



# Information and Communication Technology Portfolio Review

**March 2011**

# Power Assure Project Overview

## Project Name:

Data Center Transformation from “Always On” to “Always Available”

## Project Participants:

Lead: Power Assure, Inc.

Partner: Palo Alto Research Center Incorporated (“parc”)

## Project Duration:

January 31, 2010 to March 31, 2012

## Project Type:

Development and Commercialization

# Project Objective and Goal

## Today:

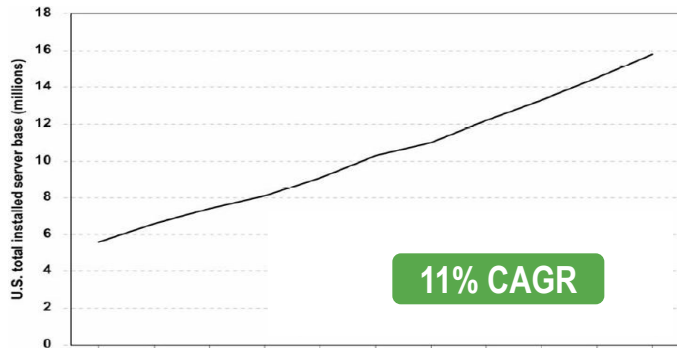
- All equipment in Data Centers is running all the time, provisioned and available for peak demand
- The average equipment utilization is <20%
- The total Data Center power consumption is over 3% of the US power consumption

## When completed, Power Assure will provide software to:

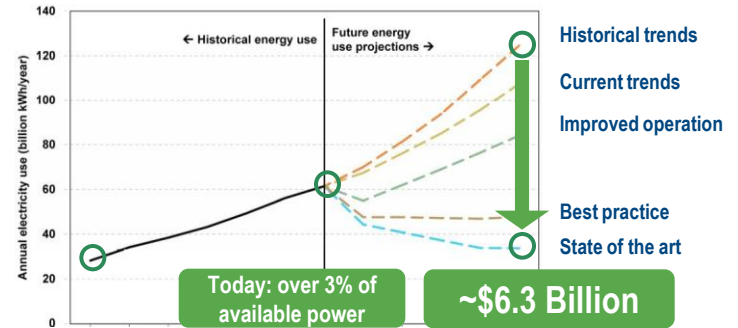
- Dynamically adjust application capacity to actual demand by shifting and shedding load across data centers and throttling, capping, or turning off backup/redundant equipment
- Increase equipment utilization
- Reduce power consumption and CO2 emission by up to 50%
- Increase Data Center efficiency and avoid unnecessary build outs

# Project Background

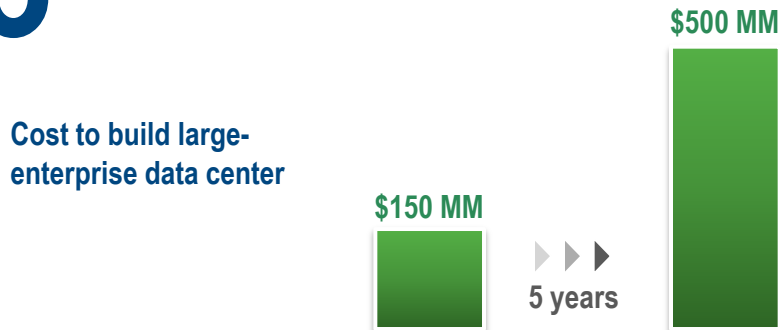
**1** Demand for server capacity continues to grow strongly<sup>1</sup>



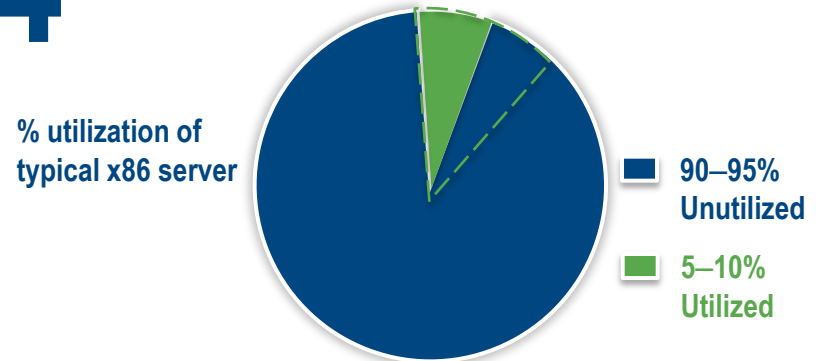
**2** Total US data center energy consumption doubling every 5 years<sup>2</sup>



**3** Building new sites is more costly<sup>3</sup>



**4** Server % utilization remains low<sup>4</sup>



<sup>1</sup>IDC, 2007

<sup>2</sup>EPA, 2007

<sup>3</sup>McKinsey & Company, 2008

<sup>4</sup>IDC, 2009

# Approach and Results

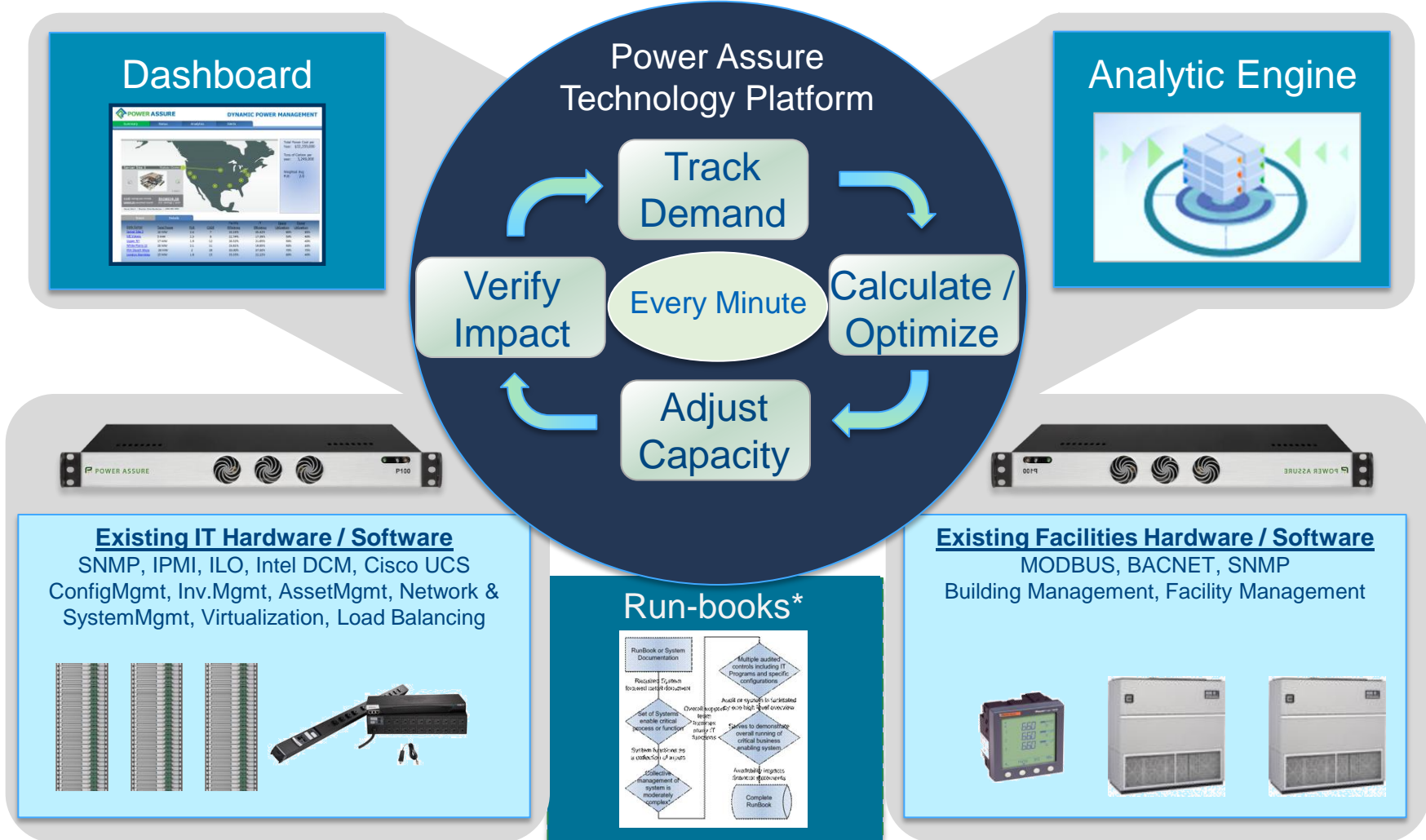
*Always On*



*Always Available  
by Power Assure*

**Savings: 56.79%**

# How it Works



# Transforming Data Center Energy Usage

## Moving to an “Always Available” model:

- **Provides a holistic view across facilities and IT**
- **Reduces energy consumption by 50%**
  - Caps, throttles, or shuts off server based on customer demand and required service levels
- **Provides runbook automation to orchestrate IT and facility standard operating procedures**
  - Adjusts facility resources based on IT requirements (e.g. cooling output)

# Estimates of Energy Savings

- **Base Unit**

- 1 MW Facility, PUE 1.6, 70% of IT are Servers
- 1.363 lbs/CO<sub>2</sub> per kWh (*EPA 2006*)
- 50% IT Savings → 35% in Total Savings = ~3,000,000 kWh  
1,855 metric ton of CO<sub>2</sub>

- **National**

- 4,120,028,000 MWhrs (*DOE 2010*)
- ~3% used by Data Centers 123,600,000 MWhrs = ~\$10B
  
- Savings potential:      43,260,000 MWhrs  
   26,700,000 metric ton of CO<sub>2</sub>



# Jobs/ Employment by Power Assure

- **Q4 – 2010: 5.5 new jobs**
- **Q1 – 2011: 4.5 additional jobs**
  
- **Total new jobs since project start: 10**

# Project Status

Task	Title	Percent Complete	Notes
1	Setup 3 data centers	70%	In progress – 2 done
2	Product Requirement Document	100%	Completed
3	Software Release 1 – Alpha SR1	100%	Completed
4	Software Release 2 – Alpha SR2	50%	In progress
5	Software Release 3 – Alpha SR3	20%	Specification started
6	Final Product Release	10%	Planning started
7	Completion of Beta Trials for Public Release	10%	Customer selection started

# After ITP-Sponsorship

- **Power Assure has received ~\$15M in venture capital funding as working capital to take product to market**
- **Power Assure got its first commercial customers who will also test enhancements and features from this work as they become available**
- **Power Assure's goal is to reach break-even by the end of 2012**

# Power Assure Value Proposition

- **Improve Data Center efficiency**
- **Extend the life of existing data centers**
- **Improve return on data center assets**
- **Reduce energy consumption and CO2**