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Updates

New Minecraft Map Format, “Anvil”

by [Jens Bergensten](#) on [February 14, 2012](#)

Hello!

Jon and I have been working on a new map format for Minecraft that we’ve dubbed “Anvil” (it’s just a name). The purpose of the new format is to prepare for modding, especially to allow for more block types, but also to improve other areas of the game (such as map height). The changes are:

- Maximum build height has been increased to 256 (was 128)
- Empty sections of the world are not loaded into memory
- Block ids have been increased to 4096 (was 256) by adding a 4 bit data layer (similar to how meta data is stored)
- Block ordering have been changed from x/z/y to y/z/x in order to improve compression
- Packets for sending chunks have been updated (a full 128-high chunk is smaller than the old format, and a chunk with lots of empty space is much smaller)
- Biomes are saved per x/z column, which means they can be altered by tools

The next snapshot, and Minecraft 1.2, will automatically convert worlds to the new format. The files of the current format (“McRegion”) will remain in your save folder, if you need to restore them for some reason.

I’ve prepared a converter (with source code) for tool makers that wants to be prepared. **You do not need to use this to convert your maps!** It’s only for reference!

[Download the converter+source here](#)

Some info:

- The 16x128x16 “Blocks”, “Data”, “SkyLight” and “BlockLight” tags are removed
- A “Sections” tag has been added with up to 16 compound tags
- Each section has 16x16x16 “Blocks”, “Data”, “SkyLight” and “BlockLight” tags
- Each section has a “Y” integer tag saying which section it is (note that some Y positions can be skipped). 0 is at the bottom of the world and 15 is the topmost section
- Each section also has a “AddBlocks” tag, which is a DataLayer byte array just like “Data”. The “AddBlocks” tag is not included in the converter since the old format never had block ids above 255. This extra tag is created whenever a block requires it, so the getTile() method needs to check if the array exists and then combine it with the default block data. In other words, $blockId = (addBlock \ll 8) + baseId$.
- Each chunk has a 16x16 byte array with biome ids called “Biomes”. If this array is missing it will be filled when the game starts. The converter doesn’t include any biome sources, though (it had too many dependencies to be included).
- Note that the old format is XZY and the new format is YZX (see the difference between DataLayer and OldDataLayer).
- The new format uses the extension “.mca” instead of “.mcr” (the old format is kept for safety, with the level.dat backed up as “level.dat_mcr”)

Finally, a shoutout to Robinton’s hard work on his mods: <https://www.minecraftforum.net/topic/310298-100robintons-mods/>

Cheers,

// jeb_

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Next post: [Minecraft Snapshot 12w07b \(Updated!\)](#)

Mojang

Tweets from a list by Daniel Kaplan

The workers of Mojang, creators of Minecraft

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[youtube.com/watch?v=SQkMWJ...](https://www.youtube.com/watch?v=SQkMWJ...)
Show Media



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