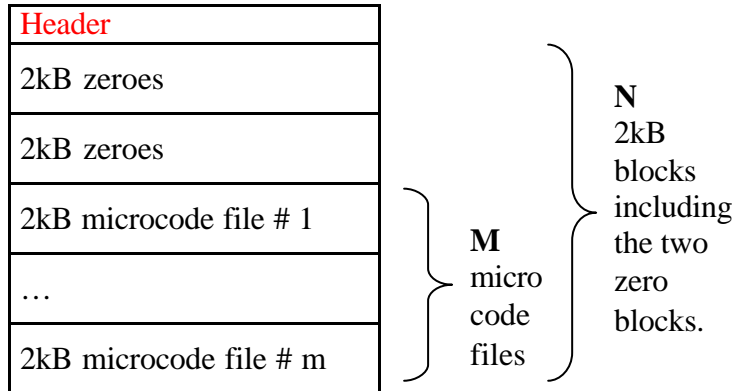


# Structure of Asus microcode update files

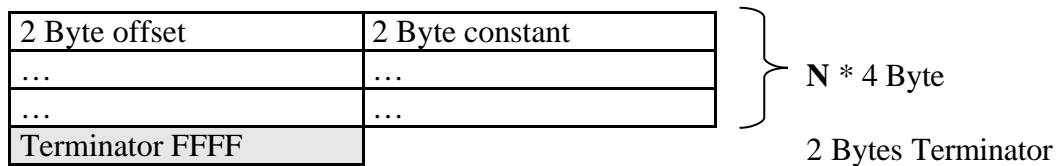
Microcode update files for Asus mainboards are different than others. There are not only the microcode files glued together but also a header that is not documented by Asus.

*Thanks to Martin for supplying all information for this document and to Carl Tao for kindly e-mailing it to me.*

## Structure of cpucode.exe



## Structure of the header



→ The first two bytes are the offset of the corresponding microcode update, the second two bytes are a constant.

Each line of the header can be described in c code as follows:

```
typedef struct {
    unsigned short offset;
    unsigned short constant;
};
```

The header is terminated by FFFF hex:

```
unsigned short endOfHeader = 0xFFFF;
```

- The offset is calculated as follows:  $4*N+2 + 2048*X$   
Where X is the Number of the microcode update (0 to N-1).
- The constant is 0x4000 (which means 4000 hex). Probably a length related value.

Note: All integers are 16bit low endians (Intel). Obviously these are all unsigned values.

That's it. All you need to do is to write a program that generates the header and then glue it together with the two "zero blocks" and the desired microcode Updates from Intel. The sequence of the micro code files seems not to be of interest.

Note that the whole file can't be longer than 65kB because the header uses a 16bit unsigned short for the offset. You won't have that much space in your BIOS anyway.