

# APEX dodatna vrijednost

ANDREJ.GRLICA@RIGHT-THING.SOLUTIONS

@AndrejGrlica



# About me

---

Oracle Application Express (APEX) Developer >+ 10 years

Author of APEX plug-ins (<https://github.com/grlicaa>)

Consulting

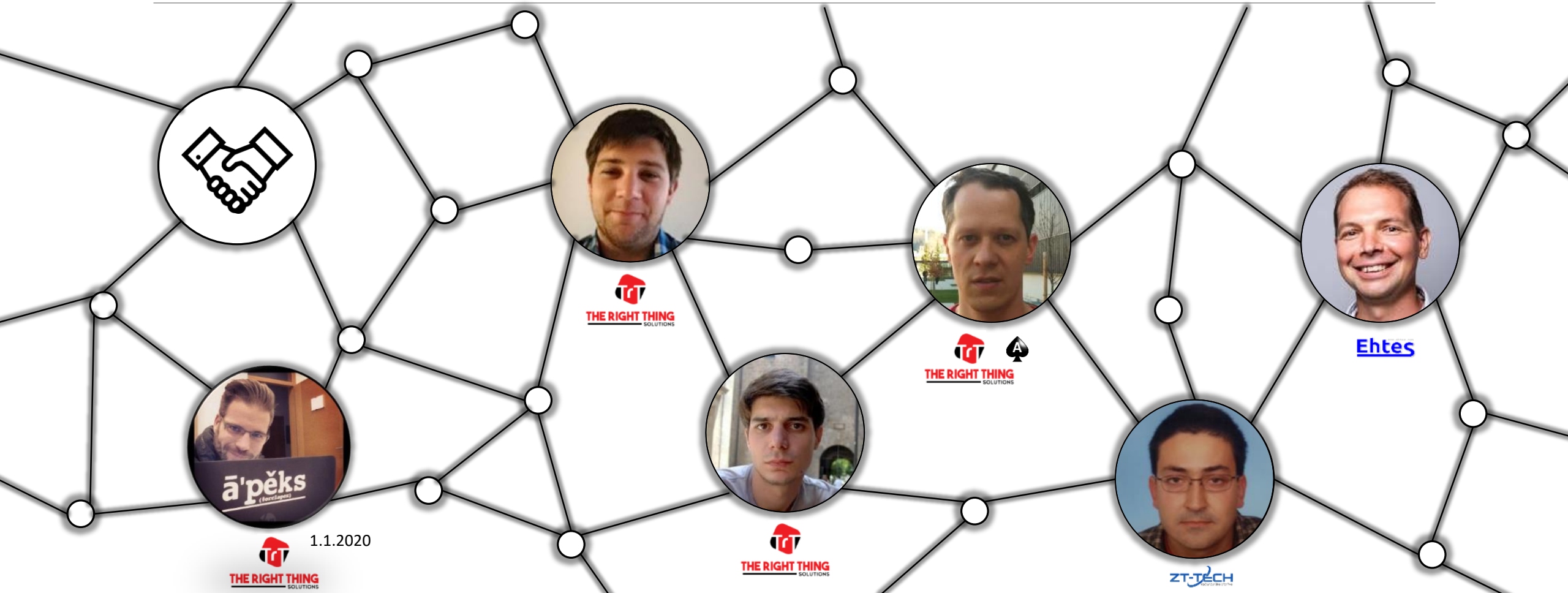
Trainings

External expert “Universe of Maribor”

Mountain guide alpine association of Slovenia, nature enthusiast



# A network of experts...



# Agenda

---



Oracle Application Express

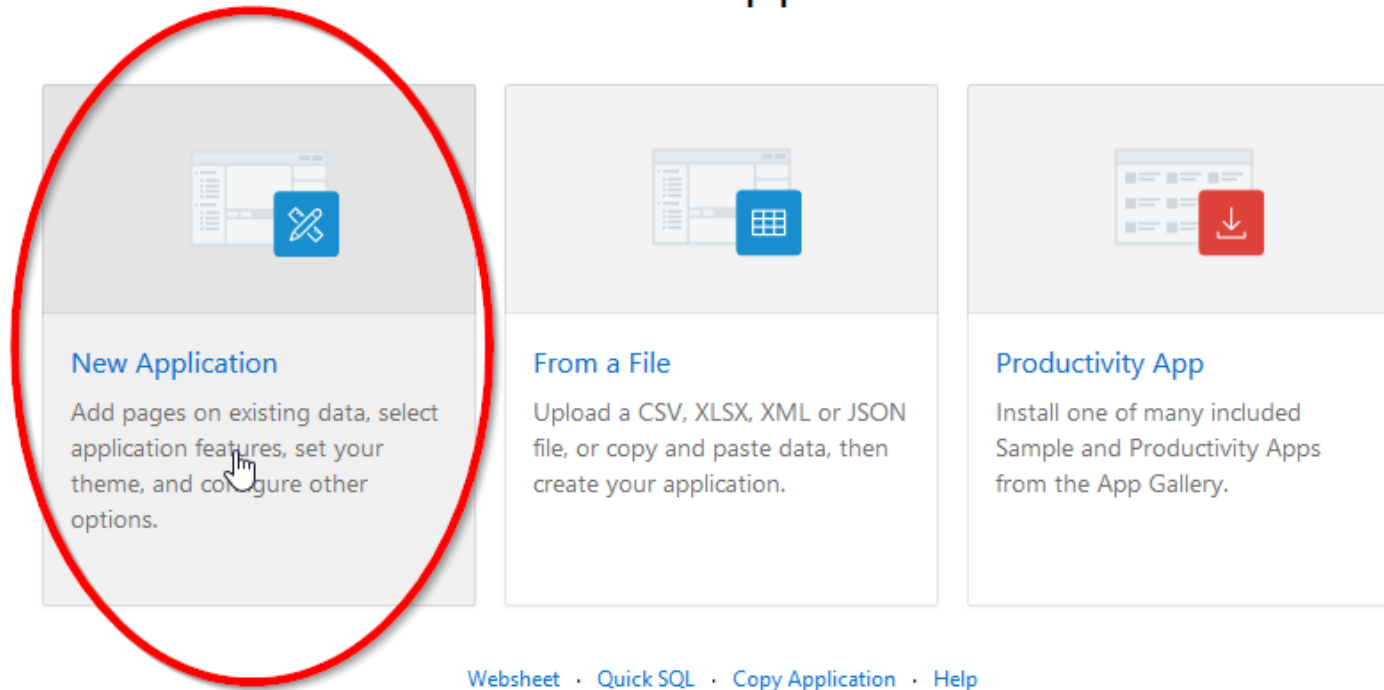
- APEX Application Settings
- APEX Application Access Control (ACL)
- APEX Mail (Templates)
- APEX Application Utilities
- APEX Monitor Activity

**#Low Code**

# APEX #Low Code

---

## Create an Application



The screenshot shows three options for creating an application:

- New Application** (circled in red): Add pages on existing data, select application features, set your theme, and configure other options.
- From a File**: Upload a CSV, XLSX, XML or JSON file, or copy and paste data, then create your application.
- Productivity App**: Install one of many included Sample and Productivity Apps from the App Gallery.

Navigation links: [Worksheet](#) · [Quick SQL](#) · [Copy Application](#) · [Help](#)

# Create an Application

Name APEXADDEDVALUE	Appearance Vita, Side Menu	
------------------------	-------------------------------	--

## Pages

Add Page

Home	Blank	Edit
------	-------	------

## Features

**Check All** **1**


<input checked="" type="checkbox"/> About Page Add about this application page	<input checked="" type="checkbox"/> Access Control Enable role-based user authorization	<input checked="" type="checkbox"/> Activity Reporting Include user activity and error reports
<input checked="" type="checkbox"/> Configuration Options Enable or disable application features	<input checked="" type="checkbox"/> Feedback Allow users to provide feedback	<input checked="" type="checkbox"/> Theme Style Selection Update default application look and feel

## Settings


Application ID 104	Schema ANDREJGR	Authentication Application Express Accounts
Language English (en)	Advanced Settings	User Interface Defaults



Cancel	<b>Create Application</b> <b>2</b>
--------	------------------------------------

# Create an Application







Name APEXADDEDVALUE	Appearance Vita, Side Menu	
------------------------	-------------------------------	---

## Pages






 **Add Page**

 Home	Blank	<b>Edit</b> 
--	-------	---

## Features Check All

- Creating features
-  **About Page**  
Add about this application page
  -  **Access Control**  
Enable role-based user authorization
  -  **Activity Reporting**  
Include user activity and error reports
  -  **Configuration Options**  
Enable or disable application features
  -  **Feedback**  
Allow users to provide feedback
  -  **Theme Style Selection**  
Update default application look and feel

## Settings

Application ID 104	Schema ANDREJGR 	Authentication Application Express Accounts 
Language English (en) 	Advanced Settings 	User Interface Defaults 



Run Application



Supporting Objects



Shared Components



Utilities



Export / Import

Q  [Go](#) [Grid](#) [List](#) [Actions](#) [Create Page >](#)



0 - Global Page - Desktop



1 - Home



9999 - Login Page



10000 - Administration



10010 - Configuration Options



10020 - Application Appearance



10030 - Activity Dashboard



10031 - Top Users



10032 - Application Error Log



10033 - Page Performance



10034 - Page Views



10040 - Configure Access Control



10041 - Manage User Access



10042 - Manage User Access



10043 - Add Multiple Users - ...



10044 - Add Multiple Users - ...



10050 - Feedback



10051 - Feedback Submitted



10053 - Manage Feedback



10054 - Feedback










10060 - About






10061 - Help



# Administration

<b>Configuration</b>
 <b>Configuration Options</b> Enable or disable application features
<b>User Interface</b>
 <b>Theme Style Selection</b> Set the default application look and feel
<b>Activity Reports</b>
 <b>Dashboard</b> View application activity metrics
 <b>Top Users</b> Report of page views aggregated by user
 <b>Application Error Log</b> Report of errors logged by this application
 <b>Page Performance</b> Report of activity and performance by application page
 <b>Page Views</b> Report of each page view by user including date of access and elapsed time

<b>Access Control</b>
Only users defined in the application access control list may access this application
Administrator
Contributor
Reader
 <b>Users</b> Change access control settings and disable access control
 <b>Access Control</b> Set level of access for authenticated users of this application
<b>Feedback</b>
Acknowledged
Closed
No Action
Open
 <b>User Feedback</b> Report of all feedback submitted by application users

# APEX added value

Application 104 \ Shared Components

Application Logic	Security	Other Components
<ul style="list-style-type: none"><li>Application Definition Attributes</li><li>Application Items</li><li>Application Processes</li><li>Application Computations</li><li><b>Application Settings</b></li><li>Build Options</li></ul>	<ul style="list-style-type: none"><li>Security Attributes</li><li>Authentication Schemes</li><li>Authorization Schemes</li><li><b>Application Access Control</b></li><li>Session State Protection</li><li>Web Credentials &gt;</li></ul>	<ul style="list-style-type: none"><li>List of Values</li><li>Plug-ins</li><li>Component Settings</li><li>Shortcuts</li><li><b>Email Templates</b></li></ul>
Navigation	User Interface	Files
<ul style="list-style-type: none"><li>Lists</li><li>Navigation Menu</li><li>Breadcrumbs</li><li>Navigation Bar List</li></ul>	<ul style="list-style-type: none"><li>User Interface Attributes</li><li>Themes</li><li>Templates</li></ul>	<ul style="list-style-type: none"><li>Static Application Files</li><li>Static Workspace Files</li></ul>

# APEX Application Settings

## Administration

Administration

Configuration

- Configuration Options  
Enable or disable application features

User Interface

- Theme Style Selection  
Set the default application look and feel

Activity Reports

- Dashboard  
View application activity metrics
- Top Users  
Report of page views aggregated by user
- Application Error Log  
Report of errors logged by this application

Access Control

control list may access this application

1
0
0

Access Control  
Set level of access for authenticated users of this application

Feedback

Acknowledged	0
Closed	0

**Configure Access Control**

Any authenticated user may access this application  Yes  No

Choose **No** if all users are defined in the access control list. Choose **Yes** if authenticated users not in the access control list may also use this application.

Cancel **Apply Changes**

# APEX Application Settings

- No custom table (ex. \_"NASTAVITVE", \_"POSTAVKE" )
- Easier transfer within environments (Export settings)
- Multiple applications / different settings

## Application Logic



[Application Definition Attributes](#)

[Application Items](#)

[Application Processes](#)

[Application Computations](#)

[Application Settings](#)

[Build Options](#)

Application 104 \ Shared Components \ Application Settings



Go



Actions

Name ↑≡	Value	Required	Valid Values
<a href="#">ACCESS_CONTROL_SCOPE</a>	ACL_ONLY	No	ACL_ONLY, ALL_USERS
<a href="#">FEEDBACK_ATTACHMENTS_YN</a>	Y	No	Y, N

# APEX Application Settings

## Attributes

Application: **102 APEXADDEDVALUE**

\* Name  ?

Value  ?

Value Required  Yes  No

Valid Values  ?

On Upgrade Keep Value  Yes  No ?

Comments `The default access level given to authenticated users who are not in the access control list`

# APEX Application Settings

## 6 APEX\_APP\_SETTING



The `APEX_APP_SETTING` package provides utilities you can use when programming in the Oracle Application Express environment related to application setting shared components. You can use the `APEX_APP_SETTING` package to get and set the value of application settings.

[SET\\_VALUE Procedure](#)

[GET\\_VALUE Function](#)

The screenshot shows the Oracle APEX Query Builder interface. The top bar has tabs for 'Worksheet' and 'Query Builder'. The main area contains a SQL query:

```
select name
, apex_app_setting.get_value(p_name => name) as val
, on_upgrade_keep_value
from apex_application_settings
where application_id = 102;
```

Below the query editor, there are tabs for 'Script Output' and 'Query Result'. The 'Query Result' tab is active, showing a table with the following data:

	NAME	VAL	ON_UPGRADE_KEEP_VALUE
1	FEEDBACK_ATTACHMENTS_YN	Y	Yes
2	ACCESS_CONTROL_SCOPE	ACL_ONLY	Yes

# APEX Application Settings

```
declare
  l_value varchar2(4000);
begin

  apex_util.set_workspace('ANDREJGR');
  apex_session.create_session (p_app_id => 102
                              , p_page_id => 1
                              , p_username => 'DEMO');

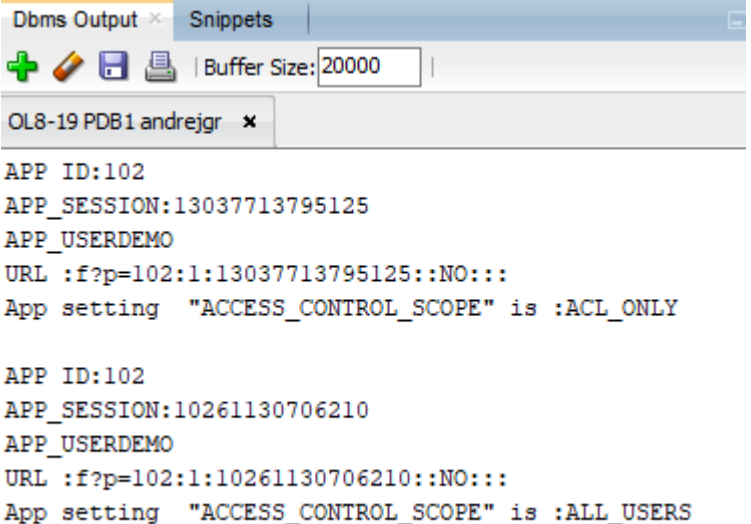
  dbms_output.put_line('APP ID:' || v('APP_ID'));
  dbms_output.put_line('APP_SESSION:' || v('APP_SESSION'));
  dbms_output.put_line('APP_USER' || v('APP_USER') );
  dbms_output.put_line('URL:' || apex_page.get_url);

  l_value := apex_app_setting.get_value( p_name => 'ACCESS_CONTROL_SCOPE');

  dbms_output.put_line('App setting "ACCESS_CONTROL_SCOPE" is : ' || l_value);

  apex_session.delete_session (p_session_id => v('APP_SESSION'));

end;
```










```
Dbms Output x Snippets | Buffer Size: 20000 |
OL8-19 PDB1 andrejgr x
APP ID:102
APP_SESSION:13037713795125
APP_USER:DEMO
URL :f?p=102:1:13037713795125::NO::
App setting "ACCESS_CONTROL_SCOPE" is :ACL_ONLY

APP ID:102
APP_SESSION:10261130706210
APP_USER:DEMO
URL :f?p=102:1:10261130706210::NO::
App setting "ACCESS_CONTROL_SCOPE" is :ALL_USERS
```

# APEX Application Settings

## Administration

<h3>Configuration</h3> <ul style="list-style-type: none"><li> <b>Configuration Options</b> Enable or disable application features</li></ul>	<h3>Access Control</h3> <p>Only users defined in the application access control list may access this application</p> <ul style="list-style-type: none"><li>Administrator</li><li>Contributor</li><li>Reader</li><li> <b>Users</b> Change access control settings and disable access control</li><li> <b>Access Control</b> Set level of access for authenticated users of this application</li></ul>
<h3>User Interface</h3> <ul style="list-style-type: none"><li> <b>Theme Style Selection</b> Set the default application look and feel</li></ul>	<h3>Feedback</h3> <ul style="list-style-type: none"><li>Acknowledged</li><li>Closed</li><li>No Action</li></ul>
<h3>Activity Reports</h3> <ul style="list-style-type: none"><li> <b>Dashboard</b> View application activity metrics</li><li> <b>Top Users</b> Report of page views aggregated by user</li><li> <b>Application Error Log</b> Report of errors logged by this application</li></ul>	



# APEX Application Access Control



Login with Email

- Security
  - Security Attributes
  - Authentication Schemes
  - Authorization Schemes
  - Application Access Control**
  - Session State Protection
  - Web Credentials

# APEX Application Access Control

- Easier to handle Authentication Schemas
- Environment export (only ROLES)
- No custom tables

The screenshot displays the 'Application Access Control' interface. It features two main sections: 'Roles' and 'User Role Assignments'. The 'Roles' section includes a search bar, a 'Go' button, an 'Actions' dropdown, and an 'Add Role >' button. Below this is a table with columns for Role, Static Identifier, Users, and Description. The 'User Role Assignments' section includes a search bar, a 'Go' button, an 'Add User Role Assignment >' button, and an 'Actions' dropdown. Below this is a table with columns for User Name and Roles.

Role	Static Identifier	Users	Description
Administrator	ADMINISTRATOR	1	Role assigned to application administrators.
Contributor	CONTRIBUTOR	1	Role assigned to application contributors.
Reader	READER	1	Role assigned to application readers.

1 - 3

User Name ↑≡	Roles
ANDREJ	Administrator
DEMO	Contributor
TEST	Reader

# APEX Application Access Control

---

APEX\_APPL\_ACL\_USERS

APEX\_APPL\_ACL\_USER\_ROLES

APEX\_APPL\_ACL\_ROLES

## 2 APEX\_ACL



The `APEX_ACL` package provides utilities that you can use when programming in the Oracle Application Express environment related to application access control shared components. You can use `APEX_ACL` package to add, remove, or replace user roles. You can also take advantage of `INSTEAD OF` trigger on `APEX_APPL_ACL_USERS` view to edit user roles with DML statements (`INSERT`, `UPDATE`, and `DELETE`). If the package is used outside of Oracle APEX environment, the `security_group_id` must be set using either `APEX_UTIL.SET_WORKSPACE` or `APEX_UTIL.SET_SECURITY_GROUP_ID` before the call. The related APEX views to get more information on application users and roles are `APEX_APPL_ACL_ROLES`, `APEX_APPL_ACL_USER_ROLES`, and `APEX_APPL_ACL_USERS`.

[ADD\\_USER\\_ROLE Procedure Signature 1](#)

[ADD\\_USER\\_ROLE Procedure Signature 2](#)

[HAS\\_USER\\_ANY\\_ROLES Function](#)

[HAS\\_USER\\_ROLE Function](#)

[REMOVE\\_USER\\_ROLE Procedure Signature 1](#)

[REMOVE\\_USER\\_ROLE Procedure Signature 2](#)

[REPLACE\\_USER\\_ROLES Procedure Signature 1](#)

[REPLACE\\_USER\\_ROLES Procedure Signature 2](#)

[REMOVE\\_ALL\\_USER\\_ROLES Procedure](#)

# APEX Mail (Templates)

---



## Other Components



List of Values

Plug-ins

Component Settings

Shortcuts

Email Templates

# APEX Mail (Templates)

## 25 APEX\_MAIL



You can use the `APEX_MAIL` package to send an email from an Oracle Application Express application. This package is built on top of the Oracle supplied `UTL_SMTP` package. Because of this dependence, the `UTL_SMTP` package must be installed and functioning to use `APEX_MAIL`.

`APEX_MAIL` contains three procedures. Use `APEX_MAIL.SEND` to send an outbound email message from your application. Use `APEX_MAIL.PUSH_QUEUE` to deliver mail messages stored in `APEX_MAIL_QUEUE`. Use `APEX_MAIL.ADD_ATTACHMENT` to send an outbound email message from your application as an attachment.

Oracle Application Express installs the database job `ORACLE_APEX_MAIL_QUEUE`, which periodically sends all mail messages stored in the active mail queue.

### Note:

In order to call the `APEX_MAIL` package from outside the context of an Application Express application (such as from a Database Scheduler job), you must call `apex_util.set_security_group_id` as in the following example:

```
for c1 in (
  select workspace_id
    from apex_applications
   where application_id = p_app_id )
loop
  apex_util.set_security_group_id(p_security_group_id =>
c1.workspace_id);
end loop;
```

[ADD\\_ATTACHMENT Procedure](#)

[GET\\_IMAGES\\_URL Function](#)

[GET\\_INSTANCE\\_URL Function](#)

[PREPARE\\_TEMPLATE Procedure](#)

[PUSH\\_QUEUE Procedure](#)

[SEND Procedure](#)

[SEND Function](#)

[SEND Procedure](#)

[SEND Function](#)

# APEX Mail (Templates)

```
HTML Format

Header ?
1 <b style="font-size: 24px;">Make IT</b>

* Body ?
1 <b>Hello #INVITEE#,</b><br>
2 <br>
3 This is a reminder of an upcoming event you have been invited to.
  Please see the event details below:<br>
4 <br>
5 <table width="100%">
6 <tr>
7 <th align="left">Organizer</th>
8 <td>#ORGANIZER#</td>
9 </tr>
10 </table>

Footer ?
1 <a href="#MY_APPLICATION_LINK#">Visit My Application and manage your
  email preferences</a>
```

Begin

```
apex_util.set_workspace('ANDREJGR');
apex_session.create_session (p_app_id => 102
                             , p_page_id => 1
                             , p_username => 'ANDREJGR');
apex_mail.send (
  p_to => 'andrej.grlica@right-thing.solutions',
  p_template_static_id => 'HROUG',
  p_placeholders => '{' ||
    "DURATION":' || apex_json.stringify( '8 h') ||
    "EVENT_DATE":' || apex_json.stringify( '17.10.2019' ) ||
    "EVENT_LINK":' || apex_json.stringify( 'https://2019.hroug.hr' ) ||
    "EVENT_NAME":' || apex_json.stringify( 'HrOug 2019 !' ) ||
    "INVITEE":' || apex_json.stringify( 'Andrej' ) ||
    "LOCATION":' || apex_json.stringify( 'Rovinj' ) ||
    "MY_APPLICATION_LINK":' || apex_json.stringify( apex_mail.get_instance_url ||
                                                       apex_page.get_url ) ||
    "NOTES":' || apex_json.stringify( 'You are late to the event !!' ) ||
    "ORGANIZER":' || apex_json.stringify( 'HROUG' ) ||
    "START_TIME":' || apex_json.stringify( '09:30' ) ||
    "URL_LINK":' || apex_json.stringify( 'HrOug' ) ||
    "URL_NAME":' || apex_json.stringify( 'https://2019.hroug.hr' ) ||
  '}' );

apex_session.delete_session (p_session_id => v('APP_SESSION'));
apex_mail.push_queue;
end;
```

# APEX Application Utilities



## Application Dashboard

Review a summary of this application.



## Upgrade Application

After upgrading to a new release, review components for upgrading to include the latest features.



## Attribute Dictionary

Manage item / column user interface defaults for a selected page.



## Database Object Dependencies

Review the database objects referenced by this application.



## Application Express Views

Query the various views against Application Express metadata.



## Advisor

Perform various checks on this application, including programming errors and best practices.



## Recently Updated Pages

View a history of the page updates made on this application.



## Change History

View a detailed report of component updates made on this application.



## Debug Messages

Review debug messages generated by this application.



## Export Repository

View a history of application exports.

# APEX Application Utilities

---

## Attribute Dictionary

- Auto generation
- Time saver

Page Items	Report Columns
Update Page	Update Page
0 Items for update	<a href="#">Review 7 Report Columns for update</a>
Update Attribute Dictionary	Update Attribute Dictionary
0 Items for insert into the Attribute Dictionary 0 Items for update of the Attribute Dictionary	0 Items for insert into the Attribute Dictionary <a href="#">Review 7 Report Columns for update of the Attribute Dictionary</a>



# APEX Application Utilities

## Upgrade Application

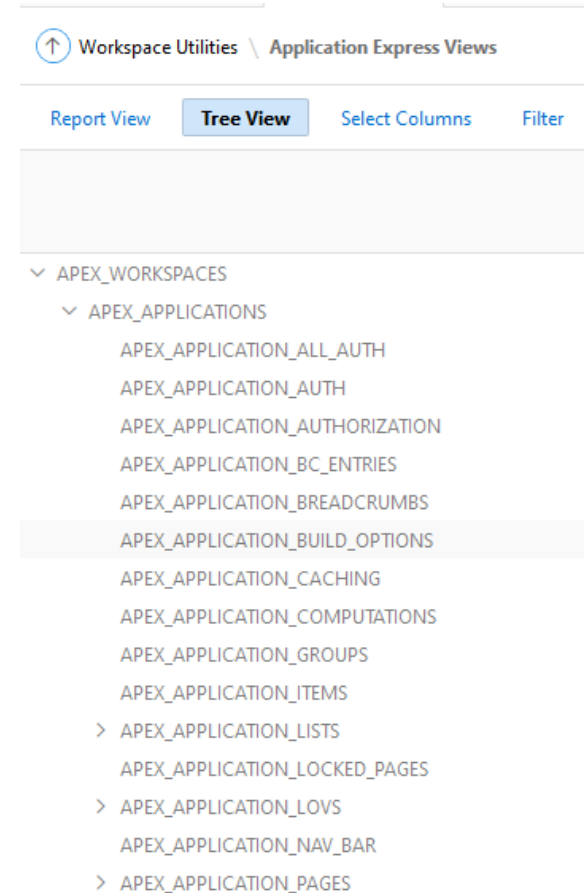
- Suggestions
- Upgrade Legacy code

Upgrade Type	Candidate Objects
Enable Save Public Report for Interactive Reports	8
Enable Subscription for Interactive Reports	8
Enable Rows Per Page Selector for Interactive Reports	8
Upgrade Legacy Form page to page containing Form Region, where appropriate	1

# APEX Application Utilities

## Application Express Views

- Tree list
- Filtering
- Live results



# APEX Application Utilities

---

## Advisor

- Errors check
- Security check
- Warnings check
- Performance check
- Usability check
- Quality check
- Accessibility check

### Errors: [?](#)

- References with Substitution Syntax
- References with Column Syntax
- References with Bind Variable Syntax
- Declarative References of Application Items, Page Items, Columns or Interactive Report Filters
- Referenced Page Number Exists
- Is Valid SQL or PL/SQL Code
- Fetch, DML, MR\* Processes are Valid
- Unconditional Branch before other Branches
- Referenced Button in When Button Pressed exists
- Button is not compatible with Dynamic Actions

### Security: [?](#)

- Inappropriate use of Substitution Syntax
- Application attributes that can be locked down
- Authorization
- Session State Protection
- Browser Security Settings

### Warnings: [?](#)

- Referenced Item is on Current Page
- Referenced Item is Page Item of Target Page
- References of Page Item in a String
- Clear Cache Page Number equals Target or Current Page
- Length of Item or Tabular Form Column Name
- Inconsistent references between Dynamic Actions and Buttons
- Protected items in Ajax calls

### Performance: [?](#)

- V Function used in SQL Statements
- User Interface includes compatibility JavaScript

### Usability: [?](#)

- Target Page Authorization is also set for Current Component
- Associated Item or Column of Validations

### Quality Assurance: [?](#)

- Hardcoded Application ID
- Report has Default Order
- Page Item has Help Text
- Deprecated attribute values

### Accessibility: [?](#)

- Theme Style tested for accessibility
- Page has page title
- Region has Row Header
- Chart type supports accessibility
- Page item has label
- Page item does not cause an unexpected context change
- Display Image item has image ALT text defined

# APEX Monitor Activity

---

**Page Views**

**Developer Activity**

**Sessions**

**Page View Analysis**

**Environment**

**Login Attempts**

**Application Errors**

**Workspace Schema Reports**

**Archived Activity Reports**

# APEX Monitor Activity

## Operating System - statistic

Since

Operating System	Page Views	Percentage ↓	
Windows 10	993	60.40	
Windows 7	429	26.09	
Other	125	7.60	
	58	3.53	
Linux	20	1.22	
Mac OS X	19	1.16	

# APEX Monitor Activity

## Most Viewed Pages

Monitor Activity \ Most Viewed Pages over All Applications

\* Top (page views)  ?

Q   Actions

Application	Application Name	Page	Page Name	Page Type	Rank ↑	Count	% Views	Graph
111583	Search Navigation Menu [Plug-in]	500	Style modeler	Navigation Form	1	824	51.694	
111583	Search Navigation Menu [Plug-in]	1	Basics	Home	2	220	13.802	
94650	Icon Picker [Plug-in]	1	Icon Picker	Home	3	74	4.642	
94650	Icon Picker [Plug-in]	101	Login Page	Login	4	68	4.266	
111583	Search Navigation Menu [Plug-in]	101	Login Page	Login	5	59	3.701	
37564	WEBASSEMBLY	1	Home	Home	6	57	3.576	
111583	Search Navigation Menu [Plug-in]	400	Shortcuts modeler	Interactive Report	7	43	2.698	
37564	WEBASSEMBLY	101	Login Page	Login	7	43	2.698	
94650	Icon Picker [Plug-in]	-	-	-	8	31	1.945	

Since    Application

Application	Page	Page Name	Page Events	Average Elapsed	Weighted Average ↓	Median Elapsed	Weighted Median	Median Content
94650	1	Icon Picker	73	1.6714	122.0089	2.9143	212.7470	0
111583	500	Style modeler	824	0.0364	29.9602	0.0285	23.4951	0
111583	1	Basics	220	0.0805	17.7169	0.0555	12.2096	0
94650	101	Login Page	68	0.2371	16.1211	0.2000	13.6030	0
111583	101	Login Page	59	0.2436	14.3735	0.2065	12.1812	0
111583	400	Shortcuts modeler	43	0.1957	8.4142	0.1519	6.5317	0
111583	300	Employees	31	0.1451	4.4992	0.1215	3.7674	0
22641	2	Apex messages	6	0.5705	3.4231	0.4446	2.6674	0
37564	1	Home	57	0.0591	3.3687	0.0557	3.1750	0
37564	101	Login Page	43	0.0520	2.2363	0.0481	2.0701	0
111583	299	Test cases	16	0.1326	2.1209	0.1040	1.6637	0
111583	13	Functionality	15	0.1184	1.7759	0.1218	1.8263	0

Performance

Since   Application

Application	Page	Page Name	Page Events	Average Elapsed ↓	Weighted Average	Median Elapsed	Weighted Median	Median Content
400	10030	Code backup	4	12.7914	51.1654	0.4846	1.9383	0
300	720	Geld Dossiers	58	6.6928	388.1822	2.2462	130.2796	0
400	6000	Facturen	109	5.8865	641.6313	2.0683	225.4466	0
400	9045	Import Translations	3	4.9282	14.7846	0.0634	0.1902	0
400	9043	Download translations	2	4.8348	9.6696	4.8348	9.6696	0
400	10010	Activity Dashboard	9	3.9393	35.4539	0.1175	1.0579	0
400	3000	Veilingen	685	3.1453	2,154.4992	1.1494	787.3274	0
300	7000	Financieel overzicht	4	2.7122	10.8488	2.3880	9.5519	0
400	8204	Leads	1	2.2708	2.2708	2.2708	2.2708	0
300	70	Overzicht Rek. Uitr.	17	2.1612	36.7408	0.1458	2.4787	0
400	7000	Betalingsopvolgingg	4	1.8289	7.3156	1.6808	6.7233	0
400	3100	Kavels	436	1.8200	793.5095	0.7753	338.0419	0
300	10191	Zoek kavels	22	1.7219	37.8809	0.1059	2.3292	0



# APEX Monitor Activity

## Application Errors

Monitor Activity \ Application Errors

Since 2 days

Application	Page	User	Date	Error Message	Context	Component	Session
102	9999	nobody	24 hours ago	Invalid Login Credentials (user=ANDREJGR)	AUTHENTICATION	Application Express Authentication	7001706035988
102	1	ANDREJGR	24 hours ago	Requested Application Setting #ACCESS_CONTROL_ENABLED# is not defined Contact your application administrator.	APEX_APPLICATIONS	-	13258510410110
4000	1500	ANDREJGR	26 hours ago	APEX - Your session has expired - Click <a href="f?p=4000:1500::NO::P1500_SHOW:">here</a> to create a new session. ORA-06512: at "APEX_190100.WWV_FLOW_ERROR", line 1381 ORA-06512: at "APEX_190100.WWV_FLOW_ERROR", line 1416	WWV_FLOW_SECURITY	FINAL_EXCEPTION_HANDLER	7783059719736
102	10	ANDREJGR	42 hours ago	APEX - ORA-06550: line 1, column 22: PL/SQL: ORA-00936: missing expression - Contact your application administrator. Details about this incident are available via debug id "419". ORA-06512: at "APEX_190100.WWV_FLOW_ERROR", line 1381 ORA-06512: at "APEX_190100.WWV_FLOW_ERROR", line 1416	WWV_FLOW_SECURITY	FINAL_EXCEPTION_HANDLER	14140824586385
102	10	ANDREJGR	42 hours ago	APEX - ORA-06550: line 1, column 22: PL/SQL: ORA-00936: missing expression - Contact your application administrator. Details about this incident are available via debug id "417". ORA-06512: at "APEX_190100.WWV_FLOW_ERROR", line 1381 ORA-06512: at "APEX_190100.WWV_FLOW_ERROR", line 1416	WWV_FLOW_SECURITY	FINAL_EXCEPTION_HANDLER	14140824586385

# APEX Monitor Activity

## Login Attempts

↑ Monitor Activity \ Login Attempts by Authentication Result

Application



Login Name



Since

1 year



Set

Reset



Go

Actions

Authentication Result ↑≡	Attempts	Login Names	Applications	Application Owners	Authentication Methods	Login Days	IP Addresses	Authentication Result Code
Account Expired	1	1	1	1	1	1	1	3
Normal, successful authentication	31,341	3,781	5	2	5	8	5,748	0
Unknown User Name	18	11	3	1	3	6	7	1

# APEX Monitor Activity

---

Internal Workspace



## Manage Log Interval

---

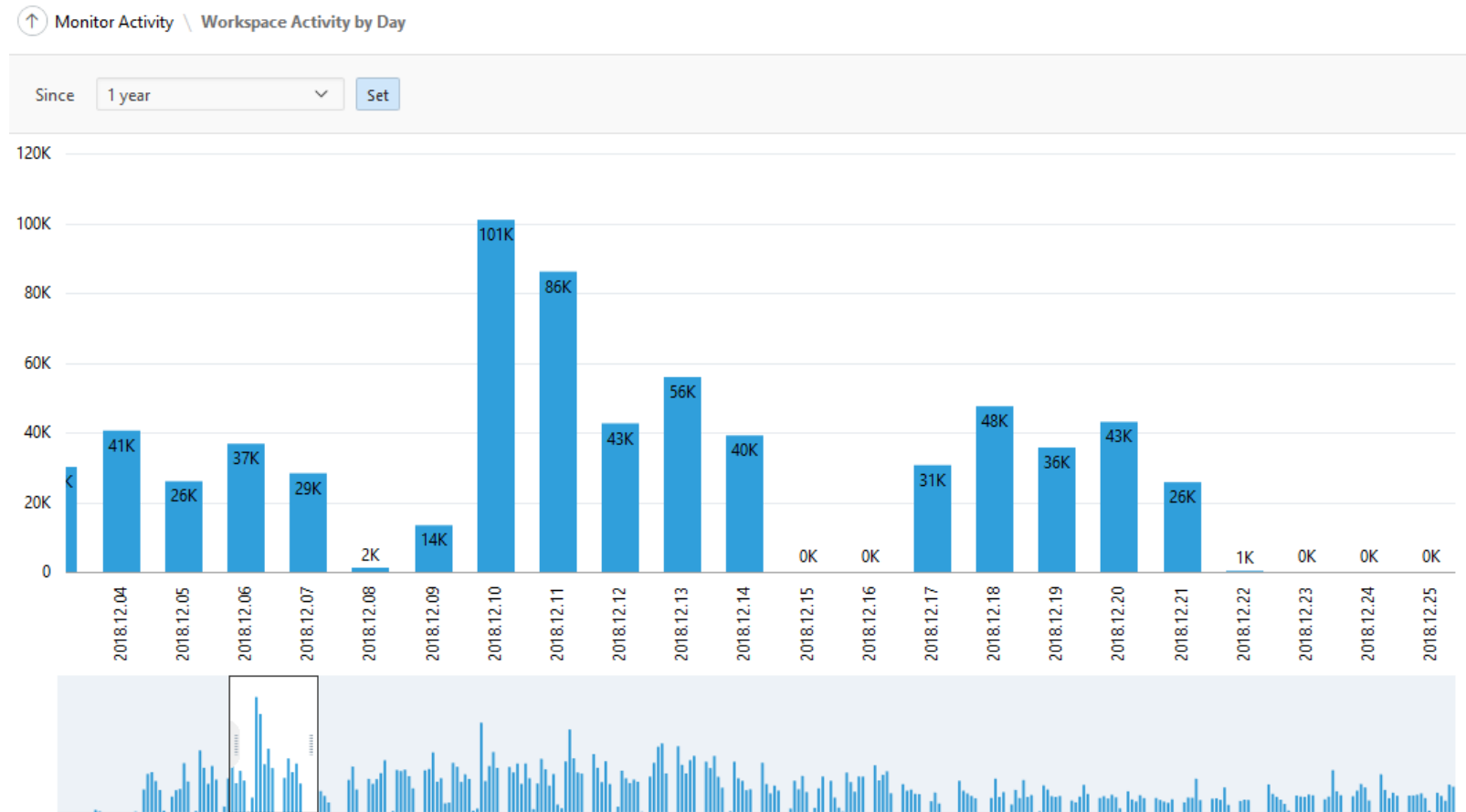
Set the minimum number of days to retain the log information for the specified logs. The maximum value that can be specified is 180 days, with a default value of 14 days. Keeping log information for longer periods can degrade runtime performance.

Logs are implemented using two underlying tables, with a switch between the log tables after the number of days specified in "Log Switch After Days".

Log Name ↑≡	Log Switched Date	Log Switch After Days
Access Log	09/24/2019 12:00:00 AM	<input type="text" value="14"/>
Activity Log	09/24/2019 12:00:00 AM	<input type="text" value="14"/>
Debug Messages	10/03/2019 12:00:00 AM	<input type="text" value="14"/>
External Click Count Log	08/01/2019 12:00:00 AM	<input type="text" value="14"/>
Web Service	08/01/2019 12:00:00 AM	<input type="text" value="14"/>

# APEX Monitor Activity

Workspace Activity  
by Day



# APEX Monitor Activity

User Activity  
by Day/Hour

Day : 10/04/2019																						
User	Activity by Hour																					
000001	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	66	21	0	23	0	0	0	9	0	91	0	0	0	0
000002	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	0	58	0	0	21	0	0	7	0	0	0	0	0	0
000003	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	0	0	111	20	72	0	0	0	0	0	0	0	0	0
000004	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	0	15	16	53	0	0	0	0	0	0	0	0	0	0
000005	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	288	322	185	108	147	251	310	113	121	128	64	0	0	0
000006	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	36	292	386	303	32	20	9	113	151	506	0	0	0	0
000007	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	51	0	0	148	60	0	44	108	107	25	0	0	0	0
000008	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	328	284	155	279	140	28	0	191	231	38	0	0	0	0
000009	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	0	0	0	0	36	0	23	0	0	0	0	0	0	0
000010	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	0	0	64	6	0	42	44	0	34	0	0	0	0	0
000011	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	0	93	107	183	21	0	53	0	0	0	0	0	0	0
000012	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	0	2	0	31	16	13	0	0	0	0	0	0	0	0
000013	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	0	0	0	0	0	0	0	0	47	105	19	22	9	28	41	11	43	2	0	0	0	0

# APEX Monitor Activity

---

## Developer Activity by Day/Hour

Day : 09/04/2019

Developer	Activity by Hour																							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Developer 1	0	0	0	0	0	0	0	0	4	45	27	10	0	16	48	182	8	0	0	0	0	0		
Developer 2	0	0	0	0	0	0	0	0	73	15	0	0	0	0	10	30	0	0	0	0	0	0		
Developer 3	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	2	0	0	0	0	0		

# Administration

## Configuration



**Configuration Options**  
Enable or disable application features

## User Interface



**Theme Style Selection**  
Set the default application look and feel

## Activity Reports



**Dashboard**  
View application activity metrics



**Top Users**  
Report of page views aggregated by user



**Application Error Log**  
Report of errors logged by this application



**Page Performance**  
Report of activity and performance by application page



**Page Views**  
Report of each page view by user including date of access and elapsed time

## Access Control

Only users defined in the application access control list may access this application

Administrator

Contributor

Reader



**Users**  
Change access control settings and disable access control



**Access Control**  
Set level of access for authenticated users of this application

## Feedback

Acknowledged

Closed

No Action

Open



**User Feedback**  
Report of all feedback submitted by application users

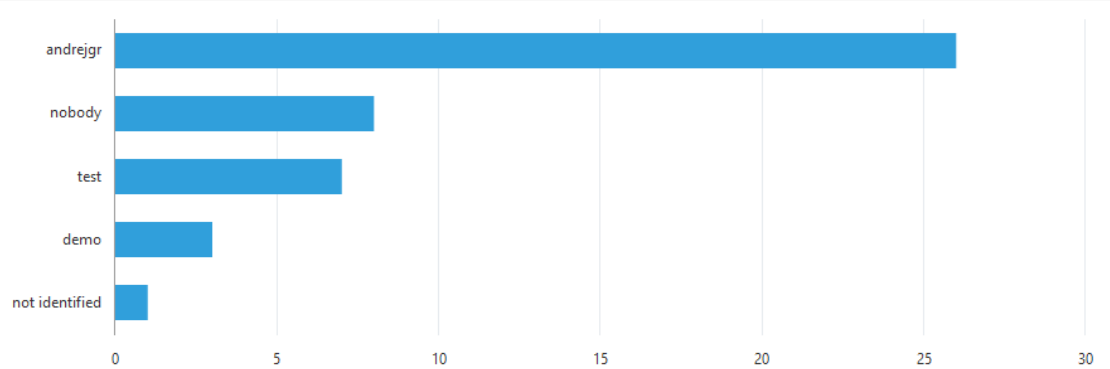


Timeframe  
15 minutes

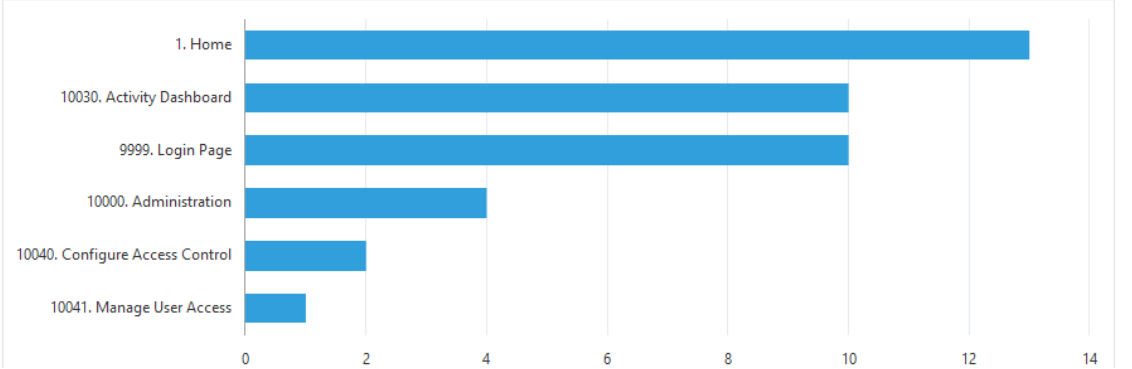
### Hourly Page Events



### Top Users



### Most Active Pages





# Next APEX Events



Oracle Application Express

**ā'pěks**  
(#orclapex)

**Meet UP**

Januar 2020

**ā'pěks alpe adria**

APEX Alpe Adria

**24.04.2020**

A regional Oracle APEX conference for everyone  
#aaapeks20

# Questions?

---



Thank you for  
your attention.