IBM Portable Modular Data Center Overview

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IBM Site and Facilities Services

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**IBM’s Data Center Family™**

**Comprehensive Set of Custom and Standard Capabilities**

<table>
<thead>
<tr>
<th>Scalable modular data center</th>
<th>Turnkey data center for 500-2,500 sq ft</th>
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<tbody>
<tr>
<td></td>
<td>Rapid deployment in 8-12 weeks</td>
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<td></td>
<td>20% less cost than traditional data centers</td>
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<tr>
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<td>15-30% improved energy efficiency</td>
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<table>
<thead>
<tr>
<th>Enterprise modular data center</th>
<th>Standardized design in 5K up to 20K sq feet</th>
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<tbody>
<tr>
<td></td>
<td>Designed for high availability</td>
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<td></td>
<td>Leadership energy efficiency – 66% DCiE</td>
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<td>25% faster deployment than custom approach</td>
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<td>Open architecture involving leading vendors</td>
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<thead>
<tr>
<th>Portable modular data center</th>
<th>Fully functional data center; multi-vendor support</th>
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<tbody>
<tr>
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<td>Portable - temporary and remote data centers</td>
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<tr>
<td></td>
<td>Rapidly deploy in 12-14 weeks</td>
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<tr>
<td></td>
<td>Designed for high availability</td>
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<td>Leadership energy efficiency: 77% DCiE</td>
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<tr>
<th>High density zone</th>
<th>“Plug and play” infrastructure to support high density servers in existing data centers</th>
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<tbody>
<tr>
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<td>Non-disruptive implementation</td>
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<td>35% lower cost than retrofitting existing data center</td>
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The portable modular data center from IBM is a flexible and customizable solution.

- Complete, fully functional, stand-alone data center
- Flexible infrastructure designs, not a "one-size-fits-all" approach
- Quick to deploy, turnkey data center
- Locate in nonstandard locations (cities, suburbs, deserts, mountains, arctic regions, etc.)
- Lower TCO than new data center build
- Designed for high-density technology and open architecture for multivendor support
- Standard data center design capabilities, including high availability and energy efficiency

Uses:
- Remote data center
- Cloud and Web 2.0
- Temporary data center
- Mobile data center
Advantages of PMDC Internal Design

*Features you expect from a traditional data center, but inside a container*

| Complete data center infrastructure | - Does not require additional client supplied infrastructure, not all competitors provide this  
- Complete turn-key solution from a single source  
- Easy to install and relocate as a single unit |
|---|---|
| Fully insulated containers | - Most competitors do not supply insulation, leading to condensation and temperature issues within container  
- Allows installation in any environment, competitive solutions are limited in installation options |
| Internal Service | - Many competitors require open containers or exposed IT equipment to service. PMDC allows internal, secure and protected service environment |
| Flexible Designs | - Not a “one-size-fits-all” design  
- Flexible designs to meet client requirements  
- 20-foot and 40-foot containers available |
| Energy Efficient Designs | - Multiple cooling solutions for most energy efficient applications  
- PUE of 1.30 or better (DCiE – 77%)  
- Most energy efficient infrastructure equipment  
- Insulation creates tightly controlled environment for IT |
| Global Solution | - Available in both IEC and NEMA designs  
- Global installations easily implemented  
- Global service and support through IBM and global suppliers |
| Open IT Architecture Design | - Supports any vendor equipment, not just IBM  
- Mix and match servers, storage and network equipment  
- Supports blade servers, rack-mount servers and IBM iDataPlex servers |
PMDC Configurations

Design configurations are flexible and customizable to meet the needs of the installation

**Single Container Solution**
- All-in-one design
  - IT equipment and infrastructure in a single container
  - Very compact solution
  - Use when space for containers is limited
  - Use when IT equipment needs are minimal
  - 20’ solution: up to five 19” racks
  - 40’ solution: up to eight 19” racks

**Multi-container Solution**
- **IT Equipment Container (Server Container)**
  - IT equipment, cooling, power distribution, fire suppression, remote monitoring, physical security
  - Use for maximized IT equipment installations
  - 20’ solution: up to eight 19” racks or 7 iDPx racks
  - 40’ solution: up to 17 - 19” racks or 24 iDPx racks
  - Supported by physical infrastructure container or existing building services

- **Physical Infrastructure Container (Services Container)**
  - UPS/batteries, power switchboard, chiller, fire detection/suppression, cooling, monitoring
  - Designed to support IT equipment container
  - 2N or N+1 design
Ease of Installation – Stand-alone Solution

1. Water Feed
2. Utility Electrical Feed
3. Network Connection
Ease of Installation – Client Supplied Mechanical and Electrical

Client owned MEP Plant

Network Connection

Concrete Pad

Concrete Pad

Client owned MEP Plant

Concrete Pad

Network Connection
PMDC is a complete turn key data center solution

- The PMDC is not just a container for IT equipment, PMDC is a complete data center solution
- The PMDC solution provides a complete end-to-end solution
  - Assessment of needs
  - PMDC design services
  - Site selection
  - Site design
  - Site preparation services
  - PMDC preparation and testing
  - PMDC installation services
  - IT equipment relocation and installation services
  - Solution testing and commissioning
  - Maintenance services
  - PMDC relocation services

- IBM provides complete project management and a single point of contact for the entire project
Installing a data center in a dessert

A Middle Eastern University needed a quick data center solution in a dessert location

Business challenge
- Traditional data center construction would take 18 – 24 months
- Needed immediate data processing capability
- Dessert location made on-site construction difficult

Solution
- PMDC provided complete data center in shipping containers, including data center infrastructure
- Plug-and-play installation in a remote location

Benefit
- 4 weeks delivery time
- PMDC fully tested prior to shipment
- Avoided expensive and difficult construction of data center in a nontraditional environment
Quick Response to Immediate Needs with PMDC

*Fire in data center only a slight set-back*

**Business challenge**
- Fire in data center stopped IT operations
- New data center construction would take 18 – 24 months
- Needed immediate data processing capability

**Solution**
- PMDC provided nearly immediate response and ability to restart IT operations quickly
- PMDC provided complete data center solution
- Temporary solution became permanent

**Benefit**
- Delivery, install and running within weeks
- PMDC fully tested prior to shipment
- Re-established data center operations without major loss to business
- Avoided expensive and difficult construction of data center
IBM PMDC Demo Unit Layout
<table>
<thead>
<tr>
<th>IBM PMDC Demo Unit Partners:</th>
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<tr>
<td><strong>THANK YOU!</strong></td>
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<table>
<thead>
<tr>
<th>Company</th>
<th>Products/Technologies</th>
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<tbody>
<tr>
<td>ABB</td>
<td>Power and automation technologies</td>
</tr>
<tr>
<td>APC</td>
<td>Products ensuring availability wherever data is created, transmitted or stored.</td>
</tr>
<tr>
<td>AST</td>
<td>Construction and design of modular data centres</td>
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<tr>
<td>Eaton</td>
<td>Electrical components and systems for power quality</td>
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<tr>
<td>EFI</td>
<td>Surge Protective Devices in the Industry</td>
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<tr>
<td>Emerson</td>
<td>Reliable power, precision cooling, connectivity and embedded solution</td>
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<tr>
<td>FG Wilson</td>
<td>Diesel and gas generator sets</td>
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<tr>
<td>HITEC Power Protection</td>
<td>Rotary UPS technology</td>
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<td>Minimax</td>
<td>Fire protection solutions</td>
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<tr>
<td>Panduit</td>
<td>Products for wiring and communications applications</td>
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<td>SDMO</td>
<td>Generating set manufacturers</td>
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<td>Siemens</td>
<td>Network Cabling Solutions</td>
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<td>Starline</td>
<td>Electrical power distribution system</td>
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<td>Stulz</td>
<td>Air-conditioning systems</td>
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<tr>
<td>Vetco</td>
<td>Solutions for High-density IT</td>
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SEE BLUE. THINK GREEN.

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