Wii™ Tools Overview

Dan Chang

Senior Software Engineer

Software Development Support Group

DEVELOPERS
CONFERENCE

Nintendo®

Roadmap

- **Wii Hardware Tools**
- Firmware Update / System Menu
- Mastering Process

Wii Hardware Tools

- **NDEV Development Unit**
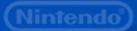 - For developers
- **RVT-H Reader**
  - For testers and publishers
- **RVT-R Reader**
  - For testers and publishers

NDEV Development Unit

- 64 MB more memory than production Wii
- Uses Windows PC for disc emulation
  - Connects via 3 x USB to PC
- Supports Freescale debugger
- Serial debug output
- If USB connections not working:
  - No video output and no spinning LED
- Uses either wired or wireless Wii Remotes

RVT-H Reader

- 64 MB more memory than production Wii
- Uses built-in hard disk for disc emulation
  - Stores up to 8 disc images
  - Write disc images using Windows PC via USB
- Button to generate disc read error
- Comes in two versions:
  - One works with wireless Wii Remotes
  - One works with wired Wii Remotes
- Two firmwares; don't use [Update] button

RVT-R Reader

- Same memory as production Wii
- Reads RVT-R Discs
  - Write RVT-R Discs using an RVT-R Writer
  - Does not read retail discs
- Use to test speed of disc reads and seeks
- Comes in two versions:
  - One works with wireless Wii Remotes
  - One works with wired Wii Remotes

Nintendo®

RVT-R Writer

- Writes master images onto RVT-R Discs
- Create firmware update discs
- Create System Menu installation discs

RVT-R Disc

- Write with RVT-R Writers
- Read with RVT-R Readers
  - Does not work in retail units
- Currently only Single Layer (4.7 GB)
  - Dual Layer coming
- Write once
- 12 cm

Wired Wii Remote Kit

- Use wired version to avoid interference
- Works with
  - All NDEVs
  - Wired RVT-R Readers
  - Wired RVT-H Readers
- Includes
  - Wii Remote (Wired)
  - Wii Remote Strap
  - Nunchuk

RF Wired RVT Controller Splitter

- Connects up to four wired Wii Remotes to an NDEV / RVT-R / RVT-H

Nintendo®

Roadmap

- Wii Hardware Tools
- **Firmware Update / System Menu**
- Mastering Process

Wii Firmware

- Must install correct firmware to match SDK
- Dev HW can hold multiple firmware revs
  - Version 9.2.4, 17.2.0, 21.2.2, etc.
- View versions using Devkit Boot Menu
  - Hold down HOME button or Z button (on GameCube controller in socket 4) while turning on the unit
  - Select "Firmware" option from menu

Firmware Update

- Get update image from RVL SDK
  - A file of the format *swupdateNNN*.gcm
- Use makeUpdateDisc to create image
- RVT-R: write to disc using RVT-R Writer
- RVT-H: write to bank using rvtwriter.exe
- NDEV: odem -r -l *swupdateNNN*.gcm
- Run image like a game disc

Nintendo®

Revolution Wii Menu Changer

- Allows you to switch between:
    - System Menu 1 (US only)
    - System Menu 2.2 (JP, US, or EU)
    - DEVKIT BOOT MENU (No System Menu)
- Also installs firmware 9.2.4, 11.0.10, 13.0.10, and 17.2.0
- Follow same procedure as updating firmware using **wiimenu_changer.gcm**

Roadmap

- Wii Hardware Tools
- Firmware Update / System Menu
- **Mastering Process**

Nintendo Confidential

DEVELOPERS
CONFERENCE

Nintendo®

Mastering Process File Types

- .ELF file + data files

  – Use ndrun.bat to create .DLF file

- .DLF file + data files

  – Use makemaster to create .RVM

  – Use rpfpack to create .RPF

- .RVM file

  – 4.7 GB file, ready to write to RVL-R Disc

.DLF Creation

- Edit the .DDF file
  - Set GameName, Company, DiskNumber, GameVersion, DiskInfo, TotalDisk
- setsmem2size 64
- setcountrycode us
  - Or setcountrycode eu or setcountrycode jp
- ndrun.bat *your_game*.elf
  - Use ndevrun.exe if NDEV is not attached

.RVM Creation

- makemaster *yourgame*.dlf *yourgame*.rvm
  - Use makemasterX if NDEV is not attached
- (part of Mastering Tools Package)
- Must:
  - Install Cygwin
  - Downgrade to OpenSSL v0.9.8b-1 (available on WarioWorld)

Adding ESRB Information

- Use MasterEditor.exe to add ESRB rating
  - Also USK, PEGI, OFLC, CERO, etc.
- Also displays information about .RVM file
  - For completing Wii Master Data Check Sheet
- (Found in Master Editor package)

Write to RVT-H Reader

- Use rvtwriter.exe (part of Mastering Tools)
- Can gang write up to 8 RVT-H Readers

Nintendo Confidential

Write to RVT-R Disc

- Use RVT-R Writer and rvtwriter.exe
- Can gang write up to 8 RVT-R Writers

DEVELOPERS
CONFERENCE

Nintendo®

Transferring Files

- .RVM files always 4.7 GB (4,700,012,544)
  - (Complete disc image; includes empty space)
- .RPF files may be smaller
  - (Doesn't include empty space)
- Transfer .RPF instead (fewer bits)

Nintendo Confidential

.RPF file format

- For transferring or storing game builds
- Think of it as zipping .DLF + data files
- Use rdpack.exe -d to create .RPF file

.RPF file format

- For transferring or storing game builds
- Think of it as zipping .DLF + data files
- Use rdpack.exe -d to create .RPF file
- Transfer .RPF file via Internet

.RPF file format

- For transferring or storing game builds
- Think of it as zipping .DLF + data files
- Use rdpack.exe -d to create .RPF file
- Transfer .RPF file via Internet
- Use rdpack.exe -u to unpack .DLF file + data files

Questions?

Ask me during the reception/breaks

Or e-mail support@noa.com

DEVELOPERS
CONFERENCE

Nintendo®