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FEDERAL BUREAU OF INVESTIGATION, CYBER DIVISION

**15 JUL 2019**

Alert Number

**MC-000105-MW**

**WE NEED YOUR  
HELP!**

If you find any of these indicators on your networks, or have related information, please

contact

**FBI CYWATCH  
immediately.**

Email:

**[cywatch@fbi.gov](mailto:cywatch@fbi.gov)**

Phone:

**1-855-292-3937**

*\*Note: By reporting any related information to FBI CyWatch, you are assisting in sharing information that allows the FBI to track malicious actors and coordinate with private industry and the United States Government to prevent future intrusions and attacks.*

The following information is being provided by the FBI, with no guarantees or warranties, for potential use at the sole discretion of recipients in order to protect against cyber threats. This data is provided to help cyber security professionals and system administrators guard against the persistent malicious actions of cyber criminals.

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## **Master Decryption Keys for GandCrab, versions 4 through 5.2**

### **Summary**

On 17 June 2019, the FBI, in partnership with law enforcement agencies from 8 European countries, as well as Europol and BitDefender, released a decryption tool applicable to all versions of GandCrab ransomware. The decryption tool can be found at [www.nomoreransom.org](http://www.nomoreransom.org). The collaborative efforts further identified the master decryption keys for all new versions of GandCrab introduced since July 2018. The FBI is releasing the master keys in order to facilitate the development of additional decryption tools.

GandCrab operates using a ransomware-as-a-service (RaaS) business model, selling the right to distribute the malware to affiliates in exchange for 40% of the ransoms. GandCrab was first observed in January 2018 infecting South Korean companies, but GandCrab campaigns quickly expanded globally to include US victims in early 2018, impacting at least 8 critical infrastructure sectors. As a result, GandCrab rapidly rose to become the most prominent affiliate-based ransomware, and was estimated to hold 50% of the ransomware market share by mid-2018. Experts estimate GandCrab infected over 500,000 victims worldwide, causing losses in excess of \$300 million.

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## Master Decryption Keys

### GandCrab v4 and 5

BwIAAAckAABSU0EyAAgAAAEAAQC77wJGC16Mco6goDGulTOC1meJMrLtkqgWCrowU0+AKPcSEc96ZrBMA5BxegicGp/dZiPxuvuZZsbltNNqj91C6V153HNIk34MsvM6Inq+TjQII/2ZVQpJJWqndhBXXyJYHaob4wp8vaK6OehasDjbvT8LuccZrUmM/GwqhikDKFTBss/+TY2eUquxgGCGr02NGNAONB/OfFICXS3Uf/JwkfbTRsigrrqxNICfYkjiElt3BoRxxYwZx7gBKlbofr0wD0sc/umQ5NbREcxdftSyMTrLmYbjlU2t+9Qdlkuh/H+/mHi703Lx40YfA0wFGJbBR8CgbxcHERArLdTleb+0g3U9aGAzu6R6yFJmLub6RDJKrgarWp++KR09uKbAygsQOKRSJ7phrAo7DoaPeq+6iZ1KUjObdGveYSaltFOISEeOqNcBCKXf8gbd1UXc8+Cty/0eVSwIY+LwWzmBdVD7XH42LBO9j2/irryjHQ2WLZGI5I854JlxCeDjgO7TV++RUzxdADB8ewANZih+yepnGK7SwrYl3a53HZJ6U6G706Ix+C5JUG74jgeGFgEVRwUvibrV5IwpYetucmJHVvOWcFwwoy5/n1JmVN2yOGqo4HDg9unsiq9nEJt/ujJNM8qzxJu2Zt5iFyEgkAw3FIB3mNpQ4Pe1hKsc+8CP1/ERhOCMHVewbW6Clh7MeL07qcODfNU/j5Ott4pFliGm1R1d3FA8OXFTwXHjYAIRBwbBAe5Wxe3KeNJmXl5ANZtUjz6C50g3zXl6lfmOJXBimFnSnXEGDOMyqB62tpFkzdw1QhzaV8sfEiMhU/TG1RATJGyCEWMVsXhhTm2HaepNq+30KrO24G3fIB8E9FbMyNILMj+eEFSkpf/FAY7zPJ+xi02uJZSHgHAY+qhFpA3F8uNnCPHUMPaEoGU55OhyUUcvgUHy4+nun3ajvJQItUYREhO6U7C2Z/DILgrKslcmLMwuGVda0kq92mnsPwHXIZiSSbTWQQkaOQSJ1trCSbnemNtDUWaAhW6jEQVbn8NVd3vJ4FkeZgolVAXhwKcpPbUvjj2EuL3fOEIltB+www57V/45jZMSHvsWfi+vB2B42XliU0y0Irb8oFFFLByBNCbiqfmkID9rm6TYM4zcf51izqr+F2zEy31G2WgpcZp8jDvKyqNihZVvfeis7Hft4mG6dXTL5r2ATVRrMsaJJEk7svJv5M802hIFvg5IEApKDDl6URubHc7iqcjA//xjld6eCPSrEMswPP6TN2j9CBAvW4Qo64/c+9js22PV78ushOowkob4wCp90kKyZsELsYjP15oCYMKfBE8IsXC6i5bO/7BSGXDnbvVz4kv/hCOB3YsqwU2IF4/ME3ERDhM62zrNzeAyUf66BC6LGizxx/gxm9oSn2A3F24LUC1oHwrpW8FLix3LU0vBsH173Gpfo+3WSKjBq9nUXR+cym6DBlutsrtafrf1SK65dgZ55WIHx34Jwh5FEjXaE8h3f+b8HEok5lwKoO8cU6O+3ecdsaM=

### GandCrab v5.0.4 - v5.1

BwIAAAckAABSU0EyAAgAAAEAAQCPuVnJ9elt7iW/ocAMfJrrTaSnrcIfGmFhmKciEOpvDXFx+KSjXOwgWWVPn8Cs/1RoQYLESNw2rLgJaxxg42/GTC8QTYU8n50I3JokQVIWjrhEoL5czMBkMJTo/MQjO9u6F/OKShMBz5tQim1oLq8UfU3YcuGZpvdr3gfvWhQj1Yt7NcedPpr2cBZvP6nxEi9b2V8PLp1q8CfUdYUHabTKrO9A7mksZHFTqtzp7pwUmO4KvHGJU8nWkjQbmyy/PgdT6w1xrLy8oacfrVxA2nTamY1l+HQSNv/g17sgjs9w624rFaxGPuystJHddPMzKGx4tv4KR2RvNGV2wxm4OGhL1XfrBAyeAJa6mU/TtLPV1nxRB/66g7QA8i0m5Yzd49RqhBhEG0Wx1g1iMWlBsnk4fiR593JSYJQc+/hcs8bQYO66eXL62vz00zdcGBjGJJQsEikQrgAigApinO588NuwpNuOyejomwJYPHlgqKh2qfgTYHvPxnV4XN7eW8ZReShieGyX5yJYBolKJ3Za9oAravyjvOS+dklwwZcENV1SEW6T2sI9Pke7sOzfCLR62gDHEWjAcsUVCaId4JEegVK9H6pbRjTQ8V5ecUHI/RqoTZ1eLeH55tdLEbCWk1K7RQZCwpmIkVswD+jfIW5pa9qjBISXGyghyDiZdwaTWMtdkXqA/zhTd9/1hrmA5NKx0URx1gqJPYsnIAPXoSzNdpjfCaclBTbkhn0pbcXPdhpT5lqWikmK6vgrNewf9ldkoe6vTL/YzmaYOe43WvXyyajMr4JUzXR2t0QnWQVPOyQrgYwas/PLs1vdSmsZkhD+6Ni33wnbSjrk+hwmShUogcpvyiOLBb+jFYQFwlQbD1fxLgAmJu7Y1oWEUXf//ZLB0u2JA+H6hMBwAFs1i/4VA1OBNogFft7S3ly6S1Gva7+2Ft+VjAsugcuZLcd+Fj1Y+9ff3Zx24Vbwo+g6Ngxv2iYUTm8Ek+LXuyXn1RQcbEckl/lkNUmBT1YkTcUcPoZbWpvVbvw17oSnuckVSZLDJHpNbsNHvEEfVhlg7BjqH15+qUWttOX2uYjYn2aOwgFt5072KsW0ZHMh0pwewPW1bNdAdrDmGSu89KxB+Hbj2IFEAWljrnHTFHE62lHpyb/6Tflzv1eFfZUEYkwzknBqcASHHuoO7y/oERYRbmHcFg1bs1HlyRRliwY5RC7aN7b3ZnRr7AdbjZNOjFaJZTpNC28uDH2II1TIQ8fn7YIYQbS1a2Bvbz0FBb53nrUtrazZZHxE7M3DamtqTIWezL5X4YVcpP5M6NJ3lr3QzNgJgmbciuo0BmCSg6WK7vJo6XHhNeoNahSIPIUB27NJa11IRrSSiK08dinkp4+HBu+5H/wmJfbwcfXGA9rudEivLCZcGKcx/FUwY+5nE6TqYPYw48YPVxc81r5td44AoEBhMc5SBHrIpyQpQb2T5jE+jLeClcMec53+6voaVTt33TrLxBKAF+gP7EIBgzAeaGw2Jpm1R4w/ivtbe0zopLgA=

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## GandCrab v5.2

BwIAAACKAABSU0EyAAgAAEAAQbtwvOCqX7rw/P9P/NqSFQEE621TAAfjoG2UUw6dgLDRWo66kSsANjkrb5Cxdy2zW9f3+vu0TusoqUfwd6My8wJ0IEd0PpJ0V1sHE504+zpG3oL8gMS7TPr3QvTMLMdmTKH/8f2LDCjfDfak/Zzz/tzm80KJ2eOQ1jTx+0Bn+j+Y0L0KzoiVJ2KpFbC5Gy2bkjYPLqkZ6Tx4NN7y6ekWkclTmtyTglqIchiJB4A+7xEtIkI80x5SyE4HTsyG/H9jIKQuYnUetZREYIagscrJtfYLjeiZCzwdlqb0KjA7Vi9B5jci5bEjrGKBOeVBeL1atKOqFldgB7Wxs4SkGw4Lb0xCs0WVMJJBWFJYIMNqSbATwmKdrYhpm4IPAI5a3EhfKQjHB9vNKRYpm+9zCmw/Nz1gDBIYxGeR9Gwvd/ZnzVa7OKSaoOdTOuPEQkYTFPJ2L5s2Qv7UyK3OzS5Va3er+20DB2NWm/FeVzXLwdhwEI8rM+rqlummMBWUJwPN1QP2/14ZRjaKFZFPByYhDVISVDRSReXZ0xhjz9ZgWGNJCA94N8IVbUbZ2NHTr7xGY9movll1+zdfXvTv+Km72m+xkHSHe/IRr2DrLMRGtTDjwrtaFwdNgDNhNRABTIsTc1sSn3pE7owK/8HMvQG8K3YffEWNG9IeDoDSFCgiWZHk3bczBZAB9QqTI3zF3sx/ISQ0rMAKBsSVDW1mJs6VN5hc5oS78LQNKPMiZGqcD2ZtQOVNWQvZ/bX5RCCco3x7kg792SAsX0TI7IS+YunreAB7xkpbs0fhAWJNzNKRkRu2IWOTL7ePedmGoiH4jrrjkh26rMCvfbM/G/w4J4dUhSXIU2EdnoT6QU0OWISnCww/lbvkylpdd6j5KYH6TnVEzYbghOwcehcjtAoWECH9r4vF9prRVfYXypu/qblljpCNmRsmraYDkX+0udTR9ILTKrZri4xVeDWbT0BpIIQzChCd6KURv526JZuYemIVxS/6+/mOLUP5RI6nUWi/oSIS8mQgwYx0a2Kfk1HGMIjrGO2EQky7LiFMf9E1ynqLaD4Uz+xzahY3UwPP9DdqMxZ3eFebdU+uxUd0wGqXFZRCXfWgEIJ5z43TXy3fSPXQN5K4YSU+5QRQ7pH+MXpk8gw/dKt4v7+eyMGqxlLtuid2uovYbQu+8lgda2ff2jORRLu0b+VuoWkweUSxoNIHaXhcnLs432eA2w8txYFI1+uUKK1ecv1bolkvkai2ip53KvMW97g5+fZTXgNEPR7vdLeViYulD4RZINvZmQLgZQvPbS+cwMJKgE7YnRQQT9BUb+139PQY5w6PoRkpTUdoHSdfe9qaiTs3vy3uCHt4mR5ODZ5z25b2223wHVVbhdTXzTZj1GBm8b0q+PpScpu/l2lffdv40pb7ufk2ILGftvPjZVbwBNjAPVXLPDybCxtA2xpk4gby/DN9cBOBuEQMMiSnIjQ7sf6QBaSJa/vgvy77VyiM8kxKBjXOrUIGz+4Li8eUdmYT6W8Dcutj5JmMA=

## Recommended Ransomware Mitigations

The FBI recommends undertaking measures to secure systems against ransomware infection and to mitigate the impact of ransomware. Recommended measures include, but are not limited to, the following:

- Train personnel to identify phishing attempts and how to respond to them.
- Implement a strong patch management system and enable automatic patching.
- Implement auto updates for antivirus software.
- Implement the principle of least privilege and strictly manage privileged accounts.
- Implement a robust backup system and store backups offline
- Implement strong authentication requirements for remote desktop protocol (RDP)

## Reporting Notice

The FBI encourages recipients of this document to report information concerning suspicious or criminal activity to their local FBI field office or the FBI's 24/7 Cyber Watch (CyWatch). Field office

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contacts can be identified at [www.fbi.gov/contact-us/field](http://www.fbi.gov/contact-us/field). CyWatch can be contacted by phone at (855) 292-3937 or by e-mail at [CyWatch@fbi.gov](mailto:CyWatch@fbi.gov). When available, each report submitted should include the date, time, location, type of activity, number of people, and type of equipment used for the activity, the name of the submitting company or organization, and a designated point of contact. Press inquiries should be directed to the FBI's National Press Office at [npo@fbi.gov](mailto:npo@fbi.gov) or (202) 324-3691.

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