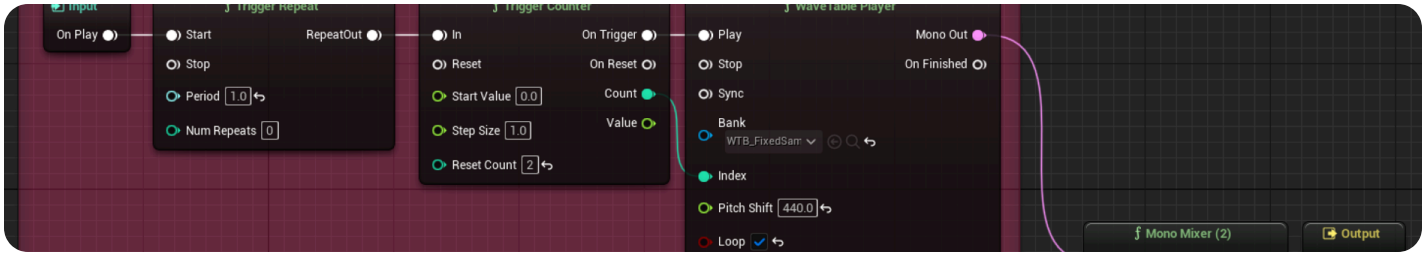
WaveTables Quick Start

A quick guide on getting started with WaveTables.



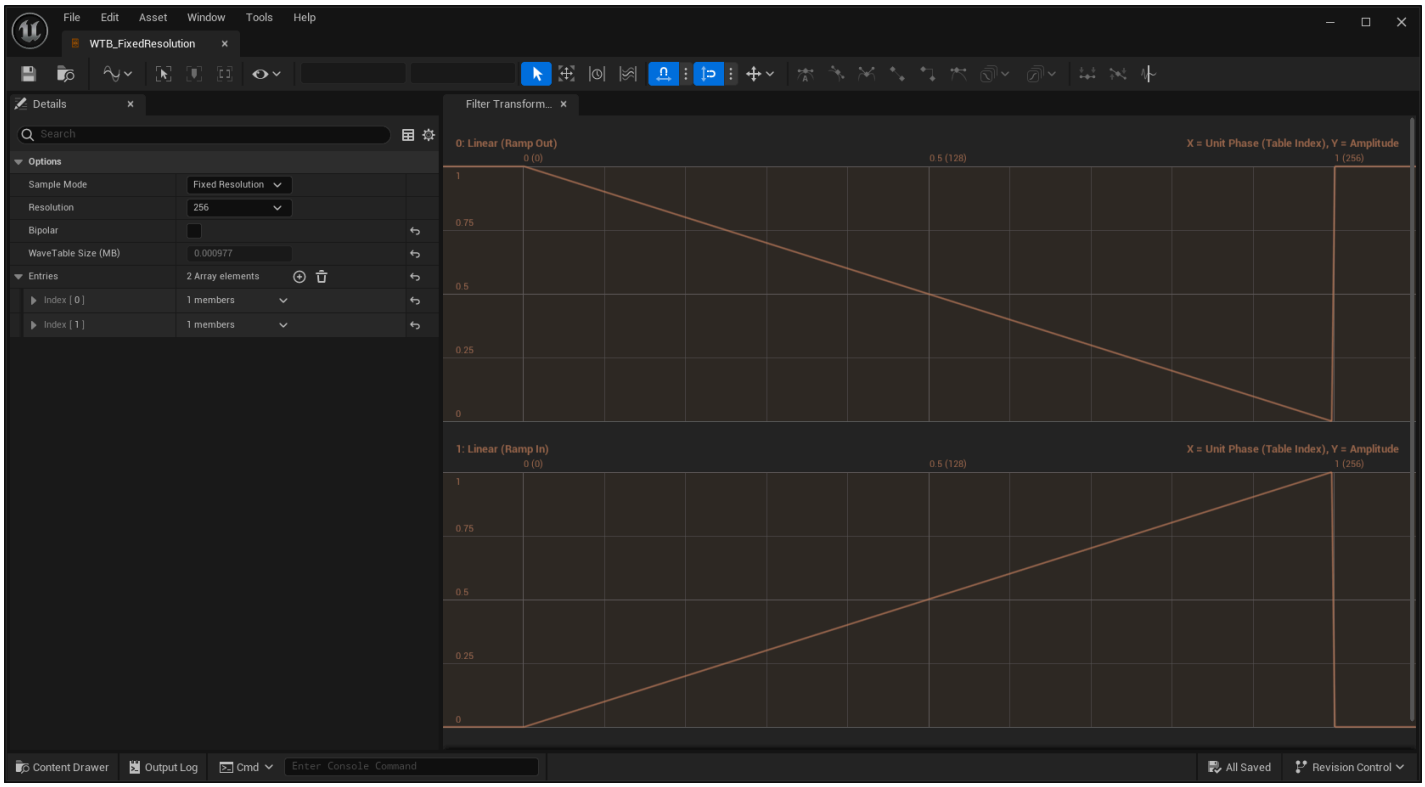
> Learn to use this **Beta** feature, but use caution when shipping with it.

WaveTables store periodic wave data in lookup tables and provide a way to perform wavetable synthesis and sampling in **MetaSounds**.

This guide teaches you how to create a MetaSound powered by two WaveTables with different Sample Modes.

- **Fixed Resolution** - Enforces uniform resolution of all WaveTables in the bank. This mode supports lockstep mixing, interpolating, and spatializing, which is useful for oscillating or enveloping.
- **Fixed Sample Rate** - Enforces uniform sample rate for all WaveTables in the bank. This mode supports discrete audio playback at a shared speed, which is helpful for sampling and granulating.

Create the Fixed Resolution WaveTable Bank

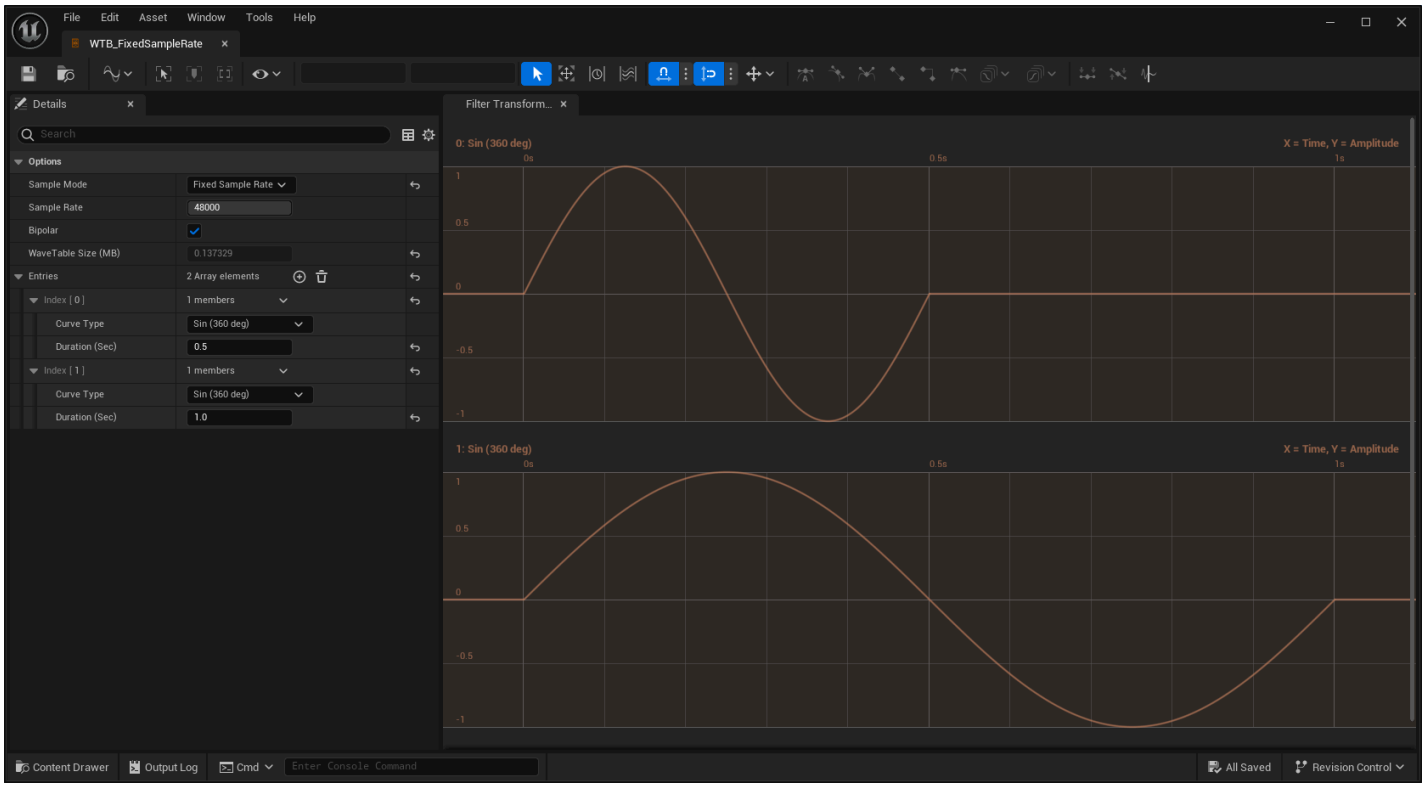


Click image for full size.

To create the Fixed Resolution WaveTable Bank:

1. In the **Content Browser**, click the **Add** button.
2. Select **Audio > WaveTable > WaveTable Bank**.
3. Name the WaveTable Bank `WTB_FixedResolution`.
4. Double-click the WaveTable Bank to open the **WaveTable Bank Editor**.
5. In the **Details** panel:
    a. Disable **Bipolar**.
    b. Click the **Add Element (+)** button for **Entries** twice.
    c. Expand **Index [0]** and set **Curve Type** to **Linear (Ramp Out)**.
    d. Expand **Index [1]** and set **Curve Type** to **Linear (Ramp In)**.
6. Save the WaveTable Bank.
7. Close the **WaveTable Bank Editor**.

Create the Fixed Sample Rate WaveTable Bank

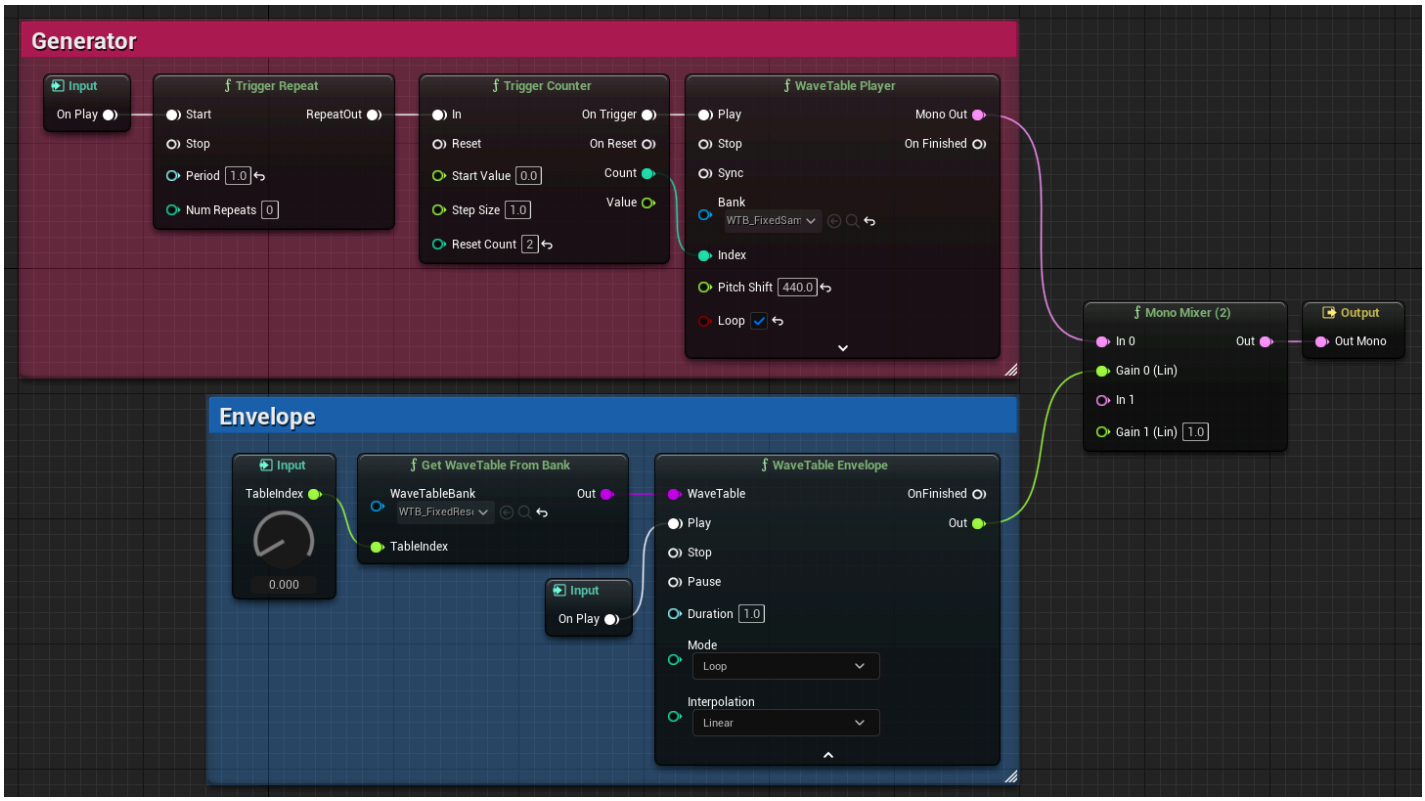


Click image for full size.

To create the Fixed Sample Rate WaveTable Bank:

1. In the **Content Browser**, click the **Add** button.
2. Select **Audio > WaveTable > WaveTable Bank**.
3. Name the WaveTable Bank `WTB_FixedSampleRate`.
4. Double-click the WaveTable Bank to open the **WaveTable Bank Editor**.
5. In the **Details** panel:
    a. Click the **Add Element (+)** button for **Entries** twice.
    b. Expand **Index [0]**:
        i. Set **Curve Type** to **Sine (360 deg)**
        ii. Set **Duration (Sec)** to 0.5.
    c. Expand **Index [1]**:
        i. Set **Curve Type** to **Sine (360 deg)**.
        ii. Set **Duration (Sec)** to 1.0.
6. Save the WaveTable Bank.
7. Close the **WaveTable Bank Editor**.

Create the MetaSound Source



Click image for full size.

Construct a MetaSound that uses the WaveTable Banks for generating and enveloping. Follow the steps below to build a MetaSound with the graph above.

1. In the **Content Browser**, click the **Add** button.
2. Select **Audio > MetaSound Source**.
3. Name the new MetaSound `MSS_WaveTableDemo`.
4. Double-click the MetaSound to open the **MetaSound Editor**.
5. In the **Interfaces** panel, click the **Remove (Trash Bin)** button next to the **UE.Source.OneShot** Interface entry. This removes the On Finished Output node, which isn't used on looping sounds.

Build the Generator Section

1. Find the **On Play Input** node in the graph and drag off of the pin into an empty space. Enter "Trigger Repeat" into the node search to create a connected node. You can move the node around the graph by dragging it.
2. On the **Trigger Repeat** node:
    a. Set **Period** to 1.0.
    b. Drag off the **RepeatOut** pin and create a **Trigger Counter** node.

3. On the **Trigger Counter** node:
    a. Set **Reset Count** to 2.0.
    b. Drag off the **On Trigger** pin and create a **WaveTable Player** node.
    c. Connect the **Count** pin to the **Index** pin of the **WaveTable Player** node.
4. On the **WaveTable Player** node:
    a. Click the **Bank** dropdown and set it to `WTB_FixedSampleRate`.
    b. Set **Pitch Shift** to 440.0.
    c. Enable **Loop**.

Build the Envelope Section

1. Right-click in an empty space and create a **Get WaveTable From Bank** node.
2. On the **Get WaveTable From Bank** node:
    a. Click the **Bank** dropdown and set it to `WTB_FixedResolution`.
    b. Drag off the **TableIndex** pin and select **Promote to Graph Input**. This creates a **Float Input** node named TableIndex.
    c. Drag off the **Out** pin and create a **WaveTable Envelope** node.
3. On the **WaveTable Envelope** node:
    a. Drag off the **On Play** pin and create a **Get On Play** node.
    b. Click the down arrow at the bottom of the node to expand the pin list.
    c. Set **Mode** to Loop.

Connect the Outputs

1. Right-click in an empty space and create a **Mono Mixer (2)** node.
2. On the **Mono Mixer (2)** node:
    a. Connect the **In 0** pin to the **Mono Out** pin of the **WaveTable Player** node.
    b. Connect the **Gain 0 (Lin)** pin to the **Out** pin of the **WaveTable Envelope** node.
    c. Connect the **Out** pin to the **Out Mono Output** node.
3. Save the MetaSound.

Test the MetaSound

Click the **Play** button on the **MetaSound Editor Toolbar** to play the MetaSound. You can adjust the **TableIndex** graph input value by clicking the **Input Widget (Dial)** on the node and dragging up or down.

The WaveTables in `WTB_FixedSampleRate` alternate playback every second. The gain is controlled by a WaveTable from `WTB_FixedResolution`, which is selected by the TableIndex graph input. TableIndex values between 0 and 1 produce a blend between the WaveTables in the bank.

Own Your Own!

Now that you've finished this Quick Start, consider taking this project further. Below are some suggestions you can explore on your own.

- Build a MetaSound with the WaveTable nodes not used in this guide, such as the **WaveTable Oscillator** node and **Evaluate WaveTable** node. For more information on WaveTable nodes, see MetaSounds Reference Guide.
- Customize your WaveTable curves by setting the **Curve Type** to **Custom**. See Curve Editor for more information about the toolbar and editing curves.
- Import audio files as a WaveTable by setting the **Curve Type** to **File** and the **Wave Table Settings > File Path.**