Containment Cooling® Brochure

Opengate Rack-Based and Row-Based Containment Cooling stabilizes IT intake air temperature to within a few degrees of the supply air temperature at all points in your data center. Create a flexible cooling circuit with modular-intelligent CONTAINMENT. Contain all the heat and keep water at the facility perimeter - deploy quickly and cost effectively.

Controller   **Chassis**

EC System Accepts; EC10, EC20 or EC30R Fan Cartridges

Redundant Fan Cartridges

Build with Confidence

Deploy More IT with CONFIDENCE and Maximize Free Cooling

Maximize Rack and Room Density and Achieve Best-In-Class PUE:

▪ **Zero-Waste Cooling**

▪ **Zero Heat Issues**

Why adapt to hot spots when you can normalize your entire data center?

Flexible Higher Density Cooling

One system automates containment providing an entire simplified cooling circuit for all IT equipment types.

Versatile for any rack density up to 30 kW, ultra-efficient Energy Star servers designed closer to their thermal limits, even multiple large network switches placed in a rack.

Modular & Redundant System

Opengate cooling distribution systems are modular and intelligent; integrating rack power, cooling, and environment monitoring.

Fan Controller Connections

208-240 VAC A/B Power Input

Ethernet RJ45

Optional Monitoring Inputs (3)

Pressure Sensor

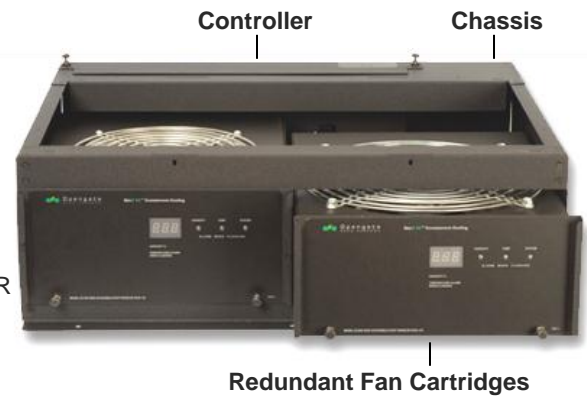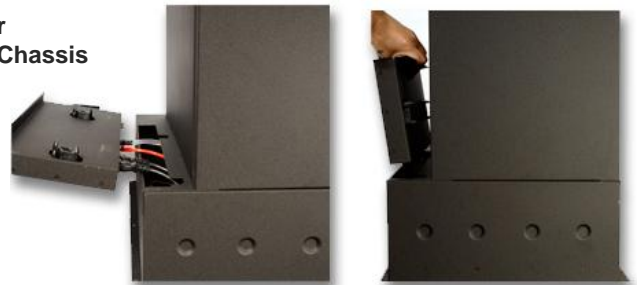**Fan Controller Placement in Chassis**

Managing Tough Customer Requirements

High-density on slab floor, avoidance of cable trays running down or across rows.

Containment Cooling deployed with RT Rack Transition Plenum

Deploy racks or additional Containment Cooling when needed. Connect to power and system automatically operates to factory-set parameters. Connect to network and simply browse to device to set up email, SNMP and alarm thresholds.

Award Winning Solution

UptimeInstitute
GREEN ENTERPRISE
IT AWARD 2011
Winner! Outstanding Facilities Product

2010 Technology Award
ASHRAE
Advancing HVAC&R to serve humanity and promote a sustainable world

Opengate

Rack-Based Containment Cooling

Configuring the rack for Rack-Based Containment Cooling requires side panels at row ends and between EC systems. Containment Cooling is managed by the EC10 or EC20 systems in the row.

EC SYSTEM

SIDE PANELS FOR ROW END & BETWEEN EC SYSTEMS

LEFT FRONT RAIL BLOCKED

NO SIDE PANELS FOR EC SHARED RACKS
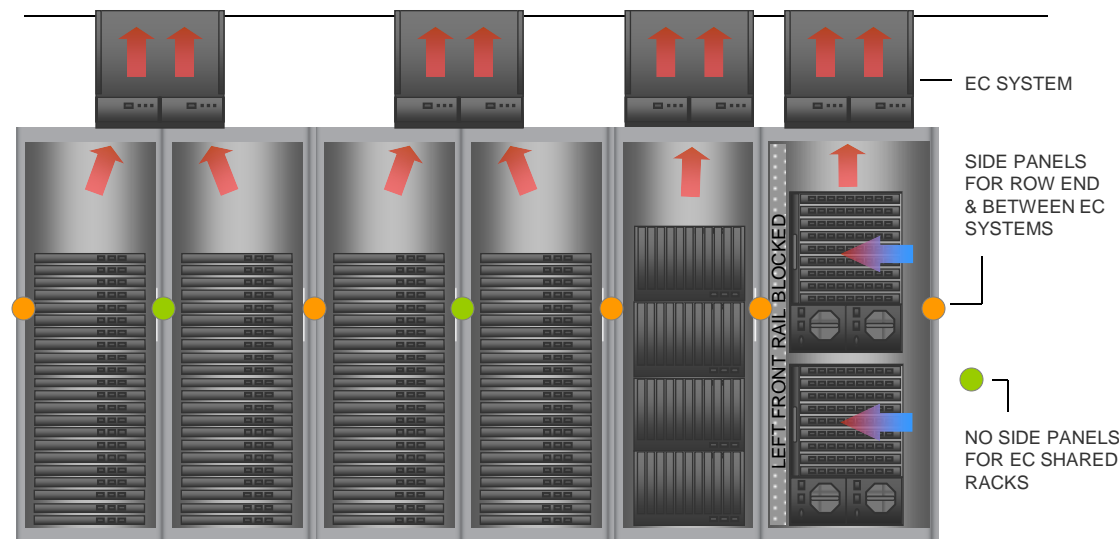
Cooling Advantage!

Stabilize your IT intake air temperature to within a few degrees of the supply air temperature at all points in your data center

Reduce total data center fan power consumption

Eliminate back pressure on server fans for improved server efficiency
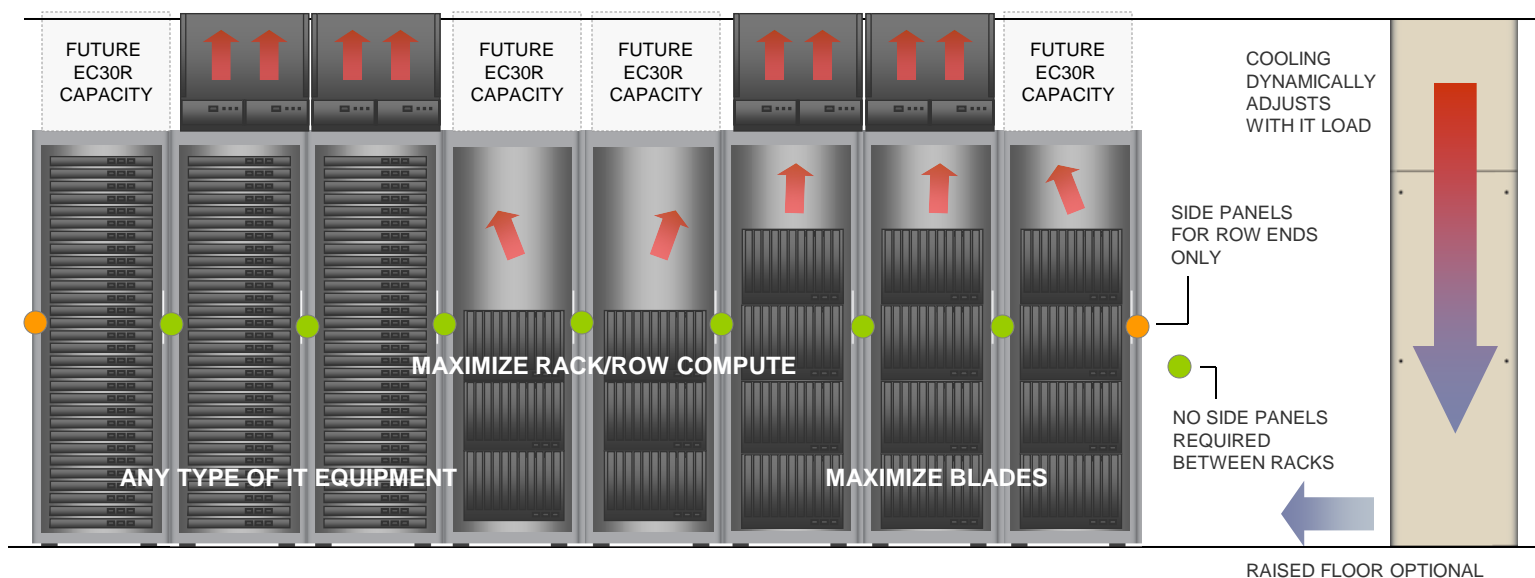
Adjust cool air delivery to IT demand as server airflow dynamically changes

Rapid return on investment - typically less than 3 months

Owners and operators are keeping costs low while delivering an effective and efficient facility

Row-Based Containment Cooling

Configuring the rack for Row-Based Containment Cooling requires side panels at row ends only. Containment Cooling is managed by EC30R systems in the row. Size EC30R systems for the row IT load. Expand while operational – adding EC30R systems later as you deploy more IT with CONFIDENCE.

FUTURE EC30R CAPACITY

COOLING DYNAMICALLY ADJUSTS WITH IT LOAD

SIDE PANELS FOR ROW ENDS ONLY

NO SIDE PANELS REQUIRED BETWEEN RACKS

MAXIMIZE RACK/ROW COMPUTE

ANY TYPE OF IT EQUIPMENT

MAXIMIZE BLADES

RAISED FLOOR OPTIONAL

The 8-rack configuration shown is equipped with 4-EC30R systems for a total IT load capacity of 120 kW or 15 kW per rack average. Add EC30R systems as required for a total row load of 240 kW or 30 kW per rack average. One EC30R system allows you to scale from just a few kW per rack to 30 kW per rack.

*"Containment Cooling enabled AAFC to quickly meet aggressive growth demands on data center services." – **Eric Swanson, Agriculture & Agri-Food Canada***

Opengate

Complete Cooling Circuit

Opengate Rack-Based and Row-Based Containment systems contain 100% of the heat while creating an entire automated cooling circuit. Place high-density racks anywhere while maintaining a perfectly controlled IT environment.

Cooling unit redundancy applied to the entire data center space - not the row level as required with aisle containment methods.

"We're putting Containment Cooling on all new racks coming into our high-density area." –
Mitch Martin, Oracle Chief Engineer

Compatibility

Scalable for any rack density up to 30 kW, and independent of precision cooling, rack, or management software platforms.

Installed and compatible with Dell, EMC, HP, Oracle Exadata, Cisco, IBM, Sun, APC racks, Eaton Foreseer, Data Aire, Stulz, Liebert, Electrorack, NER and Chatsworth systems.

For compatibility, contact an Opengate Integrator or Unity Cooling Partner.

Containment Cooled Data Center Model

shows a stable IT environment and high heat return compared to excessive bypass of cool air with best practices and ceiling grate return.

Full Heat Return

Cool Air Bypass

Full heat return and all cool air bypass eliminated

Non-ducted return shows excessive bypass

View Inside Rack Rear Door
EC Controller connections and pressure control sensor placement
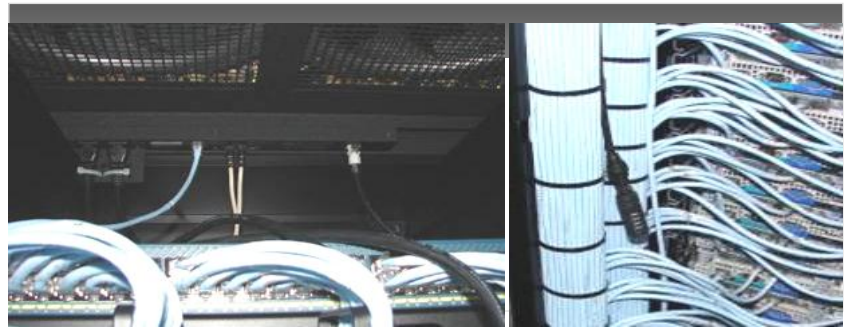
Maintain the same intake air temperature to every location in the room and automatically scale to the IT load, so every piece of IT equipment is working as efficiently and reliably as possible.

Deploy More IT with Confidence

...In Data Centers

...In Racks

...In Small Spaces

Unity Cooling®
Automated Cooling Circuit
Control & Management

SiteView®
Data Center Management
System

IT-Row™ Cooling
Automated Row Containment

SwitchAir™
Network Switch Cooling

AC Unit or Fan Speed Reduction Power Savings

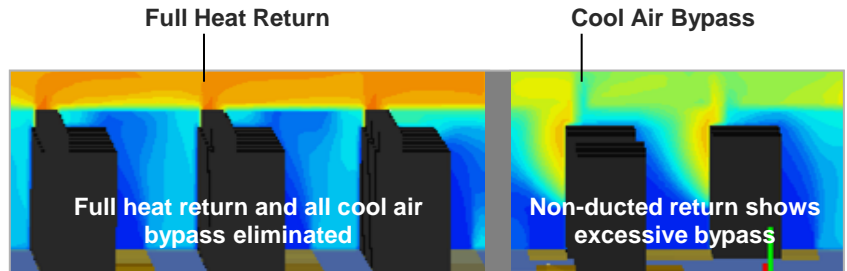| |
|---|
| **Typical Data Center Over-Provisioning of Cool Air:** |
| 2 - 2.5X Cool Air Over-Supply Based on Updated Uptime Institute Studies |
| **Typical AC Unit Fan Energy Waste:** |
| 7 - 10 kW Fan Energy Wasted for 100 kW of IT Load |
| **Opengate System Fan Energy for 100 kW of IT Load** |
| 700 W of Fan Energy Used |
| **Fan Energy Savings with Opengate System:** |
| **6 - 9 kW per 100 kW of IT Load** |

Greater fan energy savings is achieved through speed control using CRAC/CRAH units with variable speed fans. EC fans in cooling units follow a cube fan law – consuming approximately half power when running at 75% and 1/6th power when running at 50% airflow output.

Control the thermal environment and manage data center cooling for all IT equipment types. Intelligently manage data center operation and growth with integrated reporting software.

Quick Facility Integration & Reporting

Integrated Reporting Software

UC2000 Unity Cooling Controls
Adjust cooling supply to IT demand as the data center airflow load changes due to varying server flow rates
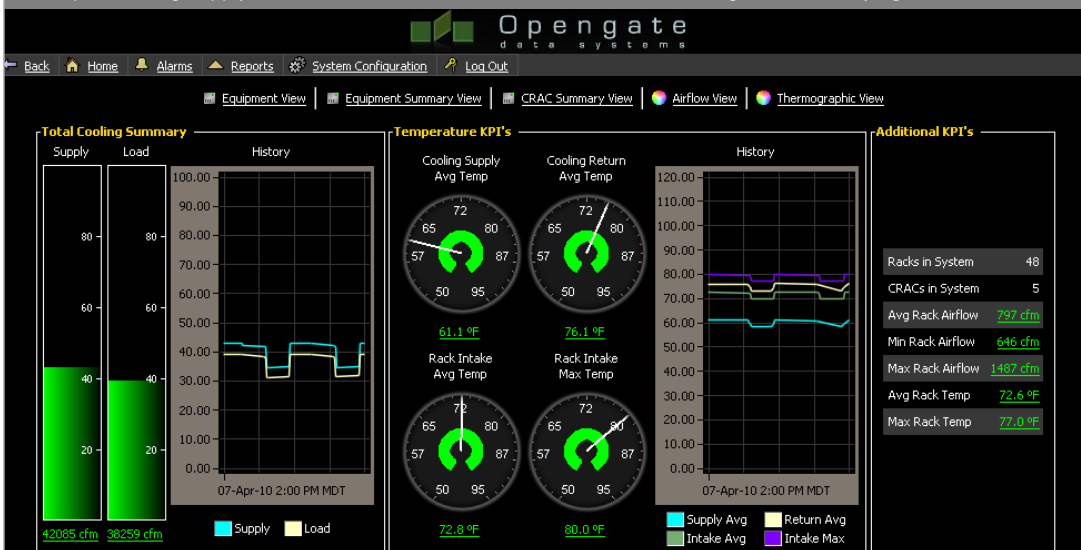
Opengate's Data Center Cooling Performance Guarantee	It's Done!
Control the thermal environment for all IT equipment types with one cooling system.	✓
Stabilize IT intake air temperature to within a few degrees of the supply air temperature **at all points in your data center.**	✓
Reduce total data center fan power consumption and eliminate pressure on server fans for **improved server efficiency.**	✓
Adjust cooling supply to IT demand as data center airflow demand dynamically changes due to varying server flow rates.	✓

Containment Cooling® Main Benefits

✓ Reclaim wasted cooling and maximize IT services in existing data centers

✓ Cool with zero-waste in new data centers

✓ No HOT AISLES and low noise levels

✓ No water lines on the IT floor

Opengate