Techmasters Server Proposal

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### Context and Background

Last Spring, five Phillipians launched Phillips Academy Capture the Flag ([PACTF](https://en.wikipedia.org/wiki/PACTF)), a national contest to educate high-schoolers about cybersecurity. PACTF reached over 1,000 teams nationally and internationally, awarding $3,000 in prizes to winners, including some right here on campus.

Techmasters will continue to host PACTF annually. As such, the club holds regular meetings to train members in cybersecurity. In the spirit of learning by doing, problems are set up on the Techmasters server for members to try to solve.

Bought at least five years ago, the current Techmasters server has served the student organization well. However, the server proved inadequate for meeting the high demand for the PACTF website. Furthermore, the server becomes overloaded and unusable during club meetings when members attempt to solve problems on it. Thus, Techmasters is proposing purchase of a new server.

As mentioned, the server will provide infrastructure to host PACTF and also run problems for private practice by Techmasters members. Students and campus organization will also be able to create personal websites on the student.andover.edu domain. Furthermore, Techmasters is collaborating with the Nest (also known as the Makerspace) to provide a compute cluster service to students. Not only would such a service foster experience and innovation on campus in an exciting field of technology, but it would also provide a platform for the CSC630 Computer Science Honors Seminar on machine learning, a computationally demanding field.

### Server Proposal

After comparing various servers, we have determined that the best option for us is currently the T5610 Dell Workstation.[[1]](#footnote-1) This workstation shall serve as an extremely powerful computer while cutting back on features we do not require.

PACTF’s overwhelming success last year led to sizeable traffic on our servers. The powerful dual Xenon CPU shall be able to meet such extreme request volumes during the duration of the CTF. To prevent excessive costs, we have scaled back the RAM with which a server is usually equipped. Although it would be nice and would be recommended for most servers to have 256 GB of memory or more, since our memory demands are relatively smaller, the proposed server comes with half as much.

### Network Utilization

<three paragraphs redacted for security reasons>

Techmasters is grateful for its benefactory relationship with the OIT serving not only members of the student organization but the Phillips Academy community at large. We welcome questions at the email addresses listed above.

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Instead, an external GPU shall better serve the unique needs of computer science at Andover, including the aforementioned compute cluster service.[[2]](#footnote-2) Machine learning and big data tend to require a very good GPU, but servers usually come with weak GPUs if one at all; hence, we shall utilize an eGPU connected to the server via an adapter.[[3]](#footnote-3)

1. <http://www.newegg.com/Product/Product.aspx?Item=2NS-0008-0WP20> [↑](#footnote-ref-1)
2. <https://bizon-tech.com/us/bizonbox2s-egpu.html/#462:1585;463:1589;465:1593> [↑](#footnote-ref-2)
3. <http://www.newegg.com/Product/Product.aspx?Item=N82E16815548001&cm_re=thunderbolt-_-15-548-001-_-Product> [↑](#footnote-ref-3)