The original message is:

US investigators say the culprits spent at least two months copying critical files. A purported member of the Guardians of Peace (GOP) who have claimed to have performed the hack stated that they have had access for at least a year prior to its discovery in November 2014, according to Wired. The hackers involved claim to have taken more than 100 terabytes of data from Sony, but that claim has never been confirmed. The attack was conducted using malware. Although Sony was not specifically mentioned in its advisory, US-CERT said that the attackers used a Server Message Block (SMB) Worm Tool to conduct attacks against a major entertainment company. Components of the attack included a listening implant, backdoor, proxy tool, destructive hard drive tool, and destructive target cleaning tool. The components clearly suggest an intent to gain repeated entry, extract information, and be destructive, as well as remove evidence of the attack. The cleaning tool used on Sony's computer infrastructure, Wiper, is a malware program designed to erase data from the servers.

Key is:

ecepurdu

Encrypted text is:

\_iTúZ3b°¸ ›N)ýíæökEÄiYv›‹ ÕzÓÉ. YrÓÿÃñ©r?È‹}ar[:=Ø¨NM"Z i°+! z Žm Q57 ÓiAþLÉ!–·!ÄéÇUüì£±kpg h ˜—¯¦™ª #Éê ü5ÎÌ¥ì` Ó~çAk ¬Iž¤Z#þí{/ ¡¢'°Ð0—üœL‚vÇÞ9 jÑ¦Ÿ¹ Ðø a<™?÷†{kŸ |î‚$þ!2ã) Ãª ˜M¦¸M ¾CÊ­Œ Ûkpö×™UV ¢  
Xgïw°ÅþV ½?È‹}ar[:0 o {³¤g3=DÈŸYEVÖ·dQ šd.‚˜þ#DNU—¸Q j /Uõ ¦ÿ§ñ˜<O £ ø³„ e#\*RÓØ †¼¼ ˜´ §ü V|©Óq¼ÊÌ ºä‚ PæQKi ²þ$¹ Ðø a<údÊà÷Sš RS³ j\*ØÚaEž¨` ‰ÓáIôƒFxexY·Öy #âÎÎ ê 1é­HØòðã34Î™¼J% 71€Â±èLMÇ Çú(…¤ ? mb z˜ 0kßR$¥¹c i²pÖ&ÖÖ'ú ˆ:+ ² ‚G=­¶V …{º9Ã Nž5ì à8m  
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«0nf/@ÛÚ.ÝF p=A·‡T™  
 Ð{ÿ‚òmH³‹^—¶°Wfòz‡ öå±¶VRßKÒ…§ÕùC-˜‡‚üs™v‚Æ²…ß±Yìñù £à4])‰ ŒÂi½ˆ¬ 0hÆ‘°m$!]q×P å f\_=ŽuÌˆÌ+( @d4ÄBl†Bí \~ èj~#ûti[0µT$úwÙ‘¯   
ú“Cî‰ ß b&Éœyƒ±ùG¬÷6‹I C¦ äÀ ST V ît¤ç &K š¿× ŽÅM©|‡§Ÿ³XI1ÔìnÑ6²BkvËJ…1)¸bå= ‰ÀÐ ¦Ì¨lA#kAL´W 3°ŸÏ‰¥N;< y A¡!ó ÝÚ#ìÙŽn »Ìì°ªæº. ìœy½)“2¹xÿšÕ¨äŒ KìÓ÷^P\*åˆø Ÿ®”›ÎÏ €J ù @¹ó R©]H¨wEÚ˜ÆÈŒº£H# hðkŒ ­j¾§‹¨ lGïUZ¹üÝ‚ ç³ö=#/Í8 Øm  
1“Å°]¤ûÔîº-# ED a=Ì4ôÆkú’ý¶šÄE ÕeÙ þã Ú Ïù\_áS÷T‡‚\_Ø –…Bâ·¢ñ„³¿Öa~;Ïí7&éßRîm©ý2 rM? ÷mý£Î

I have some problem with python I/O. If I save the output in a txt file then reload it to my program and decrypt it I get:

US investigators say the culprits spent at least two months copying critical files. A purported member of the Guardians of Peace (GOP) who have claimed to have performed the hack stated that they havePgFÃÞ¢ìess for at least a year prior to its discovery in November 2014, according to Wired. The hackers involved claim to have taken more than 100 terabytes of data from Sony, but that claim has never been confirmed. The attack was conducted using malware. Although Sony was not specifically mentioned in its advisory, US-CERT said that the attackers used a Server Message Block (SMB) Worm Tool to conduct attacks against a major entertainment company. Components of the attack included a listening implant, backdoor, proxy tool, destructive hard drivH\_z@(rèand destructive target cleaning tool. The components clearly suggest an intent to gain repeated entry, extract information, and be destructive, as well as remove evidence of the attack. The cleaning tool used on SonyHX'G{/0ter infrastructure, Wiper, is a malware program designed to erase data from the servers.

As you can see some words above became unknown characters. However most plaintext is recovered.

However if I decrypt the encrypted output, I get:

US investigators say the culprits spent at least two months copying critical files. A purported member of the Guardians of Peace (GOP) who have claimed to have performed the hack stated that they have had access for at least a year prior to its discovery in November 2014, according to Wired. The hackers involved claim to have taken more than 100 terabytes of data from Sony, but that claim has never been confirmed. The attack was conducted using malware. Although Sony was not specifically mentioned in its advisory, US-CERT said that the attackers used a Server Message Block (SMB) Worm Tool to conduct attacks against a major entertainment company. Components of the attack included a listening implant, backdoor, proxy tool, destructive hard drive tool, and destructive target cleaning tool. The components clearly suggest an intent to gain repeated entry, extract information, and be destructive, as well as remove evidence of the attack. The cleaning tool used on Sony's computer infrastructure, Wiper, is a malware program designed to erase data from the servers.

The decryption will not have such I/O problem if the plain text is short.

Problem 2

I use the key and text same as problem 1.

Total bits: 8576

Different DES&s\_box set generate: 9

After changes the s\_box, average bits change is: 4278.17

Percentage: 50%

Problem 3

Change 1 bit of the key and compare the result with the unchanged key result.

Total different key&DES result generate: 20 (bit 20 to 39)

Average bits change is: 1706.55

Percentage: 19.9%