

## Points to consider when looking at a security appliance built on a standard PC platform.

Item	Relevance
The standard design of PC motherboards is well known and all interfaces used such as PCI, PCI-X are well documented.	For a person wishing to compromise the appliance either by adding a physical hardware trap or trying to decipher key loads or similar information they have a starting point with known bus signals and levels. This makes this type of operation much simpler than with a purpose designed appliance.
PC motherboard design is constantly changing in an effort for manufacturers to keep ahead of their competitors.	Supporting a product over a number of years when you have no continuity of supply of core components can be a nightmare and can possibly lead to compatibility issues between older and new products.
PCs are built to a cost point and producers strive to minimise costs at all times. Even during the life of a specific motherboard components can be changed and items like noise reducing capacitors omitted in order to increase the profit margin.	Product testing and evaluation of a product becomes invalid when the base components of the build of later products are not the same as the original units tested.
The BIOS that is running on a PC motherboard is evolving and new versions can be downloaded from the web in order to take advantage of some new features or fix a problem.	Without control and access to the details of the BIOS this could be another problem with continuation of the product design. Changes made to the BIOS could affect the overall operation of the unit with possible unpredictable results.
Most PC motherboards run standard operating systems such as windows or Linux.	Using a standard OS such as Linux as the core of a product leaves it susceptible to attacks such as hacking, Trojan Horses and viruses.
A PC motherboard is designed to be able to do a wide range of tasks and as such needs the support components to be able to handle all these efficiently and fast.	Using a PC motherboard as the basis of a security appliance means that many of the components are not needed and are simply using power and generating excess heat. In the modern compact computer rooms this can have a considerable impact.
With the size of suitable PC motherboards and their resultant support items such as the power supply the overall size of the complete unit will be larger than a purpose built design.	Users are increasingly trying to fit their systems in small footprints in order to decrease the overall costs of their IT and if their security appliance is larger than needed this can impact their ability to meet these needs.

<p>Many PC based solutions use hard disc drives to start the system and often to contain the operating systems and application.</p>	<p>Hard disc being a mechanical device are more susceptible to damage in transit as well as early failures when compared to a pure silicon solution.</p>
<p>When a hard disc is involved there is always the issue of noise. The unit will require extra cooling to handle the extra heat produced by the disc drive and the extra support electronics and this adds to the noise.</p>	<p>In some environments where the appliance is needed to be installed outside of a rack such as in an office environment noise can be a serious nuisance.</p>
<p>PC based appliances need several connectors to allow the different interfaces and boards to be used so have multiple parts.</p>	<p>Connectors will degrade over time and will eventually lead to possible data errors. Because data is being encrypted this can lead to corruptions which may only be found when a system restore is attempted.</p>
<p>PC appliances tend to use standard SCSI and fibre channel host bus adapters to interface to the attached devices.</p>	<p>Using a standard device has the advantage of being able to get the product to market quickly and cheaply but means the appliance is reliant on drivers and silicon not designed specifically for the appliance and may not be fully in the control of the appliance designers. This minimises the options available and can lead to design compromises.</p>
<p>PC designs are made to be the minimum to meet the user's needs; we are all used to the need to restart systems in order to clear memory or simply to restart a failed application.</p>	<p>An encryption appliance will run 24 x 7, 365 days a year and should not ever need to be restarted or reset during its use. This means the needs of the design are outside what is required and produced in a standard PC motherboard or memory.</p>