

## Tableau TACC1441 Hardware Accelerator Host Selection Guidelines

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### Background

The Tableau TACC1441 Hardware Accelerator can be used to accelerate password recovery when used in conjunction with software such as AccessData's PRTK (Password Recovery Toolkit) and DNA (Distributed Network Attack)<sup>1</sup>.

This type of password recovery is known generally by several terms such as "brute-force" or "dictionary-based" password attacks; and the TACC1441 accelerator works cooperatively with a host computer when performing such password attacks. Using contemporary computers with a single accelerator, this cooperative approach yields performance gains of 6x – 60x. Larger gains will be observed when using multiple accelerators.

However, the choice of host computer can affect the overall performance of the TACC1441 accelerator. This is especially true when using more than one accelerator on a single host computer

### Recommendations – One Accelerator Per Host Computer

The host-based Tableau software which controls the TACC1441 accelerator – called the "taccapi" – is multi-threaded. Generally speaking, applications such as AccessData's PRTK and DNA are also multi-threaded.

Due to the multi-threaded nature of these applications, Tableau strongly recommends that TACC1441 be used only on those host computers with multiple processor cores or processors with "hyperthreading" technology. Intel Core2 Duo, Intel Core2 Quadcore, and Pentium-D and Pentium IV with Hyperthreading are each examples of recommended processors which will work well when using a single TACC1441 accelerator.

### Recommendations – More than One Accelerator Per Host Computer

In addition to the above, there are additional considerations when using more than one TACC1441 accelerator on a single computer. Each accelerator places demands on the host computer, and for most password attacks, this effectively limits the number of accelerators for a single computer. The following table lists the recommended number of accelerators for several classes of processors.

<b>Class of Processor</b>	<b>Recommended Maximum Number of TACC1441 Hardware Accelerators</b>
Intel Core2 Quadcore	Up to 4 TACC1441 accelerators
Intel Core2 Duo	Up to 3 TACC1441 accelerators
Intel Pentium-IV with Hyperthreading or Intel Pentium-D	1 or 2 TACC1441 accelerators (1 recommended)
Intel Pentium-IV without Hyperthreading, Intel Core, or Intel Core2	1 TACC1441 accelerator (may not achieve full performance due to multi-threading limitations on host)

There are situations in which these recommendations do not apply. For computationally complex password attacks such as Office 2007, it is likely that a single host computer will be able to support more than four TACC1441 accelerators. However, no more than four accelerators should share a single FireWire800 interface. When connecting more than four accelerators to a computer, use multiple FireWire800 interface cards.

Conversely, some password attacks such as WinRAR may place considerable computational demands on the host computer even when using the TACC1441 accelerator. Specifically considering WinRAR, Tableau recommends using a powerful processor (i.e., Intel Core2 Quadcore) with no more than a single TACC1441 accelerator for optimum performance.

NOTE: As of this writing, WinRAR is an exceptional case. Other password attacks/algorithms generally benefit from multiple accelerators per host so long as the host is chosen in accord with the preceding guidelines.

### **Recommendations – FireWire Interface**

TACC1441 units connect to the host computer using a FireWire (also known as IEEE-1394) interface. When using a single TACC1441 accelerator it is generally acceptable to use FireWire400 (1394A) or FireWire800 (1394B).

When using more than one TACC1441 accelerator on a single computer, it is strongly recommended to use only FireWire800 (1394B). Tableau's testing confirms that up to four TACC1441 accelerators will function correctly on a single FireWire800 interface.

### **Recommendations – AccessData DNA Considerations**

When using the TACC1441 accelerator with AccessData's DNA, the TACC1441 accelerator is connected to a *DNA Worker* computer and not the *DNA Supervisor*. Therefore, the preceding processor and interface recommendations apply to the *DNA Worker* computer and not to the DNA Supervisor computer.

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