Module: tf.summary

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary#aliases)
* [Modules](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary#modules)
* [Classes](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary#classes)
* [Functions](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary#functions)

Operations for writing summary data, for use in analysis and visualization.

Aliases:

* Module tf.compat.v2.summary
* Module tf.summary

Defined in [summary/\_tf/summary/\_\_init\_\_.py](https://github.com/tensorflow/tensorboard/tree/master/tensorboard/summary/_tf/summary/__init__.py).

The [tf.summary](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary) module provides APIs for writing summary data. This data can be visualized in TensorBoard, the visualization toolkit that comes with TensorFlow. See the [TensorBoard website](https://www.tensorflow.org/tensorboard) for more detailed tutorials about how to use these APIs, or some quick examples below.

Example usage with eager execution, the default in TF 2.0:

writer = tf.summary.create\_file\_writer("/tmp/mylogs")  
with writer.as\_default():  
  for step in range(100):  
    # other model code would go here  
    tf.summary.scalar("my\_metric", 0.5, step=step)  
    writer.flush()

Example usage with [tf.function](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/function) graph execution:

writer = tf.summary.create\_file\_writer("/tmp/mylogs")  
  
@tf.function  
def my\_func(step):  
  # other model code would go here  
  with writer.as\_default():  
    tf.summary.scalar("my\_metric", 0.5, step=step)  
  
for step in range(100):  
  my\_func(step)  
  writer.flush()

Example usage with legacy TF 1.x graph execution:

with tf.compat.v1.Graph().as\_default():  
  step = tf.Variable(0, dtype=tf.int64)  
  step\_update = step.assign\_add(1)  
  writer = tf.summary.create\_file\_writer("/tmp/mylogs")  
  with writer.as\_default():  
    tf.summary.scalar("my\_metric", 0.5, step=step)  
  all\_summary\_ops = tf.compat.v1.summary.all\_v2\_summary\_ops()  
  writer\_flush = writer.flush()  
  
  sess = tf.compat.v1.Session()  
  sess.run([writer.init(), step.initializer])  
  for i in range(100):  
    sess.run(all\_summary\_ops)  
    sess.run(step\_update)  
    sess.run(writer\_flush)

Modules

[experimental](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental) module: Public API for tf.summary.experimental namespace.

Classes

[class SummaryWriter](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/SummaryWriter): Interface representing a stateful summary writer object.

Functions

[audio(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/audio): Write an audio summary.

[create\_file\_writer(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/create_file_writer): Creates a summary file writer for the given log directory.

[create\_noop\_writer(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/create_noop_writer): Returns a summary writer that does nothing.

[flush(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/flush): Forces summary writer to send any buffered data to storage.

[histogram(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/histogram): Write a histogram summary.

[image(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/image): Write an image summary.

[record\_if(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/record_if): Sets summary recording on or off per the provided boolean value.

[scalar(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/scalar): Write a scalar summary.

[text(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/text): Write a text summary.

[trace\_export(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_export): Stops and exports the active trace as a Summary and/or profile file.

[trace\_off(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_off): Stops the current trace and discards any collected information.

[trace\_on(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_on): Starts a trace to record computation graphs and profiling information.

[write(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/write): Writes a generic summary to the default SummaryWriter if one exists.

# tf.summary.audio

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/audio#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/audio#aliases)

Write an audio summary.

### Aliases:

* tf.compat.v2.summary.audio
* tf.summary.audio

tf.summary.audio(  
    name,  
    data,  
    sample\_rate,  
    step=None,  
    max\_outputs=3,  
    encoding=None,  
    description=None  
)

Defined in [plugins/audio/summary\_v2.py](https://github.com/tensorflow/tensorboard/tree/master/tensorboard/plugins/audio/summary_v2.py).

#### Arguments:

* **name**: A name for this summary. The summary tag used for TensorBoard will be this name prefixed by any active name scopes.
* **data**: A Tensor representing audio data with shape [k, t, c], where k is the number of audio clips, t is the number of frames, and c is the number of channels. Elements should be floating-point values in [-1.0, 1.0]. Any of the dimensions may be statically unknown (i.e., None).
* **sample\_rate**: An int or rank-0 int32 Tensor that represents the sample rate, in Hz. Must be positive.
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **max\_outputs**: Optional int or rank-0 integer Tensor. At most this many audio clips will be emitted at each step. When more than max\_outputs many clips are provided, the first max\_outputs many clips will be used and the rest silently discarded.
* **encoding**: Optional constant str for the desired encoding. Only "wav" is currently supported, but this is not guaranteed to remain the default, so if you want "wav" in particular, set this explicitly.
* **description**: Optional long-form description for this summary, as a constant str. Markdown is supported. Defaults to empty.

#### Returns:

True on success, or false if no summary was emitted because no default summary writer was available.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

# tf.summary.create\_file\_writer

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/create_file_writer#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/create_file_writer#aliases)

Creates a summary file writer for the given log directory.

### Aliases:

* tf.compat.v2.summary.create\_file\_writer
* tf.summary.create\_file\_writer

tf.summary.create\_file\_writer(  
    logdir,  
    max\_queue=None,  
    flush\_millis=None,  
    filename\_suffix=None,  
    name=None  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

#### Args:

* **logdir**: a string specifying the directory in which to write an event file.
* **max\_queue**: the largest number of summaries to keep in a queue; will flush once the queue gets bigger than this. Defaults to 10.
* **flush\_millis**: the largest interval between flushes. Defaults to 120,000.
* **filename\_suffix**: optional suffix for the event file name. Defaults to .v2.
* **name**: a name for the op that creates the writer.

#### Returns:

A SummaryWriter object.

tf.summary.create\_noop\_writer

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/create_noop_writer#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/create_noop_writer#aliases)

Returns a summary writer that does nothing.

Aliases:

* tf.compat.v2.summary.create\_noop\_writer
* tf.summary.create\_noop\_writer

tf.summary.create\_noop\_writer()

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

This is useful as a placeholder in code that expects a context manager.

# tf.summary.flush

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/flush#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/flush#aliases)

Forces summary writer to send any buffered data to storage.

### Aliases:

* tf.compat.v2.summary.flush
* tf.summary.flush

tf.summary.flush(  
    writer=None,  
    name=None  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

This operation blocks until that finishes.

#### Args:

* **writer**: The [tf.summary.SummaryWriter](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/SummaryWriter) resource to flush. The thread default will be used if this parameter is None. Otherwise a [tf.no\_op](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/no_op) is returned.
* **name**: A name for the operation (optional).

#### Returns:

The created [tf.Operation](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/Operation).

# tf.summary.histogram

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/histogram#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/histogram#aliases)

Write a histogram summary.

### Aliases:

* tf.compat.v2.summary.histogram
* tf.summary.histogram

tf.summary.histogram(  
    name,  
    data,  
    step=None,  
    buckets=None,  
    description=None  
)

Defined in [plugins/histogram/summary\_v2.py](https://github.com/tensorflow/tensorboard/tree/master/tensorboard/plugins/histogram/summary_v2.py).

#### Arguments:

* **name**: A name for this summary. The summary tag used for TensorBoard will be this name prefixed by any active name scopes.
* **data**: A Tensor of any shape. Must be castable to float64.
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **buckets**: Optional positive int. The output will have this many buckets, except in two edge cases. If there is no data, then there are no buckets. If there is data but all points have the same value, then there is one bucket whose left and right endpoints are the same.
* **description**: Optional long-form description for this summary, as a constant str. Markdown is supported. Defaults to empty.

#### Returns:

True on success, or false if no summary was emitted because no default summary writer was available.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

# tf.summary.image

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/image#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/image#aliases)

Write an image summary.

### Aliases:

* tf.compat.v2.summary.image
* tf.summary.image

tf.summary.image(  
    name,  
    data,  
    step=None,  
    max\_outputs=3,  
    description=None  
)

Defined in [plugins/image/summary\_v2.py](https://github.com/tensorflow/tensorboard/tree/master/tensorboard/plugins/image/summary_v2.py).

#### Arguments:

* **name**: A name for this summary. The summary tag used for TensorBoard will be this name prefixed by any active name scopes.
* **data**: A Tensor representing pixel data with shape [k, h, w, c], where k is the number of images, h and w are the height and width of the images, and c is the number of channels, which should be 1, 2, 3, or 4 (grayscale, grayscale with alpha, RGB, RGBA). Any of the dimensions may be statically unknown (i.e., None). Floating point data will be clipped to the range [0,1).
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **max\_outputs**: Optional int or rank-0 integer Tensor. At most this many images will be emitted at each step. When more than max\_outputs many images are provided, the first max\_outputs many images will be used and the rest silently discarded.
* **description**: Optional long-form description for this summary, as a constant str. Markdown is supported. Defaults to empty.

#### Returns:

True on success, or false if no summary was emitted because no default summary writer was available.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

# tf.summary.record\_if

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/record_if#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/record_if#aliases)

Sets summary recording on or off per the provided boolean value.

### Aliases:

* tf.compat.v2.summary.record\_if
* tf.summary.record\_if

tf.summary.record\_if(condition)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

The provided value can be a python boolean, a scalar boolean Tensor, or or a callable providing such a value; if a callable is passed it will be invoked on-demand to determine whether summary writing will occur.

#### Args:

* **condition**: can be True, False, a bool Tensor, or a callable providing such.

#### Yields:

Returns a context manager that sets this value on enter and restores the previous value on exit.

# tf.summary.scalar

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/scalar#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/scalar#aliases)

Write a scalar summary.

### Aliases:

* tf.compat.v2.summary.scalar
* tf.summary.scalar

tf.summary.scalar(  
    name,  
    data,  
    step=None,  
    description=None  
)

Defined in [plugins/scalar/summary\_v2.py](https://github.com/tensorflow/tensorboard/tree/master/tensorboard/plugins/scalar/summary_v2.py).

#### Arguments:

* **name**: A name for this summary. The summary tag used for TensorBoard will be this name prefixed by any active name scopes.
* **data**: A real numeric scalar value, convertible to a float32 Tensor.
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **description**: Optional long-form description for this summary, as a constant str. Markdown is supported. Defaults to empty.

#### Returns:

True on success, or false if no summary was written because no default summary writer was available.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

tf.summary.SummaryWriter

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/SummaryWriter#top_of_page)
* [Class SummaryWriter](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/SummaryWriter#class_summarywriter)
  + [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/SummaryWriter#aliases)
* [Methods](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/SummaryWriter#methods)
  + [as\_default](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/SummaryWriter#as_default)

Class SummaryWriter

Interface representing a stateful summary writer object.

Aliases:

* Class tf.compat.v2.summary.SummaryWriter
* Class tf.summary.SummaryWriter

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

Methods

as\_default

as\_default()

Returns a context manager that enables summary writing.

close

close()

Flushes and closes the summary writer.

flush

flush()

Flushes any buffered data.

init

init()

Initializes the summary writer.

set\_as\_default

set\_as\_default()

Enables this summary writer for the current thread.

# tf.summary.text

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/text#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/text#aliases)

Write a text summary.

### Aliases:

* tf.compat.v2.summary.text
* tf.summary.text

tf.summary.text(  
    name,  
    data,  
    step=None,  
    description=None  
)

Defined in [plugins/text/summary\_v2.py](https://github.com/tensorflow/tensorboard/tree/master/tensorboard/plugins/text/summary_v2.py).

#### Arguments:

* **name**: A name for this summary. The summary tag used for TensorBoard will be this name prefixed by any active name scopes.
* **data**: A UTF-8 string tensor value.
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **description**: Optional long-form description for this summary, as a constant str. Markdown is supported. Defaults to empty.

#### Returns:

True on success, or false if no summary was emitted because no default summary writer was available.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

# tf.summary.trace\_export

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_export#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_export#aliases)

Stops and exports the active trace as a Summary and/or profile file.

### Aliases:

* tf.compat.v2.summary.trace\_export
* tf.summary.trace\_export

tf.summary.trace\_export(  
    name,  
    step=None,  
    profiler\_outdir=None  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

Stops the trace and exports all metadata collected during the trace to the default SummaryWriter, if one has been set.

#### Args:

* **name**: A name for the summary to be written.
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **profiler\_outdir**: Output directory for profiler. It is required when profiler is enabled when trace was started. Otherwise, it is ignored.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

tf.summary.trace\_off

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_off#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_off#aliases)

Stops the current trace and discards any collected information.

Aliases:

* tf.compat.v2.summary.trace\_off
* tf.summary.trace\_off

tf.summary.trace\_off()

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

# tf.summary.trace\_on

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_on#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_on#aliases)

Starts a trace to record computation graphs and profiling information.

### Aliases:

* tf.compat.v2.summary.trace\_on
* tf.summary.trace\_on

tf.summary.trace\_on(  
    graph=True,  
    profiler=False  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

Must be invoked in eager mode.

When enabled, TensorFlow runtime will collection information that can later be exported and consumed by TensorBoard. The trace is activated across the entire TensorFlow runtime and affects all threads of execution.

To stop the trace and export the collected information, use [tf.summary.trace\_export](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_export). To stop the trace without exporting, use [tf.summary.trace\_off](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/trace_off).

#### Args:

* **graph**: If True, enables collection of executed graphs. It includes ones from tf.function invocation and ones from the legacy graph mode. The default is True.
* **profiler**: If True, enables the advanced profiler. Enabling profiler implicitly enables the graph collection. The profiler may incur a high memory overhead. The default is False.

# tf.summary.write

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/write#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/write#aliases)

Writes a generic summary to the default SummaryWriter if one exists.

### Aliases:

* tf.compat.v2.summary.write
* tf.summary.write

tf.summary.write(  
    tag,  
    tensor,  
    step=None,  
    metadata=None,  
    name=None  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

This exists primarily to support the definition of type-specific summary ops like scalar() and image(), and is not intended for direct use unless defining a new type-specific summary op.

#### Args:

* **tag**: string tag used to identify the summary (e.g. in TensorBoard), usually generated with tf.summary.summary\_scope
* **tensor**: the Tensor holding the summary data to write
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **metadata**: Optional SummaryMetadata, as a proto or serialized bytes
* **name**: Optional string name for this op.

#### Returns:

True on success, or false if no summary was written because no default summary writer was available.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

Module: tf.summary.experimental

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental#aliases)
* [Functions](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental#functions)

Public API for tf.summary.experimental namespace.

Aliases:

* Module tf.compat.v2.summary.experimental
* Module tf.summary.experimental

Functions

[get\_step(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/get_step): Returns the default summary step for the current thread.

[set\_step(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/set_step): Sets the default summary step for the current thread.

[summary\_scope(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/summary_scope): Experimental context manager for use when defining a custom summary op.

[write\_raw\_pb(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/write_raw_pb): Writes a summary using raw [tf.compat.v1.Summary](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Summary) protocol buffers.

# tf.summary.experimental.get\_step

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/get_step#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/get_step#aliases)

Returns the default summary step for the current thread.

### Aliases:

* tf.compat.v2.summary.experimental.get\_step
* tf.summary.experimental.get\_step

tf.summary.experimental.get\_step()

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

#### Returns:

The step set by tf.summary.experimental.set\_step() if one has been set, otherwise None.

# tf.summary.experimental.set\_step

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/set_step#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/set_step#aliases)

Sets the default summary step for the current thread.

### Aliases:

* tf.compat.v2.summary.experimental.set\_step
* tf.summary.experimental.set\_step

tf.summary.experimental.set\_step(step)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

For convenience, this function sets a default value for the step parameter used in summary-writing functions elsewhere in the API so that it need not be explicitly passed in every such invocation. The value can be a constant or a variable, and can be retrieved via tf.summary.experimental.get\_step().

**Note:** when using this with @tf.functions, the step value will be captured at the time the function is traced, so changes to the step outside the function will not be reflected inside the function unless using a [**tf.Variable**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/Variable)step.

#### Args:

* **step**: An int64-castable default step value, or None to unset.

# tf.summary.experimental.summary\_scope

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/summary_scope#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/summary_scope#aliases)

Experimental context manager for use when defining a custom summary op.

### Aliases:

* tf.compat.v2.summary.experimental.summary\_scope
* tf.summary.experimental.summary\_scope

tf.summary.experimental.summary\_scope(  
    name,  
    default\_name='summary',  
    values=None  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

This behaves similarly to [tf.name\_scope](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/name_scope), except that it returns a generated summary tag in addition to the scope name. The tag is structurally similar to the scope name - derived from the user-provided name, prefixed with enclosing name scopes if any - but we relax the constraint that it be uniquified, as well as the character set limitation (so the user-provided name can contain characters not legal for scope names; in the scope name these are removed).

This makes the summary tag more predictable and consistent for the user.

For example, to define a new summary op called my\_op:

def my\_op(name, my\_value, step):  
  with tf.summary.summary\_scope(name, "MyOp", [my\_value]) as (tag, scope):  
    my\_value = tf.convert\_to\_tensor(my\_value)  
    return tf.summary.write(tag, my\_value, step=step)

#### Args:

* **name**: string name for the summary.
* **default\_name**: Optional; if provided, used as default name of the summary.
* **values**: Optional; passed as values parameter to name\_scope.

#### Yields:

A tuple (tag, scope) as described above.

# tf.summary.experimental.write\_raw\_pb

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/write_raw_pb#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/summary/experimental/write_raw_pb#aliases)

Writes a summary using raw [tf.compat.v1.Summary](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Summary) protocol buffers.

### Aliases:

* tf.compat.v2.summary.experimental.write\_raw\_pb
* tf.summary.experimental.write\_raw\_pb

tf.summary.experimental.write\_raw\_pb(  
    tensor,  
    step=None,  
    name=None  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

Experimental: this exists to support the usage of V1-style manual summary writing (via the construction of a [tf.compat.v1.Summary](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Summary) protocol buffer) with the V2 summary writing API.

#### Args:

* **tensor**: the string Tensor holding one or more serialized Summary protobufs
* **step**: Explicit int64-castable monotonic step value for this summary. If omitted, this defaults to tf.summary.experimental.get\_step(), which must not be None.
* **name**: Optional string name for this op.

#### Returns:

True on success, or false if no summary was written because no default summary writer was available.

#### Raises:

* **ValueError**: if a default writer exists, but no step was provided andtf.summary.experimental.get\_step() is None.

Module: tf.compat.v1.summary

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary#top_of_page)
* [Classes](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary#classes)
* [Functions](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary#functions)

Operations for writing summary data, for use in analysis and visualization.

See the [Summaries and TensorBoard](https://www.tensorflow.org/guide/summaries_and_tensorboard) guide.

Classes

[class Event](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Event)

[class FileWriter](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriter): Writes Summary protocol buffers to event files.

[class FileWriterCache](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriterCache): Cache for file writers.

[class SessionLog](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/SessionLog)

[class Summary](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Summary)

[class SummaryDescription](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/SummaryDescription)

[class TaggedRunMetadata](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/TaggedRunMetadata)

Functions

[all\_v2\_summary\_ops(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/all_v2_summary_ops): Returns all V2-style summary ops defined in the current default graph.

[audio(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/audio): Outputs a Summary protocol buffer with audio.

[get\_summary\_description(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/get_summary_description): Given a TensorSummary node\_def, retrieve its SummaryDescription.

[histogram(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/histogram): Outputs a Summary protocol buffer with a histogram.

[image(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/image): Outputs a Summary protocol buffer with images.

[initialize(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/initialize): Initializes summary writing for graph execution mode.

[merge(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/merge): Merges summaries.

[merge\_all(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/merge_all): Merges all summaries collected in the default graph.

[scalar(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/scalar): Outputs a Summary protocol buffer containing a single scalar value.

[tensor\_summary(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/tensor_summary): Outputs a Summary protocol buffer with a serialized tensor.proto.

[text(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/text): Summarizes textual data.

# tf.compat.v1.summary.all\_v2\_summary\_ops

Returns all V2-style summary ops defined in the current default graph.

tf.compat.v1.summary.all\_v2\_summary\_ops()

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

This includes ops from TF 2.0 tf.summary and TF 1.x tf.contrib.summary (except for tf.contrib.summary.graph and tf.contrib.summary.import\_event), but does not include TF 1.x tf.summary ops.

#### Returns:

List of summary ops, or None if called under eager execution.

# tf.compat.v1.summary.audio

Outputs a Summary protocol buffer with audio.

tf.compat.v1.summary.audio(  
    name,  
    tensor,  
    sample\_rate,  
    max\_outputs=3,  
    collections=None,  
    family=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

The summary has up to max\_outputs summary values containing audio. The audio is built from tensor which must be 3-D with shape [batch\_size, frames, channels] or 2-D with shape [batch\_size, frames]. The values are assumed to be in the range of [-1.0, 1.0] with a sample rate of sample\_rate.

The tag in the outputted Summary.Value protobufs is generated based on the name, with a suffix depending on the max\_outputs setting:

* If max\_outputs is 1, the summary value tag is 'name/audio'.
* If max\_outputs is greater than 1, the summary value tags are generated sequentially as 'name/audio/0', 'name/audio/1', etc

#### Args:

* **name**: A name for the generated node. Will also serve as a series name in TensorBoard.
* **tensor**: A 3-D float32 Tensor of shape [batch\_size, frames, channels] or a 2-D float32 Tensor of shape [batch\_size, frames].
* **sample\_rate**: A Scalar float32 Tensor indicating the sample rate of the signal in hertz.
* **max\_outputs**: Max number of batch elements to generate audio for.
* **collections**: Optional list of ops.GraphKeys. The collections to add the summary to. Defaults to [\_ops.GraphKeys.SUMMARIES]
* **family**: Optional; if provided, used as the prefix of the summary tag name, which controls the tab name used for display on Tensorboard.

#### Returns:

A scalar Tensor of type string. The serialized Summary protocol buffer.

# tf.compat.v1.summary.FileWriter

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriter#top_of_page)
* [Class FileWriter](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriter#class_filewriter)
* [\_\_init\_\_](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriter#__init__)
* [Methods](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriter#methods)
  + [\_\_enter\_\_](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriter#__enter__)

## Class FileWriter

Writes Summary protocol buffers to event files.

Defined in [python/summary/writer/writer.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/writer/writer.py).

The FileWriter class provides a mechanism to create an event file in a given directory and add summaries and events to it. The class updates the file contents asynchronously. This allows a training program to call methods to add data to the file directly from the training loop, without slowing down training.

When constructed with a [tf.compat.v1.Session](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Session) parameter, a FileWriter instead forms a compatibility layer over new graph-based summaries (tf.contrib.summary) to facilitate the use of new summary writing with pre-existing code that expects a FileWriter instance.

## \_\_init\_\_

\_\_init\_\_(  
    logdir,  
    graph=None,  
    max\_queue=10,  
    flush\_secs=120,  
    graph\_def=None,  
    filename\_suffix=None,  
    session=None  
)

Creates a FileWriter, optionally shared within the given session.

Typically, constructing a file writer creates a new event file in logdir. This event file will contain Event protocol buffers constructed when you call one of the following functions: add\_summary(), add\_session\_log(), add\_event(), or add\_graph().

If you pass a Graph to the constructor it is added to the event file. (This is equivalent to calling add\_graph() later).

TensorBoard will pick the graph from the file and display it graphically so you can interactively explore the graph you built. You will usually pass the graph from the session in which you launched it:

...create a graph...  
# Launch the graph in a session.  
sess = tf.compat.v1.Session()  
# Create a summary writer, add the 'graph' to the event file.  
writer = tf.compat.v1.summary.FileWriter(<some-directory>, sess.graph)

The session argument to the constructor makes the returned FileWriter a compatibility layer over new graph-based summaries (tf.contrib.summary). Crucially, this means the underlying writer resource and events file will be shared with any other FileWriter using the same session and logdir, and with any tf.contrib.summary.SummaryWriter in this session using the the same shared resource name (which by default scoped to the logdir). If no such resource exists, one will be created using the remaining arguments to this constructor, but if one already exists those arguments are ignored. In either case, ops will be added to session.graph to control the underlying file writer resource. See tf.contrib.summary for more details.

#### Args:

* **logdir**: A string. Directory where event file will be written.
* **graph**: A Graph object, such as sess.graph.
* **max\_queue**: Integer. Size of the queue for pending events and summaries.
* **flush\_secs**: Number. How often, in seconds, to flush the pending events and summaries to disk.
* **graph\_def**: DEPRECATED: Use the graph argument instead.
* **filename\_suffix**: A string. Every event file's name is suffixed with suffix.
* **session**: A [tf.compat.v1.Session](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Session) object. See details above.

#### Raises:

* **RuntimeError**: If called with eager execution enabled.

#### Eager Compatibility

FileWriter is not compatible with eager execution. To write TensorBoard summaries under eager execution, use tf.contrib.summary instead.

## Methods

### \_\_enter\_\_

\_\_enter\_\_()

Make usable with "with" statement.

### \_\_exit\_\_

\_\_exit\_\_(  
    unused\_type,  
    unused\_value,  
    unused\_traceback  
)

Make usable with "with" statement.

### add\_event

add\_event(event)

Adds an event to the event file.

#### Args:

* **event**: An Event protocol buffer.

### add\_graph

add\_graph(  
    graph,  
    global\_step=None,  
    graph\_def=None  
)

Adds a Graph to the event file.

The graph described by the protocol buffer will be displayed by TensorBoard. Most users pass a graph in the constructor instead.

#### Args:

* **graph**: A Graph object, such as sess.graph.
* **global\_step**: Number. Optional global step counter to record with the graph.
* **graph\_def**: DEPRECATED. Use the graph parameter instead.

#### Raises:

* **ValueError**: If both graph and graph\_def are passed to the method.

### add\_meta\_graph

add\_meta\_graph(  
    meta\_graph\_def,  
    global\_step=None  
)

Adds a MetaGraphDef to the event file.

The MetaGraphDef allows running the given graph via saver.import\_meta\_graph().

#### Args:

* **meta\_graph\_def**: A MetaGraphDef object, often as returned bysaver.export\_meta\_graph().
* **global\_step**: Number. Optional global step counter to record with the graph.

#### Raises:

* **TypeError**: If both meta\_graph\_def is not an instance of MetaGraphDef.

### add\_run\_metadata

add\_run\_metadata(  
    run\_metadata,  
    tag,  
    global\_step=None  
)

Adds a metadata information for a single session.run() call.

#### Args:

* **run\_metadata**: A RunMetadata protobuf object.
* **tag**: The tag name for this metadata.
* **global\_step**: Number. Optional global step counter to record with the StepStats.

#### Raises:

* **ValueError**: If the provided tag was already used for this type of event.

### add\_session\_log

add\_session\_log(  
    session\_log,  
    global\_step=None  
)

Adds a SessionLog protocol buffer to the event file.

This method wraps the provided session in an Event protocol buffer and adds it to the event file.

#### Args:

* **session\_log**: A SessionLog protocol buffer.
* **global\_step**: Number. Optional global step value to record with the summary.

### add\_summary

add\_summary(  
    summary,  
    global\_step=None  
)

Adds a Summary protocol buffer to the event file.

This method wraps the provided summary in an Event protocol buffer and adds it to the event file.

You can pass the result of evaluating any summary op, using tf.Session.run or [tf.Tensor.eval](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/Tensor#eval), to this function. Alternatively, you can pass a [tf.compat.v1.Summary](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/Summary) protocol buffer that you populate with your own data. The latter is commonly done to report evaluation results in event files.

#### Args:

* **summary**: A Summary protocol buffer, optionally serialized as a string.
* **global\_step**: Number. Optional global step value to record with the summary.

### close

close()

Flushes the event file to disk and close the file.

Call this method when you do not need the summary writer anymore.

### flush

flush()

Flushes the event file to disk.

Call this method to make sure that all pending events have been written to disk.

### get\_logdir

get\_logdir()

Returns the directory where event file will be written.

### reopen

reopen()

Reopens the EventFileWriter.

Can be called after close() to add more events in the same directory. The events will go into a new events file.

Does nothing if the EventFileWriter was not closed.

# tf.compat.v1.summary.FileWriterCache

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriterCache#top_of_page)
* [Class FileWriterCache](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriterCache#class_filewritercache)
* [Methods](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriterCache#methods)
  + [clear](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriterCache#clear)
  + [get](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/FileWriterCache#get)

## Class FileWriterCache

Cache for file writers.

Defined in [python/summary/writer/writer\_cache.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/writer/writer_cache.py).

This class caches file writers, one per directory.

## Methods

### clear

@staticmethod  
clear()

Clear cached summary writers. Currently only used for unit tests.

### get

@staticmethod  
get(logdir)

Returns the FileWriter for the specified directory.

#### Args:

* **logdir**: str, name of the directory.

#### Returns:

A FileWriter.

# tf.compat.v1.summary.get\_summary\_description

Given a TensorSummary node\_def, retrieve its SummaryDescription.

tf.compat.v1.summary.get\_summary\_description(node\_def)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

When a Summary op is instantiated, a SummaryDescription of associated metadata is stored in its NodeDef. This method retrieves the description.

#### Args:

* **node\_def**: the node\_def\_pb2.NodeDef of a TensorSummary op

#### Returns:

a summary\_pb2.SummaryDescription

#### Raises:

* **ValueError**: if the node is not a summary op.

#### Eager Compatibility

Not compatible with eager execution. To write TensorBoard summaries under eager execution, use tf.contrib.summary instead.

# tf.compat.v1.summary.histogram

Outputs a Summary protocol buffer with a histogram.

tf.compat.v1.summary.histogram(  
    name,  
    values,  
    collections=None,  
    family=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

Adding a histogram summary makes it possible to visualize your data's distribution in TensorBoard. You can see a detailed explanation of the TensorBoard histogram dashboard [here](https://www.tensorflow.org/get_started/tensorboard_histograms).

The generated [Summary](https://www.tensorflow.org/code/tensorflow/core/framework/summary.proto) has one summary value containing a histogram for values.

This op reports an InvalidArgument error if any value is not finite.

#### Args:

* **name**: A name for the generated node. Will also serve as a series name in TensorBoard.
* **values**: A real numeric Tensor. Any shape. Values to use to build the histogram.
* **collections**: Optional list of graph collections keys. The new summary op is added to these collections. Defaults to [GraphKeys.SUMMARIES].
* **family**: Optional; if provided, used as the prefix of the summary tag name, which controls the tab name used for display on Tensorboard.

#### Returns:

A scalar Tensor of type string. The serialized Summary protocol buffer.

# tf.compat.v1.summary.image

Outputs a Summary protocol buffer with images.

tf.compat.v1.summary.image(  
    name,  
    tensor,  
    max\_outputs=3,  
    collections=None,  
    family=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

The summary has up to max\_outputs summary values containing images. The images are built from tensor which must be 4-D with shape [batch\_size, height, width, channels] and where channels can be:

* 1: tensor is interpreted as Grayscale.
* 3: tensor is interpreted as RGB.
* 4: tensor is interpreted as RGBA.

The images have the same number of channels as the input tensor. For float input, the values are normalized one image at a time to fit in the range [0, 255]. uint8 values are unchanged. The op uses two different normalization algorithms:

* If the input values are all positive, they are rescaled so the largest one is 255.
* If any input value is negative, the values are shifted so input value 0.0 is at 127. They are then rescaled so that either the smallest value is 0, or the largest one is 255.

The tag in the outputted Summary.Value protobufs is generated based on the name, with a suffix depending on the max\_outputs setting:

* If max\_outputs is 1, the summary value tag is 'name/image'.
* If max\_outputs is greater than 1, the summary value tags are generated sequentially as 'name/image/0', 'name/image/1', etc.

#### Args:

* **name**: A name for the generated node. Will also serve as a series name in TensorBoard.
* **tensor**: A 4-D uint8 or float32 Tensor of shape [batch\_size, height, width, channels] where channels is 1, 3, or 4.
* **max\_outputs**: Max number of batch elements to generate images for.
* **collections**: Optional list of ops.GraphKeys. The collections to add the summary to. Defaults to [\_ops.GraphKeys.SUMMARIES]
* **family**: Optional; if provided, used as the prefix of the summary tag name, which controls the tab name used for display on Tensorboard.

#### Returns:

A scalar Tensor of type string. The serialized Summary protocol buffer.

# tf.compat.v1.summary.initialize

Initializes summary writing for graph execution mode.

tf.compat.v1.summary.initialize(  
    graph=None,  
    session=None  
)

Defined in [python/ops/summary\_ops\_v2.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/ops/summary_ops_v2.py).

This operation is a no-op when executing eagerly.

This helper method provides a higher-level alternative to usingtf.contrib.summary.summary\_writer\_initializer\_op and tf.contrib.summary.graph.

Most users will also want to call [tf.compat.v1.train.create\_global\_step](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/train/create_global_step) which can happen before or after this function is called.

#### Args:

* **graph**: A [tf.Graph](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/Graph) or [tf.compat.v1.GraphDef](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/GraphDef) to output to the writer. This function will not write the default graph by default. When writing to an event log file, the associated step will be zero.
* **session**: So this method can call tf.Session.run. This defaults to [tf.compat.v1.get\_default\_session](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/get_default_session).

#### Raises:

* **RuntimeError**: If the current thread has no default tf.contrib.summary.SummaryWriter.
* **ValueError**: If session wasn't passed and no default session.

# tf.compat.v1.summary.merge

Merges summaries.

tf.compat.v1.summary.merge(  
    inputs,  
    collections=None,  
    name=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

This op creates a [Summary](https://www.tensorflow.org/code/tensorflow/core/framework/summary.proto) protocol buffer that contains the union of all the values in the input summaries.

When the Op is run, it reports an InvalidArgument error if multiple values in the summaries to merge use the same tag.

#### Args:

* **inputs**: A list of string Tensor objects containing serialized Summary protocol buffers.
* **collections**: Optional list of graph collections keys. The new summary op is added to these collections. Defaults to [].
* **name**: A name for the operation (optional).

#### Returns:

A scalar Tensor of type string. The serialized Summary protocol buffer resulting from the merging.

#### Raises:

* **RuntimeError**: If called with eager mode enabled.

#### Eager Compatibility

Not compatible with eager execution. To write TensorBoard summaries under eager execution, use tf.contrib.summary instead.

# tf.compat.v1.summary.merge\_all

Merges all summaries collected in the default graph.

tf.compat.v1.summary.merge\_all(  
    key=tf.GraphKeys.SUMMARIES,  
    scope=None,  
    name=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

#### Args:

* **key**: GraphKey used to collect the summaries. Defaults to GraphKeys.SUMMARIES.
* **scope**: Optional scope used to filter the summary ops, using re.match

#### Returns:

If no summaries were collected, returns None. Otherwise returns a scalar Tensor of type stringcontaining the serialized Summary protocol buffer resulting from the merging.

#### Raises:

* **RuntimeError**: If called with eager execution enabled.

#### Eager Compatibility

Not compatible with eager execution. To write TensorBoard summaries under eager execution, use tf.contrib.summary instead.

# tf.compat.v1.summary.scalar

Outputs a Summary protocol buffer containing a single scalar value.

tf.compat.v1.summary.scalar(  
    name,  
    tensor,  
    collections=None,  
    family=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

The generated Summary has a Tensor.proto containing the input Tensor.

#### Args:

* **name**: A name for the generated node. Will also serve as the series name in TensorBoard.
* **tensor**: A real numeric Tensor containing a single value.
* **collections**: Optional list of graph collections keys. The new summary op is added to these collections. Defaults to [GraphKeys.SUMMARIES].
* **family**: Optional; if provided, used as the prefix of the summary tag name, which controls the tab name used for display on Tensorboard.

#### Returns:

A scalar Tensor of type string. Which contains a Summary protobuf.

#### Raises:

* **ValueError**: If tensor has the wrong shape or type.

tf.compat.v1.summary.SummaryDescription

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/SummaryDescription#top_of_page)
* [Class SummaryDescription](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/SummaryDescription#class_summarydescription)
* [Properties](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/SummaryDescription#properties)
  + [type\_hint](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/SummaryDescription#type_hint)

Class SummaryDescription

Defined in [core/framework/summary.proto](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/core/framework/summary.proto).

Properties

type\_hint

string type\_hint

tf.compat.v1.summary.TaggedRunMetadata

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/TaggedRunMetadata#top_of_page)
* [Class TaggedRunMetadata](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/TaggedRunMetadata#class_taggedrunmetadata)
* [Properties](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/compat/v1/summary/TaggedRunMetadata#properties)

Class TaggedRunMetadata

Defined in [core/util/event.proto](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/core/util/event.proto).

Properties

run\_metadata

bytes run\_metadata

tag

string tag

# tf.compat.v1.summary.tensor\_summary

Outputs a Summary protocol buffer with a serialized tensor.proto.

tf.compat.v1.summary.tensor\_summary(  
    name,  
    tensor,  
    summary\_description=None,  
    collections=None,  
    summary\_metadata=None,  
    family=None,  
    display\_name=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

#### Args:

* **name**: A name for the generated node. If display\_name is not set, it will also serve as the tag name in TensorBoard. (In that case, the tag name will inherit tf name scopes.)
* **tensor**: A tensor of any type and shape to serialize.
* **summary\_description**: A long description of the summary sequence. Markdown is supported.
* **collections**: Optional list of graph collections keys. The new summary op is added to these collections. Defaults to [GraphKeys.SUMMARIES].
* **summary\_metadata**: Optional SummaryMetadata proto (which describes which plugins may use the summary value).
* **family**: Optional; if provided, used as the prefix of the summary tag, which controls the name used for display on TensorBoard when display\_name is not set.
* **display\_name**: A string used to name this data in TensorBoard. If this is not set, then the node name will be used instead.

#### Returns:

A scalar Tensor of type string. The serialized Summary protocol buffer.

# tf.compat.v1.summary.text

Summarizes textual data.

tf.compat.v1.summary.text(  
    name,  
    tensor,  
    collections=None  
)

Defined in [python/summary/summary.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/summary/summary.py).

Text data summarized via this plugin will be visible in the Text Dashboard in TensorBoard. The standard TensorBoard Text Dashboard will render markdown in the strings, and will automatically organize 1d and 2d tensors into tables. If a tensor with more than 2 dimensions is provided, a 2d subarray will be displayed along with a warning message. (Note that this behavior is not intrinsic to the text summary api, but rather to the default TensorBoard text plugin.)

#### Args:

* **name**: A name for the generated node. Will also serve as a series name in TensorBoard.
* **tensor**: a string-type Tensor to summarize.
* **collections**: Optional list of ops.GraphKeys. The collections to add the summary to. Defaults to [\_ops.GraphKeys.SUMMARIES]

#### Returns:

A TensorSummary op that is configured so that TensorBoard will recognize that it contains textual data. The TensorSummary is a scalar Tensor of type string which contains Summary protobufs.

#### Raises:

* **ValueError**: If tensor has the wrong type.

Module: tf.sysconfig

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig#top_of_page)
* [Functions](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig#functions)
* [Other Members](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig#other_members)

System configuration library.

Functions

[get\_compile\_flags(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_compile_flags): Get the compilation flags for custom operators.

[get\_include(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_include): Get the directory containing the TensorFlow C++ header files.

[get\_lib(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_lib): Get the directory containing the TensorFlow framework library.

[get\_link\_flags(...)](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_link_flags): Get the link flags for custom operators.

Other Members

* CXX11\_ABI\_FLAG = 0
* MONOLITHIC\_BUILD = 0

# tf.sysconfig.get\_compile\_flags

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_compile_flags#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_compile_flags#aliases)

Get the compilation flags for custom operators.

### Aliases:

* tf.compat.v1.sysconfig.get\_compile\_flags
* tf.compat.v2.sysconfig.get\_compile\_flags
* tf.sysconfig.get\_compile\_flags

tf.sysconfig.get\_compile\_flags()

Defined in [python/platform/sysconfig.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/platform/sysconfig.py).

#### Returns:

The compilation flags.

# tf.sysconfig.get\_include

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_include#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_include#aliases)

Get the directory containing the TensorFlow C++ header files.

### Aliases:

* tf.compat.v1.sysconfig.get\_include
* tf.compat.v2.sysconfig.get\_include
* tf.sysconfig.get\_include

tf.sysconfig.get\_include()

Defined in [python/platform/sysconfig.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/platform/sysconfig.py).

#### Returns:

The directory as string.

# tf.sysconfig.get\_lib

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_lib#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_lib#aliases)

Get the directory containing the TensorFlow framework library.

### Aliases:

* tf.compat.v1.sysconfig.get\_lib
* tf.compat.v2.sysconfig.get\_lib
* tf.sysconfig.get\_lib

tf.sysconfig.get\_lib()

Defined in [python/platform/sysconfig.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/platform/sysconfig.py).

#### Returns:

The directory as string.

# tf.sysconfig.get\_link\_flags

* [**Contents**](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_link_flags#top_of_page)
* [Aliases:](https://www.tensorflow.org/versions/r2.0/api_docs/python/tf/sysconfig/get_link_flags#aliases)

Get the link flags for custom operators.

### Aliases:

* tf.compat.v1.sysconfig.get\_link\_flags
* tf.compat.v2.sysconfig.get\_link\_flags
* tf.sysconfig.get\_link\_flags

tf.sysconfig.get\_link\_flags()

Defined in [python/platform/sysconfig.py](https://github.com/tensorflow/tensorflow/tree/r2.0/tensorflow/python/platform/sysconfig.py).

#### Returns:

The link flags.