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6 From TOWER to RACK: BENEFITS OF DATA CENTER THERMAL OPTIMIZATION

DATA CENTER CHALLENGES

70%
of the 2.5B people that are online worldwide use the Internet every day.[1]
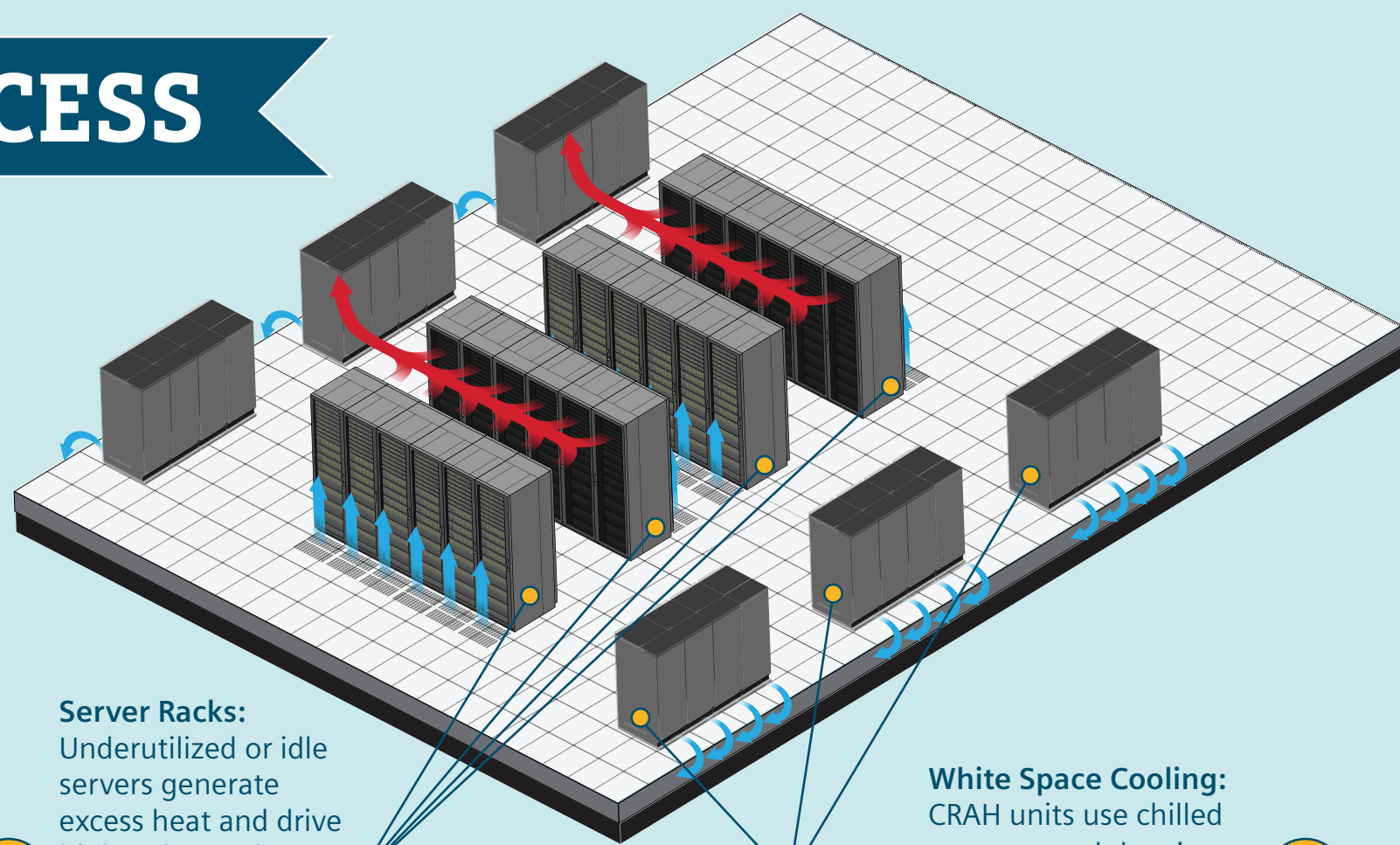
45%
of enterprises don't have scheduled auditing for comatose servers.[2]

Downtime
Heating and cooling system failure is one of the key causes of downtime.[3]

As a result, there is a growing need for data center cooling optimization to drive increased energy efficiency.
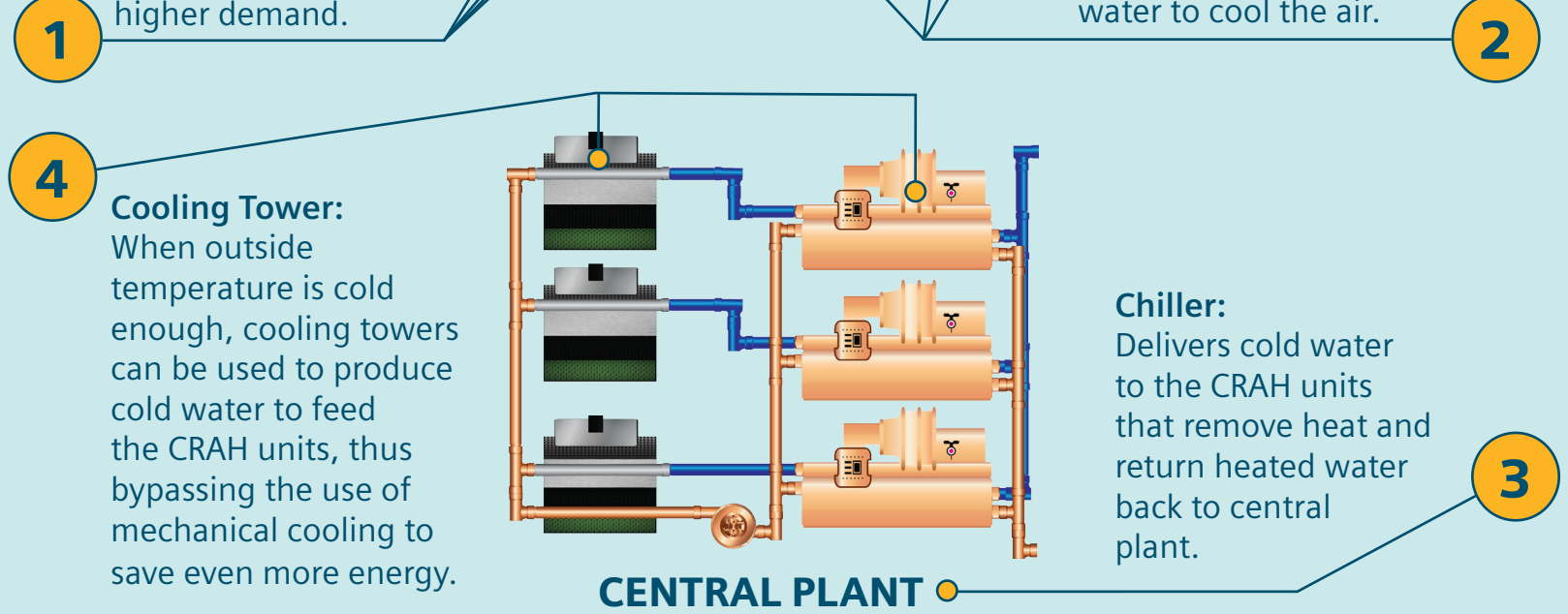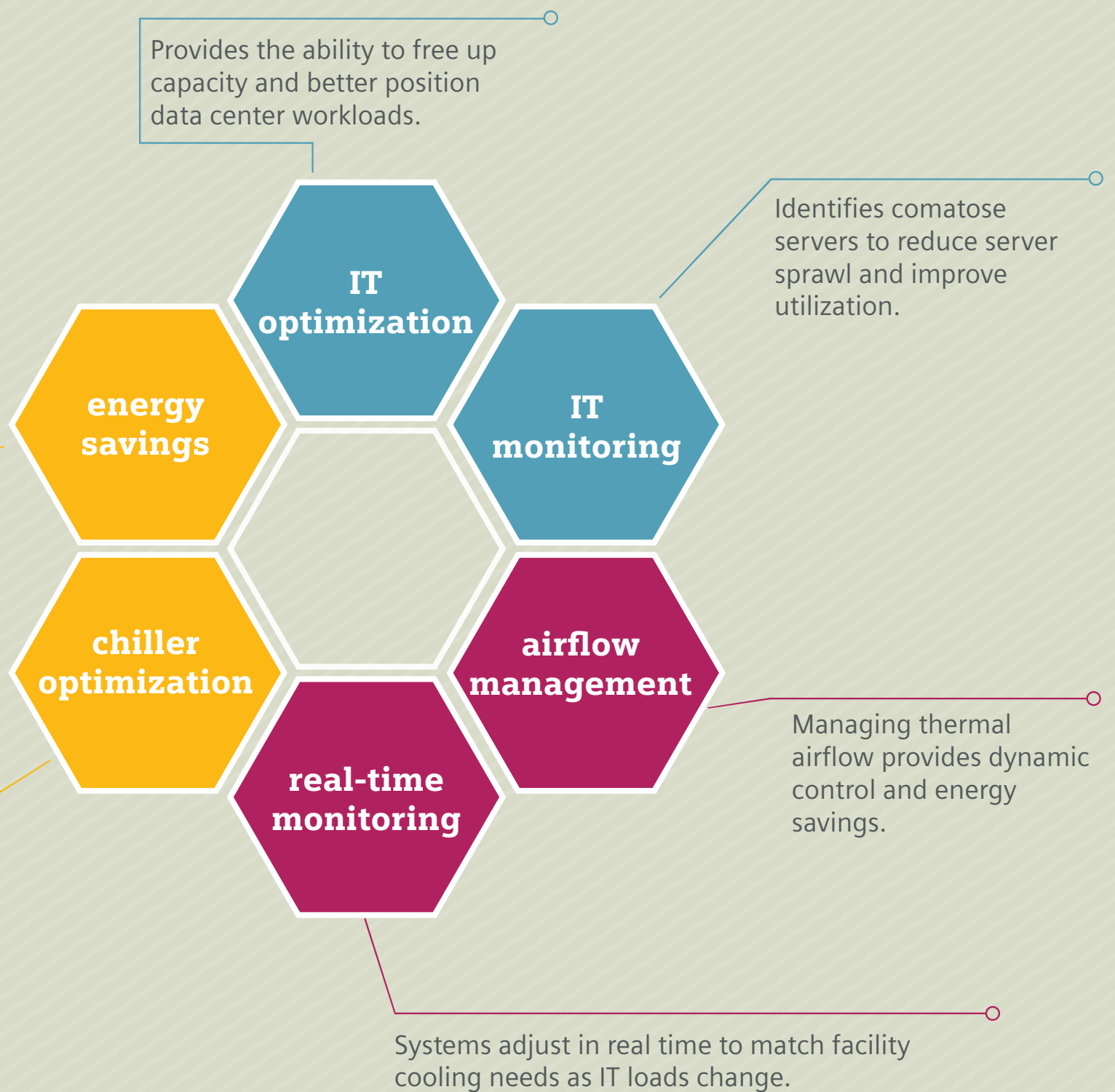
COOLING PROCESS

Dynamic facility environments can make it difficult to manage thermal air flow.

20%-30% of servers in large data centers are obsolete or unused—but are still plugged in, consuming electricity 24/7, driving excess heat and higher demand.[4]

Numerous market factors, including volatile energy prices, rising energy demand, and growing interest and legislation around efficiency issues, drive the need for cooling optimization.

1 Server Racks:
Underutilized or idle servers generate excess heat and drive higher demand.

2 White Space Cooling:
CRAH units use chilled water to cool the air.

4 Cooling Tower:
When outside temperature is cold enough, cooling towers can be used to produce cold water to feed the CRAH units, thus bypassing the use of mechanical cooling to save even more energy.

3 Chiller:
Delivers cold water to the CRAH units that remove heat and return heated water back to central plant.

CENTRAL PLANT

6 BENEFITS OF THERMAL OPTIMIZATION

Provides the ability to free up capacity and better position data center workloads.

Identifies comatose servers to reduce server sprawl and improve utilization.

Optimizing central plant operations can help a facility achieve energy savings up to 50%.

Managing thermal airflow provides dynamic control and energy savings.

Dynamically controlling pumps, chillers and fans can lead to maintained optimal performance.

Systems adjust in real time to match facility cooling needs as IT loads change.

- **IT optimization**
- **IT monitoring**
- **energy savings**
- **chiller optimization**
- **airflow management**
- **real-time monitoring**

References: 1). Natural Resources Defense Council (NRDC) 2). Uptime Institute 3). Data Center Frontier 4). Natural Resources Defense Council (NRDC)

LEARN MORE:
usa.siemens.com/datacenters