



TensorRT

Support Matrix | NVIDIA Docs

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Chapter 1. Features For Platforms And Software

This section lists the supported TensorRT features based on which platform and software.

Table 1. List of supported features per platform.

	Linux x86-64	Windows x64	Linux ppc64le	Linux AArch64
Supported CUDA versions	11.2 update 1 11.1 update 1 11.0 update 1 10.2	11.2 update 1 11.1 update 1 11.0 update 1 10.2	11.0 update 1	11.1 10.2
Supported cuBLAS versions	11.4.1.x 11.3.0.106 11.2.0.252 10.2.3.254	11.4.1.x 11.3.0.106 11.2.0.252 10.2.3.254	11.2.0.252	11.2.1.74 10.2.2.214
Supported cuDNN versions	cuDNN 8.1.1	cuDNN 8.1.1	cuDNN 8.0.3	cuDNN 8.0.4
TensorRT Python API	Yes	No	Yes	Yes
NvUffParser	Yes	Yes	Yes	Yes
NvOnnxParser	Yes	Yes	Yes	Yes
Loops	Yes	Yes	Yes	Yes



Note: Serialized engines are not portable across platforms or TensorRT versions.

Chapter 2. Layers And Features

The section lists the supported TensorRT layers and each of the features.

Table 2. List of supported features per TensorRT layer.

Layer	Dimensions of input tensor	Dimensions of output tensor	Does the operation apply to only the innermost 3 dimensions?	Supports broadcast (see Note 1)	Supports broadcast across batch (see Note 2)
IActivationLayer	0-7 dimensions	0-7 dimensions	No	No	No
IConcatenationLayer	1-7 dimensions	1-7 dimensions	No	No	No
IConstantLayer	has no inputs	0-7 dimensions	No	No	Always
IConvolutionLayer > 2D Convolution	3 or more dimensions	3 or more dimensions	Yes	No	No
IConvolutionLayer > 3D Convolution	4 or more dimensions	4 or more dimensions	No	No	No
IDeconvolutionLayer > 2D Deconvolution	3 or more dimensions	3 or more dimensions	Yes	No	No
IDeconvolutionLayer > 3D Deconvolution	4 or more dimensions	4 or more dimensions	No	No	No
IElementWiseLayer	0-7 dimensions	0-7 dimensions	No	Yes	Yes
IFillLayer	1 dimension	0-7 dimensions	No	NA	NA
IFullyConnectedLayer	3 or more dimensions	3 or more dimensions	Yes	No	No

Layer	Dimensions of input tensor	Dimensions of output tensor	Does the operation apply to only the innermost 3 dimensions?	Supports broadcast (see Note 1)	Supports broadcast across batch (see Note 2)
IGatherLayer	<ul style="list-style-type: none"> Input1: 1-7 dimensions Input2: 0-7 dimensions 	0-7 dimensions	No	No	Yes
IIdentityLayer	0-7 dimensions	0-7 dimensions	No	No	No
IIteratorLayer	1-7 dimensions	0-6 dimensions	No	No	NA
ILoopOutputLayer	0-7 dimensions	0-7 dimensions	No	No	NA
ILRNLayer	3 or more dimensions	3 or more dimensions	Yes	No	No
IMatrixMultiplyLayer	2 or more dimensions	2 or more dimensions	No	Yes	Yes
IPaddingLayer	3 or more dimensions	3 or more dimensions	Yes	No	No
IParametricReluLayer	1-7 dimensions	1-7 dimensions	No	No	No
IPluginLayer	User defined	User defined	User defined	User defined	User defined
IPluginV2Layer	User defined	User defined	User defined	User defined	User defined
IPoolingLayer > 2D Pooling	3 or more dimensions	3 or more dimensions	Yes	Yes	Yes
IPoolingLayer > 3D Pooling	4 or more dimensions	4 or more dimensions	No	Yes	Yes
IRaggedSoftMaxLayer	<ul style="list-style-type: none"> Input: 2 dimensions Bounds: 2 dimensions 	2 or more dimensions	No	No	Yes
IRecurrenceLayer	0-7 dimensions	0-7 dimensions	No	No	NA
IReduceLayer	1-7 dimensions	0-7 dimensions	No	No	No
IResizeLayer	1-7 dimensions	1-7 dimensions	No	No	No
IRNNLayer	3 dimensions	3 dimensions	No	No	No

Layer	Dimensions of input tensor	Dimensions of output tensor	Does the operation apply to only the innermost 3 dimensions?	Supports broadcast (see Note 1)	Supports broadcast across batch (see Note 2)
IRNNv2Layer	<ul style="list-style-type: none"> ► Data/Hidden/Cell: 2 or more dimensions ► SeqLen: 0 or more dimensions 	Data/Hidden/Cell: 2 or more dimensions	No	No	No
IScaleLayer	3 or more dimensions	3 or more dimensions	Yes	No	No
ISelectLayer	0-7 dimensions	0-7 dimensions	No	Yes	NA
IShapeLayer	1 or more dimensions	1 dimension	No	No	NA
IShuffleLayer	0-7 dimensions	0-7 dimensions	No	No	No
ISliceLayer	1-7 dimensions	1-7 dimensions	No	No	Yes
ISoftMaxLayer	1-7 dimensions	1-7 dimensions	No	No	Yes
ITopKLayer	1-7 dimensions	<ul style="list-style-type: none"> ► Output1: 1-7 dimensions ► Output2: 1-7 dimensions 	Yes	No	Yes
ITripLimitLayer	0 dimensions	has no outputs	No	No	NA
IUnaryLayer	1-7 dimensions	1-7 dimensions	No	No	No

**Note:**

1. Indicates support for broadcast in this layer. This layer allows its two input tensors to be of dimensions [1, 5, 4, 3] and [1, 5, 1, 1], and its output is [1, 5, 4, 3]. The second input tensor has been broadcast in the innermost 2 dimensions.
2. Indicates support for broadcast across the batch dimension. "NA" in this column means it's not allowed in networks with an implicit batch dimension.

For more information about each of the TensorRT layers, see [TensorRT Layers](#).

Chapter 3. Layers And Precision

The section lists the TensorRT layers and the precision modes that each layer supports. It also lists the ability of the layer to run on Deep Learning Accelerator (DLA).

For more information about additional constraints, see [DLA Supported Layers](#).

For more information about each of the TensorRT layers, see [TensorRT Layers](#). To view a list of the specific attributes that are supported by each layer, refer to the [TensorRT API](#) documentation.

Table 3. List of supported precision modes per TensorRT layer.

Layer	FP32	FP16	INT8	INT32	DLA FP16	DLA INT8
IActivationLayer	Yes	Yes	Yes	No	Yes ¹	Yes ²
IConcatenationLayer	Yes	Yes	Yes	Yes	Yes ³	Yes ³
IConstantLayer	Yes	Yes	Yes	Yes	No	No
IConvolutionLayer > 2D Convolution	Yes	Yes	Yes	No	Yes	Yes
IConvolutionLayer > 3D Convolution	Yes	Yes	No	No	No	No
IDeconvolutionLayer > 2D Deconvolution	Yes	Yes	Yes	No	Yes	Yes ⁴
IDeconvolutionLayer > 3D Deconvolution	Yes	Yes	No	No	No	No
IElementWiseLayer	Yes	Yes	No	Yes	Yes ⁵	Yes ⁶

¹ Partial support. Yes for ReLU, Clipped ReLU, Sigmoid and TanH activation types only.

² Partial support. Yes for ReLU, Clipped ReLU activation type only.

³ Partial support. Yes for concatenation across c dimension only.

⁴ Partial support. Yes for ungrouped deconvolutions and No for grouped.

⁵ Partial support. Yes for sum, sub, prod, min and max elementwise operations only.

⁶ Partial support. Yes for sum elementwise operation only.

Layer	FP32	FP16	INT8	INT32	DLA FP16	DLA INT8
IFillLayer	Yes	No	No	Yes	No	No
IFullyConnectedLayer	Yes	Yes	Yes	No	Yes	Yes
IGatherLayer	Yes	Yes	No	Yes	No	No
IIdentityLayer	Yes	Yes	Yes	Yes	No	No
IIteratorLayer	Yes	Yes	No	Yes	No	No
ILoopOutputLayer	Yes	Yes	No	Yes	No	No
IPluginV2Layer	Yes	Yes	Yes	No	No	No
ILRNLayer	Yes	Yes	Yes	No	Yes	No
IMatrixMultiplyLayer	Yes	Yes	No	No	No	No
IPaddingLayer	Yes	Yes	Yes	No	No	No
IParametricReLULayer	Yes	Yes	Yes	No	No	No
IPluginLayer	Yes	Yes	No	No	No	No
IPoolingLayer > 2D Pooling	Yes	Yes	Yes	No	Yes ⁷	Yes ⁷
IPoolingLayer > 3D Pooling	Yes	Yes	No	No	No	No
IRaggedSoftMaxLayer	Yes	No	No	No	No	No
IRecurrenceLayer	Yes	Yes	No	Yes	No	No
IReduceLayer	Yes	Yes	No	No	No	No
IResizeLayer	Yes	Yes	No	No	No	No
IRNNLayer	Yes	Yes	No	No	No	No
IRNNv2Layer	Yes	Yes	No	No	No	No
IScaleLayer	Yes	Yes	Yes	No	Yes ⁸	Yes ⁸
ISelectLayer	Yes	Yes	No	Yes	No	No
IShapeLayer ⁹	Yes	Yes	Yes	Yes	No	No
IShuffleLayer	Yes	Yes	Yes	Yes	No	No
ISliceLayer	Yes	Yes	No ¹⁰	Yes	No	No
ISoftMaxLayer	Yes	Yes	No	No	No	No
ITopKLayer	Yes	Yes	No	No	No	No
ITripLimitLayer	Yes	Yes	No	Yes	No	No


⁷ Partial support. Yes for max and average pooling inclusive pooling type only.

⁸ Partial support. DLA does not support power on scale layer.

⁹ Output is always INT32.

¹⁰ Partial support. Yes for unstrided Slice and No for strided.

Layer	FP32	FP16	INT8	INT32	DLA FP16	DLA INT8
UnaryLayer	Yes	Yes	No	No	No	No

 **Note:** DLA with FP16/INT8 precision with some restrictions on layer parameters.

Chapter 4. Hardware And Precision

The following table lists NVIDIA hardware and which precision modes each hardware supports. TensorRT supports all NVIDIA hardware with capability SM 5.0 or higher. It also lists the availability of Deep Learning Accelerator (DLA) on this hardware. Refer to the following tables for the specifics.



Note: Support for CUDA Compute Capability version 3.0 has been removed. Support for CUDA Compute Capability versions below 5.0 may be removed in a future release and is now deprecated.

Table 4. Supported hardware

<u>CUDA Compute Capability</u>	<u>Example Device</u>	TF32	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
8.6	GeForce 3090	Yes	Yes	Yes	Yes	Yes	Yes	No
8.0	NVIDIA A100/ GA100 GPU	Yes	Yes	Yes	Yes	Yes	Yes	No
7.5	Tesla T4	No	Yes	Yes	Yes	Yes	Yes	No
7.2	Jetson AGX Xavier	No	Yes	Yes	Yes	Yes	Yes	Yes
7.0	Tesla V100	No	Yes	Yes	Yes	Yes	No	No
6.2	Jetson TX2	No	Yes	Yes	No	No	No	No
6.1	Tesla P4	No	Yes	No	Yes	No	No	No
6.0	Tesla P100	No	Yes	Yes	No	No	No	No

<u>CUDA Compute Capability</u>	Example Device	TF32	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
5.3	Jetson TX1	No	Yes	Yes	No	No	No	No
5.2	Tesla M4	No	Yes	No	No	No	No	No
5.0	Quadro K2200	No	Yes	No	No	No	No	No

Deprecated hardware

Table 5. List of supported precision mode per hardware.

<u>CUDA Compute Capability</u>	Example Device	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
3.7	Tesla K80	Yes	No	No	No	No	No
3.5	Tesla K40	Yes	No	No	No	No	No

Removed hardware

Table 6. List of supported precision mode per hardware.

<u>CUDA Compute Capability</u>	Example Device	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
3.0	Tesla K10	Yes	No	No	No	No	No

Chapter 5. Software Versions Per Platform

The section lists the supported software versions based on platform.

Table 7. List of supported platforms per software version.

	Compiler version	Python versions
Ubuntu 16.04 x86-64	gcc 5.4.0	2.7 , 3.5 ¹¹
Ubuntu 18.04 x86-64	gcc 7.5.0	2.7 , 3.6 ¹¹
CentOS 7.9 x86-64	gcc 4.8.5	2.7 , 3.6 ¹¹
Windows 10 x64	MSVC 2017u5	N/A
CentOS 8.1 ppc64le	gcc 4.8.5	2.7 , 3.6 ¹¹
Ubuntu 18.04 ppc64le	gcc 7.5.0	2.7 , 3.6 ¹¹
Ubuntu 18.04 AArch64	gcc 8.4.0 (SBSA) gcc 7.5.0	2.7 , 3.6 ¹¹

¹¹ Python versions supported when using Debian or RPM packages. When using Python wheel files, versions 3.4, 3.5, 3.6, 3.7, and 3.8 are supported.

Chapter 6. Supported Ops

The section lists the operations that are supported in a Caffe or TensorFlow framework and in the ONNX TensorRT parser.

Caffe

These are the operations that are supported in a Caffe framework:

- ▶ BatchNormalization
- ▶ BNLL
- ▶ Clip¹²
- ▶ Concatenation
- ▶ Convolution
- ▶ Crop
- ▶ Deconvolution
- ▶ Dropout
- ▶ ElementWise
- ▶ ELU
- ▶ InnerProduct
- ▶ Input
- ▶ LeakyReLU
- ▶ LRN
- ▶ Permute
- ▶ Pooling
- ▶ Power
- ▶ Reduction
- ▶ ReLU, TanH, and Sigmoid
- ▶ Reshape
- ▶ SoftMax
- ▶ Scale

¹² When using the `clip` operation, Caffe users must serialize their layers using `ditcaffe.pb.h` instead of `caffe.pb.h` in order to import the layer into TensorRT.

TensorFlow

These are the operations that are supported in a TensorFlow framework:

- ▶ Add, AddV2, AddN, Sub, Mul, Div, FloorDiv, RealDiv, Minimum, Maximum
- ▶ AvgPool, AvgPool3D¹³
- ▶ ArgMin
- ▶ AvgPool
- ▶ BiasAdd
- ▶ Cast¹³
- ▶ Clip
- ▶ CombinedNonMaxSuppression
- ▶ ConcatV2
- ▶ Const
- ▶ Conv2D, Conv3D
- ▶ Conv2DBackpropInput, Conv3DBackpropInputV2
- ▶ ConvTranspose2D
- ▶ DepthToSpace
- ▶ DepthwiseConv2dNative
- ▶ Elu
- ▶ ExpandDims
- ▶ FusedBatchNorm, FusedBatchNormV2, FusedBatchNormV3
- ▶ FusedConv2DBiasActivation
- ▶ GatherV2
- ▶ Identity
- ▶ LeakyReLU
- ▶ MatMul, BatchMatMul, BatchMatMulV2
- ▶ MaxPool, MaxPool3D¹³
- ▶ Mean
- ▶ Negative, Abs, Sqrt, Recip, Rsqrt, Pow, Exp, Log, Square
- ▶ Pad is supported if followed by one of these TensorFlow layers: Conv2D, DepthwiseConv2dNative, MaxPool, and AvgPool.
- ▶ Pack, Unpack
- ▶ ReLU, TanH, Sigmoid
- ▶ Relu6
- ▶ Reshape

¹³ Supported only in [TensorFlow 2.0](#).

- ▶ ResizeBilinear, ResizeNearestNeighbor
- ▶ Sin, Cos, Tan, Asin, Acos, Atan, Sinh, Cosh, Asinh, Acosh, Atanh, Ceil, Floor
- ▶ Selu
- ▶ Shape¹³
- ▶ Slice, StridedSlice
- ▶ SoftMax



Note: If the input to a TensorFlow `SoftMax` op is not `NHWC`, TensorFlow will automatically insert a transpose layer with a non-constant permutation, causing the UFF converter to fail. It is therefore advisable to manually transpose `SoftMax` inputs to `NHWC` using a constant permutation.

- ▶ Softplus
- ▶ Softsign
- ▶ SpaceToDepth
- ▶ Split
- ▶ SquaredDifference
- ▶ Squeeze
- ▶ TopKV2
- ▶ Transpose

For the list of ops supported in UFF, see [UFF Operators](#).

ONNX

Since the ONNX parser is an open source project, the most up-to-date information regarding the supported operations can be found [here](#).

These are the operations that are supported in the ONNX framework:

- ▶ Abs
- ▶ Acos
- ▶ Acosh
- ▶ And
- ▶ Asin
- ▶ Asinh
- ▶ Atan
- ▶ Atanh
- ▶ Add
- ▶ ArgMax
- ▶ ArgMin

- ▶ AveragePool
- ▶ BatchNormalization
- ▶ Cast
- ▶ Ceil
- ▶ Clip
- ▶ Concat
- ▶ Constant
- ▶ ConstantOfShape
- ▶ Conv
- ▶ ConvTranspose
- ▶ Cos
- ▶ Cosh
- ▶ DepthToSpace
- ▶ DequantizeLinear
- ▶ Div
- ▶ Dropout
- ▶ Elu
- ▶ Equal
- ▶ Erf
- ▶ Exp
- ▶ Expand
- ▶ Flatten
- ▶ Floor
- ▶ Gather
- ▶ Gemm
- ▶ GlobalAveragePool
- ▶ GlobalMaxPool
- ▶ Greater
- ▶ GRU
- ▶ HardSigmoid
- ▶ Identity
- ▶ ImageScaler
- ▶ InstanceNormalization
- ▶ LRN
- ▶ LeakyRelU
- ▶ Less

- ▶ Log
- ▶ LogSoftmax
- ▶ Loop
- ▶ LRN
- ▶ LSTM
- ▶ MatMul
- ▶ Max
- ▶ MaxPool
- ▶ Mean
- ▶ Min
- ▶ Mul
- ▶ Neg
- ▶ Not
- ▶ Or
- ▶ Pad
- ▶ ParametricSoftplus
- ▶ Pow
- ▶ PRelu
- ▶ QuantizeLinear
- ▶ RandomUniform
- ▶ RandomUniformLike
- ▶ Range
- ▶ Reciprocal
- ▶ ReduceL1
- ▶ ReduceL2
- ▶ ReduceLogSum
- ▶ ReduceLogSumExp
- ▶ ReduceMax
- ▶ ReduceMean
- ▶ ReduceMin
- ▶ ReduceProd
- ▶ ReduceSum
- ▶ ReduceSumSquare
- ▶ Relu
- ▶ Reshape
- ▶ Resize

- ▶ RNN
- ▶ ScaledTanh
- ▶ Scan
- ▶ Selu
- ▶ Shape
- ▶ Sigmoid
- ▶ Sin
- ▶ Sinh
- ▶ Size
- ▶ Slice
- ▶ Softmax
- ▶ Softplus
- ▶ Softsign
- ▶ SpaceToDepth
- ▶ Split
- ▶ Sqrt
- ▶ Squeeze
- ▶ Sub
- ▶ Sum
- ▶ Tan
- ▶ Tanh
- ▶ ThresholdedRelu
- ▶ Tile
- ▶ TopK
- ▶ Transpose
- ▶ Unsqueeze
- ▶ Upsample
- ▶ Where

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