A Green IT Strategy Through Virtualization

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Green IT is Everyone's Business

- **Consumer Awareness of Product Carbon Footprint**

- **Senior Management Developing Policies that Require IT Support**

- **Green Friendly Saves Money**

- **Green Friendly Helps the Environment**

- **Community Recycling Programs**

- **Business Responses (hotels, airlines, cabs)**

State CIO Priorities 2009
Priority Technologies, Applications and Tools

1. Virtualization (storage, computing, data center)

2. Document/Content/E-mail management (active, repository, archiving, digital preservation)

3. Legacy application modernization and upgrade (ERP)

4. Networking, voice and data communications, unified communications

5. Web 2.0 (services, collaboration technologies, social computing)

6. Green IT Technologies and solutions

7. Identity and access management

8. Geospatial analysis and Geographic Information Systems (GIS)

9. Business Intelligence (BI) and analytics applications

10. Mobile worker enablement

Source: NASCIO

County and City Government priorities

- Consolidation and Centralization

- Mobile Government

- GIS adoption and expansion

- Disaster Preparedness (Recovery, continuity and response)

- Green Policies

What's Happening Around the World?

- Building More Efficient Data Centers

- Installing Virtualization Solutions

- Greater Use of Cloud Computing

- Turning to Video Conferencing

- Reducing Use of Utilities

- Reducing IT Waste

CITRIX®

Do we have the right technology mix to run and grow the business?

Server Growth	28%
Storage Growth	45%
MIPS Growth	17%
Desktop Growth	1.3 x number employee
Unused capacity	40 %

In the past we simply added capacity to support business growth. Today there is a better way.
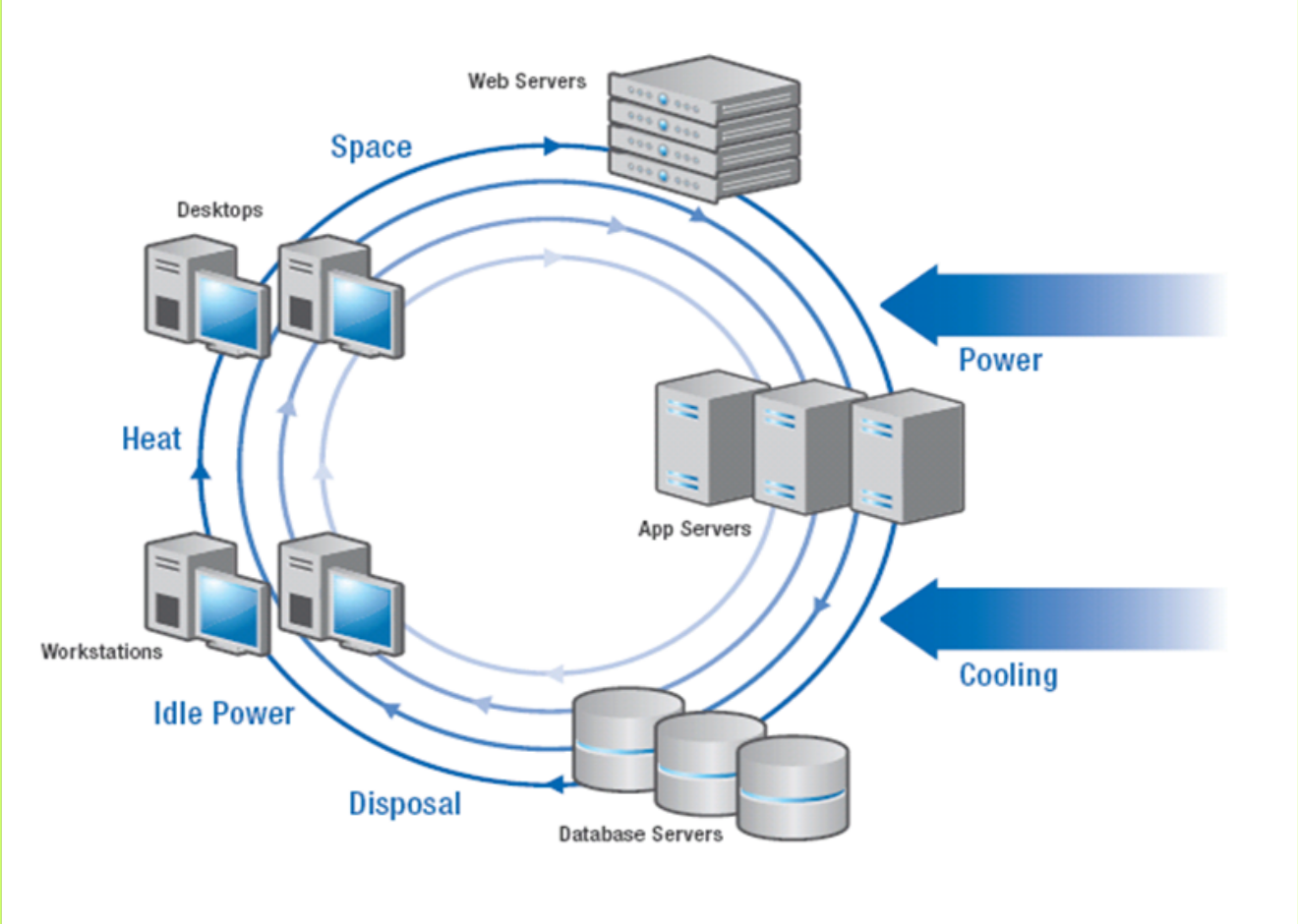
SOURCE: Howard Rubin, Computerworld, February 15, 2008

FIVE TECHNOLOGIES TO INVEST IN EVEN IN A DOWNTURN

1. Storage

2. Business Intelligence

3. Virtualization

4. Security

5. Cloud Computing

Source: Tom Sullivan, Computerworld, November 19, 2008

Green Computing IT Challenge

Why We Need to Care

- Computers today use 2% of all energy worldwide (US=3%)

- Data center energy costs moving from 10% of IT budget to more than 50% of IT budget

- 60% of the energy is wasted because of heat or is used to cool equipment.

VIRTUAL DELIVERY MODEL

CITRIX®

End-to-End Virtualization Model

Desktop Virtualization

App Virtualization

Server Virtualization

Desktop

Application

Server

Virtual Application Delivery

When to Consider Virtual Application Delivery?

- Expansion opportunities centered around streaming
  - Windows-based desktop applications
  - Mobile users that work offline
  - Applications that change or update frequently
  - Applications or users that need local CPU power and peripherals

- Graphics applications that can be put on the network
  - Picture Archiving and Communications System (PACS)
  - Geospatial Information System (GIS)

- Impending software migrations
  - Office 2007
  - Windows Vista
  - Windows Server 2008

Virtual Desktop Infrastructure
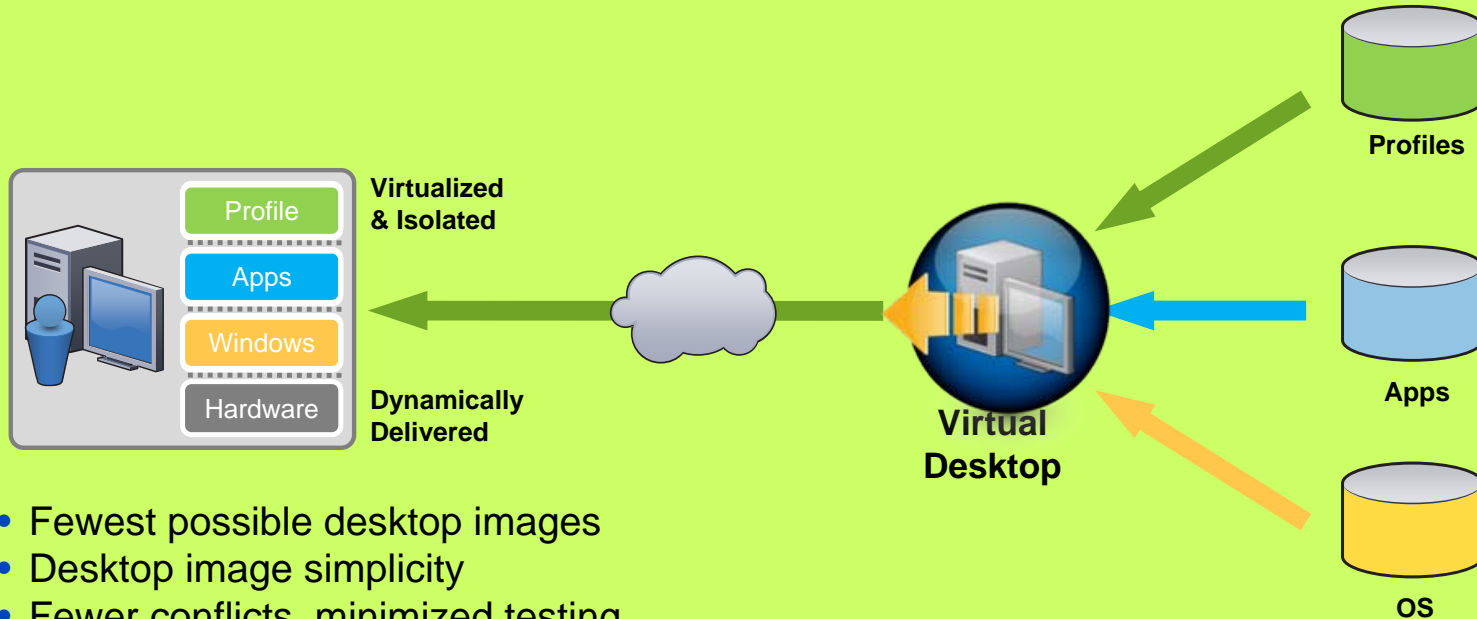
Inspiration from other Service Delivery systems

Just like Satellite and Cable TV services…
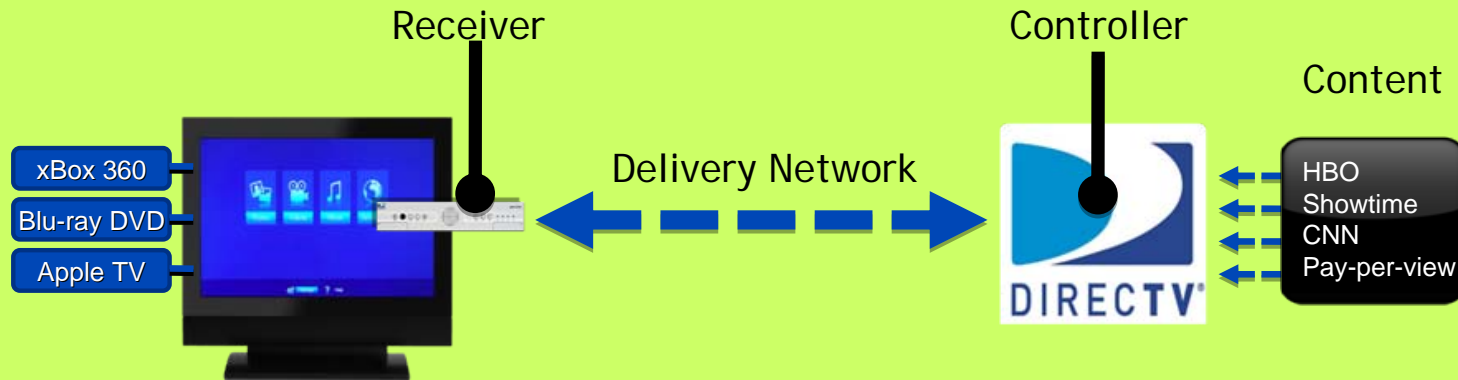
- Easy, fast & on-demand user experience

- Device, network & content independence

- Content security & access control

- Dynamic capacity – peak & off-peak

- Predictable operating & capital costs

- Simple, scalable infrastructure

# Desktop Delivery Vision

Virtual Desktop is a Better Way…

Profiles

Profile — Virtualized & Isolated

Apps

Windows

Hardware — Dynamically Delivered

Apps

Virtual Desktop

OS

- Fewest possible desktop images
- Desktop image simplicity
- Fewer conflicts, minimized testing
- Low-touch, self-serve re-imaging

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Virtual Desktop with Integrated Virtual Application Delivery
Dynamically Assembles Virtual Desktops

virtual delivery protocol

Users

Virtual Desktop

On-demand Assembly

Apps

User Settings

OS

Data Center
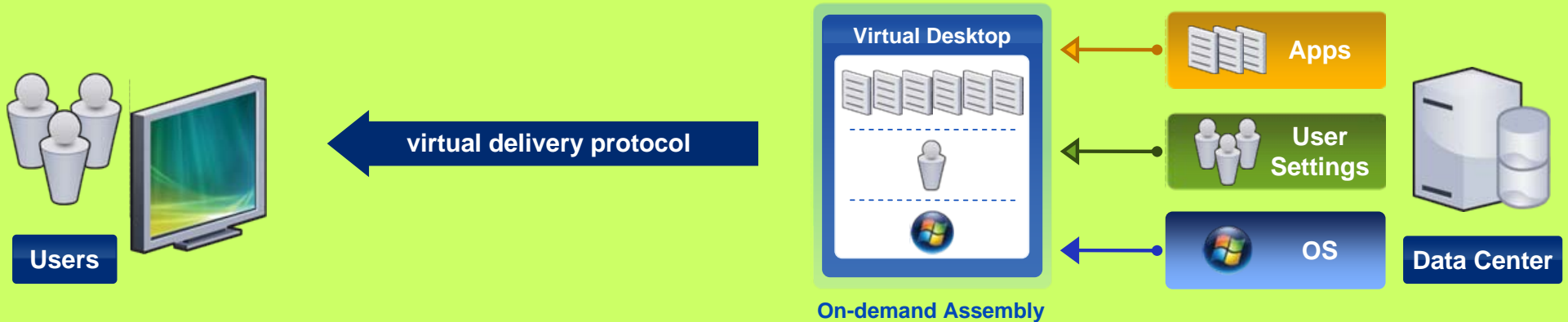
Delivered
with best user
experience

Dynamically
assembled at
runtime

Single master
image of each
component

Result is a Superior User Experience

- Desktop on Demand
- Pristine Desktop
- High Speed Delivery
- Speed Screen
- Universal Printer Driver
- Simple Life Cycle Management
- USB Mass Storage
- Click to Call Voice Communications
- Reduces Admin Costs

Virtual Work Place and Continuity of Operations

- Easy for disrupted workers to switch to a new work location

- Large numbers able work from remote locations for extended period

- Maintain communications with customers, partners, suppliers, and coworkers

- Capabilities include automatic notification, roll calls, bulletin boards, express directory, instant messaging, call redirection, and remote desktop access

Strategic Desktop Initiatives

- Cost effective **desktop refresh** that also reduces waste

- Increase control over data to meet **compliance requirements**

- Lower cost of **desktop management**

- Provide **anytime, anywhere access** to desktops for increased productivity and business continuity

- Supports **telecommuting** options

Virtual Servers

The Case for Server Virtualization

- Creating a Green datacenter

- Servers are costly to maintain

- Costs encompass provisioning, housing, power, cooling, management, etc.

- Servers are poorly utilized

- Typically one workload per server

- Physical servers are inflexible

- More complex management than desktops

Case Studies

Continental Airlines

Challenge:
- Reduce paperwork for maintenance checks during aircraft turnaround
- Support operations at the 286 locations served by the airline
- Enhance corporate commitment to environment
- Add future applications to support additional business functions

Solution:
- Implemeted a virtual application solution on central servers
- Eliminated paperwork for maintenance checks
- Supported 2000-3000 reservation agents working from home
- Improved employee productivity and satisfaction
- Real time wireless access to applications
- Enhanced corporate reputation for ecoresponsibility

Mississippi Department of Transportation

Challenge:

- Improve application delivery to employees across the State
- Reduce manual updates of machines located at over 100 locations
- Speed delivery of client/server applications especially GIS and data intensive construction applications
- Create a consistent environment for applications and data

Solution:

- Implemeted a virtual application solution on central servers Jackson data center
- Delivered construction management software, financial management system, and data bases
- Expanded solutions to include BlackBerry devices and wireless laptops
- Reduced administration and support costs

Dane County, WI

Challenge:

- Ensure quick response at the incident site
- Police officers spent too much time on administrative tasks

Solution:

- Application delivery to thin Clients, custom 'Mug shot imaging system' and custom 'jail records system'
- Real time wireless access to applications

State of Colorado Department of Personnel & Administration

- Challenge:
  - Computers on a 4-year refresh cycle
  - Offices spread across the state
  - IT staff of 5
  - Needed an economical way to upgrade and manage their devices

- Solution:
  - DPA initiated a pilot and implemented a virtual application solution on a central server farm to deploy applications to its existing desktop computers.
  - Employees entered the network as if they were remote users
  - The employees were able to access mission-critical applications much faster than the older technology infrastructure allowed.
  - Based on the success of the pilot, DPA decided to migrate all of its desktops to a thin client infrastructure.

New York City Human Resource Administration (HRA)

- Challenge:
  - Delivery and management of their Welfare Management System
  - Constant changes in regulations sometimes requiring an application update every week
  - Caseworker productivity
  - Incorrect disbursements

- Solution:
  - Centralized their Welfare Management System on a virtual application server
  - Quick upgrades to the WMS system, ensuring latest changes in welfare laws are reflected
  - Accurate, on-time delivery of all appropriate benefits to citizens
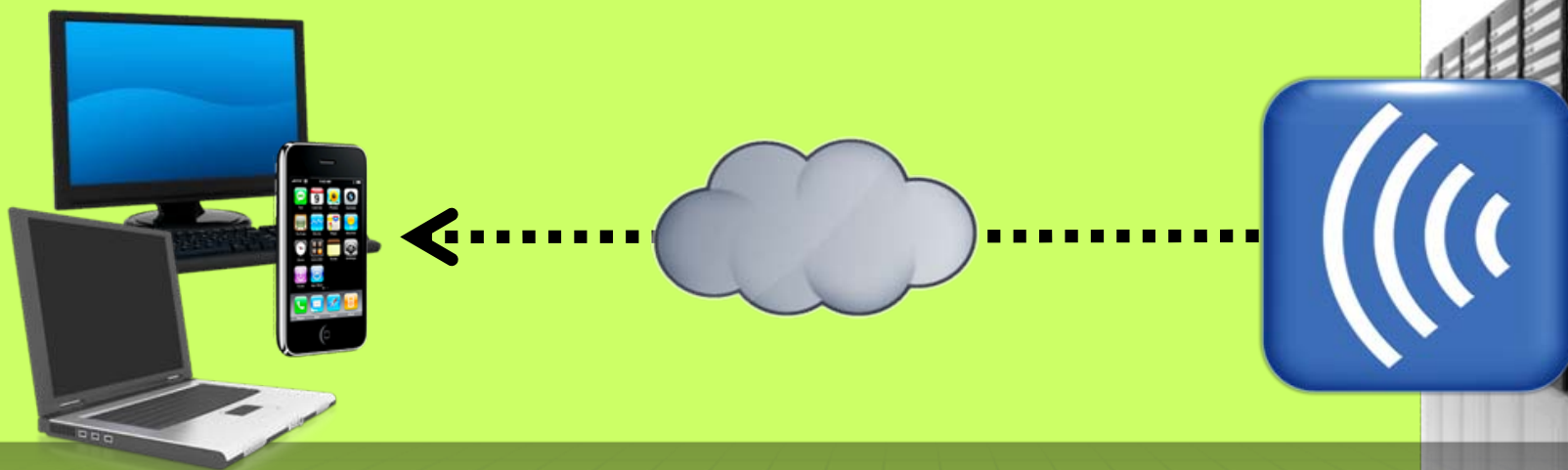
- Results
  - Reduced the time and resources required to upgrade an application by 90-percent
  - Savings of approx $5-million
  - Improved security and privacy of welfare distribution system by central control of data

Green Computing IT Challenge
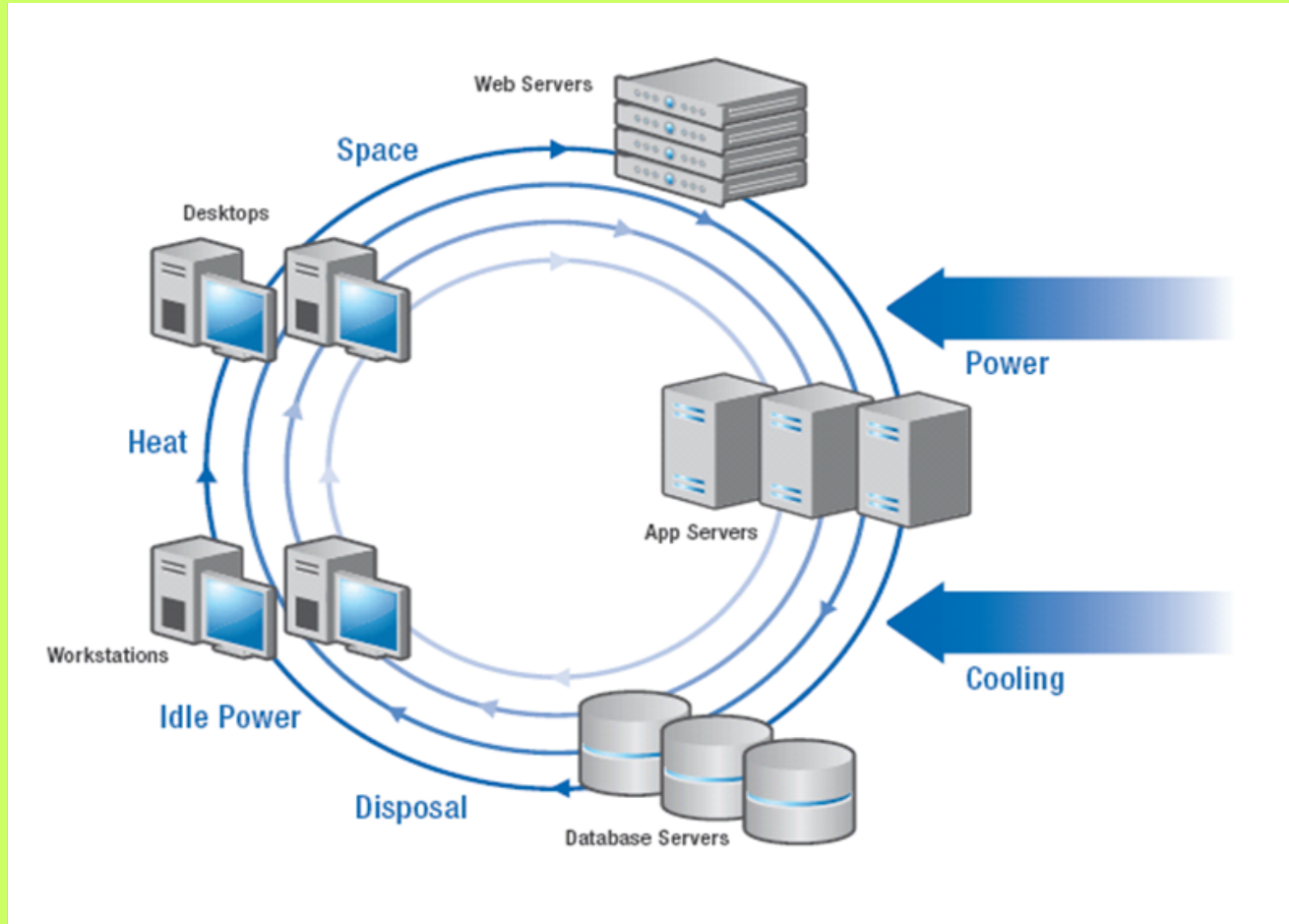
Delivery Center

Easier to Use • Easier to Buy
"Insanely Great" Device Support

How Does Virtualization Support Green IT?

Improves ease of support for virtual workers

Reduces carbon emissions

Reduces costs for energy

Reduces e-waste

Simplifies administration of infrastructure

QUESTIONS?

Want to Learn More About Green IT Solutions?

1. Free Guide:

    Green IT: Reducing Your Carbon Footprint

    www.citrix.com/delivergreenIT

2. NASCIO Green IT Video

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