

NVIDIA TensorRT

Support Matrix | NVIDIA Docs

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Chapter 1. Features for Platforms and Software

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

List of Supported Features per Platform Table 1.

	Linux x86-64	Windows x64	Linux ppc64le	Linux AArch64
	8.4.x	8.4.x	8.0.x	8.4.x
Supported	11.7 update 1 ¹	11.7 update 1 ⁷	11.3 update 1	11.6 update 2
NVIDIA CUDA versions	11.6 update 2	11.6 update 2		11.4
	11.5 update 2 ²	11.5 update 2 ⁸		
	11.4 update 4	11.4 update 4 ⁹		
	11.3 update 1 ³	11.3 update 1 10		
	11.2 update 2 ⁴	11.2 update 2 ¹¹		
	11.1 update 1 ⁵	11.1 update 1 ¹²		

CUDA 11.7 added a feature called Lazy loading, however, this feature is not supported by TensorRT 8.4 because the CUDA 11.x binaries were built with CUDA Toolkit 11.6.

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² These CUDA versions are supported using a single build, built with CUDA toolkit 11.6. It is compatible with all CUDA 11.x versions and only requires driver 450.x.

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	Linux x86-64	Windows x64	Linux ppc64le	Linux AArch64
	8.4.x	8.4.x	8.0.x	8.4.x
	<u>11.0 update 1</u> ⁶	11.0 update 1 ¹³		
	10.2	10.2		
Supported	11.10.3.66	11.10.3.66	11.5.1.109	11.9.2.110
cuBLAS versions	11.9.2.110	11.9.2.110		11.6.5.2
	11.7.4.6	11.7.4.6		
	11.6.5.2	11.6.5.2		
	11.5.1.109	11.5.1.109		
	11.4.1.1043	11.4.1.1043		
	11.3.0.106	11.3.0.106		
	11.2.0.252	11.2.0.252		
	10.2.3.254	10.2.3.254		
Supported cuDNN versions	cuDNN 8.4.1	cuDNN 8.4.1	cuDNN 8.2.1	cuDNN 8.3.3
TensorRT Python API	Yes	Yes	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.
- Refer to the minimum compatible driver versions in the <u>NVIDIA CUDA Release Notes</u> for specific NVIDIA Driver versions.

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Chapter 2. Layers and Features

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



Note:

- Supports broadcast 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 two dimensions.
- Supports broadcast across batch indicates support for broadcast across the batch dimension. "NA" in this column means it is not allowed in networks with an implicit batch dimension.

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	Supports broadcast across batch
IActivationLaye	r0-7 dimensions	0-7 dimensions	No	No	No
IAssertionLayer	0-1 dimensions	No output	No	No	No
IConcatenation	L laye r dimensions	1-7 dimensions	No	No	No
<u>IConditionLayer</u>	Zero	No output	No	No	No
IConstantLayer	Has no inputs	0-7 dimensions	No	No	Always
IConvolutionLay > 2D Convolution	vanhree or more dimensions	Three 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	Supports broadcast across batch
IConvolutionLay > 3D Convolution	verour or more dimensions	Four or more dimensions	No	No	No
IDeconvolution > 2D Deconvolution	_ ∄yer ee or more dimensions	Three or more dimensions	Yes	No	No
IDeconvolution > 3D Deconvolution	_#geur or more dimensions	Four or more dimensions	No	No	No
IDequantizeLay	e <u>r</u> wo or more dimensions	Two or more dimensions	Yes	No	No
<u>IEinsumLayer</u>	0-7 dimensions	0-7 dimensions	No	No	Yes
<u>IElementWiseLa</u>	dimensions	0-7 dimensions	No	Yes	Yes
IFillLayer	One dimension	0-7 dimensions	No	Not Applicable	Not Applicable
IFullyConnected	d ⊞anne e or more dimensions	Three or more dimensions	Yes	No	No
IGatherLayer	 Input1: 1-7dimensions Input2: 0-7dimensions 		No	No	Yes
IldentityLayer	0-7 dimensions	0-7 dimensions	No	No	No
IIfConditionalO	u 0 ∋vitLayer dimensions	0-7 dimensions	No	No	No
IlfConditionalIn	p 0±7 Zayer dimensions	0-7 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	Supports broadcast across batch
IlteratorLayer	1-7 dimensions	0-6 dimensions	No	No	Not Applicable
<u>ILoopOutputLa</u>	y @ -7 dimensions	0-7 dimensions	No	No	Not Applicable
ILRNLayer	Three or more dimensions	Three or more dimensions	Yes	No	No
<u>IMatrixMultiply</u>	Lāyær or more dimensions	Two or more dimensions	No	Yes	Yes
<u>IPaddingLayer</u>	Three or more dimensions	Three or more dimensions	Yes	No	No
<u>IParametricRelu</u>	u <u>Llayer</u> dimensions	1-7 dimensions	No	No	No
IPluginV2Layer	User defined	User defined	User defined	User defined	User defined
IPoolingLayer > 2D Pooling	Three or more dimensions	Three or more dimensions	Yes	Yes	Yes
IPoolingLayer > 3D Pooling	Four or more dimensions	Four or more dimensions	No	Yes	Yes
IQuantizeLayer	Two or more dimensions	Two or more dimensions	Yes	No	No
IRaggedSoftMaxLayerout: Two		Two or more dimensions	No	No	Yes
IRecurrenceLay	e <u>0</u> -7 dimensions	0-7 dimensions	No	No	Not Applicable
IReduceLayer	1-7 dimensions	0-7 dimensions	No	No	No
IResizeLayer	1-7 dimensions	1-7 dimensions	No	No	No

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Layer	Dimensions of input tensor	Dimensions of output tensor	Does the operation apply to only the innermost 3 dimensions?	Supports broadcast	Supports broadcast across batch
IRNNv2Layer	 Data/ Hidden/ Cell: Two or more dimensions Seqlen: Zero or more dimensions 	Data/Hidden/ Cell: Two or more dimensions	No	No	No
<u>IScaleLayer</u>	Three or more dimensions	Three or more dimensions	Yes	No	No
<u>IScatterLayer</u>	0-7 dimensions	0-7 dimensions	No	No	No
ISelectLayer	0-7 dimensions	0-7 dimensions	No	Yes	Not Applicable
IShapeLayer	One or more dimensions	One dimension	No	No	Not Applicable
IShuffleLayer	0-7 dimensions	0-7 dimensions	No	No	No
<u>ISliceLayer</u>	1-7 dimensions	1-7 dimensions	No	No	Yes
ISoftMaxLayer	1-7 dimensions	1-7 dimensions	No	No	Yes
ITopKLayer	1-7 dimensions	 Output1: 1-7 dimensions Output2: 1-7 dimensions 		No	Yes
ITripLimitLayer	Zero dimensions	Has no outputs	No	No	Not Applicable

Layer	Dimensions of input tensor	Dimensions of output tensor	Does the operation apply to only the innermost 3 dimensions?	Supports broadcast	Supports broadcast across batch
<u>IUnaryLayer</u>	1-7 dimensions	1-7 dimensions	No	No	No

For more information about each of the TensorRT layers, see <u>TensorRT Layers</u>.

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 NVIDIA TensorRT API Reference documentation.

Table 3. List of Supported Precision Modes per TensorRT Layer

Layer	FP32	FP16	INT8	INT32	Bool	DLA FP16	DLA INT8
IActivation	-exyeesr	Yes	Yes	No	No	Yes ¹⁴	Yes ¹⁵
IAssertionL	a <u>Mer</u>	No	No	No	Yes	No	No
<u>IConcatena</u>	t Kes Layer	Yes	Yes	Yes	No	Yes ¹⁶	Yes ⁵
IConditionL	.alyler	No	No	No	Yes	No	No
IConstantL	a ye s	Yes	Yes	Yes	No	No	No
IConvolution > 2D Convolution		Yes	Yes	No	No	Yes	Yes
IConvolution > 3D Convolution	-	Yes	Yes	No	No	No	No
IDeconvolut > 2D Deconvolut		Yes	Yes	No	No	Yes	Yes ¹⁷

Partial support. Yes for Relu, Clipped Relu, Leaky Relu, Sigmoid, and Tanh activation types only.

Partial support. Yes for ReLU, Clipped ReLU, Leaky ReLU, Sigmoid, and Tanh activation types only.

Partial support. Yes for concatenation across c dimension only.

¹⁷ Partial support. Yes for ungrouped deconvolutions and No for grouped.

Layer	FP32	FP16	INT8	INT32	Bool	DLA FP16	DLA INT8
IDeconvolu > 3D Deconvolu		Yes	No	No	No	No	No
<u>IDequantiz</u>	zeLNaoyer	No	Yes	No	No	No	No
<u>IEinsumLa</u>	<u>yeY</u> es	Yes	No	No	No	No	No
IElementW	/is ¥e≜s ayer	Yes	Yes	Yes	Yes	Yes ¹⁸	Yes ¹⁹
IFillLayer	Yes	No	No	Yes	No	No	No
IFullyConn	ec Yes lLayer	Yes	Yes	No	No	Yes	Yes
<u>IGatherLay</u>	<u>/e</u> Yes	Yes	No	Yes	No	No	No
IldentityLa	nyeYres	Yes	Yes	Yes	No	No	No
IIfConditio	na //e utputLa	<u>ye</u> lfes	No	Yes	Yes	No	No
IIfConditio	na l/ers putLaye	r Yes	No	Yes	Yes	No	No
IlteratorLa	ye Y es	Yes	No	Yes	No	No	No
ILoopOutp	ut Yes yer	Yes	No	Yes	No	No	No
ILRNLayer	Yes	Yes	Yes	No	No	Yes	No
<u>IMatrixMu</u>	lti ye sLayer	Yes	Yes ²⁰	No	No	No	No
<u>IPaddingLa</u>	ay e rs	Yes	Yes	No	No	No	No
<u>IParametri</u>	c R⁄eds Layer	Yes	Yes	No	No	Yes	Yes
IPluginV2L	.ay Xer s	Yes	Yes	No	No	No	No
IPoolingLa > 2D Pooling	ye Y es	Yes	Yes	No	No	Yes ²¹	Yes ⁹
IPoolingLa > 3D Pooling	ye Y es	Yes	No	No	No	No	No
<u>IQuantizeL</u>	.ay xe rs	No	No	No	No	No	No
IRaggedSc	ft Kés xLayer	No	No	No	No	No	No
IRecurrenc	ce <u>Yæn</u> ger	Yes	No	Yes	Yes	No	No
IReduceLa	ye Y es	Yes	Yes	Yes	No	No	No
IResizeLay	<u>er</u> Yes	Yes	Yes	No	No	Yes	Yes

Partial support. Yes for sum, sub, prod, min , and max elementwise operations only.
Partial support. Yes for sum, sub, prod, min , and max elementwise operations only.
Partial support. Yes for the case the second input is build-time constant and the first input is not transposed - either produced by a Shuffle layer or opA == kTRANSPOSE.
Partial support. Yes for max and average padding inclusive pooling type only.

Layer	FP32	FP16	INT8	INT32	Bool	DLA FP16	DLA INT8
IRNNv2Laye	e r Yes	Yes	No	No	No	No	No
IScaleLayer	Yes	Yes	Yes	No	No	Yes ²²	Yes ¹⁰
<u>IScatterLay</u>	<u>e</u> Yes	Yes	Yes	Yes	No	No	No
ISelectLaye	<u>r</u> Yes	Yes	No	Yes	Yes	No	No
IShapeLaye	rYes	Yes	Yes	Yes	Yes	No	No
IShuffleLay	e Y es	Yes	Yes	Yes	No	Yes ²⁴	Yes ²⁵
ISliceLayer	Yes	Yes	No ²⁶	Yes	No	Yes	No
ISoftMaxLa	y Yee s	Yes	No	No	No	Yes	No
ITopKLayer	Yes	Yes	No	No	No	No	No
ITripLimitLa	ay Xee rs	Yes	No	Yes	Yes	No	No
<u>IUnaryLaye</u>	r ²⁷ es	Yes	Yes	Yes	Yes	No	No



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

Partial support. DLA does not support power on the scale layer.
Output is always INT32.
Partial support in TensorRT 8.4.12 only.
Partial support in TensorRT 8.4.12 only.
Partial support. Yes for unstrided Slice and No for strided.
Datatype support is limited to the type of unary operation used. Refer to the Unary Layer for more information.

Chapter 4. Hardware and Precision

The following table lists NVIDIA hardware and which precision modes that each hardware supports. TensorRT supports all NVIDIA hardware with capability SM 5.0 or higher. It also lists the availability of 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

CUDA Compute Capability	Example Device	TF32	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
8.7	NVIDIA DRIVE AGX Orin [™]	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8.6	NVIDIA A10	Yes	Yes	Yes	Yes	Yes	Yes	No
8.0	NVIDIA A100/ GA100 GPU	Yes	Yes	Yes	Yes	Yes	Yes	No
7.5	NVIDIA T4	No	Yes	Yes	Yes	Yes	Yes	No
7.2	Jetson AGX Xavier	No	Yes	Yes	Yes	Yes	Yes	Yes
7.0	NVIDIA V100	No	Yes	Yes	Yes	Yes	No	No

CUDA Compute Capability	Example Device	TF32	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
6.1	NVIDIA P4	No	Yes	No	Yes	No	No	No
6.0	NVIDIA P100	No	Yes	Yes	No	No	No	No
5.2	NVIDIA 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

CUDA Compute Capability	Example Device	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
3.7	NVIDIA K80	Yes	No	No	No	No	No
3.5	NVIDIA K40	Yes	No	No	No	No	No

Removed Hardware

Table 6. List of Supported Precision Mode per Hardware

CUDA Compute Capability	-	FP32	FP16	INT8	FP16 Tensor Cores	INT8 Tensor Cores	DLA
3.0	NVIDIA K10	Yes	No	No	No	No	No

Chapter 5. Layers for Flow-Control Constructs

The following table lists the TensorRT layers that can be used as interior layers in TensorRT flow-control constructs.

Currently, TensorRT supports loop constructs (using <code>lloopLayer</code>) and ternary conditional constructs (using IIfConditionalLayer). Interior layers are layers that include the body of a loop or one of the two branches of an if-conditional.

An Ilooplayer interior layer may contain other loops and if-conditionals. An IIfConditionalLayer branch may contain other if-conditionals and loops.

Flow-control constructs do not support INT8 calibration and interior-layers cannot employ implicit-quantization (INT8 is supported only in explicit-quantization mode).

Table 7. List of TensorRT Layers that are Supported as Interior Layers of Flow-control Constructs

Layer	Supported
<u>IActivationLayer</u>	Yes, when the operation is one of: krelu,
	kSIGMOID, kTANH, kELU
<u>IAssertionLayer</u>	Yes
<u>IConcatenationLayer</u>	Yes
<u>IConditionLayer</u>	Yes (for nested conditionals)
<u>IConstantLayer</u>	Yes
IConvolutionLayer > 2D Convolution	singleton channel and spatial dims, that are,
	the dimensions must be static or have a single value in each optimization profile
IConvolutionLayer > 3D Convolution	singleton channel and spatial dims
IDeconvolutionLayer > 2D Deconvolution	No
IDeconvolutionLayer > 3D Deconvolution	No
<u>IDequantizeLayer</u>	No

Layer	Supported		
<u>IEinsumLayer</u>	Yes		
<u>IElementWiseLayer</u>	Yes		
IFillLayer	krandom_uniform only		
<u>IFullyConnectedLayer</u>	Yes		
<u>IGatherLayer</u>	Yes		
<u>IldentityLayer</u>	Yes		
IIfConditionalOutputLayer	Yes (for nested conditionals)		
<u>IlfConditionalInputLayer</u>	Yes (for nested conditionals)		
<u>IlteratorLayer</u>	Yes (for nested loops)		
<u>ILoopOutputLayer</u>	Yes (for nested loops)		
ILRNLayer	No		
<u>IMatrixMultiplyLayer</u>	Yes		
<u>IPaddingLayer</u>	No		
<u>IParametricReluLayer</u>	No		
IPluginV2Layer	Yes		
IPoolingLayer > 2D Pooling	No		
IPoolingLayer > 3D Pooling	No		
<u>IQuantizeLayer</u>	No		
IRaggedSoftMaxLayer	No		
IRecurrenceLayer	Yes		
IReduceLayer	Yes		
IResizeLayer	No		
IRNNv2Layer	No		
<u>IScaleLayer</u>	Yes		
<u>IScatterLayer</u>	Yes		
<u>ISelectLayer</u>	Yes		
IShapeLayer	Yes		
IShuffleLayer	Yes		
<u>ISliceLayer</u>	Yes		
<u>ISoftMaxLayer</u>	Yes		
ITopKLayer	No		
ITripLimitLayer	Yes		

Layer	Supported
<u>IUnaryLayer</u>	Yes, when the operation is one of: kabs, kceil,
	kERF, kEXP, kFLOOR, kLOG, kNEG, kNOT, kRECIP,
	kROUND, kSIGN, kSQRT, kSIN, kCOS, kATAN

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Chapter 6. Compute Capability Per Platform

The section lists the supported compute capability based on platform.

Table 8. Compute Capability per Platform

Platform	Compute capability
Linux x86-64	3.5, 3.7, 5.0, 5.2, 6.0, 6.1, 7.0, 7.5, 8.0 ²⁸ , 8.6 ²⁹
Windows 10 x64	3.5, 3.7, 5.0, 5.2, 6.0, 6.1, 7.0, 7.5, 8.0 ¹³ , 8.6 ¹⁴
CentOS 8.3 ppc64le	7.0, 7.5, 8.0, 8.6
Ubuntu 20.04 SBSA	7.0, 7.5, 8.0, 8.6
NVIDIA JetPack AArch64	5.3, 6.2, 7.2, 8.7

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Requires CUDA toolkit 11.0 or newer and a TensorRT CUDA 11.x build.
Requires CUDA toolkit 11.1 or newer and a TensorRT CUDA 11.x build.

Chapter 7. Software Versions Per Platform

The section lists the supported software versions based on platform.

Table 9. List of Supported Platforms per Software Version

Platform	Compiler version	Python version
Ubuntu 18.04 x86-64	gcc 8.3.1	3.6
Ubuntu 20.04 x86-64	gcc 8.3.1	3.8
CentOS 7.9 x86-64	gcc 8.3.1	3.6
CentOS 8.3 x86-64	gcc 8.3.1	3.8
SLES 15 x86-64	gcc 8.3.1	Not Applicable
Windows 10 x64	MSVC 2017u8	Not Applicable
CentOS 8.3 ppc64le	<u>Clang 10.0.1</u>	3.8
Ubuntu 20.04 SBSA	gcc 8.4.0	3.8
NVIDIA JetPack AArch64	gcc 9.3.0	3.8



Note: Python versions supported when using Debian or RPM packages. When using Python wheel files, versions 3.6, 3.7, 3.8, 3.9, and 3.10 are supported.

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Chapter 8. ONNX Operator Support

The ONNX operator support list for TensorRT can be found here.

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