

Dev With Ali Cloud Link TEE Air Edition

V0.1

more than
just connected



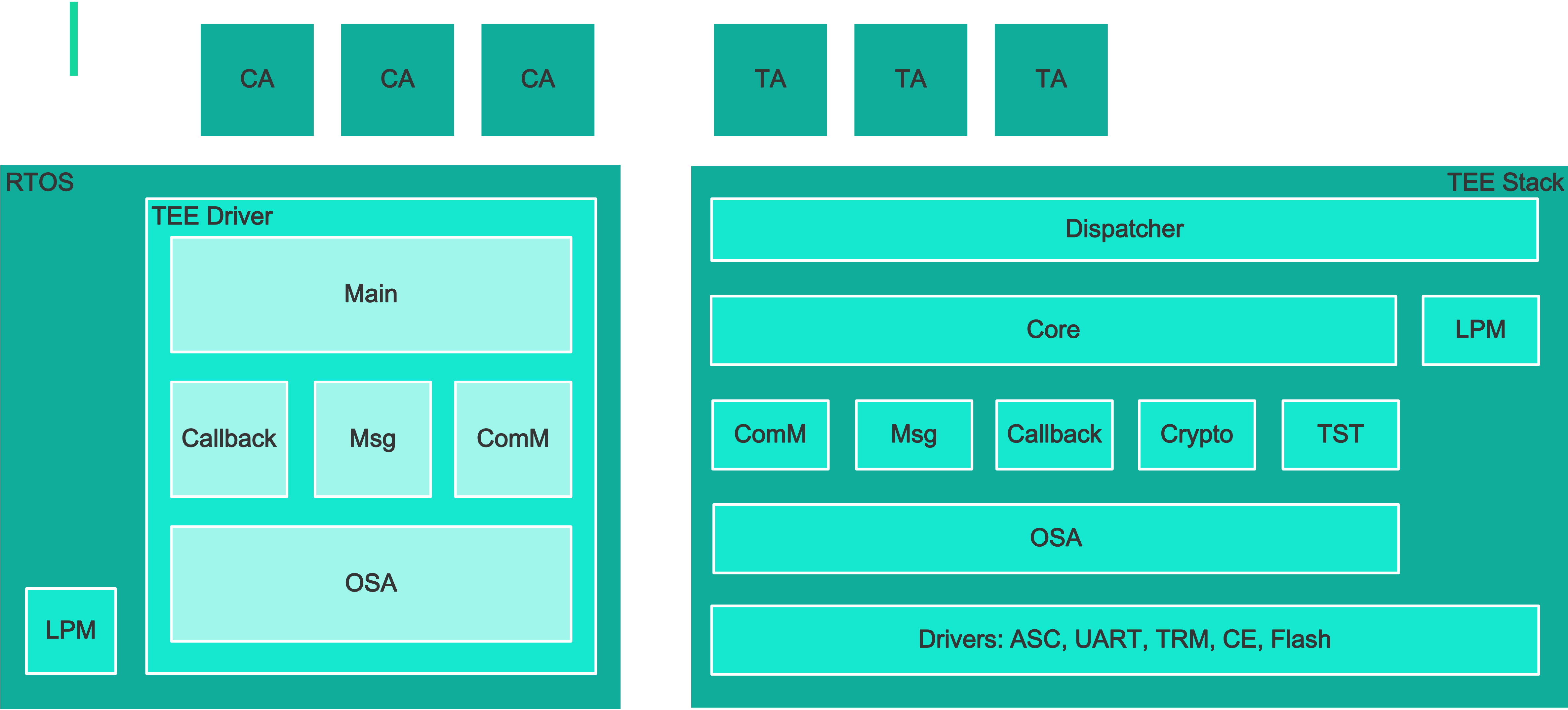
Arch



CA/TA Dev



Architecture



● TEE Air Arch

● **2** CA/TA Dev ●

●



API overview

Ali自定义API

Secure world:

- TEE internal API.

Non-secure world:

- TEE client API.
- TEE lpm API.

Software Development Kit (SDK)

This SDK is used to develop CA and TA of Alibaba TEE Air.

SDK layout:

- Non secure world
 - header files \$(code)/src/ntw/inc
 - library \$(code)/src/ntw/drv \$(code)src/ntw/lpm
- Secure world
 - header files \$(code)/src/tw/inc
 - 暴露给TA的api是tee_tos.h tee_crypto.h tee_tst.h
 - 其中tee_crypto.h实现了部份接口，tee_tst.h是安全存储的接口
 - service link script
- Tools
 - build_tw
- Documentations
- Samples
- Test

TA/CA sample

```
int tee_xor_test()
{
    unsigned int    a = 12345, b = 67890, c = 0;
    TEEC_Context    cntx;
    TEEC_Session    ss;
    TEEC_Operation  op;
    TEEC_Result      ret = TEEC_SUCCESS;

    ret = TEEC_OpenSession(&ss, &g_uuid, NULL);
    if (ret != TEEC_SUCCESS) {
        tee_dbg_print(ERR, "failed to call TEEC_OpenSession, 0x%08x\n", ret);
        goto cleanup2;
    }

    op.paramTypes = TEEC_PARAM_TYPES(
        TEEC_VALUE_INPUT, TEEC_VALUE_INPUT,
        TEEC_VALUE_OUTPUT, TEEC_NONE);
    op.params[0].value.a = a;
    op.params[1].value.a = b;
    op.params[2].value.a = c;

    ret = TEEC_InvokeCommand(&ss, CMD_XOR, &op);
    if (ret != TEEC_SUCCESS) {
        tee_dbg_print(ERR, "failed to call TEEC_InvokeCommand, 0x%08x\n", ret);
        goto cleanup3;
    }
    c = op.params[2].value.a;
    tee_dbg_print(INF, "a = %d; b = %d; c = a ^ b: %d\n", a, b, c);
    if (c != (a ^ b)) {
        ret = TEEC_ERROR_GENERIC;
        tee_dbg_print(ERR, "XOR failed!\n");
        goto cleanup3;
    }

cleanup3:
    TEEC_CloseSession(&ss);
cleanup2:
    return ret;
}
```

TA/CA sample(cont)

```
1  /**
2   * Copyright (C) 2015 The YunOS Project. All rights reserved.
3   */
4
5  #include "tee_tos.h"
6  #include "tee_srv.h"
7  #include "xor.h"
8
9  static TEE_Result _xor_CreateEntryPoint(void) ②
10 {
11     return TEE_SUCCESS;
12 }
13
14 static void _xor_DestroyEntryPoint(void) ⑥
15 {
16     return;
17 }
18
19 static TEE_Result _xor_OpenSessionEntryPoint( ③
20     uint32_t paramTypes,
21     TEE_Param params[4],
22     void **sessionContext)
23 {
24     return TEE_SUCCESS;
25 }
26
27 static void _xor_CloseSessionEntryPoint(void *sessionContext) ⑤
28 {
29     return;
30 }
31
32 static TEE_Result _xor_InvokeCommandEntryPoint( ④
33     void *sessionContext,
34     uint32_t commandID,
35     uint32_t paramTypes,
36     TEE_Param params[4])
37 {
38     if (paramTypes != TEE_PARAM_TYPES(
39         TEE_PARAM_TYPE_VALUE_INPUT,
40         TEE_PARAM_TYPE_VALUE_INPUT,
41         TEE_PARAM_TYPE_VALUE_OUTPUT,
42         TEE_PARAM_TYPE_NONE)) {
43         return TEE_ERROR_BAD_PARAMETERS;
44     }
45
46     if (CMD_XOR != commandID) {
47         return TEE_ERROR_BAD_PARAMETERS;
48     }
49
50     params[2].value.a =
51         params[0].value.a ^ params[1].value.a;
52
53     return TEE_SUCCESS;
54 }
55
56 TEE_SRV_DATA_START(_xor_CreateEntryPoint, ①
57     _xor_DestroyEntryPoint,
58     _xor_OpenSessionEntryPoint,
59     _xor_CloseSessionEntryPoint,
60     _xor_InvokeCommandEntryPoint)
61 TEE_SRV_UUID_PROPERTY("gpd.ta.appID", XOR_SRV_UUID)
62 TEE_SRV_BOOL_PROPERTY("gpd.ta.singleInstance", true)
63 TEE_SRV_BOOL_PROPERTY("gpd.ta.multiSession", true)
64 TEE_SRV_BOOL_PROPERTY("gpd.ta.instanceKeepAlive", true)
65 TEE_SRV_INT_PROPERTY("gpd.ta.dataSize", 0x10000)
66 TEE_SRV_INT_PROPERTY("gpd.ta.stackSize", 0x1000)
67 TEE_SRV_DATA_END
```

TA/CA build

CA

。参考FreeRTOS_M2351/Demo/M2351_NS (通过Keil可以直接打开工程文件)


TA

在\$(code)/build/srv_path_list.log文件中，指定新的TA的路径如下：

```
../samples/xor/tw
```

编译

在\$(code)/build/ 运行 ./b 就可以。会在\$(code)/out 目录下生成TEE 镜像文件 tee_tw.bin.



所知 不止于感知

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