GADGET GUIDE: COMPUTERS

In less than a century, computers have gone from science fiction "thinking machines" to ubiquitous elements of everyday life. The Internet spans the world, opening new frontiers, as well as new opportunities for criminals and law enforcement alike.

This **Gadget Guide** looks at computers and associated technology, including skills in computer use, programming, and "hacking".

COMPUTER SKILL CHECKS

Most normal computer operations—using software, getting your e-mail, accessing the Internet—don't require a check and can be done untrained. However, searching an unfamiliar network for a particular file, writing programs, altering existing programs to perform differently, and breaking computer security all require Technology skill checks (and training).

Find File: The DC and the time required to locate a file on an unfamiliar system are determined by the size of the site. Finding public information on the Internet does not fall under this category; this only pertains to finding files on unfamiliar computer systems.

SCOPE OF SITE	DC	TIME
Personal computer	10	1 round
Small office network	15	2 rounds
Large office network	20	1 minute
Massive Network	25	10 minutes

Defeat Computer Security: The DC is determined by the quality of the security installed to defend the system. If the check fails by more than one degree, the system immediately alerts its administrator there has been an unauthorized entry. An alerted administrator may attempt to identify you or cut off access to the system.

LEVEL OF SECURITY	DC
Minimal	20
Average	25
Exceptional	30
Total	35

Sometimes, you have to defeat security at more than one stage of the operation. If you obtain three or more degrees of success when attempting to defeat computer security, you automatically succeed at all subsequent security checks at that site until the end of your session.

Defend Security: If you are the system administrator for a site (which may be as simple as being the owner of a personal computer), you can defend it against intruders. If the site alerts you to an intruder, you can attempt to cut off the intruder's access or even to identify the intruder.

To cut off access, make an opposed Technology check against the intruder. If the check succeeds, the intruder's session is ended. The intruder might be able to defeat your security and access your site again, but has to start over again. Attempting to cut off access takes a full round.

One surefire way to prevent further access is to simply shut the site down. With a single computer, that's no big deal, but on a large site with many computers (or computers controlling functions that can't be interrupted) it may be time-consuming or even impossible.

To identify the intruder, make an opposed Technology check. If the check succeeds, you learn the site from which the intruder is operating (if it's a single computer, you learn the name of the computer's owner). Identifying the intruder requires 1 minute and is a separate check from cutting off access. This check can only be made if the intruder is accessing your site for the entire length of the check—if the intruder's session ends before you make the skill check, your attempt fails.

Degrade Programming: You can destroy or alter programs on a computer to make it harder or impossible to use. Crashing a computer simply shuts it down. Its user can restart it without a skill check (however, restarting takes at least 1 minute). Destroying programming makes the computer unusable until the programming is repaired. Damaging programming imposes a –5 penalty on all checks made with the computer (sometimes this is preferable to destroying the programming, since the user might not know anything is wrong, and won't simply decide to use a different computer).

You can damage the programming of multiple computers at a single site; doing so adds +2 to the DC for each additional computer.

SCOPE OF ALTERATION	DC	TIME
Crash computer	10	1 minute
Destroy program	15	10 minutes
Damage program	20	10 minutes
Repair program	25	1 hour

Write Program: You can create a program to help with a specific task. This is DC 20 and takes an hour. The program grants a +2 circumstance bonus to the task. A specific task, in this case, is one type of operation with one target. Increasing the DC of writing the program to 25 increases the circumstance bonus to +5.

Operate Remote: Many devices are computer-operated. If you have access to the computer controlling them, you can shut them off or change their operating parameters. The DC depends on the nature of the operation. With more than one degree of failure on the check, the system alerts its administrator there has been an unauthorized use of the equipment. An alerted administrator may attempt to identify you or cut off your access to the system.

TYPE OF OPERATION	DC	TIME
Shut down passive remote	20	1 round
Shut down active remote	25	1 round
Reset parameters	30	1 minute
Change passcodes	25	1 minute
Hide alterations	+10	+1 minute
Minimum security	−5	—
Exceptional security	+10	—
Total security	+15	—

HACKING CHALLENGES

The Technology skill in **Chapter 4** of the *Hero's Handbook* covers the essential uses of computers, but challenges involving more detailed use of computers, particularly "hacking" into secure systems or networks, can use the following guidelines.

When you hack, you attempt to invade a site. A site is a virtual location containing files, data, or applications. A site can be as small as a single computer, or as large as a corporate network connecting computers and data archives all over the world—the important thing is access to the site connects the user to everything within it. Some sites can be accessed via the Internet or similar networks; others are not connected to any outside network and are only accessible from particular locations.

A system administrator is in charge of a site, and maintains its security. Often, the system administrator is the only person with access to all of a site's functions and data. A site can have more than one administrator; large sites have a system administrator on duty at all times. You are the system administrator of your own personal computer.

When you hack into a site, the visit is called a session. Once you stop accessing the site, the session is over. You can go back to the site in the future; when you do, it's a new session. Generally, each session can be considered a separate Technology challenge to hack the site.

Several steps are required to hack into a site:

Access the Site: There are two ways to do this: physically or over the Internet.

- **Physical Access:** You gain physical access to the computer, or a computer connected to the site. If the site being hacked is not connected to a network, this is probably the only way you can access it. A variety of checks may be required, depending on the method used to gain access.

- **Internet Access:** Reaching a site over the net requires two Technology checks. The first check (DC 10) is needed to locate the site on the net. Increase the DC for hidden or concealed sites. The second is to defeat the site's security. Once you have succeeded in both checks, you have accessed the site.

Locate What You're Looking For: To find the data (or application, or remote device) you want, make a Technology skill check.

Defeat File Security: Many networks have additional file security. If so, you need to make another check to overcome it.

Do Your Stuff: Finally, you can do what you came to do. If you just want to access information, no additional check is needed. (You can also download data, although that often takes several rounds or even several minutes, for especially large amounts of information.) Altering or deleting records sometimes requires another check to defeat computer security.

Covering Your Tracks: This step is optional. By making a Technology check (DC 20), you can alter your identifying information. This imposes a major circumstance penalty (–5) on any attempt made to identify you if your activity is detected.

COMPUTER HARDWARE

A computer's hardware determines its physical capabilities, including processors, memory, storage capacity, and various peripherals (printer, external readers or drives, and so forth).

From a game system perspective, computer hardware is largely all the same. Having regular access to a computer is worth 1 equipment point, and is assumed to come with most common peripherals like a camera, scanner, and printer, as well as an Internet connection. A smartphone, tablet, or similar device that combines the capabilities of a computer and a cellphone costs 2 equipment points.

At the Gamemaster's discretion, especially top-line or cutting-edge computer hardware may provide a circumstance bonus to skill checks involving its use. For 1 equipment point, the hardware provides a +2 circumstance bonus, for 2 equipment points, it offers a +5 bonus. Such equipment may be restricted to characters with the means or skills to acquire or build it, if the GM wishes.

The circumstance bonuses for top-line hardware and effective software (following) do stack, but only to a degree: two +2 circumstance bonuses make a major (+5) bonus, but the circumstance bonus does not increase beyond that; there is a limit to how much benefit a user can derive from just the technology.

COMPUTER SOFTWARE

Software is made up of the program instructions that tell computers how to perform a variety of functions. Computer software is often referred to as "programs" or "applications" ("apps" for short). Software gives computers considerable versatility, allowing the basic hardware to accomplish many different tasks.

In game terms, software serves three functions: providing access to information, performing tasks on command, and aiding users in performing other tasks.

- **Access Information:** An application may contain or access a database of information. Modern applications may also search available online databases via the Internet. Essentially, the software provides the necessary resources for doing different kinds of research or answering questions via Expertise (see **Chapter 4** of the *Hero's Handbook*). Access to software may provide the answers to questions that routine Expertise checks can provide, given some time. The Gamemaster may permit a Technology skill check to substitute for the appropriate Expertise check, with a circumstance bonus for the quality of the database or search software.

- **Perform Task:** Programs can perform a wide range of tasks, from word processing and number-crunching to retrieving email or operating machines by remote. Fairly routine computer use is covered by the simple Feature of having a computer. More complex tasks, such as remote control, can constitute additional Features (see the Remote Control feature of vehicles, for example). A programmable computer able to execute certain tasks may be a descriptor for a Triggered effect (see **Gadget Guide: Traps** for details) or an explanation for a hero point used to retcon a situation (see **Chapter 1** of the *Hero's Handbook*).

- **Aid Task:** Lastly, computer software may be considered a necessary tool for certain skills requiring tools, removing the circumstance penalty for attempting the skill without the proper tools. Especially sophisticated software can actually provide a circumstance bonus for those tasks. So, for example, computer design software may be necessary to use Technology to build or repair certain things, with cutting-edge versions of the software providing a +2 or +5 circumstance bonus to the Technology skill check for design, construction, or repair. Characters can write programs to aid specific tasks (see **Write Program**, previously) or acquire advanced software designed to do so (generally a 1 rank Feature for a circumstance bonus, 2 ranks for a major bonus).

DEDICATED COMPUTERS

While computers—even just processors on chips—are found in virtually all modern electronics, some dedicated computer systems are worth noting in their own right. These systems may be stand-alone equipment or configurations of the same multi-function computer system (in which case add their game traits together to determine the systems total cost).

INVESTIGATIVE COMPUTER

Also known as a "crime computer," an investigative computer is designed as an aid for Investigation skill use. Having a properly programmed investigative computer can provide a circumstance bonus on checks to analyze evidence. This is essentially the same as the bonus provided by dedicated software (in this case forensic and investigative applications).

INSTALLATION COMPUTER

An installation can have the Computer feature (see **Chapter 7** of the *Hero's Handbook* or **Gadget Guide: Installations**), giving it a dedicated computer system capable of overseeing the installation. The advantages are that many of the installation's functions can be automated, but the computer is subject to being hacked, and the installation's functions overridden like other computer-controlled remotes (see the **Operate Remote** task under **Computer Skill Checks**). A criminal hacker with the right access to the installation's computer and security systems can turn a hero's own headquarters into a deathtrap!

SECRET IDENTITIES & SOCIAL NETWORKS

Superheroes concealing their identities behind domino masks (or a pair of eyeglasses) can be outlandish enough, but how does a costumed character keep secrets in the modern world where everyone has a digital video camera close at hand and even social networks have built-in facial recognition software (to say nothing of the data-mining capabilities available to law enforcement)? The answer depends a great deal on the type of setting and game the group wants to run:

- **There Are No Secrets**...at least, not for every long. Maintaining a secret identity is just as hard as it seems, meaning even a full face-mask will only go so far (given things like voice recognition). Those who want to maintain their secrets either need serious measures (a costume covering everything along with a voice-mask) or a power that lets them transform into another identity altogether.

- **Keep Things Close:** Masked heroes can keep their true identities secret with some amount of effort, enough to qualify for various complications. There may occasionally be a need to come up with a clever story to explain away an inconvenient online picture or video—or to enlist the help of a computer expert to eliminate or compromise it. Less tech-savvy characters may benefit from having a helpful ally or contact who knows which end of a data connection to manipulate.

- **Turning a Blind (Electronic) Eye:** All the modern methods of gathering information don't have any effect on things like secret identities. For whatever reason, nobody notices the clues any more than people noticing that the guy with glasses looks a lot like a famous superhero without them. There might be an actual explanation for this (if the GM chooses) or it could just be the way things are and nobody questions it...and neither should the players.

NAVIGATIONAL COMPUTER

Vehicles and even mobile devices can have a built-in navigational computer able to determine position (usually via connection to the Global Positioning Satellite network) and plot routes to different known destinations. This is a Feature essentially the same as the Direction Sense effect and includes the circumstance bonus of the Navigation System listed for vehicles in **Chapter 7** of the *Hero's Handbook*.

TACTICAL COMPUTER

A tactical computer system links sensors to an expert software package to rapidly calculate the most advantageous tactics on the battlefield, providing information via a heads-up display (HUD) in a visor, for example. A tactical computer system might provide various Enhanced Advantage ranks in combat advantages from Improved Initiative to Precise Attack or Favored Environment (for a pre-programmed environment or set of conditions).

TARGETING COMPUTER

A targeting computer rapidly calculates all the variables involved in aiming a ranged weapon at a target, from distance to wind-speed, and compensates to improve the user's aim. A basic targeting computer may provide an Enhanced Advantage (Improved Aim) effect, while a more sophisticated system can offer ranks of Enhanced Advantage (Ranged Attack) on top of that. The latter bonus is limited by power level while the former (being a circumstance bonus) is not.

VEHICLE COMPUTER

Like an installation, a vehicle can have its own dedicated computer system as a Feature, allowing it to provide the necessary tools for Technology skill use and to control the vehicle's systems via "autopilot". If the vehicle also has the Remote Control feature, the computer is accessible via communications networks, allowing the vehicle to be controlled from a distance, but also opening up the possibility of the system being hacked and overridden, as with an installation.

VIRTUAL REALITY

Virtual reality is a computer generated simulation of a real (or even imaginary) experience. Using an interface ranging from a cumbersome helmet and goggles to a direct neural link, a computer system projects a simulation of a virtual world with which the user can interact.

The simplest virtual realities are obviously computer interfaces, while the most sophisticated are Illusion effects, capable of seeming just as real as the real world. Neural interface virtual realities can even have the Psychic modifier from P**ower Profile: Illusion Powers**, adjusting the images they present based on information drawn from the subject's own mind.

AUGMENTED REALITY

An interim step between virtual reality and the mundane world is "augmented reality," where virtual images or interfaces overlay perceptions of the real world. This is common for advanced computer systems able to project "virtual" controls on a touch surface or even in the open air (sensitive to the user's movements), giving the system a great deal of flexibility in terms of user interface and responsiveness.

VIRTUAL NETWORKS

A virtual network translates the interactions of a computer system into virtual symbols, such as a network as a vast city with datalines as "roads" and computer systems as structures. In this virtual "world" both authorized users and hackers can carry out computer related tasks.

M&M Gamemasters may wish to use a virtual network metaphor in settings with sufficiently advanced technology, or for characters with appropriate powers and equipment to allow them to visualize their computer system interactions in this way.

VIRTUAL WORLDS

With enough processing power and an effective interface, a computer system could support an entire virtual world (or even virtual *universe*). To the minds "inside" the simulation it appears entirely real, even if events that take place in the virtual world are unreal or difficult to believe (potentially allowing for checks to find faults in the illusion).

A virtual world is a powerful kind of trap, since most subjects are not even aware they are anywhere other than the real world. The controller or programmer of a virtual world may use command of its "reality" to lull subjects into a false sense of safety and security or to torment them with "misfortune."

Virtual worlds also make for unusual places for heroes to visit and adventure, since the "rules" of reality are different there than in the real world. "Physical" interaction with the setting is defined by programs within the system, meaning characters have only the abilities defined by those parameters. In a setting like the virtual world of Tronik—an alien "cyber-city" digitized by the Curator and running on a computer system in Centurion's Sanctum—your heroes can adventure in a science fiction setting with blasters and soaring air-cars, but without the powers they possess in the real world!

ARTIFICIAL INTELLIGENCE

An artificial intelligence (abbreviated "AI") is a type of construct (see **Constructs** in **Chapter 7** of the *Hero's Handbook* and **Gadget Guide: Robots**).

Artificial intelligences count as minions or sidekicks, much like other constructs. Since an AI is unlikely to become involved in direct conflicts (outside of the virtual reality of a computer network) most tend to be minions.

ABILITIES

Unlike robots, which generally lack Intellect and Presence, being essentially mindless, AIs lack Strength and Agility, having no "body" apart from the computer hardware that houses and runs their software. They are bodiless intellect, true "ghosts in the machine." AIs possessing a mobile body lack only Stamina, but may even have self-repairing capabilities (Regeneration ranks) to compensate for that. See **Gadget Guide: Robots** for details.

SKILLS

Artificial intelligences may be programmed with certain skills and, as intelligent beings, can also learn and improve skills. AIs lack physical skills, unless they have the ability to use them via remotes, such as an AI computer with ranks in Ranged Combat because it has control over a gun emplacement, or Vehicles because it can act as an auto-pilot (and may even be the "brain" of a vehicle).

ADVANTAGES

The construction of AIs as digital intelligences grants them certain advantages. All AI computers have Eidetic Memory, with perfect recall of information stored in their systems. Many are also Fearless, although not necessarily, since AIs may have emotions (including fear). Other skill or intelligence-based advantages like Inventor, Languages, Skill Mastery, or Well-informed may be common for AIs, whereas combat advantages are rare unless the computer is designed for combat.

POWERS

The physical makeup of artificial intelligences generally means they have Immunity to Fortitude effects to go along with their lack of Stamina. Some also have either Immunity to Mental Powers or Immunity to Will effects based on their digital mentality, although their mental immunity does not automatically extend to powers that specifically affect machines or computer "minds" (see the **Power Profiles Mental Powers** and **Tech Powers** for further discussion).

AIs may have Comprehend (machines), since they usually *are* machines themselves, able to interface and communicate with other computers. An AI's ranks of Intellect and Technology skill (if any) determine its effectiveness as a computer programmer and hacker.

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