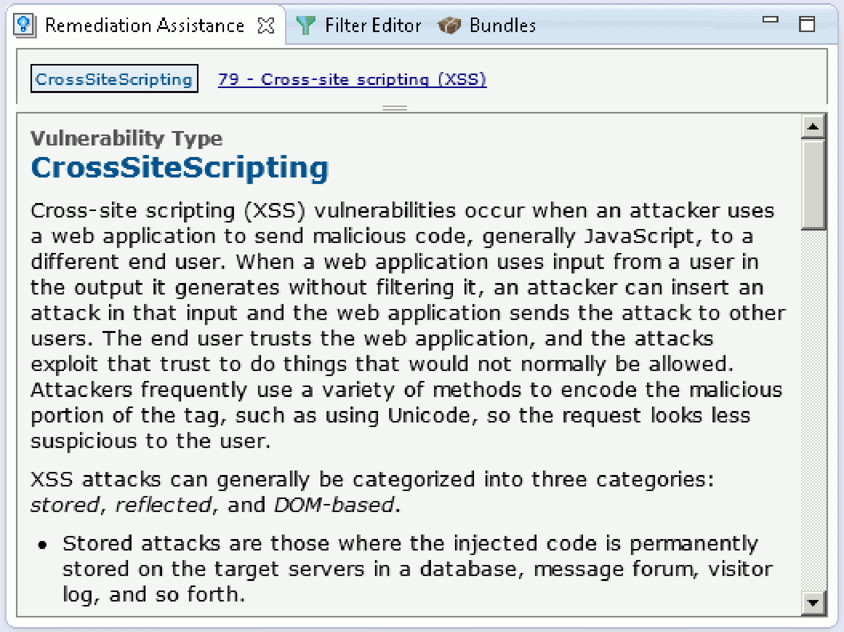
Explore the findings (3 of 4)

- When a finding is selected in the Findings view, the Remediation Assistance view provides context-specific intelligence for the vulnerability. The view tells you what the vulnerability is, why it is unsafe, how to fix it, and how to avoid it in the future.



Vulnerability Type

CrossSiteScripting

Cross-site scripting (XSS) vulnerabilities occur when an attacker uses a web application to send malicious code, generally JavaScript, to a different end user. When a web application uses input from a user in the output it generates without filtering it, an attacker can insert an attack in that input and the web application sends the attack to other users. The end user trusts the web application, and the attacks exploit that trust to do things that would not normally be allowed. Attackers frequently use a variety of methods to encode the malicious portion of the tag, such as using Unicode, so the request looks less suspicious to the user.

XSS attacks can generally be categorized into three categories: *stored*, *reflected*, and *DOM-based*.

- Stored attacks are those where the injected code is permanently stored on the target servers in a database, message forum, visitor log, and so forth.

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Explore the findings (4 of 4)

- More views are available. Use them for the following purposes:
  - Edit findings.
  - Create, edit, and apply filters to streamline the list of findings.
  - Display excluded, modified, and fixed findings.
  - Create and modify custom findings.
  - Display search results.
  - Organize findings according to a variety of audit reports, which measure compliance with software security best practices and regulatory requirements.

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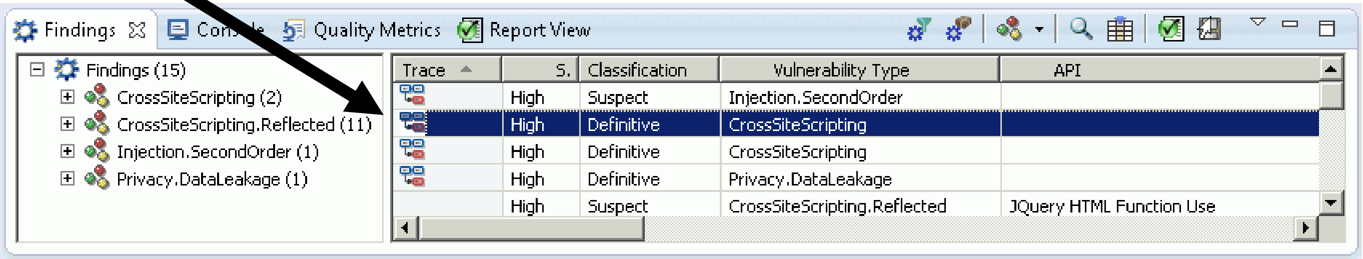
Open finding details in the trace view (1 of 4)

- In the Findings view, note the **Trace** column. If that column contains a trace icon, you can select the finding to open it in the Trace view:

Double-click this finding.



- Findings (15)
  - CrossSiteScripting (2)
  - CrossSiteScripting.Reflected (11)
  - Injection.SecondOrder (1)
  - Privacy.DataLeakage (1)

Trace	S.	Classification	Vulnerability Type	API
▣	High	Suspect	Injection.SecondOrder	
▣	High	Definitive	CrossSiteScripting	
▣	High	Definitive	CrossSiteScripting	
▣	High	Definitive	Privacy.DataLeakage	
	High	Suspect	CrossSiteScripting.Reflected	JQuery HTML Function Use

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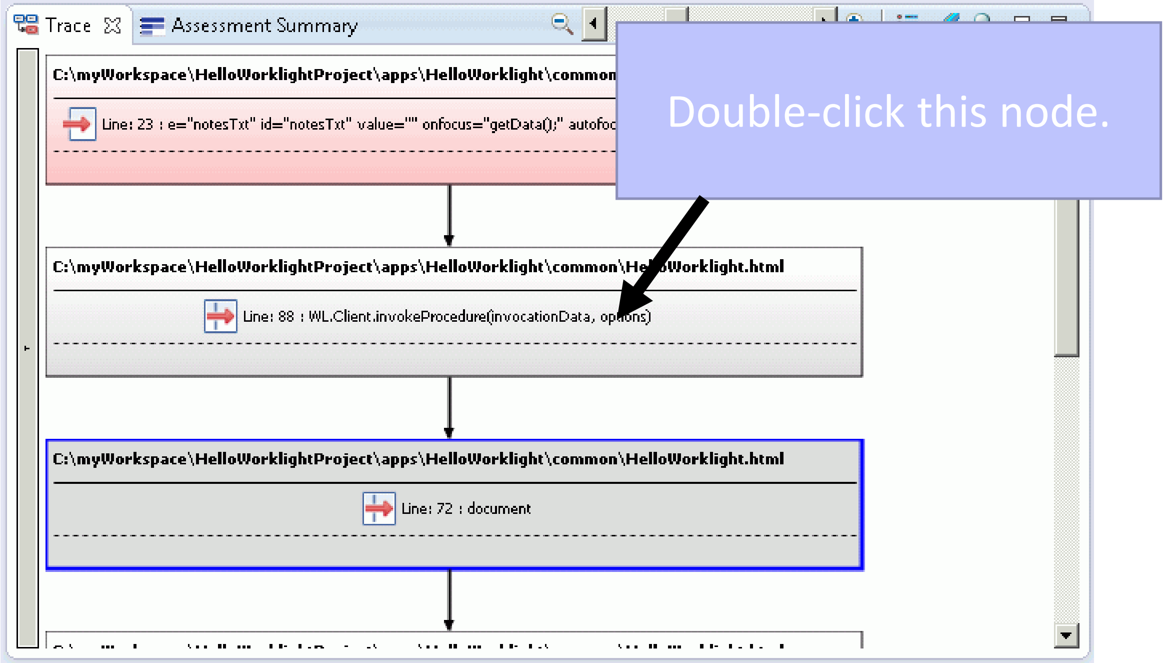
Open finding details in the trace view (2 of 4)

- Double-click the finding to open the tainted data flow in the Trace View.
- Double-click any node to see the related source code.



C:\myWorkspace\HelloWorklightProject\apps\HelloWorklight\common

Line: 23 : e="notesTxt" id="notesTxt" value="" onfocus="getData();" autofoc

C:\myWorkspace\HelloWorklightProject\apps\HelloWorklight\common\HelloWorklight.html

Line: 88 : WL.Client.invokeProcedure(invocationData, options)

C:\myWorkspace\HelloWorklightProject\apps\HelloWorklight\common\HelloWorklight.html

Line: 72 : document

Double-click this node.

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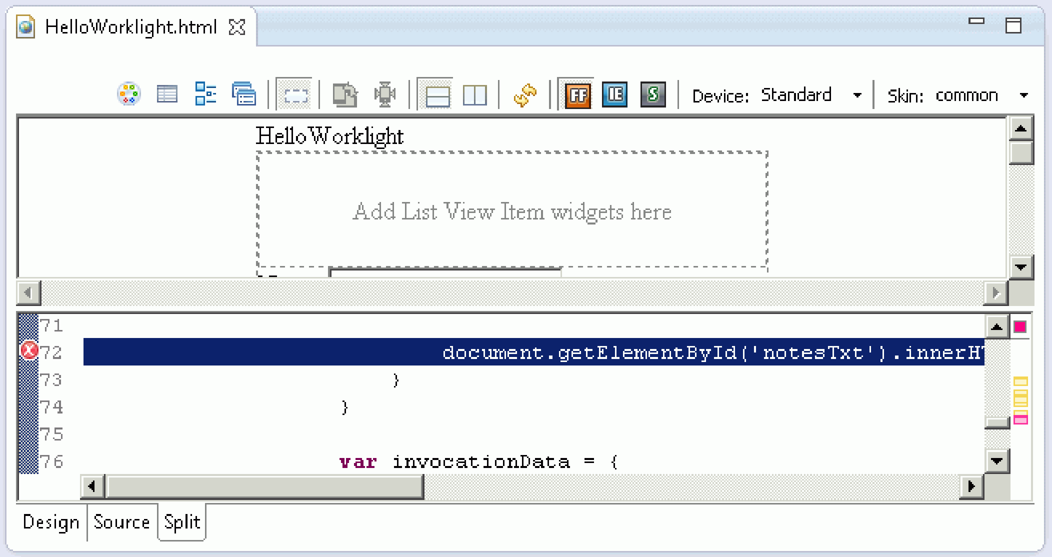
Open finding details in the trace view (3 of 4)

- Double-click the node to view the source code that is causing the vulnerability and fix it in the editor.



```
                    document.getElementById('notesTxt').innerH
                }
            }

            var invocationData = {
```

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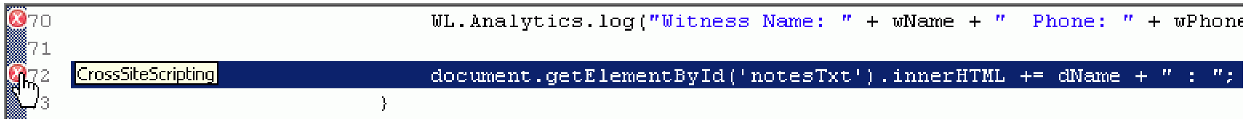
Open finding details in the trace view (4 of 4)

- Hover help in the editor reveals a cross-site scripting vulnerability in this line of code:



CrossSiteScripting

```
        WL.Analytics.log("Witness Name: " + wName + "  Phone: " + wPhone

        document.getElementById('notesTxt').innerHTML += dName + " : ";
    }
```

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View the vulnerability in the source code and fix it in place

- The line of code that the trace exposes is vulnerable to a cross-site scripting attack because unsanitized input from a third party is echoed back to the web page without the data being properly sanitizing first. In this case, the data is the `dName` variable, which is completed by a third party or customer. If left unmitigated, this vulnerability could allow an attacker to run malicious JavaScript on the customer’s device.
- To resolve this problem, simply use an HTML sanitization routine, such as `window.escape()`. Or, if you are using a framework like JQuery, sanitize with `$.text()`.

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For more information

- For more information about IBM Worklight Application Scanning, see the IBM Security AppScan Source for Development (Eclipse plug-in) user documentation at:
  - http://www.ibm.com/support/knowledgecenter/SSS9LM_9.0.0/com.ibm.rational.appscansrc.developer.doc/topics/eclipse_intro_overview.html
- To learn about IBM Security AppScan Source for Development (Eclipse plug-in) system requirements, see the **Detailed System Requirements for IBM Security AppScan Source** IBM page at:
  - http://www.ibm.com/support/docview.wss?uid=swg27027486

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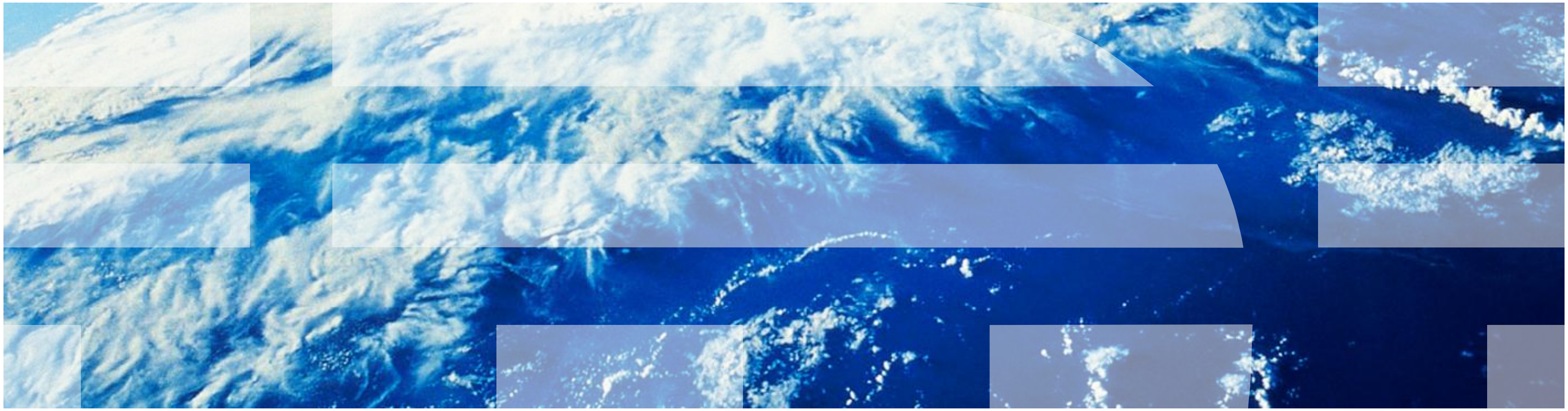

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