GPUpartner

VALIDATION REPORT · IMAGE GENERATION

Stable Diffusion XL 1.0

on RTX 3090 · 16-bit (BF16)

STATUS · OCT 22, 2026

Validated

3 of 3 checks pass

Stable Diffusion XL 1.0 at 16-bit runs on the RTX 3090, about 9.6 s per image.

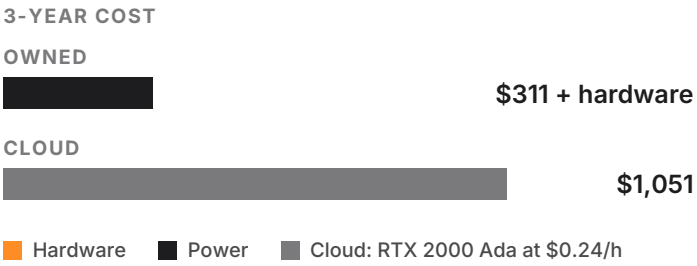
VALIDATION

CHECK	TARGET	RESULT	STATUS
Fits in GPU memory	24.0 GB usable	5.6 GB needed	PASS
Headroom	5% free	18.4 GB free (77%)	PASS
Time per image	under 30 s	9.6 s	PASS

Targets: an image in under 30 s, and 5% of memory left free. Calculated from published specs, not benchmarked.

BUDGET

HARDWARE, ONE-TIME	MSRP not entered
POWER, PER YEAR	$104 · 395 W at the wall
CLOUD INSTEAD, PER YEAR	$350
3-YEAR TOTAL, OWNED	Hardware + $311 power
3-YEAR TOTAL, CLOUD	$1,051
BREAK-EVEN	Needs the hardware MSRP



Budget basis: 4 h a day, power at $0.18 per kWh, cloud at RunPod on-demand prices as of Oct 22, 2026. Hardware at the MSRP entered in the calculator, not a GPU Partner quote. A 3-year view; resale value, staff time and taxes aren't counted.

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TECHNICAL DETAIL · IMAGE GENERATION

Stable Diffusion XL 1.0

on RTX 3090 · 16-bit (BF16)

SETUP

PARAMETERS	2.6B
PRECISION	16-bit (BF16)
OUTPUT	1024 × 1024
STEPS	30
HARDWARE	RTX 3090
GPU CAN USE	24.0 GB of 24.0 GB

MEMORY

WEIGHTS	4.8 GB
WORKING	22 MB
RUNTIME	819 MB
SYSTEM	0.0 GB
FREE	18.4 GB

SAME MODEL, OTHER MACHINES

RTX 4090	16-bit · 4.7 s
RTX 5090	16-bit · 3.9 s
RTX PRO 6000 BLACKWELL	16-bit · 2.2 s
M5 MAX 128 GB	16-bit · 12 s
M3 ULTRA 256 GB	16-bit · 23 s
DGX SPARK 128 GB	16-bit · 11 s
RYZEN AI MAX+ 395 128 GB	16-bit · 19 s

WHERE TO GET IT

GGUF	huggingface.co/AEUPH/sdxl-unet-q8-gguf
OFFICIAL	huggingface.co/stabilityai/stable-diffusion-xl-base-1.0

METHOD AND ASSUMPTIONS

Memory is the denoiser's weights at the chosen precision plus the bigger of one transformer block's working set and the VAE decode, plus the runtime; the text encoders run first and then wait in system RAM. Time is the denoising FLOPs per step times the steps, against the chip's dense 16-bit TFLOPS, scaled to published GeForce runs of this model. Running cost is power at the wall at your rate and hours; the cloud figure is the cheapest RunPod on-demand GPU that runs the same job. Accuracy: memory lands within about a gigabyte; speeds and times are rough, about ±25%. Model data and hardware specs checked Oct 2026; cloud prices are RunPod's on-demand list as of Oct 22, 2026. Report VR-03ZUJYT, generated October 22, 2026.