



FUTURE PROOFING
YOUR DATA CENTER

FUTURE-PROOFING YOUR NEXT DATA CENTER

Data Centers designed with future proofing in mind won't become obsolete when changes in technology like high density cabinets are introduced or when changes in social pressures demand greater sustainability and energy efficiencies. Such changes are now driving the need for existing Data Centers to absorb the distribution of Liquid Cooling lines for a variety of cooling technologies (e.g., rear door heat exchangers, direct to chip cold plates, and immersion tanks). Practically speaking, they can't. The conversion of a typical on-slab data center flooded with cold air will likely incur a significant up-front investment and associated risks to accommodate Liquid Cooling.

One of the main reasons existing data centers don't lend themselves to Liquid Cooling is that their design distributes services overhead rather than under the cabinets. One cannot be both code compliant and exercise best practices while at the same time distributing Liquid Cooling lines overhead.

Furthermore, when considering the distribution of Liquid Cooling and other services overhead for your data center (retrofit or new), you should consider the following:

- a. Liquid Cooling only has effective redundancy if there are dual lines to and from each cabinet/server. Is there enough overhead space with all the other services to accommodate dual lines?
- b. Drip pans are required for piping/hoses, but there is no provision for leaks, nor is there a provision for drips or leaks vertically into the cabinets. Leak detection is a must. Furthermore, drip pans require addition space and maintenance. Are they easily accessible?
- c. The roof may require reinforcing to support the additional weight of cooling pipes, liquid, and drip pans.
- d. Cooling lines may need to be insulated. What does the extra bulk mean when sizing drip pans and their position in the overhead space?
- e. Will hoses for liquid cooling be NFPA compliant?
- f. The overhead space is already congested, adding piping, drip pans, and insulation can impact effective return air.

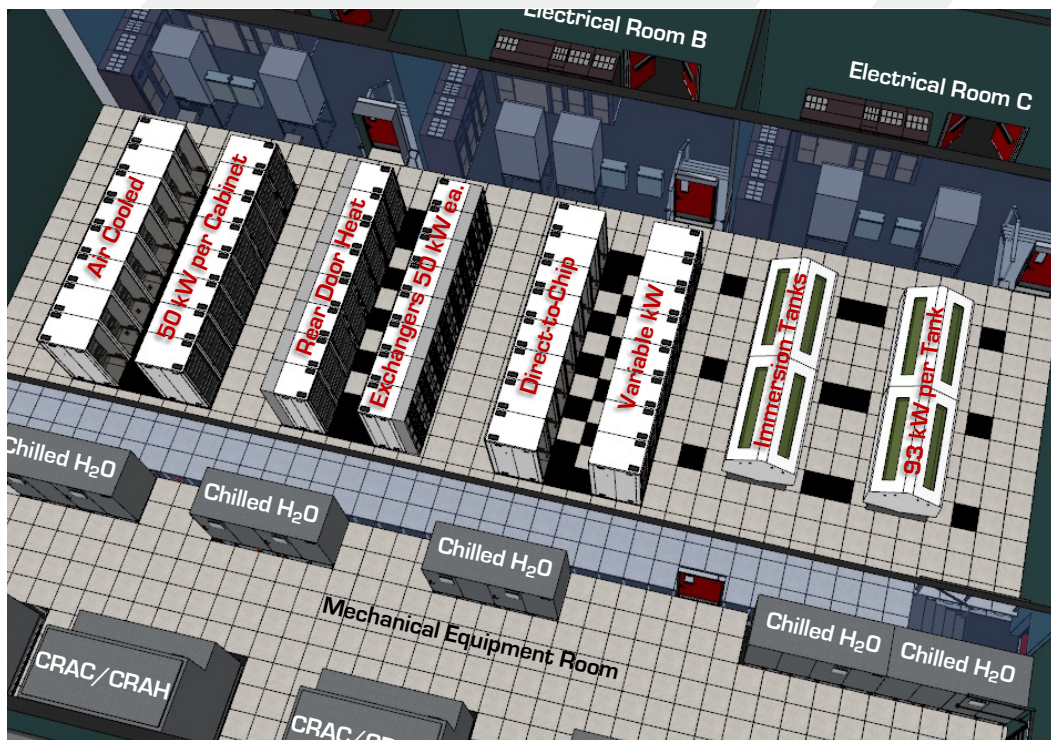


Fig. 1, An example of a hybrid data center using Interstitial. A combination of any cooling medium can be used anywhere in the room.

Is there a better way?

Transitioning a data center to higher densities will not happen overnight. New Data Centers will be expected to handle a mix of both low and high-density cabinets and a variety of cooling technologies. What is certain is that Air Cooling will always be required both during and after the transition.

Using Interstitial to distribute not only air, power and data cable but also Liquid Cooling lines makes such questions moot because Interstitial accommodates all these concerns.

Interstitial's pressurized air distribution plenum is an effective means of cooling IT Equipment using only air. In fact, it is so efficient that Interstitial can effectively cool 50 kW cabinets.* That means the investment and transition to a liquid cooling system can be avoided if the cabinet loads won't exceed 50kW or can be delayed until they do.

Interstitial distributes services below the cabinets. Air is in a dedicated pressurized lower air plenum separated from the power, cabling and piping distribution in the upper utility plenum. So, when the time comes to introduce high density cabinets greater than 50kW, your data center is ready. Liquid Cooling lines can be distributed in the upper utility plenum below the cabinets without affecting supply airflow during the transition. Furthermore, with all services distributed in Interstitial, capital won't be required to reinforce a ceiling/roof structure. Interstitial means low risk and low cost when transitioning to Liquid Cooling.

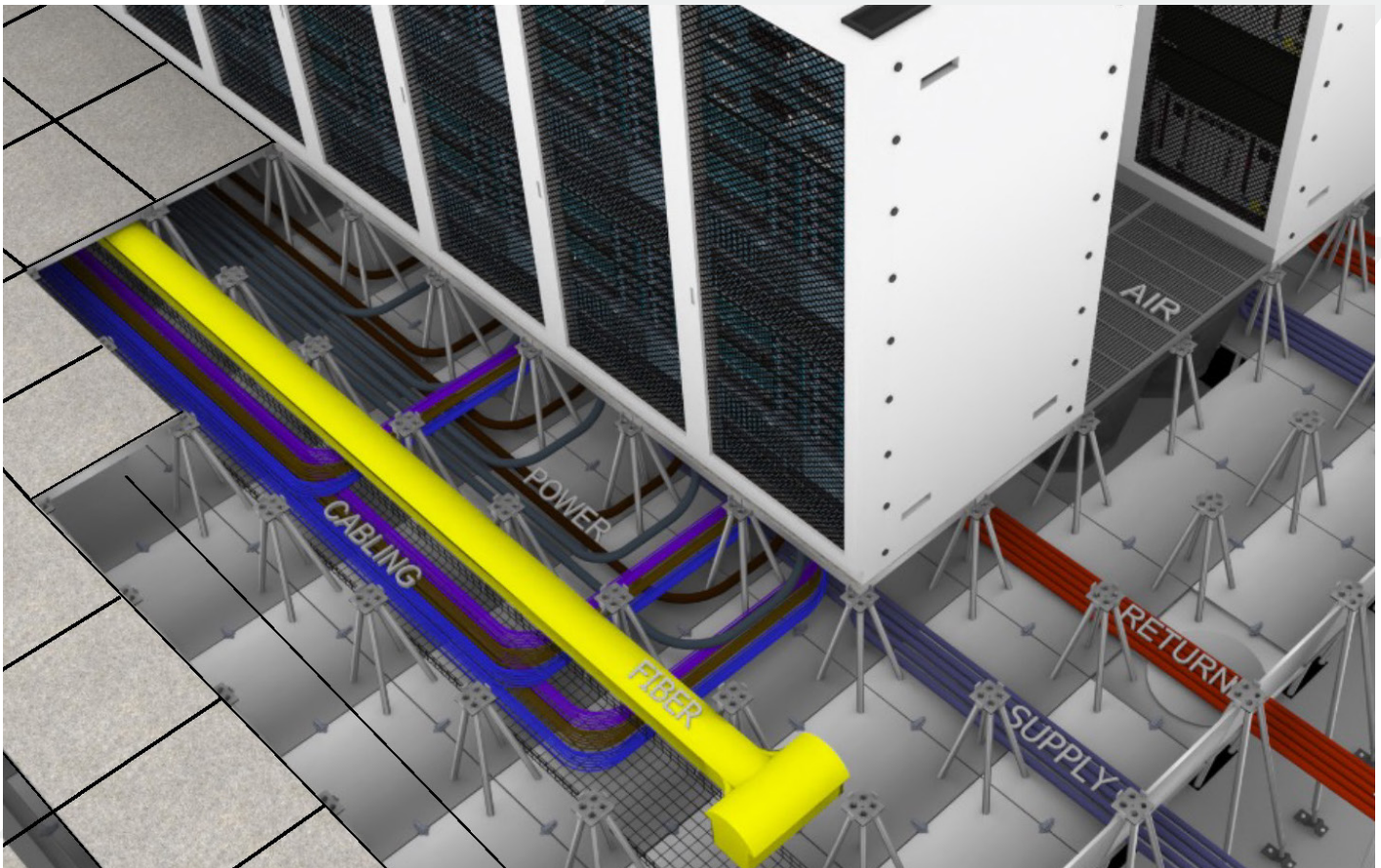


Fig. 2, Demonstrates one of many ways pipes/hoses, power cables, fiber/structured cabling can be distributed in Interstitial's Utility Plenum.

Moving services below the cabinets is a sure way to future-proof your data center. Interstitial was designed to do so cost effectively with minimal impact on operations. It saves space compared to an on-slab design. It delays significant liquid cooling investment when retrofitting existing or building new data centers for higher density heat loads. It avoids investment in hot/cold aisle containment. It achieves genuine N+1 redundancy with fewer AC units. It affords the ultimate in layout. It's a best practice and is code compliant.

You can install Interstitial knowing it will accommodate your liquid cooling choice and the equipment it drives now and in the future.

Interstitial is the “functional” and “sustainable” data center solution

**Download “Cooling 50kW Cabinets with Air” from our website*



Sustainability Follows Functionality



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