

# Application Note

## 在 Sitara MPU 上启用 Matter



### 摘要

本应用手册探讨了如何在 Sitara 处理器器件上实现和使用 Matter 连接协议。以下各节概述了 Matter 的实现和演示，提供了从 SK-AM62B 收集的示例数据。

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### 商标

所有商标均为其各自所有者的财产。

## 1 引言

**Matter** 是一种开源应用层连接协议，专门用于创建与物联网设备交互的统一方法。它构建在 IP 基础之上，这使其原生适用于多种网络标准，例如 WiFi (802.11)、以太网 (802.3) 和 Thread (802.15.4)。

## 2 当前设计

此协议常见的实现方式是 **connectedhomeip** 项目的 **chip-tool** 中的参考设计，网址为：<https://github.com/project-chip/connectedhomeip>。该存储库包含：

- **Matter** 服务器的实现方式
- 消息传递接口的定义
- 广播和侦听广播事件所需的所有网络实用程序，包括：
  - mDNS 服务器
  - DNS 解析器
- 用于启用蓝牙配置的工具
- 每种可能的端点群集类型的定义
- 每个端点群集的示例
- 控制器/管理员应用的示例

对于一个简单的演示来说，只有两个方面很重要：管理员和端点。因此，我们将重点介绍 **chip-tool** 和锁定应用示例。从 **chip-tool** 开始，此示例应用有一个命令行界面 (CLI)，它充当管理员，能够链接到端点并根据该端点启用的集群发出命令或获取状态。**lock-app** 是端点的一个例子，通常用于控制电子锁存器。此应用会注册一些命令，例如：

- Lock
- Unlock
- Unbolt
- GetUser
- SetUser
- GetDoorState
- SetDoorState
- SetCredential
- GetCredential

其中每个命令都在 **chiptool** 中注册，并附带日志和状态更改消息，这些消息在调用时会广播。

## 3 支持

我们的演示使用了 **SK-AM62B**，有关该器件的更多信息，请参阅以下链接：<https://www.ti.com.cn/tool/cn/SK-AM62B>。关于软件，可以按照以下步骤使用 **Yocto** 编译演示：

1. 对于您的 **Ubuntu** 主机，下载先决程序：[https://software-dl.ti.com/processor-sdk-linux/esd/AM62X/09\\_00\\_00\\_03/exports/docs/linux/Overview\\_Building\\_the\\_SDK.html#prerequisites-one-time-setup](https://software-dl.ti.com/processor-sdk-linux/esd/AM62X/09_00_00_03/exports/docs/linux/Overview_Building_the_SDK.html#prerequisites-one-time-setup)。
2. `git clone https://git.ti.com/git/arago-project/oe-layersetup.git tisd`
3. `cd tisd`
4. `./oe-layertool-setup.sh -f configs/processor-sdk/processor-sdk-09.00.00-config.txt`
5. `cd sources`
6. `git clone -b kirkstone https://github.com/kraj/meta-clang.git`
7. `cd meta-arago/meta-arago-demos/recipes-apps`
8. `mkdir matter && cd matter`
9. 创建一个名为 `matter_git.bb` 的文件并添加以下内容：

```
SUMMARY = "Matter IoT connectivity on TI boards"
DESCRIPTION = "This recipe primes the matter environment"
LICENSE = "Apache-2.0"
LIC_FILES_CHKSUM = "file://${COMMON_LICENSE_DIR}/
Apache-2.0;md5=89aea4e17d99a7cacdbeed46a0096b10"
```

```

BRANCH = "master"
SRC_URI = "git://github.com/project-chip/connectedhomeip.git;protocol=https;branch=${BRANCH};lfs=1"

SRCREV = "a98bc64856aa161197e7dc7c1ffbdcc43323eda3"

do_matter_bootstrap[network] = "1"
do_compile[network] = "1"

TARGET_CC_ARCH += "${LDFLAGS}"
DEPENDS += " glib-2.0 gn-native ninja-native avahi dbus-glib-native pkgconfig-native python3-native boost zap-native openssl-native ca-certificates-native clang-native"
RDEPENDS_${PN} += " libavahi-client openssl "
FILES:${PN} += "usr/share"
INSANE_SKIP:${PN} += "dev-so debug-deps strip"

PACKAGECONFIG ?= ""
PACKAGECONFIG[debug] = "is_debug=true,is_debug=false"

GN_TARGET_ARCH_NAME:aarch64 = "arm64"
GN_TARGET_ARCH_NAME:arm = "arm"
GN_TARGET_ARCH_NAME:x86 = "x86"
GN_TARGET_ARCH_NAME:x86-64 = "x64"

def gn_target_arch_name(d):
    """Returns a GN architecture name corresponding to the target machine's
    architecture."""
    name = d.getVar("GN_TARGET_ARCH_NAME")
    if name is None:
        bb.fatal('Unsupported target architecture. A valid override for the '
            'GN_TARGET_ARCH_NAME variable could not be found.')
    return name

# this variable must use spaces and double quotes for parameter strings because
# *gn* is evil
GN_ARGS = " \
    ${PACKAGECONFIG_CONFARGS} \
    target_cpu="${@gn_target_arch_name(d)}" \
    target_arch="${TUNE_FEATURES}" \
    target_os="linux" \
    treat_warnings_as_errors=false \
    enable_rtti=true \
    enable_exceptions=true \
"

# Make sure pkg-config, when used with the host's toolchain to build the
# binaries we need to run on the host, uses the right pkg-config to avoid
# passing include directories belonging to the target.
GN_ARGS += 'host_pkg_config="pkg-config-native"'

s = "${WORKDIR}/git"

common_configure() {
    # this block must use spaces and double quotes for strings because *gn* is
    # evil
    PKG_CONFIG_SYSROOT_DIR=${PKG_CONFIG_SYSROOT_DIR} \
    PKG_CONFIG_LIBDIR=${PKG_CONFIG_PATH} \
    gn gen out/ --args='
        ${GN_ARGS}
        import("../build_overrides/build.gni")
        target_cflags=[
            "-DCHIP_DEVICE_CONFIG_WIFI_STATION_IF_NAME=\"wlan0\"",
            "-DCHIP_DEVICE_CONFIG_LINUX_DHCPC_CMD=\"udhcpc -b -i %s\"",
        ]
        custom_toolchain="${build_root}/toolchain/custom"
        target_cc="${CC}"
        target_cxx="${CXX}"
        target_ar="${AR}"
    '
}

export https_proxy
export http_proxy
export ftp_proxy
export no_proxy

do_matter_bootstrap() {

```

```

    . ${S}/scripts/bootstrap.sh
}

do_configure() {
    . scripts/activate.sh
    pip install click

    cd ${S}/examples/chip-tool
    common_configure

    cd ${S}/examples/lock-app/linux
    common_configure

    cd ${S}/examples/thermostat/linux
    common_configure

    cd ${S}/examples/lighting-app/linux
    common_configure
}

do_compile() {
    . scripts/activate.sh

    cd ${S}/examples/chip-tool
    ninja -C out/

    cd ${S}/examples/lock-app/linux
    ninja -C out/

    cd ${S}/examples/thermostat/linux
    ninja -C out/

    cd ${S}/examples/lighting-app/linux
    ninja -C out/
}

do_install() {
    install -d -m 755 ${D}${bindir}

    # Install chip-tool
    install ${S}/examples/chip-tool/out/chip-tool ${D}${bindir}

    # lock-app
    install ${S}/examples/lock-app/linux/out/chip-lock-app ${D}${bindir}
    install ${S}/examples/thermostat/linux/out/thermostat-app ${D}${bindir}
    install ${S}/examples/lighting-app/linux/out/chip-lighting-app ${D}${bindir}
}

addtask matter_bootstrap after do_unpack before do_configure

INSANE_SKIP_${PN} = "ldflags"

```

#### 10. 创建一个名为 `zap_git.bb` 的文件并添加以下内容：

```

PN = "zap-native"
SUMMARY = "ZAP prebuilt tools"
DESCRIPTION = "ZAP prebuilt binaries"
LICENSE = "Apache-2.0"
LIC_FILES_CHKSUM = "file://${COMMON_LICENSE_DIR}/
Apache-2.0;md5=89aea4e17d99a7cacdbeed46a0096b10"

PACKAGES = "${PN}"

PV = "v2023.08.04-nightly"
SRC_URI = "https://github.com/project-chip/zap/releases/download/${PV}/zap-linux-
x64.zip;unpack=yes"
SRC_URI[sha256sum] = "b254a0c066ef6b1fe7c2bdd1ab5b137ca80413f0952dfe6e64f4b0fdc4479b55"

S = "${WORKDIR}"

#INSANE_SKIP:${PN} = " already-stripped arch file-rdeps "
BBCLASSEXTEND = "native"
INHIBIT_PACKAGE_STRIP = "1"
INHIBIT_SYSROOT_STRIP = "1"
INHIBIT_PACKAGE_DEBUG_SPLIT = "1"
INHIBIT_FILE_RDEPS = "1"
INHIBIT_PACKAGE_DEBUG_SPLIT_CHECK = "1"

```

```
INHIBIT_PACKAGE_DEPMODE_CHECK = "1"
INHIBIT_PACKAGE_RELOCATE = "1"
INHIBIT_PACKAGE_UNPACK = "1"

INSANE_SKIP:${PN} += "dev-so"
inherit native

do_install() {
    install -d -m 0755 ${D}${bindir}/
    cp -ar zap* ${D}${bindir}/
    # This is a workaround to bypass the issue that zap-cli modified by build system
    chmod 444 ${D}${bindir}/zap-cli
}

do_package_qa[noexec] = "1"
EXCLUDE_FROM_SHLIBS = "1"

# This is a workaround to bypass the issue that zap-cli modified by build system
do_deploy() {
    chmod 755 ${D}${bindir}/zap-cli
}

do_populate_sdk:append() {
    chmod 755 ${D}${bindir}/zap-cli
}

addtask deploy after do_install do_populate_sysroot
addtask deploy before do_cleansstate
addtask deploy before do_clean
```

11. cd ../../../../

12. cd sources/bitbake/lib/bb/fetch2/

13. 按如下方式修改 gitsm.py :

```
diff --git a/lib/bb/fetch2/gitsm.py b/lib/bb/fetch2/gitsm.py
index c5f7c03c..ee852224 100644
--- a/lib/bb/fetch2/gitsm.py
+++ b/lib/bb/fetch2/gitsm.py
@@ -122,6 +122,7 @@ class Gitsm(Git):
     url += ';protocol=%s' % proto
     url += ";name=%s" % module
     url += ";subpath=%s" % module
+    url += ";lfs=1"

    ld = d.createCopy()
    # Not necessary to set SRC_URI, since we're passing the URI to
@@ -238,7 +239,7 @@ class Gitsm(Git):
    # All submodules should already be downloaded and configured in the tree. This simply sets
    # up the configuration and checks out the files. The main project config should remain
    # unmodified, and no download from the internet should occur.
-    runfetchcmd("%s submodule update --recursive --no-fetch" % (ud.basecmd), d, quiet=True,
workdir=ud.destdir)
+    runfetchcmd("GIT_LFS_SKIP_SMUDGE=1 %s submodule update --recursive --no-fetch" %
(ud.basecmd), d, quiet=True, workdir=ud.destdir)

def implicit_urldata(self, ud, d):
    import shutil, subprocess, tempfile
```

14. cd ../../../../build/

15. 打开文件 conf/local.conf 并在文件底部添加以下内容 : IMAGE\_INSTALL:append = "matter"

16. . conf/setenv

17. MACHINE=am62xx-evm bitbake-layers add-layer ../sources/meta-clang/

18. MACHINE=am62xx-evm bitbake tisdk-default-image

19. 使用以下目录中生成的 WIC 映像烧录 SD 卡 : ./arago-tmp-default-glibc/deploy/images/am62xx-evm/tisdk-default-image-am62xx-evm.wic.xz

生成 wic 映像后, 请参阅以下使用 SD 卡启动 EVM 的说明 : [https://dev.ti.com/tirex/content/tirex-product-tree/am62x-devtools/docs/am62x\\_skevm\\_quick\\_start\\_guide.html](https://dev.ti.com/tirex/content/tirex-product-tree/am62x-devtools/docs/am62x_skevm_quick_start_guide.html)

## 4 演示

图 4-1 显示了两个使用芯片工具和锁应用的 AM62x 器件通过以太网相互连接。

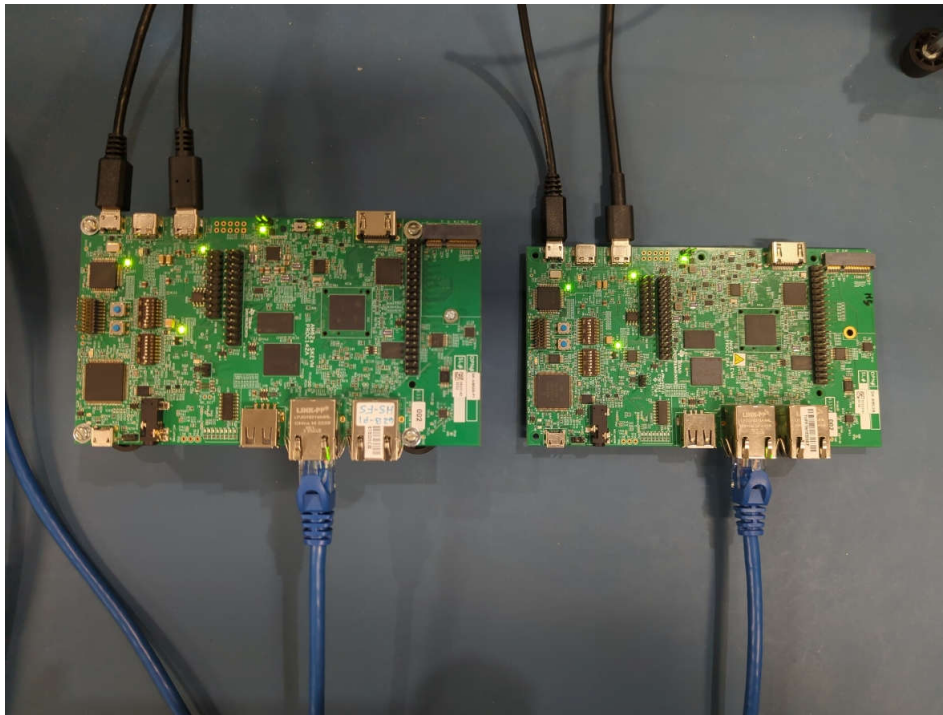


图 4-1. 硬件设置

图 4-2 显示了如何使用锁定应用将 AM62x 器件设置为端点。

```
[ #0 Endpoint ]  
root@am62xx-evm:~# /usr/bin/chip-lock-app  
|
```

图 4-2. 创建端点

图 4-3 显示了预期的端点日志。请注意器件配置信息。

```

[ # Endpoint ]
[1698091073.104599][7891-7891] CHIP-DIS: Responding with DD45B3C0D6209708_matterc_udp.local
[1698091073.104577][7891-7891] CHIP-DIS: CHIP minimal mDNS configured as 'Commissionable node device'; instance name
: DD45B3C0D6209708
[1698091073.111691][7891-7891] CHIP-DIS: mDNS service published: matterc_udp
[1698091073.111773][7891-7891] CHIP-DIS: Updating services using commissioning mode 1
[1698091073.115639][7891-7891] CHIP-DIS: CHIP minimal mDNS started advertising.
[1698091073.130695][7891-7891] CHIP-DL: Using wifi MAC for hostname
[1698091073.130268][7891-7891] CHIP-DIS: Advertise commission parameter vendorID=65521 productID=32769 discriminator
: 3840/15 cm=1
[1698091073.130320][7891-7891] CHIP-DIS: Responding with _matterc_udp.local
[1698091073.130336][7891-7891] CHIP-DIS: Responding with DD45B3C0D6209708_matterc_udp.local
[1698091073.130351][7891-7891] CHIP-DIS: Responding with 1063490F614A6000.local
[1698091073.130365][7891-7891] CHIP-DIS: Responding with 1063490F614A6000.local
[1698091073.130384][7891-7891] CHIP-DIS: Responding with _v65521_sub_matterc_udp.local
[1698091073.130401][7891-7891] CHIP-DIS: Responding with _S15_sub_matterc_udp.local
[1698091073.130419][7891-7891] CHIP-DIS: Responding with _L3840_sub_matterc_udp.local
[1698091073.130436][7891-7891] CHIP-DIS: Responding with _CM_sub_matterc_udp.local
[1698091073.130461][7891-7891] CHIP-DIS: Responding with DD45B3C0D6209708_matterc_udp.local
[1698091073.130476][7891-7891] CHIP-DIS: CHIP minimal mDNS configured as 'Commissionable node device'; instance name
: DD45B3C0D6209708
[1698091073.130561][7891-7891] CHIP-DIS: mDNS service published: matterc_udp
[1698091073.130580][7891-7891] CHIP-IN: CASE Server enabling CASE session setups
[1698091073.136108][7891-7891] CHIP-IN: SecureSession[0xaaadbd39540]: Allocated Type:2 LSID:60447
[1698091073.136141][7891-7891] CHIP-SEC: Allocated SecureSession (0xaaadbd39540) - waiting for Sigma msg
[1698091073.136164][7891-7891] CHIP-SVR: Joining Multicast groups
[1698091073.136188][7891-7891] CHIP-ZCL: Emitting StartUp event
[1698091073.136238][7891-7891] CHIP-EVL: LogEvent event number: 0x0000000000000002 priority: 2, endpoint id: 0x0 c1
uster id: 0x000000028 event id: 0x0 Epoch timestamp: 0x0000010B551D0E70
[1698091073.136270][7891-7891] CHIP-SVR: Server initialization complete
[1698091073.136306][7891-7891] CHIP-SVR: Server Listening...
[1698091073.136320][7891-7891] CHIP-DL: Device Configuration:
[1698091073.136365][7891-7891] CHIP-DL: Serial Number: TEST_SN
[1698091073.136431][7891-7891] CHIP-DL: Vendor Id: 65521 (0xFFf1)
[1698091073.136458][7891-7891] CHIP-DL: Product Id: 32769 (0x8001)
[1698091073.136474][7891-7891] CHIP-DL: Product Name: TEST_PRODUCT
[1698091073.136496][7891-7891] CHIP-DL: Hardware Version: 0
[1698091073.136510][7891-7891] CHIP-DL: Setup Pin Code (0 for UNKNOWN/ERROR): 20202021
[1698091073.136525][7891-7891] CHIP-DL: Setup Discriminator (0xFFFF for UNKNOWN/ERROR): 3840 (0xF00)
[1698091073.136546][7891-7891] CHIP-DL: Manufacturing Date: (not set)
[1698091073.136589][7891-7891] CHIP-DL: Device Type: 65505 (0xFFf5)
[1698091073.136583][7891-7891] CHIP-SVR: SetupQRCode: [MT-24J04ZC00KA0648000]
[1698091073.136605][7891-7891] CHIP-SVR: Copy/paste the below URL in a browser to see the QR Code:
[1698091073.466833][7891-7891] CHIP-SVR: https://project-chip.github.io/connectedhomeip/qrcode.html?data=MT%3A-24J04
ZC00KA0648000
[1698091073.467126][7891-7891] CHIP-SVR: Manual pairing code: [34970112332]
[1698091073.479252][7891-7893] CHIP-DL: TRACE: Bus acquired for name MATTER-3840
[1698091073.479820][7891-7893] CHIP-DL: CREATE service object at /chipoble/led3/service
[1698091073.481740][7891-7893] CHIP-DL: Create characteristic object at /chipoble/led3/service/c1
[1698091073.483175][7891-7893] CHIP-DL: Create characteristic object at /chipoble/led3/service/c2
[1698091073.483983][7891-7893] CHIP-DL: CHIP BTP C1 /chipoble/led3/service
[1698091073.484023][7891-7893] CHIP-DL: CHIP BTP C2 /chipoble/led3/service
[1698091073.484098][7891-7893] CHIP-DL: CHIP_ENABLE_ADDITIONAL_DATA_ADVERTISING is FALSE
[Admin] 0:~#
  
```

图 4-3. 预期端点日志

图 4-4 显示了管理员如何使用芯片工具与端点对配。

```

[ #1 Administrator ]
root@am62xx-evm:~# /usr/bin/chip-tool pairing onnetwork 1 20202021
  
```

图 4-4. 与端点器件配对

图 4-5 显示预期的成功配对尝试日志。注意日志中的 CommissioningComplete 响应。

```

[ # Administrator ]
[1698091101.606158][7889-7892] CHIP:DL: HandlePlatformSpecificBLEEvent 32793
[1698091101.613771][7889-7892] CHIP:EM: >>> [E:575771 S:16952 M:254685401 (Ack:55486435)] (S) Msg RX from 1:0000000000000000 [6361] --- Type 0001:09 (IM-InvokeCommandResponse)
[1698091101.613851][7889-7892] CHIP:EM: Found matching exchange: 575771, Delegates: 0xfffffc01ab58
[1698091101.613909][7889-7892] CHIP:EM: Ack Ack, Removing MessageCounter:55486435 from Retrans Table on exchange 575771
[1698091101.613966][7889-7892] CHIP:DMG: ICR moving to [ResponseRe]
[1698091101.614496][7889-7892] CHIP:DMG: Received Command Response Data, Endpoint=0 Cluster=0x0000_0030 Command=0x0000_0000
[1698091101.614155][7889-7892] CHIP:CTL: Received CommissioningComplete response, errorCode=0
[1698091101.614201][7889-7892] CHIP:CTL: Successfully finished commissioning step "SendComplete"
[1698091101.614240][7889-7892] CHIP:CTL: Commissioning stage next step: SendComplete -> Cleanup
[1698091101.614286][7889-7892] CHIP:CTL: Performing next commissioning step "Cleanup"
[1698091101.614329][7889-7892] CHIP:IN: SecureSession[0xfffffc00dd0]: MarkForEviction Type:1 LSID:16951
[1698091101.614368][7889-7892] CHIP:SC: SecureSession[0xfffffc00dd0, LSID:16951]: State change 'kActive' --> 'kPendingVictim'
[1698091101.614556][7889-7892] CHIP:IN: SecureSession[0xfffffc00dd0]: Released - Type:1 LSID:16951
[1698091101.614612][7889-7892] CHIP:CTL: Successfully finished commissioning step "Cleanup"
[1698091101.614657][7889-7892] CHIP:TOO: Device commissioning completed with success
[1698091101.614793][7889-7892] CHIP:DMG: ICR moving to [AwaitingDel]
[1698091101.614937][7889-7892] CHIP:DM: <<< [E:575771 S:16952 M:55486436 (Ack:254685401)] (S) Msg TX to 1:0000000000000000 [6361] --- Type 0000:10 (SecureChannel.StandAloneAck)
[1698091101.615004][7889-7892] CHIP:IN: (S) Sending msg 55486436 on secure session with LSID: 16952
[1698091101.615224][7889-7892] CHIP:DM: Flushed pending ack for MessageCounter:254685401 on exchange 575771
[1698091101.617188][7889-7892] CHIP:DL: HandlePlatformSpecificBLEEvent 32793
[1698091101.620558][7889-7889] CHIP:CTL: Shutting down the commissioner
[1698091101.620593][7889-7889] CHIP:CTL: Stopping commissioning discovery over DNS-SD
[1698091101.620727][7889-7889] CHIP:IN: Expiring all sessions for fabric 0x111
[1698091101.620739][7889-7889] CHIP:IN: SecureSession[0xfffffc03e130]: MarkForEviction Type:2 LSID:16952
[1698091101.620755][7889-7889] CHIP:SC: SecureSession[0xfffffc03e130, LSID:16952]: State change 'kActive' --> 'kPendingVictim'
[1698091101.620769][7889-7889] CHIP:IN: SecureSession[0xfffffc03e130]: Released - Type:2 LSID:16952
[1698091101.620786][7889-7889] CHIP:FP: Forgetting fabric 0x1
[1698091101.620811][7889-7889] CHIP:TS: Pending Last Known Good Time: 2023-08-10T21:07:57
[1698091101.621003][7889-7889] CHIP:TS: Previous Last Known Good Time: 2023-08-10T21:07:57
[1698091101.621023][7889-7889] CHIP:TS: Reverted Last Known Good Time to previous value
[1698091101.621076][7889-7889] CHIP:CTL: Shutting down the commissioner
[1698091101.621082][7889-7889] CHIP:CTL: Stopping commissioning discovery over DNS-SD
[1698091101.621371][7889-7889] CHIP:CTL: Shutting down the controller
[1698091101.940699][7889-7889] CHIP:CTL: Shutting down the System State, this will teardown the CHIP Stack
[1698091101.950263][7889-7889] CHIP:DMG: All ReadHandler-s are clean, clear GlobalDirtySet
[1698091101.950399][7889-7889] CHIP:FP: Shutting down FabricTable
[1698091101.950443][7889-7889] CHIP:TS: Pending Last Known Good Time: 2023-08-10T21:07:57
[1698091101.950648][7889-7889] CHIP:TS: Previous Last Known Good Time: 2023-08-10T21:07:57
[1698091101.950674][7889-7889] CHIP:TS: Reverted Last Known Good Time to previous value
[1698091101.951042][7889-7889] CHIP:DL: writing settings to file (/tmp/chip_counters.ini-8RV0bv)
[1698091101.951077][7889-7889] CHIP:DL: renamed tmp file to file (/tmp/chip_counters.ini)
[1698091101.951637][7889-7889] CHIP:DL: WVS set: chip-counters/total-operational-hours = 0 (0x0)
[1698091101.951694][7889-7889] CHIP:DL: Inet Layer shutdown
[1698091101.951718][7889-7889] CHIP:DL: BLE shutdown
[1698091101.951741][7889-7889] CHIP:DL: System Layer shutdown
root@am62xx-avm-#
Administrator 14:58 23-Oct-23

```

图 4-5. 成功配对

图 4-6 显示端点的状态设置为锁定。

```

[ # Administrator ]
[1698091101.951741][7889-7889] CHIP:DL: System Layer shutdown
root@am62xx-avm-# /usr/bin/chip-tool doorLock lock-door 1 1 --timedInteractionTimeoutMs 1000
[1698091110.128191][7954-7954] CHIP:DL: ChpLinuxStorage:Init: Using KVS config file: /tmp/chip_kvs
[1698091110.137753][7954-7954] CHIP:DL: ChpLinuxStorage:Init: Using KVS config file: /tmp/chip_factory.ini
[1698091110.138020][7954-7954] CHIP:DL: ChpLinuxStorage:Init: Using KVS config file: /tmp/chip_config.ini
[1698091110.138092][7954-7954] CHIP:DL: ChpLinuxStorage:Init: Using KVS config file: /tmp/chip_counters.ini
[1698091110.138375][7954-7954] CHIP:DL: writing settings to file (/tmp/chip_counters.ini-5n15kj)
[1698091110.138686][7954-7954] CHIP:DL: renamed tmp file to file (/tmp/chip_counters.ini)
[1698091110.138685][7954-7954] CHIP:DL: WVS set: chip-counters/reboot-count = 2 (0x2)
[1698091110.139421][7954-7954] CHIP:DL: Got Ethernet interface: eth0
[1698091110.139719][7954-7954] CHIP:DL: Found the primary Ethernet interface:eth0
[1698091110.140180][7954-7954] CHIP:DL: Failed to get WiFi interface
[1698091110.140181][7954-7954] CHIP:DL: Failed to reset WiFi statistic counts
[1698091110.140216][7954-7954] CHIP:IN: UDP:Init bind&listen port=0
[1698091110.140321][7954-7954] CHIP:IN: UDP:Init bound to port=34854
[1698091110.140330][7954-7954] CHIP:IN: UDP:Init bind&listen port=0
[1698091110.140390][7954-7954] CHIP:IN: UDP:Init bound to port=43945

```

图 4-6. 将锁定状态设置为已锁定



图 4-7 显示了门锁请求之后在端点上报告的状态。

```

[ # Endpoint ]
[698091110.564418][7891:7891] CHIP-DL: HandlePlatformSpecificBLEEvent 32793
[698091110.567324][7891:7891] CHIP-EM: >>> [E:36465r S:60448 M:92270786] (S) Msg RX from 1:00000000018669 [6361]
--- Type 0001:0a (IM:TimeRequest)
[698091110.567692][7891:7891] CHIP-EM: >>> [E:36464r S:0 M:27467073 (Ack:89265551)] (U) Msg RX from 0:A347E545D02CE
948 [0000] --- Type 0000:10 (SecureChannel:StandAloneAck)
[698091110.567692][7891:7891] CHIP-DMG: Got Time Request with timeout 1000: handler 0xaaadb3f69 exchange 36465r
[698091110.567944][7891:7891] CHIP-EM: <<< [E:36465r S:60448 M:247907961 (Ack:92270786)] (S) Msg TX to 1:000000000
018669 [6361] --- Type 0001:01 (IM:StatusResponse)
[698091110.568032][7891:7891] CHIP-DM: (S) Sending msg 247907961 on secure session with LSID: 60448
[698091110.568574][7891:7891] CHIP-DMG: Timed Request time limit 0x00000000000033598F: handler 0xaaadb3f69 exchang
e 36465r
[698091110.568699][7891:7891] CHIP-DL: HandlePlatformSpecificBLEEvent 32793
[698091110.568978][7891:7891] CHIP-EM: >>> [E:36464r S:0 M:27467073 (Ack:89265551)] (U) Msg RX from 0:A347E545D02CE
948 [0000] --- Type 0000:10 (SecureChannel:StandAloneAck)
[698091110.569096][7891:7891] CHIP-EM: Found matching exchange: 36464r, Delegate: (nil)
[698091110.569388][7891:7891] CHIP-EM: Rxd Ack; Removing MessageCounter:89265551 from Retrans Table on exchange 364
64r
[698091110.569421][7891:7891] CHIP-DL: HandlePlatformSpecificBLEEvent 32793
[698091110.898427][7891:7891] CHIP-EM: >>> [E:36465r S:60448 M:92270787 (Ack:247907961)] (S) Msg RX from 1:00000000
00018669 [6361] --- Type 0001:0a (IM:InvokeCommandRequest)
[698091110.898427][7891:7891] CHIP-EM: Found matching exchange: 36465r, Delegate: 0xaaadb3f69
[698091110.898497][7891:7891] CHIP-EM: Rxd Ack; Removing MessageCounter:247907961 from Retrans Table on exchange 36
465r
[698091110.898517][7891:7891] CHIP-DMG: Timed following action arrived at 0x0000000000335921: handler 0xaaadb3f69
0 exchange 36465r
[698091110.898531][7891:7891] CHIP-DMG: Handling timed invoke to IM engine: handler 0xaaadb3f69 exchange 36465r
[698091110.898606][7891:7891] CHIP-DMG: Received command for Endpoint=1 Cluster=0x0000_0101 Command=0x0000_0000
[698091110.898649][7891:7891] CHIP-ZCL: Received command: LockDoor
[698091110.898720][7891:7891] CHIP-ZCL: Door Lock App: PIN code is not specified [endpointId=1]
[698091110.898727][7891:7891] CHIP-ZCL: Door Lock App: setting door lock state to 'locked' [endpointId=1]
[698091110.898817][7891:7891] CHIP-DMG: Command handler moving to [Preparing]
[698091110.898864][7891:7891] CHIP-DMG: Command handler moving to [AddingComm]
[698091110.898905][7891:7891] CHIP-DMG: Command handler moving to [AddedComm]
[698091110.898954][7891:7891] CHIP-DMG: Decreasing reference count for CommandHandler, remaining 0
[698091110.899087][7891:7891] CHIP-EM: <<< [E:36465r S:60448 M:247907962 (Ack:92270787)] (S) Msg TX to 1:000000000
018669 [6361] --- Type 0001:09 (IM:InvokeCommandResponse)
[698091110.899152][7891:7891] CHIP-EM: (S) Sending msg 247907962 on secure session with LSID: 60448
[698091110.899479][7891:7891] CHIP-DMG: Command handler moving to [CommandDone]
[698091110.899522][7891:7891] CHIP-DMG: Command handler moving to [AwaitingDe]
[698091110.899579][7891:7891] CHIP-DL: HandlePlatformSpecificBLEEvent 32793
[698091110.899624][7891:7891] CHIP-DL: HandlePlatformSpecificBLEEvent 32793
[698091110.899954][7891:7891] CHIP-DL: writing settings to file (/tmp/chip_kvps-p8gnvq)
[698091110.900655][7891:7891] CHIP-DMG: renamed tmp file to file (/tmp/chip_kvps)
[698091110.900743][7891:7891] CHIP-DMG: Endpoint 1, Cluster 0x0000_0101 update version to 1c9fd231
[698091110.900789][7891:7891] CHIP-ZCL: Door Lock attribute changed
[698091110.900801][7891:7891] CHIP-EM: LogEvent event number: 0x0000000000000004 priority: 2, endpoint id: 0x1 cl
uster id: 0x0000_0101 event id: 0x2 Epoch timestamp: 0x00000185E1E1F4
[698091110.901306][7891:7891] CHIP-EM: >>> [E:36465r S:60448 M:92270788 (Ack:247907962)] (S) Msg RX from 1:00000000
00018669 [6361] --- Type 0000:10 (SecureChannel:StandAloneAck)
[698091110.901375][7891:7891] CHIP-EM: Found matching exchange: 36465r, Delegate: (nil)
[698091110.901433][7891:7891] CHIP-EM: Rxd Ack; Removing MessageCounter:247907962 from Retrans Table on exchange 36
465r
[698091110.901491][7891:7891] CHIP-DL: HandlePlatformSpecificBLEEvent 32793
[Admin] 0:~$
  
```

图 4-7. 端点日志中的锁定状态

要查看上述内容的录制演示以及同步更新的完整端点和管理员日志，请参阅以下内容：<https://ascinema.org/a/620956>。

## 5 总结

本应用手册的主要目标是演示如何从 `connectedhomeip` 工程编译 `matter` 的参考设计，并运行简单的锁定/解锁演示。尽管使用的是 `AM62x` 器件，上述说明适用于任何 `ARM 32 位` 和 `ARM 64 位 TI 处理器`。

## 6 参考资料

- 德州仪器 (TI), [AM625 产品文件夹](#)。

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