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| compression | (used on top of compression algorithms) |
| section merging | merge all sections (just one entry in the section table) |
| imports | imports are stored and loaded with a more compact import table format |
| imports by hash | exports are parsed until it matches a specific hash, instead of a <i>GetProcAddress</i> call |
| call optimisation | turn relative operands of jumps and calls into absolute → better compression |
| resources | compresses resources, avoiding critical ones (main icon, manifest,...) |
| protection | |
| token check | presence check to allow the program to run: dongle, CD/DVD, key, file, network... |
| fingerprinting | token is specific to a hardware element: disk/OS/CPU/MAC/... |
| demo mode | inclusion of a demo binary/mode that is executed when token is absent or not enough privileged |
| integrity | check the contents are unmodified with checksum or hash |
| anti-analysis | |
| overlap | jumping after the first byte of an instruction |
| illusion | makes the analyst think something incorrect happened |
| junk | insertion of dummy code between relevant opcodes |
| jumps | insertion of jumps to make analysis visually harder |
| polymorphism | different but equivalent code → 2 packed files of the same source are different |
| self generation | packer stub generates polymorphic code on the fly → same file executes differently |
| virtualization | virtualizes (part of) packer stub code → harder analysis |
| stack | strings are built and decrypted before use, then discarded → to avoid obvious references |
| faking | add fake code similar to known packers to fool identification |
| thread | use several parallel threads to make analysis harder |
| timing | comparing time between two points to detect unusual execution |
| anti-debugging (and anti-tools, by extension) | |
| detect | detect the presence of an attached debugger: IsDebuggerPresent |
| prevent | prevent a debugger to attach to the target itself or stay attached |
| nuisance | make debugger session difficult: BlockInput, slow down... |
| thread | spawn a monitoring thread to detect tampering, breakpoints, ... |
| artifacts | detects a debugger by its artifact: window title, device driver, exports, ... |
| limitation | prevent the use of a tool via a specific limitation |
| exploit | prevent the use of a tool via a specific vulnerability |
| backdoor | detect or crash a debugger via a specific backdoor |
| self-debugging | debug itself to prevent another debugger to be attached |
| int1 | block interruption 1 → debuggers stop working |
| fake | add code of known packer to fool identification |
| anti-dumping (prevent making a working executable from a memory image) | |
| tampering | erase or corrupt specific file parts to prevent rebuilding (header, packer stub,...) |
| imports | add obfuscation between imports calls and APIs (obfuscation, virtualization, stealing, ...) |
| on the fly | API address is resolved before each use to prevent complete dumping |
| API hooking | alter API behavior: redirect benign API to a critical one → dump not working |
| inlining | copy locally the whole content of API code → no more 'import calls' |
| relocate | relocate API code in separate buffer → calls don't lead to imported DLLs |
| byte stealing | move the first bytes of the original code elsewhere → harder rebuilding and bypasses breakpoints |
| page guard | blocks of code are encrypted individually, and decrypted temporarily only upon execution |
| flow | flow opcodes are removed and emulated (or decrypted) by the packer during execution → incorrect dump |
| virtualization | virtualizes (part of) original code, API start... → dump not working without VM code |
| anti-emulation | |
| opcodes | using different opcodes sets (FPU, MMX, SSE) to block emulators |
| undoc | use of rare or undocumented opcodes to block non-exhaustive emulators |
| API | unusual APIs are called to block non-exhaustive emulators (anti-virus) |
| loop | extra loops are added to make time-constraint emulators give up |
| bundlers | |
| drop | original file is written to disk then executed |
| injection | original file is injected in existing process → no new file on disk + higher privileges |
| hooking | file handling APIs are modified to make embedded files usable like external ones |