

DESIGNING GAMES FOR NVIDIA GRID[™]

BEST PRACTICES GUIDE Eric Young, DevTech Engineering Manager for GRID

Onboard Games on to NVIDIA GRID GamePad Support! Configurable Game Settings AGENDA Optimizing your game for GRID[™] Handling Text Input **GRID** Server Configurations Validate with Gamestream



ONBOARD GAMES ON TO NVIDIA GRID[™]

Buy & Play Instantly

RATIAN

The Witcher 3 Wild Hunt

NVIDIA GRID

Prepare for Game Streaming

- NVIDIA GRID[™] Service connected to SHIELD Devices
- Work with us to get your Game on GRID!



NVIDIA GRID



Batman Arkham Knight \$59.99

WILD HUNT

The Witcher 3 Wild Hunt \$59.99



\$19.99

Resid \$24.99

Purchased Games



SHADOWAMORDOR

GAMEPAD SUPPORT!

Add GAMEPAD Controller Support

•Crucial for a good gaming experience on GRID^{*}

Use XINPUT API

- Preferred for Universal Controller Support
- Easily Implemented for
 - Desktops (Windows, Linux, OSX)
 - Consoles (Xbox 360/One, PS3/PS4)
 - Mobile (Android & IOS)

Refer to the NvGamepad Library

- API Layer for GamePad support for Windows and Android Games
- http://developer.nvidia.com/cross-platform-gamepad-api



CONFIGURABLE GAME SETTINGS

Developer: Game's settings must be configurable
Use game config files that are modified externally (by GRID)
Do not encrypt config files
Makes onboarding difficult or not possible
Optionally have the video settings reside in a separate config file

•NVIDIA: Game Onboarding process for GRID

Tested with different game settings
Settings are optimized for GRID
Visual Quality (HQ) and Frame rate (30fps & 60fps)
Streaming settings (H.264)

GEFORCE EXPERIENCE

Use GeForce Experience API

http://developer.nvidia.com/geforce-settings-api

•NVIDIA API to configure game settings



The easiest way to keep your drivers up to date and your games optimized.

Sioshock Infinite Crysis 3 Metro: Last Light	Crysis 3 DrProgram Files (1687),Origin Gam		
🗢 📐 Titanfall			
🛢 🛞 Watch_Dogs	Setting	Current	Optimal
World Of Tanks			
	Anisotropic Filtering		
	Anti-aliasing		
	Display Mode		
	Game Effects		
	Object		
	Particles		
	Post-processing		
	Resolution		
	Shading		
	Shadows		
	Texture Resolution		
	Water		
	NVIDIA Multi-Frame Sampled Anti-aliasing		

VIDEO SETTINGS ON $GRID^{*}$

Target these Screen Sizes and Resolutions

Shield screen sizes: 5" to 8" LCD screens
Large screen sizes: 32" to 85" TVs
Screen resolutions: 720p and 1080p
Scale User Interface Elements and Text accordingly

Add support for HQ Video Settings
High resolution textures = images less blurry and stretched
Anti-aliasing (TXAA) + more 3D geometry
Better H.264 quality (high PSNR & lower bitrate)
More Particle Effects
Add more emitters, patterns for larger screen
Calibrate colors in your game for TVs

VIDEO SETTINGS ON GRID[™]

Follow Multiple Screen Size recommendations

- Screen Sizes Range from 5-8 Inches to 40-65 Ft + Large Screens
- User Interface Elements and Text Font Sizes Must be Scaled Accordingly
- Support 16:9 Aspect Ratio = Landscape Orientation
- Support Overscan = TVs Loose Some Rendered Space Along the Edges

Refer to These Guides

- https://developer.nvidia.com/android-tv-developer-guide
- http://developer.android.com/guide/practices/screens_support.html



OPTIMIZING YOUR GAME FOR GRID^{$^{\text{TM}}$}

Game launch suggestions

Games need to be directly launchable (without Game Launcher)
Allow pre-game screens & video startups to be skipped by Gamepad buttons

Some Game Menu options should be hidden

Shield X sets the game settings before launch
Settings should be hidden from user when running on GRID
Hide UI settings for Video, audio, and performance
Integrate directly with the GRID Link SDK





HANDLING TEXT INPUT

Text Input

- If your game has an in-game On Screen (OSC) Keyboard
- You are GamePad and ready for NVIDIA GRID

Alternatively refer to GRID Link SDK

- Text input through a Dialog?
- A non-native OSC Keyboard = Bad experience for GamePad users
- Integrate with GRID Link SDK for a better experience

ALL the Menus & Dialogs Need to be Navigable by Gamepad

- UI Components should be properly highlighted and resized for visibility
- UI Elements should be clearly actionable when Selected
- Do not use Touch Screen controls

GRID SERVER SPECIFICATIONS

	Kepler GK104	Maxwell GM204
CPU Configuration	Xeon E5-2670 2.6 - 3.3 Ghz 4-core CPU (8 HT)	Xeon E5-2660 v3 2. 6 -3.3 Ghz 4-core CPU (8 HT)
GPU Configuration	1536 Cores 2.4TF / 102GT	2048 Cores 4.8TF / 149GT
GPU Memory	4GB	8GB
System Memory	15GB	15GB
Storage per Game	1TB	1TB

VALIDATE WITH GAMESTREAM

Test GameStream using a Shield & NVIDIA GPU
Windows 7 or 8 PC with NVIDIA GTX 650 or higher
Latest NVIDIA GeForce drivers.
WiFi Router: 802.11a/g, 802.11n, 802.11ac dual band recommended.

5Ghz wireless recommended

A Shield device



VALIDATE WITH GAMESTREAM

NVIDIA GeForce Experie	ence		
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SHOP NEWS MY ANDROID GAMES MY MEDIA APPS MY PC GAMES GRID GAMES GRID GAMES Connect Gate PC and enter this code. 5533 Cancel On Your PC, by Windows System
Open NVIDIA GeForce Experience
Choose Preference -> GameStream
Click + to "Add Your Game"

On Your Shield Launch Shield HUB
My PC Games -> Settings

-> GameStream Ready PCs

+ Enter the IP Address of Your PC

Shield Shows a 4 Digit Code

Enter on Your PC

RESOURCES

Signup for GameWorks!

https://developer.nvidia.com/gameworks-registered-developer-program

Android TV Developer Guide

https://developer.nvidia.com/android-tv-developer-guidehttp://developer.android.com/guide/practices/screens_support.html

NVGamePad Library

http://developer.nvidia.com/cross-platform-gamepad-api

Contact:

•GRID-developer-support@nvidia.com