



DESIGNING GAMES FOR NVIDIA GRID™

BEST PRACTICES GUIDE

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AGENDA

Onboard Games on to NVIDIA GRID™

GamePad Support!

Configurable Game Settings

Optimizing your game for GRID™

Handling Text Input

GRID Server Configurations

Validate with Gamestream



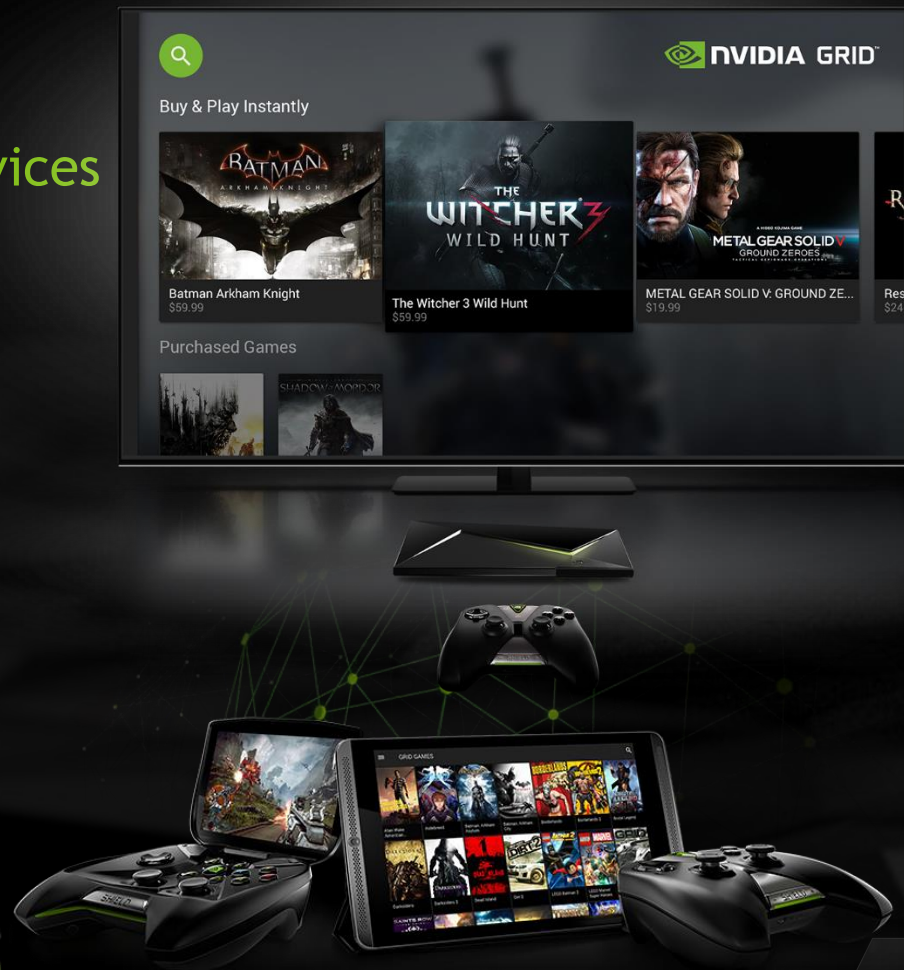
ONBOARD GAMES ON TO NVIDIA GRID™

Prepare for Game Streaming

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



gameworks.nvidia.com | GDC 2015



NVIDIA GRID™



Batman Arkham Knight
\$59.99



The Witcher 3 Wild Hunt
\$59.99

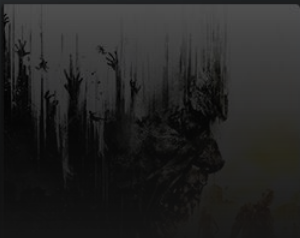


METAL GEAR SOLID V: GROUND ZE...
\$19.99



Resid...
\$24.99

Purchased Games



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)



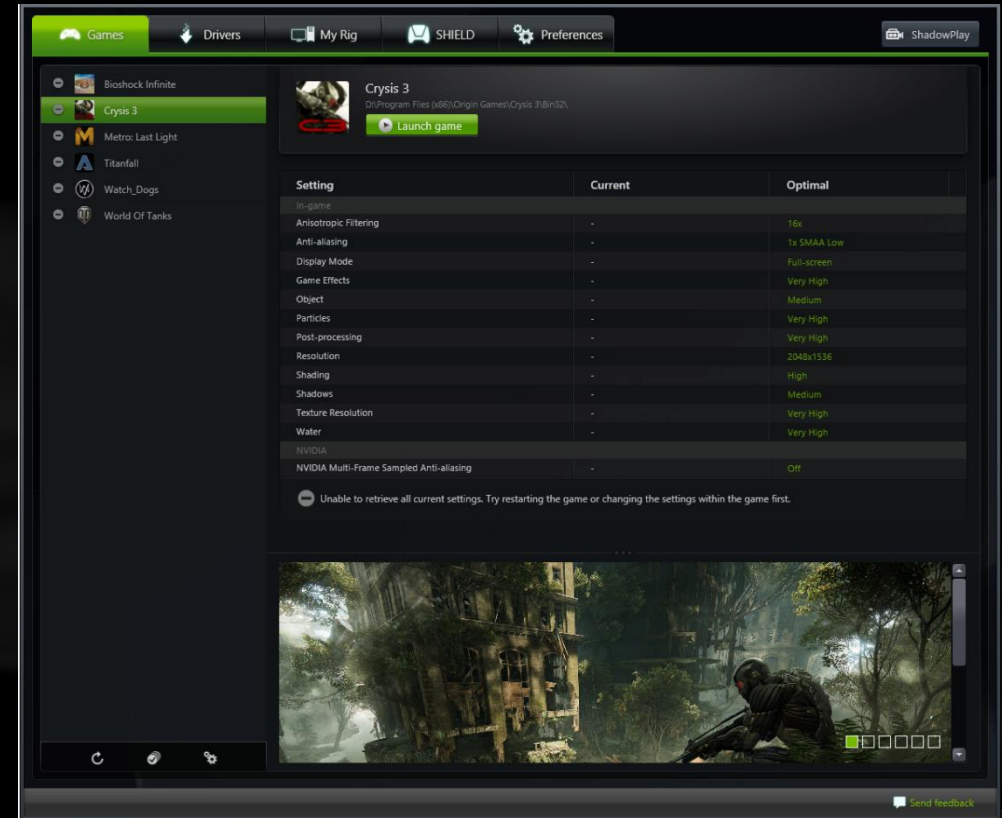
GEFORCE EXPERIENCE

- Use GeForce Experience API
 - <http://developer.nvidia.com/geforce-settings-api>
 - NVIDIA API to configure game settings



GEFORCE[®]
EXPERIENCE[™]

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



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™

- 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



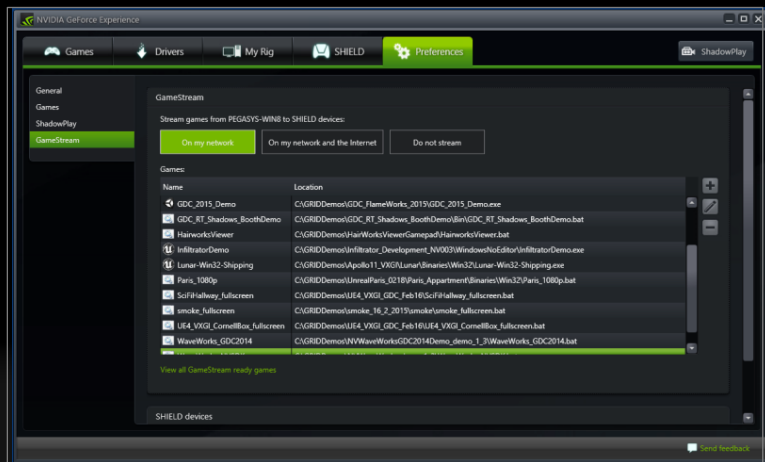
VALIDATE WITH GAMESTREAM

- 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

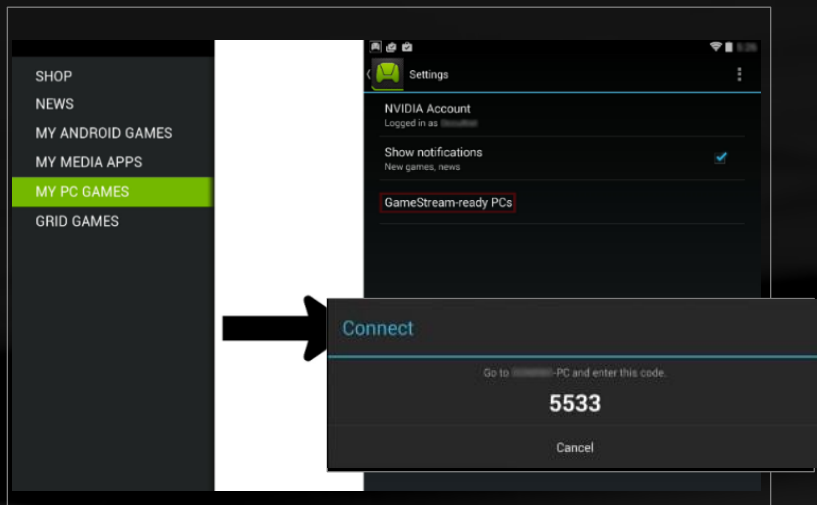


VALIDATE WITH GAMESTREAM

- 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-guide>
 - http://developer.android.com/guide/practices/screens_support.html
- NVGamePad Library
 - <http://developer.nvidia.com/cross-platform-gamepad-api>
- Contact:
 - GRID-developer-support@nvidia.com

