



## Rack-Based Containment Cooling

Geist Rack-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 the modular-intelligent containment. Contain all the heat and keep water at the facility perimeter-deploy quickly and cost effectively.

### 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

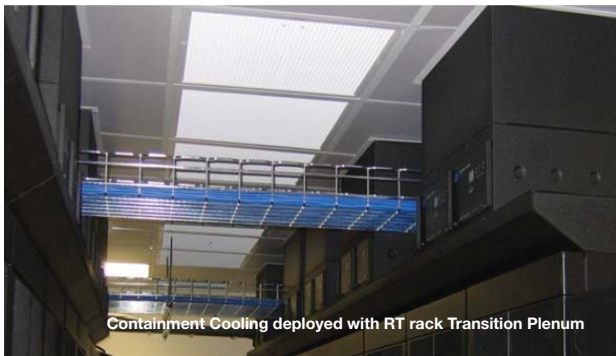
Why adapt to hot spots when you can normalize your entire data center?

### Flexible Higher Density Cooling

- One System automates containment providing an entire simplified cooling circuit for all IT equipment types.
- Ultra-efficient Energy Star servers or even multiple large network switches placed in a rack.

### Managing Tough Customer Requirements

Deploy rack 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.



Containment Cooling deployed with RT rack Transition Plenum

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



EC System Accepts; EC10, or EC20 Fan Cartridges

### Modular & Redundant System

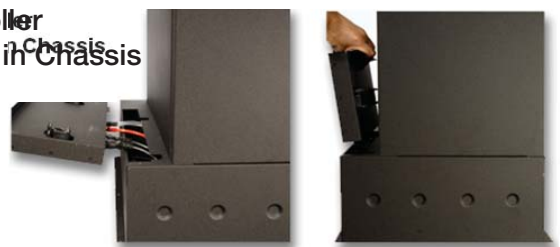
Geist cooling distribution systems are modular and intelligent; integrating rack power, cooling and environment monitoring

### Fan Controller Connections

- 120-208 or 208-240 VAC A/B Power Input
- Ethernet RJ45
- Optional Monitoring Inputs (3)
- Pressure Sensor



### Fan Controller Placement in Chassis

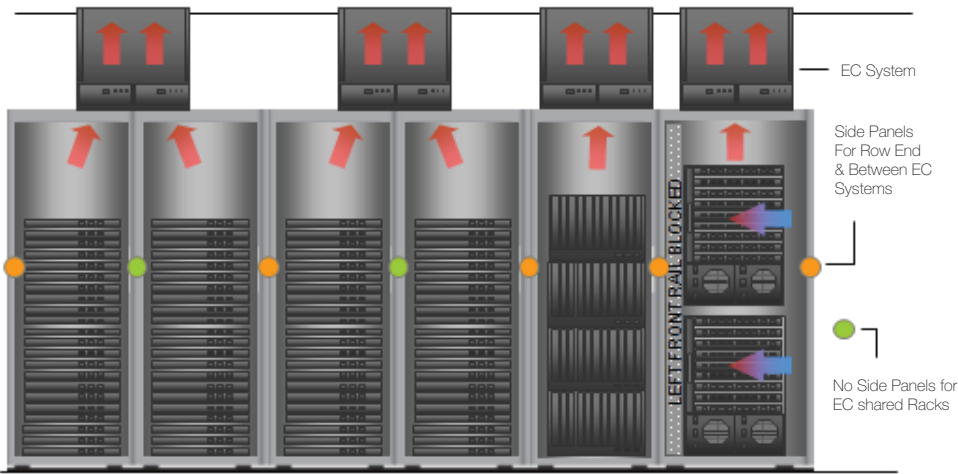


### Award-Winning Solution



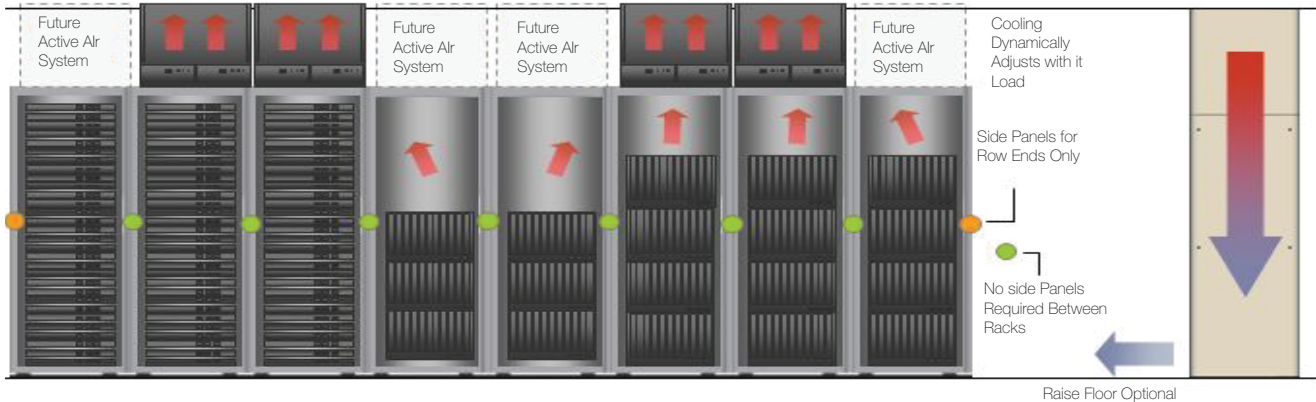
## Rack-Based Containment Cooling

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.



## Row-Based Containment Cooling

Configuring the rack for Row-Based Containment cooling requires side panels at row ends only. Containment Cooling is managed by the systems in the row. Size the systems for the row IT load.



The 8-rack configuration shown is equipped with 4-systems for a total IT load capacity of 80 kW or 10 kW per rack average. Add systems as required for a total row load of 160 kW or 20kW per rack average.

### 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 an 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 three months

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

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

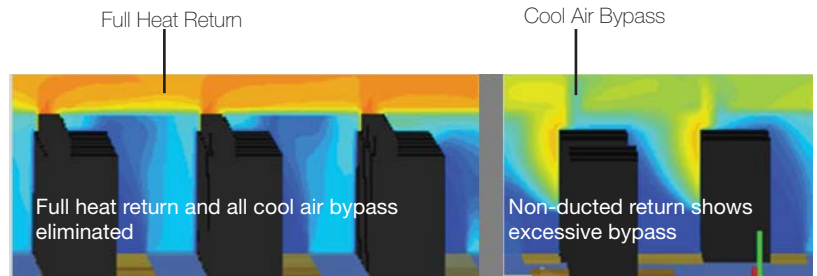
## Rack-Based Containment Cooling

Geist Rack-Based and Row-Based Containment systems contain 100 percent 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.

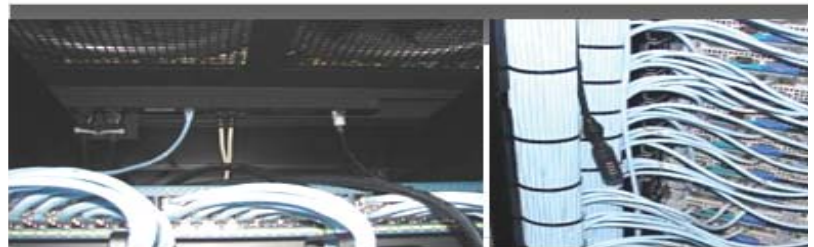
### Containment Cooled Data Center Model

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



### 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.

“We’re putting Containment Cooling on all new racks coming into our high-density area.”

— Mitch Martin, Oracle Chief Engineer

## AC Unit or Fan Reduction Power Settings

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
Geist System Fan Energy for 100 kW of IT Load 700 W of Fan Energy Used
Fan Energy Savings with Geist System 6-9 kW per 100 kW of IT Load

Greater fan energy 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 percent and 1/6<sup>th</sup> power when running at 50 percent airflow output.

**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

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