



Android 11 - native fdopendir + readdir dont show full files list using Storage Access Framework

+1 18

Hotlists (4)

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Assigned

Bug

P3

+ Add Hotlist

adexe s nau



STATUS UPDATE No update yet.

Edit



DESCRIPTION an...@gmail.com created issue #1

Sep 7, 2021 08:29PM



This question was originally asked on stackoverflow with no replies here:

<https://stackoverflow.com/questions/69075070/android-11-saf-native-fdopendir-readdir-dont-show-full-files-list>

Tested on Pixel 3XL with latest update to the day of report.

According to the docs, if user grants access permissions on specific folder (on android 11) with ACTION\_OPEN\_DOCUMENT\_TREE intent then applications can have full access on it's content using SAF framework (except specific folders like 'Android/data/' and similar.

Problem is that native function readdir is not affected by this permission and shows only media files. It can show full content only if is enabled 'all files (MANAGE\_EXTERNAL\_STORAGE)' in application settings.

readdir function takes file descriptor like a input parameter. The file descriptor is obtained jumping to java (using jni) from ContentResolver with openFileDescriptor function, I pass there uri from granted tree with ACTION\_OPEN\_DOCUMENT\_TREE.

```
resolver.openFileDescriptor(uri, "r").detachFd();
```

If I enable 'all files' in application settings (MANAGE\_EXTERNAL\_STORAGE flag) then I can iterate over all files using readdir.

If I list files with function below then I get all files even without 'all files' enabled

```
public static void listUri(String path, Uri uri) {
    final Uri childrenUri = DocumentsContract.buildChildDocumentsUriUsingTree(uri, DocumentsContract.getDocumentId(uri));

    Cursor c = null;
    StringBuilder b = new StringBuilder();
    try {
        c = resolver.query(childrenUri, new String[] {
            DocumentsContract.Document.COLUMN_DOCUMENT_ID,
            DocumentsContract.Document.COLUMN_DISPLAY_NAME,
            DocumentsContract.Document.COLUMN_MIME_TYPE
        }, null, null, null);
        while (c.moveToNext()) {
            b.setLength(0);
            final String documentId = c.getString(0);
            final String documentName = c.getString(1);
            final Uri documentUri = DocumentsContract.buildDocumentUriUsingTree(uri, documentId);

            b.append(path);
            b.append(documentName);

            if (c.getString(2).equals(DocumentsContract.Document.MIME_TYPE_DIR)) {
                b.append("/");
            }
            uriCache.put(b.toString(), documentUri);
        }
    } catch (Exception e) {
        e.printStackTrace();
    } finally {
        closeQuietly(c);
    }
}
```

Reporter

an...@gmail.com

Type

Bug

Priority

P3

Severity

S3

Status

Assigned

Access

Default access View

Assignee

an...@google.com

Verifier

--

Collaborators

^

CC

an...@gmail.com ^

AOSP ID

--

ReportedBy

Developer

Found In

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Targeted To

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In Prod



✓ Links (3)

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🔗 Links (3)

"<https://stackoverflow.com/questions/69075070/android-11-saf-native-fdopendir-readdir-...>"

an...@ #1

"<https://issuetracker.google.com/components/192763>"

an...@ #10

"<https://issuetracker.google.com/hotlists/784269>"

an...@ #10

COMMENTS

All comments



↓ Oldest first



an...@gmail.com <an...@gmail.com> #2

I created native example which clearly shows what is going on. I attached it.

#### Steps to reproduce

1. create folder on device and place there media and non media files
2. start application and press button "SAF", then grant permissions on created folder
3. Press button "READ CONTENT C++". Method behind this button reports folders and media files to textview below buttons
4. Press button "READ CONTENT JAVA". All files are now displayed
5. Press button "ALL FILES" and grant 'all files' permission. Then press again button "READ CONTENT C++". Now you will see all files and folders



0 B ⓘ

🔒 Restricted

vi...@google.com <vi...@google.com>

Sep 8, 2021 07:19PM

Assigned to en...@google.com.

en...@google.com <en...@google.com> [#3](#)

Sep 9, 2021 01:31AM ⋮

Reassigned to an...@google.com.

(i don't have permission to move this bug to the storage component.)

co...@google.com <co...@google.com> [#4](#)

Sep 9, 2021 01:33AM ⋮

Reassigned to bo...@google.com.

Nikki, are you able to help with this question?

bo...@google.com <bo...@google.com> [#5](#)

Sep 9, 2021 01:38AM ⋮

It's not possible to use `readdir(3)` to get the contents of a directory via the storage access framework.

an...@gmail.com <an...@gmail.com> [#6](#)

Sep 9, 2021 03:39AM ⋮

Hmm, it is a bug or it so meant? Because, everything looks like it should be alright and it already worked on android 11 using SAF, I tested it in december last year. It was changed after this date, dont knoe exactly when.

1. Get file descriptor from allowed folder tree with SAF
2. Pass it to `fdopendir` and get pointer to DIR structure
3. Read folder from allowed tree using DIR structure with `readdir`

According to what I do with file:

1. Get file descriptor from allowed folder tree with SAF
2. Pass it to `fdopen` and get pointer to FILE structure
3. Read file using `fread` use it with other functions accepting file descriptor

If I dont have to use `readdir`, how to read directory using DIR structure, which is from granted folder tree? I work on emulator written in c++. It emulates old system and I really need work with `readdir` or competitive fast function. Please help.

an...@gmail.com <an...@gmail.com> [#7](#)

Sep 9, 2021 06:05PM ⋮

To prevent words like sometimes or probably I did some testing.

Based on above explanation that it cant work SAF, I tested attached jniTest application on Android 10 (because I dont have android 11 version device or emulator from october/november 2020 and I can't truly confirm that it worked on android 11). :

It was said : "It's not possible to use `readdir(3)` to get the contents of a directory via the storage access framework."

Here is result of my testing:

Android 10 :

JniTest application on android 10 without declared "requestLegacyExternalStorage". Test folders and files were placed in "Downloads" folder. I granted SAF permission on folder located in Downloads and I clearly see that `fdopendir` + `readdir` correctly reads full content of folder from granted folder tree.

The same does not work on Android 11. However it works not only on android 10, it works on android 5 up to 10. Starting android 11 it is not functional.

bo...@google.com <bo...@google.com>

Sep 9, 2021 06:17PM

Reassigned to co...@google.com.



**an...@gmail.com** <an...@gmail.com> [#8](#)

Sep 16, 2021 05:23PM ⋮

Hi people, any update on it? Many thanks.



**tp...@twonav.com** <tp...@twonav.com> [#9](#)

Sep 23, 2021 10:25PM ⋮

I am having exactly the same issue, native C++ application, readdir returns only media files, ignoring non-media files which in my case are the ones that interest me. Only way for the moment to get these files is by using `MANAGE_ALL_FILES` permission. Please give some feedback



**an...@gmail.com** <an...@gmail.com> [#10](#)

Sep 23, 2021 10:34PM ⋮

They fixed it on android 12...but it is roughly 12x slower then before.  
Because I did not get response I think they can't fix it for android 11.

On Thu, Sep 23, 2021 at 2:26 PM <[buganizer-system@google.com](mailto:buganizer-system@google.com)> wrote:

[- Show quoted text -](#)



**co...@google.com** <co...@google.com>

Jun 17, 2023 12:47AM

Reassigned to an...@google.com.