

Request #: HUTRR110
Title: System Microphone Mute
Spec Release: 1.3
Requester: Jingyuan Liang
Company: Google Inc.

Current Status: **Approved**
Priority: Normal

Required Voter: Microsoft
Required Voter: Logitech
Required Voter: Intel

Voting Begins: 18th October 2022
Voting Ends: 25th October 2022
Voting Result: 7-0

Summary:

Add a new Usage to the Generic Desktop Page (0x01) to support system-wide microphone mute/unmute.

Background:

System-wide microphone mute control maintains a global and consistent 'microphone mute' state across all internal/external microphones and audio input devices (e.g., Telephony headset, webcam, standalone microphone, etc.). Global state is applied to all applications and virtual machines, and may be augmented by GUI controls that can also affect 'microphone mute' state. 'System Microphone Mute' is not intended to replace existing functionality on telephony or audio input devices nor 'Call Mute Toggle' [0xE1].

Existing phone mute for telephony devices affects the state of a specific audio device associated with the controls. Both 'Call Mute Toggle' and 'System Microphone Mute' are for system consumption. 'Call Mute Toggle' is intended to control the system's 'Call' mute state affected by a 'Call', mainly for VoIP applications. 'System Microphone Mute' has a wider coverage across the entire system to provide users a higher degree of privacy and confidence.

Scenario:

Suppose a microphone is active and unmuted, the user activates a dedicated button (e.g. on a keyboard) to mute the microphone. The system updates its global 'microphone mute' state and activates 'system microphone mute' LED to reflect that the microphone is now muted. The user then connects another microphone (e.g. a headset with an inbuilt microphone). The system detects the headset as an active microphone, and it is automatically muted (reflecting the current system 'microphone mute' state). The user can then unmute by activating the dedicated button again or using software controls synchronized to the system 'microphone mute' state (if supported by the system).

Proposal:

Add-to/modify Table 4.1: Generic Desktop Page

Usage ID	Usage Name	Usage Type
0xA9	System Microphone Mute	OOC

Add following text in section 4.5 System Controls

Usage Name	Usage Type	Description
System Microphone Mute	OOC	<p>Toggle system-wide 'microphone mute' state On/Off. (e.g. if system 'microphone mute' state is unmute, toggle it to mute, and vice-versa).</p> <p>Asserting this Usage indicates to turn-off/disable/mute all microphones at system level (and-vice-versa). The system maintains a global 'microphone mute' state which affects microphones connected internally and externally.</p> <p><i>Note: The device cannot derive the current system 'microphone mute' state from the lack-of or previous assertion of this Usage or any other Usage. (as the system 'microphone mute' state may have been set by a user via system UI, or another device).</i></p> <p><i>Note: This conceptually 'overrides' the 'Call Mute Toggle' state, as a 'Call' may not be muted, but all system microphones being muted has a similar affect.</i></p>

Add-to/modify Table 11.1: LED Page

Usage ID	Usage Name	Usage Type
0x57	System Microphone Mute	OOC
0x58-0x5F	<i>Reserved</i>	

New section to be added with the following text:

Section 11.9 System Control Indicators

Usage Name	Usage Type	Description
System Microphone Mute	OOC	Asserted by System to indicate the system 'microphone mute' state is muted.

Sample Descriptor .wara:

The below describes a simple 'System Control' device with a single InputReport and a single OutputReport. Toggling the 'System Microphone Mute' OOC button, toggles whether all microphones attached to the system are muted or unmuted. Similarly, the Host toggling the 'System Microphone Mute' LED toggles the LED co-located on the button.

Below document authored with Waratah (<https://github.com/microsoft/hidtools>)

```
[[usagePage]]
```

```
id = 0x01
```

```
  [[usagePage.usage]]
```

```
  id = 0xA9
```

```
  name = 'System Microphone Mute'
```

```
  types = ['OOC']
```

```
[[usagePage]]
```

```
id = 0x08
```

```
  [[usagePage.usage]]
```

```
  id = 0x57
```

```
  name = 'System Microphone Mute'
```

```
  types = ['OOC']
```

```
[[applicationCollection]]
```

```
usage = ['Generic Desktop', 'System Control']
```

```
  [[applicationCollection.inputReport]]
```

```
    [[applicationCollection.inputReport.variableItem]]
```

```
    usage = ['Generic Desktop', 'System Microphone Mute']
```

```
    logicalValueRange = [0, 1]
```

```
    reportFlags = ['relative']
```

```
  [[applicationCollection.outputReport]]
```

```
    [[applicationCollection.outputReport.variableItem]]
```

```
    usage = ['LED', 'System Microphone Mute']
```

```
    logicalValueRange = [0, 1]
```

```
    reportFlags = ['relative']
```

Sample Descriptor:

Below document output from above .wara contents

```
0x05, 0x01,    // UsagePage(Generic Desktop[1])
0x09, 0x80,    // UsageId(System Control[128])
0xA1, 0x01,    // Collection(Application)
0x85, 0x01,    //     ReportId(1)
0x09, 0xA9,    //     UsageId(System Microphone Mute[169])
0x15, 0x00,    //     LogicalMinimum(0)
0x25, 0x01,    //     LogicalMaximum(1)
0x95, 0x01,    //     ReportCount(1)
0x75, 0x01,    //     ReportSize(1)
0x81, 0x06,    //     Input(Data, Variable, Relative, NoWrap, Linear, PreferredState,
NoNullPosition, BitField)
0x75, 0x07,    //     ReportSize(7)
0x81, 0x03,    //     Input(Constant, Variable, Absolute, NoWrap, Linear, PreferredState,
NoNullPosition, BitField)
0x05, 0x08,    //     UsagePage(LED[8])
0x09, 0x57,    //     UsageId(System Microphone Mute[87])
0x75, 0x01,    //     ReportSize(1)
0x91, 0x06,    //     Output(Data, Variable, Relative, NoWrap, Linear, PreferredState,
NoNullPosition, NonVolatile, BitField)
0x75, 0x07,    //     ReportSize(7)
0x91, 0x03,    //     Output(Constant, Variable, Absolute, NoWrap, Linear,
PreferredState, NoNullPosition, NonVolatile, BitField)
0xC0,         // EndCollection()
```