

# The 4 Meg RAM Expansion

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*High res gaming on the N64.*

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TECHNO SPECIAL



— THE 4 MEG RAM EXPANSION —

High Res

GAMING ON THE N64.



There's no doubt that the delay, and possible cancellation, of the 64DD's appearance on the Australian market has angered a

great many N64 gamers. The promise of net gaming, more detailed and larger games and the ability to create your own levels and save them to disk are all features that will be sadly missed.

Perhaps, though, the introduction of the 4 Megabyte ram expansion pack will go a long way in making up for the lack of a 64DD for gamers today.

One of the main features of the 64DD was its extra 4 Megabytes of ram that were built into the 64DD's circuit board. This extra memory would enable the N64 to draw all of its games in a high resolution mode of 640 by 480 pixels, which delivers a level of detail that is incredibly realistic and pleasing to the eye.

With the introduction of the 4 Meg ram pack, gamers will now be able to use this extra ram to unlock high res modes in a great many games that are coming to the N64 in the future, the first of which is Iguana's Turok 2.

THIS IS A SHOT OF THE 4 MEG RAM EXPANSION. IT'S ALMOST EXACTLY THE SAME AS THE JUMPER, OR TERMINATOR PAK, ALREADY SITTING IN YOUR N64. THE JUMPER PAK IS REMOVED AND THE 4 MEG RAM EXPANSION IS INSTALLED. ALL OLD GAMES ARE COMPATIBLE WITH THE RAM EXPANSION, SO THERE'S NO NEED TO REMOVE IT ONCE IT IS INSTALLED.



RAM EXPANSION RAM EXPANSION RAM EXPANSION



A low resolution image in Turok 2 (without mem expansion).



A high resolution image from Turok 2 (with mem expansion).



With the ram expansion installed in the N64 you can go to the game's options and select the high resolution mode and then sit back and enjoy some of the best visuals available on any home console today.

By comparing the two shots below you can see that the high resolution mode in Turok 2 shows a greater level of detail in the game's environments (withstanding the limitations of printing on paper in magazines).

So, how does the extra ram enable the N64 to use its high resolution mode? And do the frame-rates in the high res mode drop noticeably below that of the

game's original lower resolution mode?

The answer to the first question has to do with the levels of memory required to draw games in higher resolutions. In games like Quarterback Club '99, WWF Warzone and All Star Baseball '99, the game's characters and environments were constructed out of simple polygons that lack detail and colour. They were still highly impressive, but the polygon models and colours were reduced to allow the game to run with the N64's basic 4 megabyte of ram that every machine comes fitted with. With the extra ram pak the N64's memory is increased from 4 megabyte to 8 megabytes, which gives programmers the working room to include more detailed polygon models and environments that use a great deal more colour as well.

In a game like Turok 2, there are plenty of different monsters, environments and colours on-screen that use up too much memory to allow a

high res mode with only 4 megabytes of ram. Add another 4 meg though, and you're on your way to visual bliss.

Another problem with the limitation of 4 megs of ram and high detailed polygons is that the N64 has to constantly swap memory around. For example, the N64 would load in some enemies to display on-screen, but then when the player comes across some other enemies or environments the N64 would have to wipe the old data and load new data into its ram. This causes some noticeable slowdown in games (even though these operations take place in milli seconds), but with the extra ram pak the N64 has to do a lot less memory swapping, which helps to keep the frame-rate high in all high res games. Having played Turok 2, we can say that the N64 does lose a little speed in its gameplay, but it's not that much considering that the N64 is now drawing over 4 times as much graphics as it previously was in the lower resolution mode. And boy does it show - after one look at a game in its high resolution mode there's simply no going back to lower res games!

Expect the N64's sound capabilities to also receive a boost from the mem expansion as well, as with the extra ram in the N64, programmers now have the option of creating higher quality sound effects and better music as well.

Will the 4 meg ram expansion speed up the graphics and the gameplay in your old N64 games? Well, no. Games have to be written to use the 4 meg ram expansion, so only count on future games, from Turok 2 onwards, to take advantage of this extra gaming power. The 4 meg expansion won't be a necessity though, as gamers who'd prefer not to buy it can still run the games in their normal resolution modes, so don't count on being left in the dark if you don't have one.

So far quite a few companies have announced that they are making games for the 4 meg expansion, with the list being as follows: Turok 2, NFL Quarterback Club '99, NBA Jam '99, Vigilante 8, Shadowman and Southpark.

The shot below shows what the N64 looks like without the jumper pak installed in it. Please note that N64 Gamer recommends that you should, as mentioned in the N64's instruction booklet, not remove the jumper pak. Once you've purchased the 4 meg ram expansion you should follow the instructions in the booklet as a guideline for how to remove and install the expansion unit.

