



▶ **Marvell. Moving Forward Faster**

# USB Driver

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## Driver Overview

- USB Driver Split into PC side and Device Side
- Device side matches PC side
- Current PC side driver is provided by SamSung
- Current Device side is developed by Marvell to cooperate with PC side driver.

## Drivers supported by Marvell MIFI

PID	Description	Driver type composition	Use case	Group Comparison (reason)	remark
0x6861	integrated driver(RNDIS(#0,1) + UMS(#2)	RNDIS+UMS+ dynamic composition	MS Composite		Samsung integrated driver
0x6864	integrated driver(RNDIS(#0,1))	RNDIS+dynamic composition	MS Composite		

PID	Description	Driver type composition	Use case	Group Comparison (reason)	remark
N/A	RNDIS Only	RNDIS			
N/A	ECM Only	ECM			
N/A	UMS Only	UMS			

## Dynamic composition

- **Dynamic composition use the CDC-ACM Device Descriptor**
- **Enumerated as Modem in PC side**
- **3 endpoints for one device: 1 for control, 2 for data(RX/TX)**
- **2 Modems realized in current design: one for AT, one for Diag**

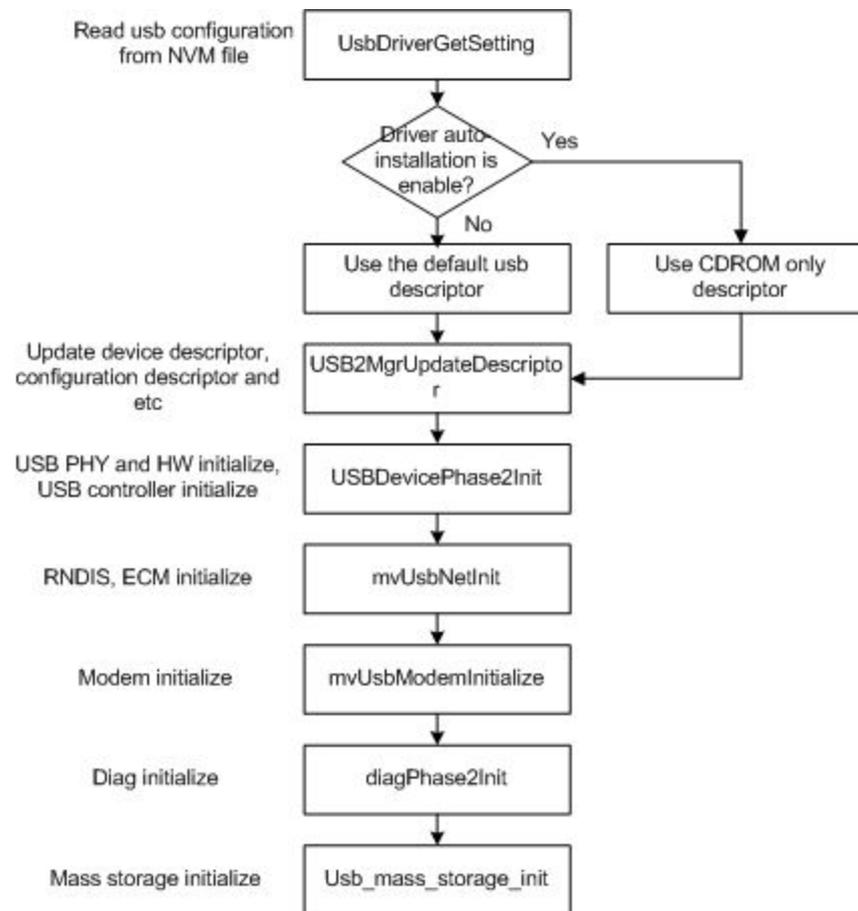
# RNDIS

- Developed according to Microsoft RNDIS protocol
- 3 endpoints for one device: 1 for control, 2 for data(RX/TX)

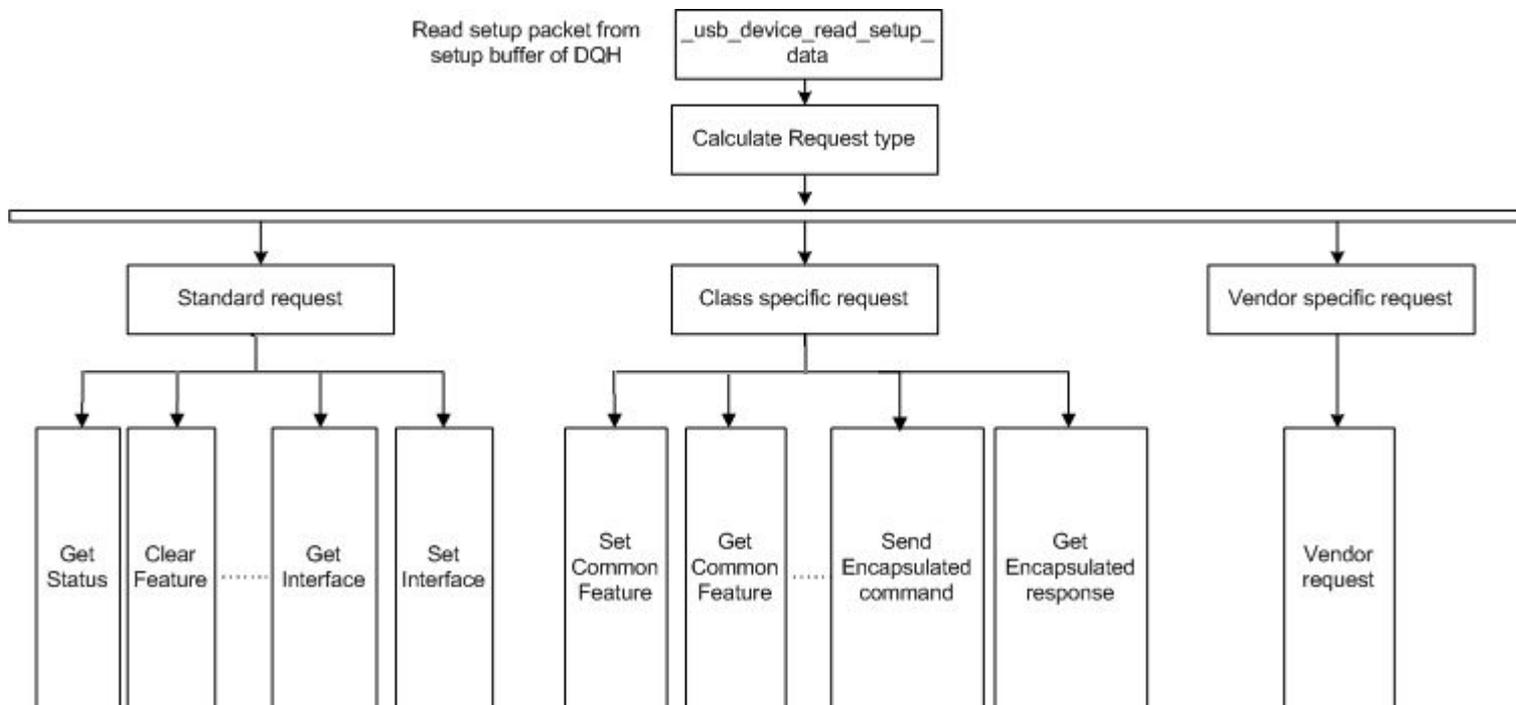
# ECM

- **Developed according to USB CDC-ECM protocol**
- **3 endpoints for one device: 1 for control, 2 for data(RX/TX)**

# USB Initialization process



# Setup packet process



# How to update USB descriptor

## □ Modify or add new descriptor in USB2MgrUpdateDescriptor.

- Device descriptor.
- Configuration descriptor.
- String descriptor.

```

void USB2MgrUpdateDescriptor (PlatformUsbDescType desc)
{
    UINT16 dev_desc_length, config_desc_length, qualif_desc_length, other_speed_desc_length;
    UINT16 devDesc_num, configDesc_num;
    BOOL storage = FALSE;

    .....

    /* Get Mass storage enable flag. */
    storage = usbCfg.mass_storage;

    switch(desc)
    {
        .....

        case USB_SSG_MIFI_DESCRIPTOR: //Samsung MIFI
        {
            devDesc_num=0;
            //Device Descriptor
            devDesc[devDesc_num++] = 0x12; // bLength           - Descriptor length
            devDesc[devDesc_num++] = 0x01; // bDescriptorType  - Descriptor Type
            .....

            configDesc_num=0;
            //Configuration Descriptor
            configDesc[configDesc_num++] = 0x09; // bLength           - Descriptor length
            configDesc[configDesc_num++] = 0x02; // bDescriptorType  - Descriptor Type
            .....

            break;
        }

        .....

    } ? end switch desc ?

    .....

    switch(desc)
    {
        .....

        case USB_SSG_MIFI_DESCRIPTOR:
        case USB_AZW_MIFI_DESCRIPTOR:
        {
            USBDeviceSetDescriptor ( USB_DESCRIPTOR_TYPE_STRING , strDescManufacturer, sizeof(strDescManufacturer), 1); //iManufacturer
            USBDeviceSetDescriptor ( USB_DESCRIPTOR_TYPE_STRING , strMobileDevice, sizeof(strMobileDevice), 2); //iProduct
            USBDeviceSetDescriptor ( USB_DESCRIPTOR_TYPE_STRING , strMobileNumber, sizeof(strMobileNumber), 3); //iSerialNumber
            .....
        }
    }
}
    
```

# How to configure Mass Storage

## Configure mass storage.

- The max logical unit number.
- The Start/End flash address.
- The media type of logical disc.
- Enable/Disable Mass storage.

```

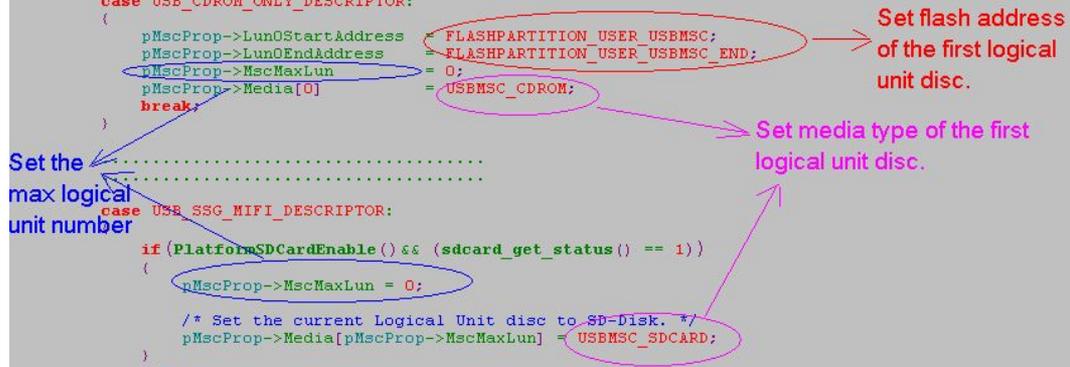
void mvUsbStorageConfigure (void)
{
    mvUsbMscProperties_T *pMscProp = GetMscProperties();
    PlatformUsbDescType usbdesc = USB2ReconfigDescriptor();

    memset(pMscProp, 0x00, sizeof(mvUsbMscProperties_T));

    switch(usbdesc)
    {
        case USB_CDROM_ONLY_DESCRIPTOR:
        {
            pMscProp->Lun0StartAddress = FLASHPARTITION_USER_USBMSC;
            pMscProp->Lun0EndAddress   = FLASHPARTITION_USER_USBMSC_END;
            pMscProp->MscMaxLun        = 0;
            pMscProp->Media[0]         = USBMSC_CDROM;
            break;
        }
        .....
        case USB_SSG_MIFI_DESCRIPTOR:
        {
            if (PlatformSDCardEnable() && (sdcard_get_status() == 1))
            {
                pMscProp->MscMaxLun = 0;

                /* Set the current Logical Unit disc to SD-Disk. */
                pMscProp->Media[pMscProp->MscMaxLun] = USBMSC_SDCARD;
            }
            else
            {
                usbCfg.mass_storage = MASS_STORAGE_DISABLE;
            }
            break;
        }
        .....
    } ? end switch usbdesc ?

    ASSERT(pMscProp->MscMaxLun < MSC_MAX_LUN);
} ? end mvUsbStorageConfigure ?
    
```



# How to modify the flash address of mass storage

## □ Modify the flash address of every logical unit disc in flashpartition.h

```

/*****
/* FAT System/Mass Storage Nor flash Address */
/*****

#ifdef SPI_NOR_FLASH

#define FAT_SYS_MAP_TABLE_ADDRESS      0x960000
#define FAT_SYS_START_ADDRESS          (0x960000+0x30000)
#define FAT_SYS_END_ADDRESS            (FAT_SYS_START_ADDRESS+0x210000-1)

#define FLASHPARTITION_USER_USBMSC     0xBA0000
#define FLASHPARTITION_USER_USBMSC_END (0xDA0000-1)

/* USB Flash Disc one*/
#define FLASHPARTITION_USER_USBMSC1    (0xDA0000)
#define FLASHPARTITION_USER_USBMSC1_END (0xEA0000-1)

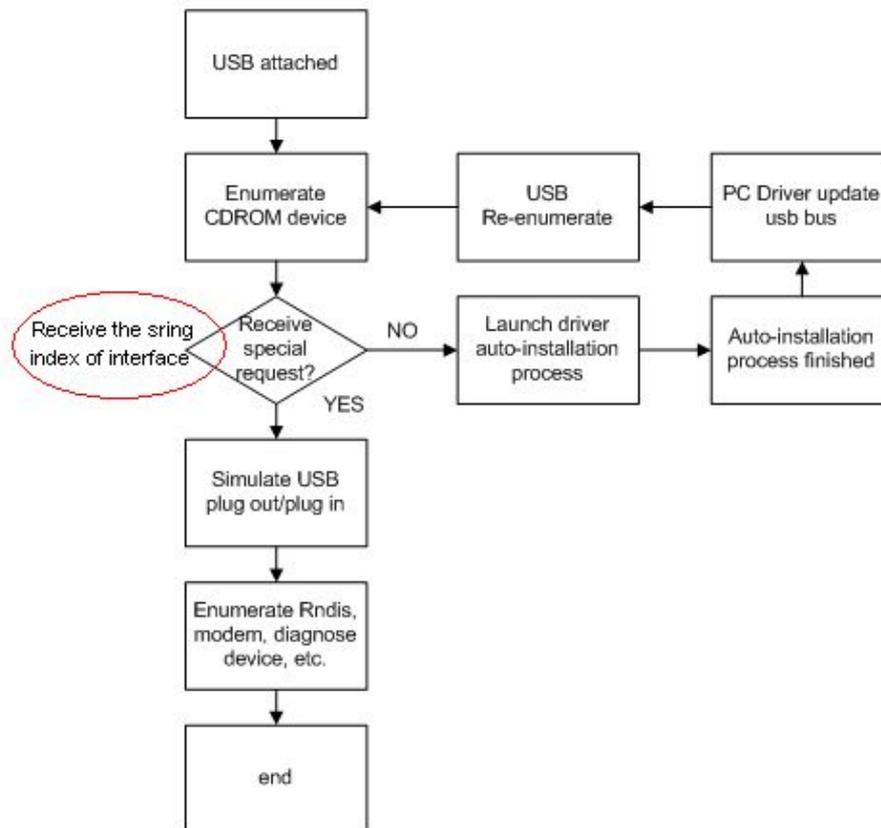
/* USB Flash Disc two*/
#define FLASHPARTITION_USER_USBMSC2    (0xEA0000)
#define FLASHPARTITION_USER_USBMSC2_END (0xFA0000-1)

#define FLASHPARTITION_PSM_ADDR        0xFA0000

#else /* Nand Flash layout*/

```

# Driver Auto-installation

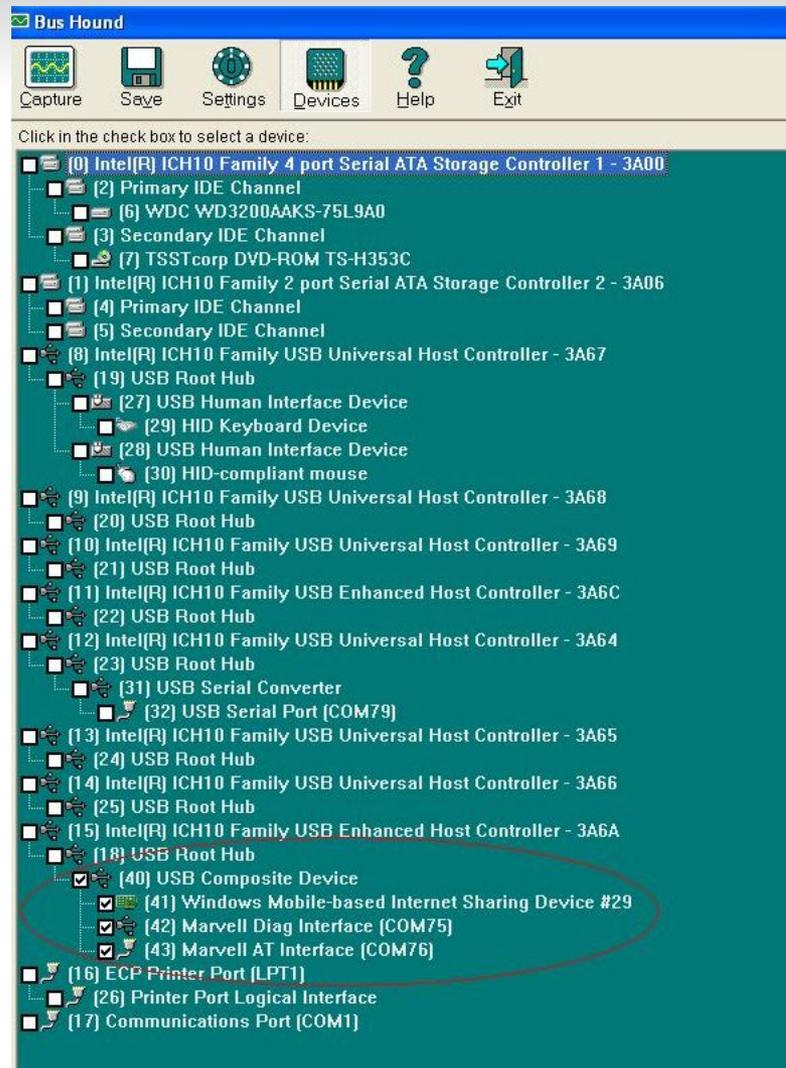


Driver auto-installation flow chart

# Debug With Bushound

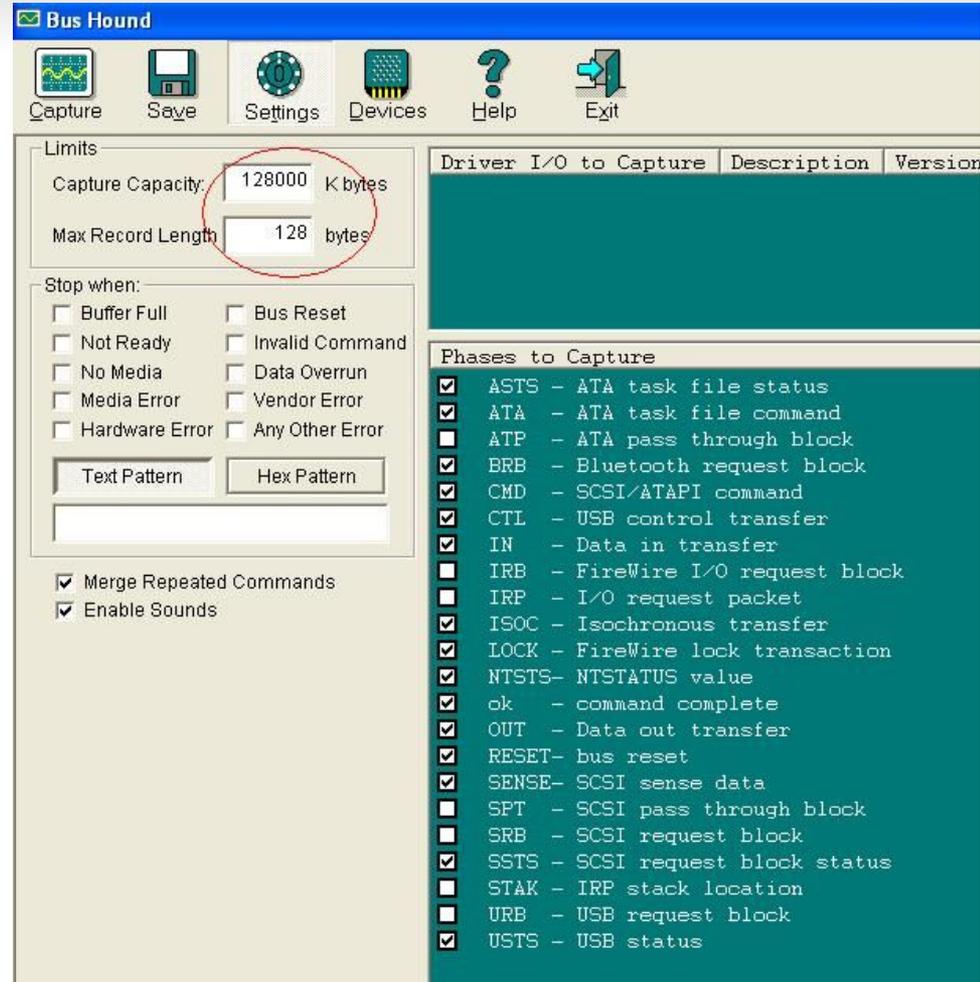
# How to capture bushound log

## Select usb devices



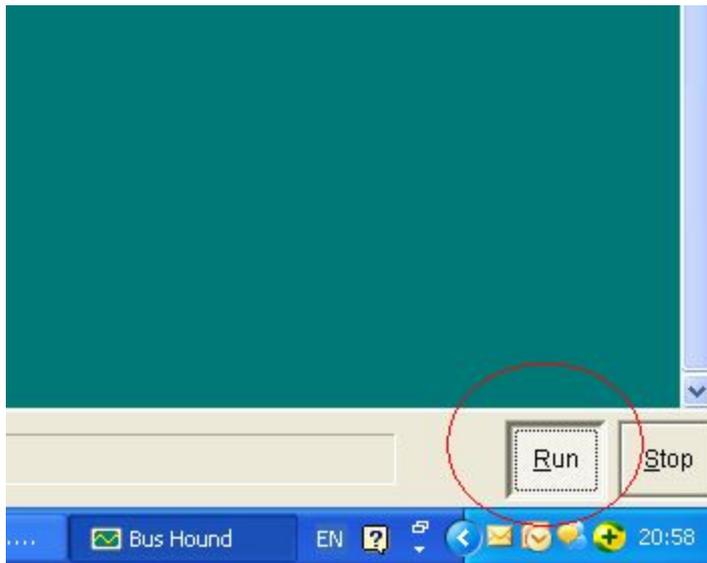
# How to capture bushound log

- ❑ Set “Capture Capacity”.
- ❑ Set “Max Record Length”



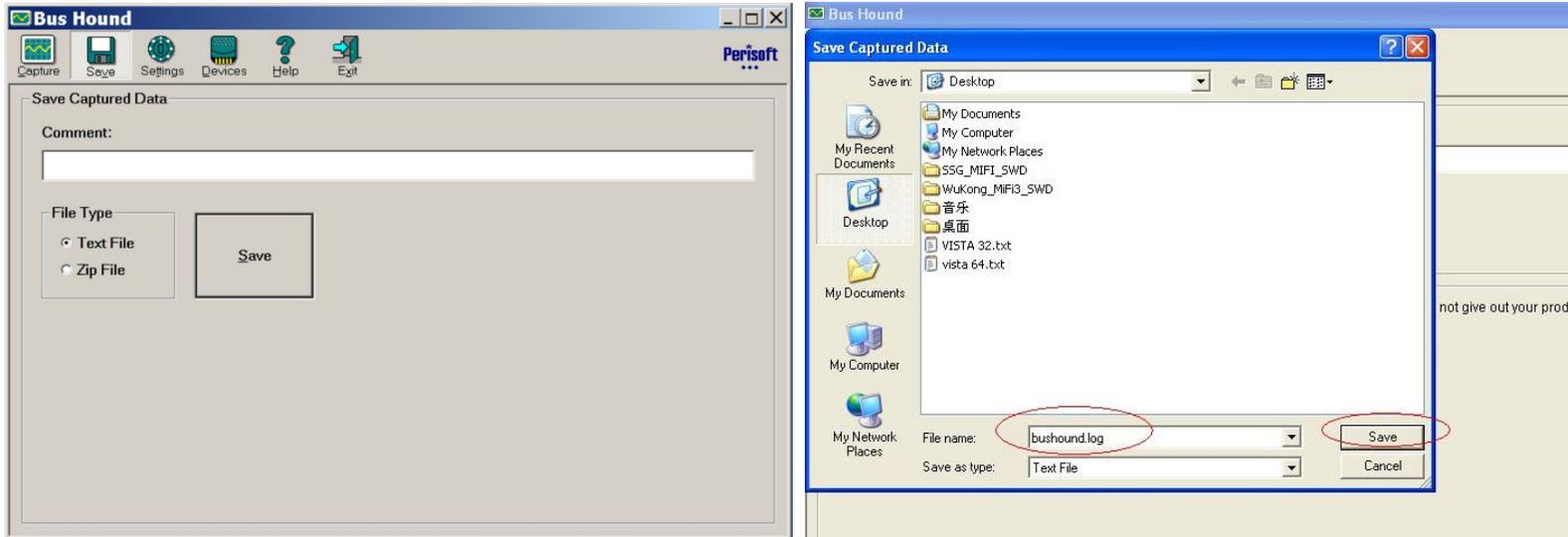
## How to capture bushound log

- Click “run” button to start to capture log.



# How to capture bushound log

## □ Save log



# Thank You!