GURPS Space 2108, Computer Hacking

These rules are taken from GURPs **Compendium II, p11ff**.

Computer Hacking – The Basics at TL9

Hacking a Password System *Complexity 1*	Such as an ordinary home computer	Computer Hacking Skill. –5 Sophistication penalty.
Hacking a Key Based System *Complexity 3*	Such as a military system	Cryptanalysis Skill. –10 Sophistication penalty.
Defensive Systems	On large corporate / military systems	- If detected, make a Contested Roll – Hacking versus Defence Skill - If the system has a Security program, it can impose a hacking penalty (below). - If the Hacker has a Worm, add +2. - It is possible for the Security program to insert a virus

Computer Hacking – The Blurb

Adventurers may want to break into a computer system, usually to steal information. The first requirement is access to the computer system itself, whether through a communicator (datajack) or an actual terminal, using a Datalink program (if the character has a datajack this is integral). A totally self-contained system cannot be penetrated from outside – but few systems (except military defence-control systems) are totally self-contained.

Many military systems (including all TL7 systems in the U.S. containing anything other than Unclassified data) and some civilian systems are protected by cryptographic barriers from outside intrusions via the Net. Access to these systems requires compatible cryptographic systems (military-grade systems are usually unavailable – consider them LC 0) and current crypto keys. The latter are normally carefully guarded, and may not even be known to the users of the system.

It may be possible to "crack" keys, depending on the level of protection of the crypto gear. Unlike simple passwords, crypto keys are usually very large random numbers, and can only be attacked by using **Cryptanalysis** skill (p. CI156) on the text of a message. At late TL7, this normally requires both specialized programs and enormous computing power – tens or hundreds of millions of dollars worth.

The easiest way to penetrate a system protected by crypto barriers is to acquire the keys somehow. For modern military settings, this typically means suborning a security officer who handles keys (many Social skills are useful here), breaking into a high-security safe (which will generally leave enough traces that all the protected keys will be immediately invalidated), or physical access to a crypto unit containing the key of interest, plus lots of time and very specialized gear and training.

Once you get past the crypto barrier to talk to the target system, you still typically have to get past password protection (see below) to access specific data. Some very secure systems use cryptographic identification devices (like physical keys) instead of passwords, so this may present significant additional problems.

Once the intruder is accepted as a legitimate user of the system, he can try to gain access to its databases or programs. Some databases are open to any user, while others require special passwords and are defended by security programs (see below). For instance, once inside a military installation's computer system, a user will have access to dozens of separate databases. Some will be unrestricted, such as the public relations biographies of senior officers. Others, such as the program controlling the installation's recognition monitors, will have limited access and alarm programs if unauthorized attempts are detected.

Any attempt to break into a secure database or program requires a roll against Computer Hacking (see p. CI155). Add bonuses depending on the quality of Worm program (see Intrusion and Security Programs, below) the intruder is using, and subtract penalties if the database or program is defended by an attached Security program. The GM may also add bonuses of up to +5 if the intruder has obtained passwords or codes that provide partial access to his target.

In some settings (especially less cinematic ones) a specific Computer Hacking skill may not exist: instead, hacking is a process, not a skill. In this case, the roll above is against Computer Programming. Other useful skills include many Social skills (especially Fast-Talk) for getting passwords, Thief/Spy skills for stealing keys and gaining physical access to the system, Scrounging for "dumpster diving" (finding useful notes and manuals, even passwords, in the garbage) and Computer Operation skill (see below). As well, "connected" Allies, Contacts and Patrons may be able to provide passwords, as can a sufficiently high Security Clearance (see p. CI29). Any of the above can give up to a +5 bonus, at the GM's option.

Each attempt takes one hour. Success means that any defences are unlocked, and the intruder is inside. If he was trying to break into a database, he can now access it, and alter, erase, insert or retrieve information. If he was trying to get into an existing program, he can attempt to reprogram it.

Failure by 1 to 2 means that the attempt fails and must be tried again, taking another hour; failure by 3 or more indicates that the computer's defences, if any, are alerted – see the Defence program, below.

A large computer may have thousands of gigabytes ("gigs") of information in its databases, and finding a single item can be difficult, but the more time spent in an illegal search, the more chance of tripping an alarm program. To make such a search, determine the size of the database being examined before rolling against the questioner's Computer Operation skill. Penalties are -1 for a database of up to 10 gigs, -2 for 11 to 100 gigs, -3 for 101 to 1,000 gigs, and so on.

Each search attempt requires 10 minutes. If the user is unauthorized, failure by 3+ activates the system's Defence programs (if any). On a legal search, each attempt still takes 10 minutes and has the same penalties for amount of information stored. Failures simply mean no information for that search – a long enough search will find anything in the system! Of course, the information simply might not be there; that is up to the GM, and characters may or may not even discover that the search is futile.

Intrusion & Security Programs

These specialized programs are used to protect against data penetration – or to facilitate it. Remember that more complex and expensive versions of these programs give higher skill levels :

Skill Increase : Some programs provide a bonus to operator skill, or have a built-in skill level. Standard programs give a +2 bonus to appropriate skills, or an effective skill level of 12. More expensive and sophisticated versions of these programs may be purchased, for every +1 skill over and above this, double the cost and *increase the program's Complexity by one*. Note that bonuses to the same skill from multiple programs are not cumulative.

Complexity (CII, Base 3) : Computer Systems have a Complexity rating from 1 – 6. Complexity 1 systems merely respond to commands. Complexity 2 computers can give simple responses. Complexity 4 is capable of self learning and Complexity 6 is fully self aware. In 2108 computers of Complexity 5 and 6 are not entirely trusted. Most big military and corporate systems in 2108 are Complexity 3.

Sophistication (Based on CI Hacking, Base –5 / –10) : A computer also has a Sophistication Penalty. This penalty is applied to attempts to Hack into it. At TL-9 this can usually be calculated as (Complexity $\times$ 2) + 3. For Example $c1 = s -5$, $c2 = s -7$, $c3 = s -9$, $c4 = s -11$. This can be adjusted for the individual system. The base for most corporate and military systems in 2108 is –10. The base for most civilian ships and habitat control systems is –5.

Defence (Base Skill 14) : A Defence program does not prevent intrusion – but if an intruder fails his skill roll he is detected and it goes into action. A Defence program has an effective skill of 14. Roll a Quick Contest of Skill between the Defence program and the Computer Hacking skill of the intruder. If the intruder wins, he escapes, and may try to re-enter the system again later. If the Defence program wins, it pinpoints the location of the intruder terminal and alerts security forces. An Active Defence program may also insert a computer virus (see below) into the intruder's system. Active Defence programs are often illegal (Legality Class 1). A Passive Defence program is Complexity 3 and costs $5,000. Active Defence programs are Complexity 6 and cost $250,000.

Security (Base Adjustment –8) : A Security program is assigned to a particular program or database in the computer to protect it against unauthorized access. Any data penetration attempt has a penalty of -8. Additional protection can be bought just as for raising the skill of a program – doubling the cost and adding 1 to the Complexity adds another -1 to any penetration attempt. Complexity 2, $30,000. These penalties are concurrent with the Sophistication penalty. If the Sophistication penalty is higher than the security rating, apply that penalty instead.

Virus : These are special programs that may be used to infect other programs or databases. If an infected program is loaded into a computer, or a virus is inserted into the system by an Active Defence program, all programs on that computer will become infected (and can pass it along if copied!). Some time (delay varies with the program) after the virus has been initially released, it activates its programming. Typical programs erase everything stored in the computer, or change random pieces of stored information (-4 to all skill rolls augmented by the computer), or can even cause the computer to physically damage itself! More sophisticated virus programs might subvert the target computer, turning it into a spy for the virus creator. $1,000, Complexity 2. A Target Virus is written to get into a specific system (or type of system) and change specific pieces of data. Otherwise it functions as a normal virus. $10,000 (in custom programming fees), Complexity 3.

Worm (+2 Hacking) : A Worm program adds 2 to any Computer Hacking/TL roll for a data penetration attempt, or provides a skill level of 12. In some places, Worm programs may be illegal (Legality Class 3 or less). Complexity 3, $25,000.