

Dimitri Gielis

APEX Session State Explained



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Dimitri Gielis

- ❖ Founder & CEO of United Codes
- ❖ 20+ years of Oracle Experience (OCP & APEX Certified)
- ❖ Oracle ACE Director
- ❖ “APEX Developer of the year 2009” by Oracle Magazine
- ❖ “Oracle Developer Choice award (ORDS)” in 2015
- ❖ Author Expert Oracle APEX
- ❖ Presenter at Conferences





APEX Office Print



APEX Media Extension



APEX Project Eye



Plug-ins Pro

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Dimitri Gielis Blog (Oracle Application Express - APEX)
I created this Blog to share my knowledge especially in Oracle Application Express (APEX) and my feelings...

MONDAY, MARCH 02, 2020

APEX Media Extension (AME) Publicly Available

After two months of [beta testing](#), we have released the first production version of [APEX Media Extension v20.1](#).

I'm extremely proud to bring our second product to the Oracle and APEX community. With our first product, [APEX Office Print \(AOP\)](#), we wanted to make the Printing and Exporting of documents easy. With **APEX Media Extension (AME)** we want to make the processing of media easy for any Oracle database and Oracle APEX developer!

We got the idea of doing this product when Oracle Intermedia/Multimedia became decommissioned in the Oracle database, but we still needed the manipulation of images in our projects. We did research on the best use of existing tools, but it always seemed we couldn't rely on any one tool and we needed different tools and custom code to come to a solution.

In our first release of AME, you will find the following features:

- [resize images](#)
- [rotate and flip images](#)
- [crop images](#)
- [add one or more watermarks or overlays \(images and text\) to images](#)
- [compress images](#)



My next public appearances:

- [APEX World: 16/17-MAR-2020](#)
- [APEX Ape Alder: 24-APR-2020](#)
- [APEX Connect: 5/7-MAY-2020](#)
- [ODTUG KScope: 28/02-JUN-2020](#)
- [Oracle Open World: 5/9-OCT-2020](#)

About Me

 [Dimitri Gielis](#)

Passionate about Oracle and especially Oracle Application Express (APEX). Founder of [AOP](#) and [APEX R&D](#), a company that provides Development, Training and Consulting in APEX.

[View my complete profile](#)





https://github.com/dgielis/presentations

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master 1 branch 0 tags Go to file Add file Code

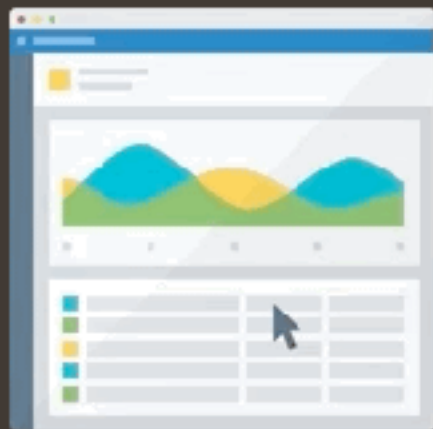
 dgielis APEX Automations ... ed84727 on 24 Jun 6 commits

 README.md	Update README.md	2 years ago
 apex_automations.sql	APEX Automations	3 months ago
 apex_session_state_explained.sql	APEX Session State Explained	5 months ago
 gloc_aop_workshop.sql	GLOC AOP Workshop	5 months ago
 kscope2019_1.sql	KScope2019_1	2 years ago

Oracle APEX Architecture

Stateless Access

Metadata Driven



This diagram highlights the process flow when a user requests or submits a page in Oracle APEX.

What is an APEX Session?

A session is a logical construct that **establishes a stateful behavior** across page views.

Getting an APEX Session

Chromium DevTools interface showing the Network tab. The address bar displays the URL: `http://www.apexrtd.be/ords/training/r/presentation-apex-session-state-explained/`. The Network tab is active, showing a list of requests with a time scale from 50000 ms to 500000 ms. The main content area displays the message: "Recording network activity... Perform a request or hit **R** to record the reload. [Learn more](#)".

Web page content showing a login form titled "Presentation: APEX Session State Explained". The form includes a username field with the value "dimi", a password field with masked characters "*****", a checkbox for "Remember username", and a "Sign In" button. The page is displayed in a light gray background.

Application 626

Cancel Apply Changes

Show All Authentication Authorization Session Management Session State Protection Browser Security Database Session

Authentication Scheme Application Express Accounts ⓘ

Authorization

Define Authorization Schemes >

Application authorization schemes control access to all pages within an application. Unauthorized access to the application, regardless of which page is requested, will cause an error page to be displayed.

Authorization Scheme - No application authorization required - ⓘ

Run on Public Pages ☐ ⓘ

Run on Background Job ☒ ⓘ

Source for Role or Group Schemes Access Control User Role Assignments ⓘ

Session Management

Rejoin Sessions Disabled ⓘ

Deep Linking Disabled ⓘ

Maximum Session Length in Seconds ⓘ

When Maximum Session Length is not set, the workspace level or instance level value will be used (currently, 36000 seconds).

Session Timeout URL ⓘ

Maximum Session Idle Time in Seconds ⓘ

When Maximum Session Idle Time is not set, the workspace level or instance level value will be used (currently, 7200 seconds).

Session Idle Timeout URL ⓘ

Session Timeout Warning in Seconds ⓘ

Session State Protection

Expire Bookmarks

Manage Session State Protection >

Enabling Session State Protection can prevent hackers from tampering with URLs within your application. URL tampering can adversely affect program logic, session state contents, and information privacy.

To enable Session State Protection for your application, select **Enabled** from the Session State Protection list. Enabling Session State Protection turns on session state protection controls defined at the page and item level. To configure Session State Protection, click **Manage Session State Protection**.

Session State Protection Enabled ⓘ

Allow URLs Created After (null) ⓘ

Bookmark Hash Function SHA-2, 512 bit (requires 12c) ⓘ

Authentication Scheme

- Show All
- Name
- Subscription
- Settings
- Source
- Session Not Valid
- Login Processing
- Post-Logout URL
- Session Sharing
- Real Application Security
- Comments

Settings

Sentry Function Name

sentry_basic_auth

?

Invalid Session Procedure Name

?

Authentication Function Name

?

Post Logout Procedure Name

?

Enable Legacy Authentication Attributes

No

?

- Show All
- Name
- Subscription
- Source
- Session Not Valid
- Login Processing
- Post-Logout URL
- Session Sharing
- Real Application Security
- Comments

Session Not Valid

Verify Function Name

?

Go To:

☒ Login Page

☐ Built-In Login Page

☐ URL

?

- Show All
- Name
- Subscription
- Source
- Session Not Valid
- Login Processing
- Post-Logout URL
- Session Sharing
- Real Application Security
- Comments

Session Sharing

Type

✓ Application (No Sharing)

Workspace Sharing

Custom

?

What is APEX doing?

1. Check if the session is valid
 - depending on Authentication Scheme (sentry)
 - and see if possible to rejoin session
2. Create a new session for user “nobody”
3. Redirect to the “Session Not Valid” settings (sentry=false)
e.g. Login Page or URL

Viewing behind the scenes

1 select * 2 from APEX_WORKSPACE_SESSIONS 3 where apex_session_id = 16783692246062									
Results Explain Describe Saved SQL History									
WORKSPACE_ID	WORKSPACE_NAME	WORKSPACE_DISPLAY_NAME	APEX_SESSION_ID	USER_NAME	REMOTE_ADDR	SESSION_CREATED	SESSION_IDLE_TIMEOUT_ON	SESSION_LIFE_TIMEOUT_ON	SESSION_MAX_IDLE_SEC
8549726844268266	TRAINING	TRAINING	16783692246062	DIMI	0.0.0.0:0:0:0:1	04/19/2021	04/19/2021	04/20/2021	7200

Demo

What is Session State?

Session state enables developers to **store and retrieve values for a user** as the user navigates between different application pages.

Session State of items

-

Page Rendering

Item value available after

1. Computation
2. Process (Execute Code)
3. Form Initialization / Form Automatic Row Process

Item value not available

1. Item source value
2. Item default value

Set Item Value in Process

```
-- this might or might not do an implicit commit (use parameter!)
apex_util.set_session_state(p_name    => 'P1_ITEM',
                           p_value    => 'My value'
                           p_commit => true);
```

```
-- bind variables will always win over apex_util.set_session_state
:P1_ITEM := 'My value';
```

Tip!

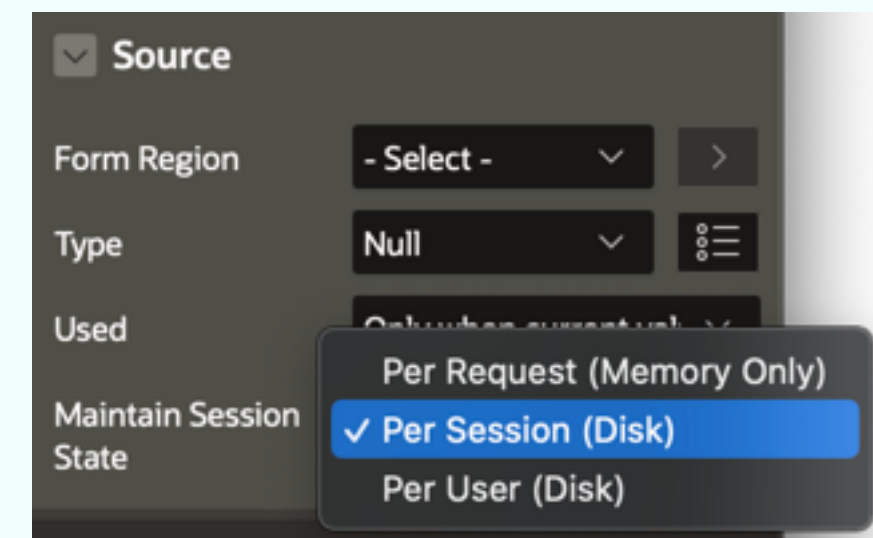
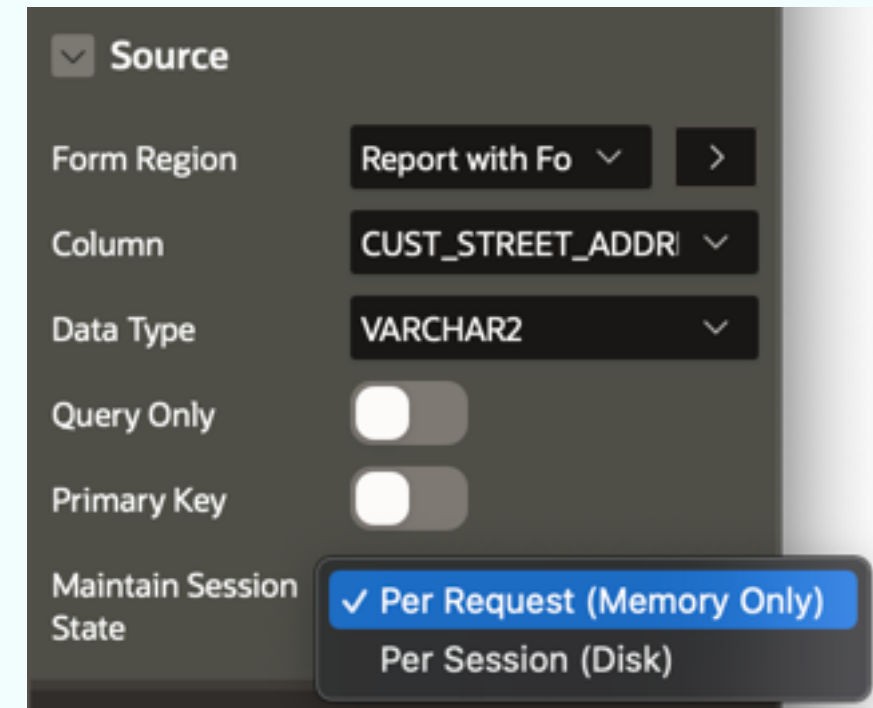
Don't mix usage of bind variables and set_session_state

Three types of Session State

1. Per Request (Memory Only)

2. Per Session (Disk)

3. Per User (Disk)



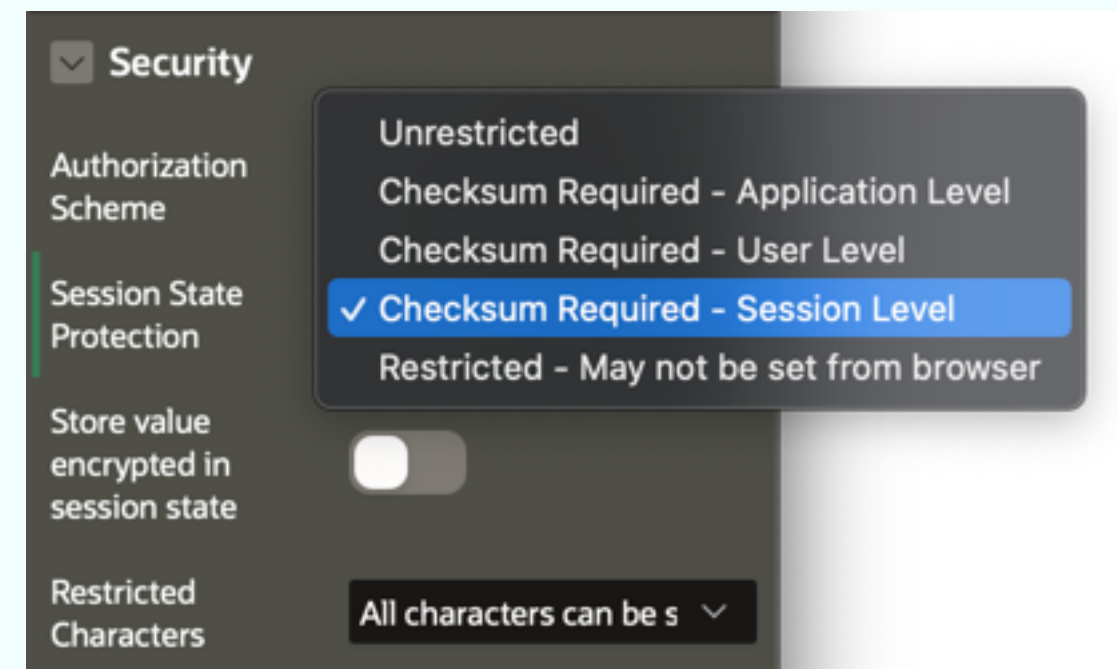
Referencing page items on another page

1. Pass through URL
2. Item Maintain Session State = Per Session (Disk)
3. Item Maintain Session State = Per User (Disk)

Session State Protection

To protect session state, enable SSP on the item

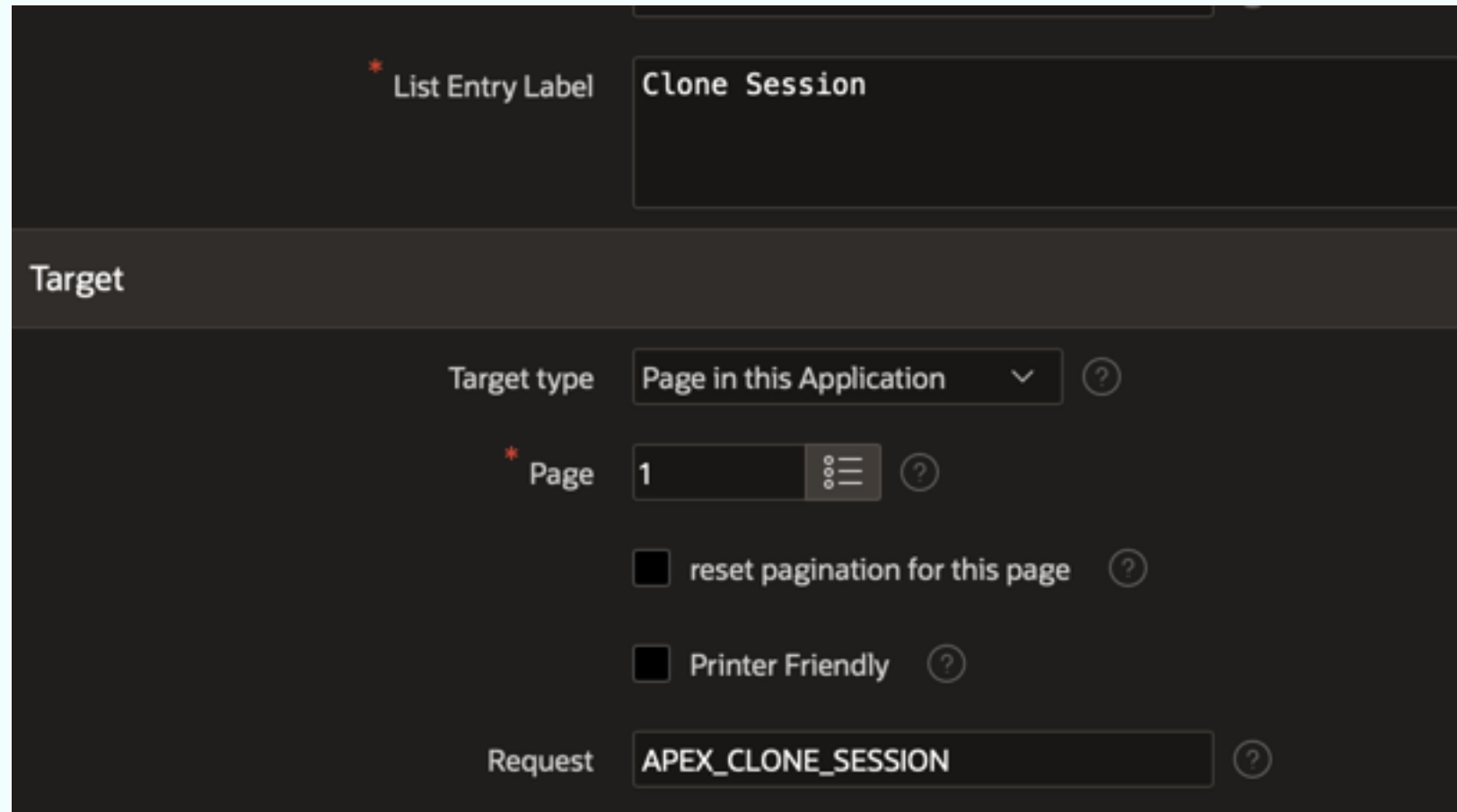
URL...&cs=3uU5uZCBnaap-12PYOAnRgJGWlaVihPNK3dQANPM4e...



Cloning a session

Work in the same browser in different tabs

Set request to APEX_CLONE_SESSION



The screenshot shows the 'Clone Session' dialog box in an APEX application. The dialog has a dark theme. At the top, there is a 'List Entry Label' field with the text 'Clone Session'. Below this is a 'Target' section. Inside the 'Target' section, there are several fields: 'Target type' is a dropdown menu set to 'Page in this Application'; 'Page' is a text input field containing the number '1'; there are two checkboxes, 'reset pagination for this page' and 'Printer Friendly', both of which are currently unchecked; and 'Request' is a text input field containing the text 'APEX_CLONE_SESSION'. Each of the dropdown, page input, checkboxes, and request input fields has a small circular help icon to its right.

* List Entry Label	Clone Session
Target	
Target type	Page in this Application
* Page	1
☐ reset pagination for this page	
☐ Printer Friendly	
Request	APEX_CLONE_SESSION

Demo

Session State of items

-

Page Processing

Item values are available in

1. Computation

2. Process

3. Branch

Session State of items

-

Dynamic Actions

Set items in session state with DA

! 32K max size of a native APEX Item

- ❖ Set Value
=> Affected Elements
- ❖ Execute Server
=> Items to Submit
- ❖ JavaScript
=> `apex.server.process (pageItems)`

Q&A



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