MICRO-DATA CENTER
DESIGN CHALLENGE

The *$10,000* Micro-Data Center Design Challenge

Students, engineers, researchers, and innovators welcome!

The Challenge

Design a solar powered micro-data center for communities in the developing world using ARM-based technologies.

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The Impact

The winning design will serve as a model that can be replicated around the world, potentially impacting millions.

The Specifics

- **First Prize: $10,000 and winning design built and deployed in developing world**
- Second Prize: Google Nexus 7 tablet for each teammate.
- **Entries must be submitted by June 10th.**
- Winners announced on July 15th.

Register/ learn more:

http://www.inveneo.org/designchallenge/

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The Challenge

The Challenge is to create an innovative, custom designed micro server chassis that, together with networking software, cabling, power supply, battery system, and housing, come together to function as a Micro-Data Center. The micro chassis will accommodate a stack of up to 15 ARM-based micro server boards (i.e. Raspberry Pi, Banana Pi), which effectively fields over 30 processor cores, more than 15 GB of RAM, up to 10TB of solid-state storage, and is connected over an internal gigabit network fabric. A fan-less, passively cooled housing will integrate the Li-ion battery and power system, which will accept 24/48 v input from solar or DC power source. Hobbyists around the world have already begun stacking such processing boards to create one-off servers. The Micro-Data Center Challenge takes this work on low-powered, high-performance computing to the next level: commissioning an enterprise-class micro-data center design ready to deploy in the most challenging environments.

The Impact

Ultra-efficient micro-data centers present the potential to push computing to the edge of the network across the developing world. The ability to house data locally is critical for these nations and regions. The micro-data center winning design will remain open-source in order to serve as a model that can be replicated in other parts of the world.

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Judging Criteria

The designs will be judged based upon feasibility, cost, creativity, and potential for impact by a panel of industry experts.

Micro Chassis Specifications

Micro Boards	Up to 15	Banana Pro, Raspberry Pi 2, Odroid, etc
Managed Gigabit Switch	1	20 ports, DC powered
Solid State Drives	10	Standard 2.5" SSD up to 1TB
DC power supply	Input 24 or 48v DC	To accept Solar or DC input
Passive Cooling	No fans	To prevent dust and dirt
Li-ion Battery Pack		To run 24/7

Most developers will recognize the term "SDK" or "Software Development Kit." This challenge may be considered as an "HDK" or "Hardware Development Kit." The Micro Data Center HDK will be used to run web (cloud) services, computing of environmental and educational content, data mining, real time sensor monitoring, and analysis of high speed incoming data for real time reporting.

Resources for Developers

LeMaker has created specially discounted 15 Banana Pro kits that are available for purchase to prototype your design. Computer aided chassis design software is freely available from ProtoCase.

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