GUIDELINES FOR GEFORCE RTX TECHNOLOGIES

Ray Tracing, DLSS, and NVIDIA Adaptive Shading

NVIDIA DLSS

Deep Learning Super Sampling (DLSS) is an NVIDIA RTX technology which uses deep learning neural network to boost frame rates and generate beautiful, sharp images for your games. It gives you the performance headroom to maximize quality settings and increase output resolution.

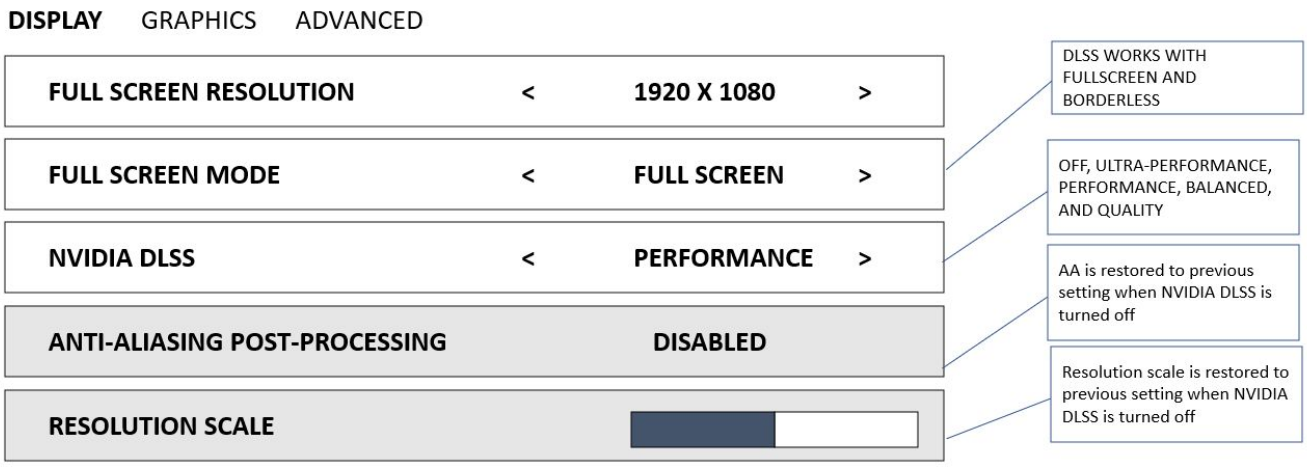
For more details on NVIDIA DLSS, see DLSS: What Does It Mean for Game Developers? as well as the NVIDIA Turing GPU Architecture Whitepaper. Learn more about DLSS 2.0.

NVIDIA DLSS: Settings Options

Mode	Description	Resolution Support	GPU Support
OFF	Turns DLSS off.	NA	NA
ULTRA PERFORMANCE	Offers the highest performance boost. Recommended for 8K gameplay only.	ALL RESOLUTIONS	ALL RTX GPUs
PERFORMANCE	Offers a higher performance boost than balanced mode.	ALL RESOLUTIONS	ALL RTX GPUs
BALANCED	Offers both optimized performance and image quality	ALL RESOLUTIONS	ALL RTX GPUs
QUALITY	Offers a higher image quality than balanced mode.	ALL RESOLUTIONS	ALL RTX GPUs
ULTRA QUALITY*	Offers the highest image quality.	ALL RESOLUTIONS	ALL RTX GPUs

*** mode is a placeholder for future feature updates. It should not be visible to end users.**

NVIDIA DLSS: UI



Notes:

NVIDIA DLSS currently has 5 modes that are available for any game or application but are not necessarily enabled for a given game. Modes should only be visible in the UI if it is confirmed available via a call to GetOptimalSettings. Please see the programming guide for further details.

NVIDIA DLSS: UI tooltip or setting description

- **NVIDIA DLSS** *NVIDIA DLSS is used to provide the highest possible frame rates at maximum graphics settings. DLSS requires an NVIDIA RTX graphics card.*
    - **Japanese version**: NVIDIA DLSSは最大のグラフィック設定で可能な限り最高のフレームレートを達成するように使用されます。DLSSを使用するのにはRTXグラフィックカードが必要です。
- **IGNORE FILM GRAIN:** Further improves sharpness for games that use film grain.

RAY TRACING

Ray tracing is the holy grail of gaming graphics, simulating the physical behavior of light. GeForce RTX graphics cards have dedicated RT Cores to accelerate ray tracing, enabling higher quality and performance.

For more details on GeForce RTX Technology, see the NVIDIA Turing GPU Architecture Whitepaper. Additional details on Ray Tracing Best Practices can be found here.

Ray Tracing: Settings Options

The recommended RT settings are "**ON**", "**HIGH**", and "**ULTRA**." When ray tracing is "ON," there should be a noticeable image quality difference. Additionally, there should be a very noticeable difference between each quality level, otherwise fewer setting options are appropriate.

Ray Tracing: Target Performance

We recommend the following targets for 60 fps average gameplay in your benchmark or areas of the game that are relatively heavy for ray tracing effects.

- **GeForce RTX 2060:** Ray tracing set to "**ON**" at 1920x1080 with DLSS enabled
- **GeForce RTX 2080 Ti:** Ray tracing set to "**HIGH**" at 2560x1440 with DLSS enabled

Ray Tracing: Recommended UI

Ray Tracing: UI tooltip or setting description

- **DXR:** *Enable DirectX Raytracing (DXR) for life-like [EFFECT NAME] (i.e., Shadows, Reflections, etc)*
- **NON-DXR:** *Enable ray tracing for life-like [EFFECT NAME] (i.e., Shadows, Reflections, etc)*

NVIDIA ADAPTIVE SHADING (NAS)

NVIDIA Adaptive Shading (NAS) boosts performance by selectively lowering pixel shading rate, without affecting perceived image quality. Screen regions without high contrast details or with fast motion speeds are identified and shaded in lower rate, using the Variable Rate Shading (VRS) feature introduced on Turing.

For more details on GeForce RTX Technology, see the NVIDIA Turing GPU Architecture Whitepaper

NAS: Game Options

The recommended NAS settings are "**OFF**", "**BALANCED**", "**PERFORMANCE, " and CUSTOM.**

NAS: Recommended UI

Notes:

NAS changes to Custom mode when user changes the default settings (Detail sensitivity, low-light sensitivity, and motion sensitivity).

NAS: UI COPY

- **NVIDIA ADAPTIVE SHADING:** *Boost frame rates by adapting shading rate based on content and motion information. This will disable deferred rendering.*
- **DETAIL SENSITIVITY:** *Shading rate sensitivity to image details*
- **LOW-LIGHT SENSITIVITY:** *Shading rate sensitivity to dark regions*
- **MOTION SENSITIVITY:** *Shading rate sensitivity to motion*

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