

Thermal Management of Switch Racks

With the ever-increasing efficiency of hardware comes the need for more power and more power means more heat.

Whilst the IT / Network industry has quite rightly focussed on the thermal management of servers, switches which use less power have generally taken a back seat. They none the less contribute to the whole power requirements.

Cooper B-Line has identified this issue and has developed a range of products to increase the thermal efficiency of switch racks.

The principal of hot isle/cold isle is well known and accepted throughout the industry as the most effective way to organise data centre thermal management. CBL have taken this principal and applied it to their unique Access range of cabinets when configured as a switch rack.

The cold/hot principal is applied within the Access cabinets by introducing sealed plenum chambers. The system still allows the initial and subsequent updates to be done without compromising the seals.

Case Study 1 – Switches that are cooled front to rear.

Taking an 800 wide cabinet with the 19” rails set centrally (the system works equally well if the rails are offset to one side to allow the switch cabling to come in from one side only) the first step is to fill all of the unused front “U” space with blank panels.

The next step is to fit the unique CBL vertical, hinged brush strip baffle. The baffle has a full height brush strip that seals against the front face of the 19” mounting rails. The opposite side of the baffle seals against the side panel using a soft foam gasket. These two steps create a sealed plenum chamber that presents only cooled air to the front of the switches.

During cabling the baffle can be either hinged to one side or removed, using the sprung quick release hinge pins. When the cabling is complete the baffle is refitted/hinged back to the closed position and the brush strip forms a seal around the cables/cable looms.

Case Study 2 – Switches with cooling side to and with power cooled front to rear.

As with the front to rear cooled switches, the first step is to fill in the front unused “U” space with blank panels.

To present the cooling air to the side of the switch, two “L” shaped plenums are created (see diagram). Again the plenums are sealed with the CBL vertical, hinged brush strip baffles.

The switch cooling air will be taken from side to side.

The power cooling air will be taken from front to rear.

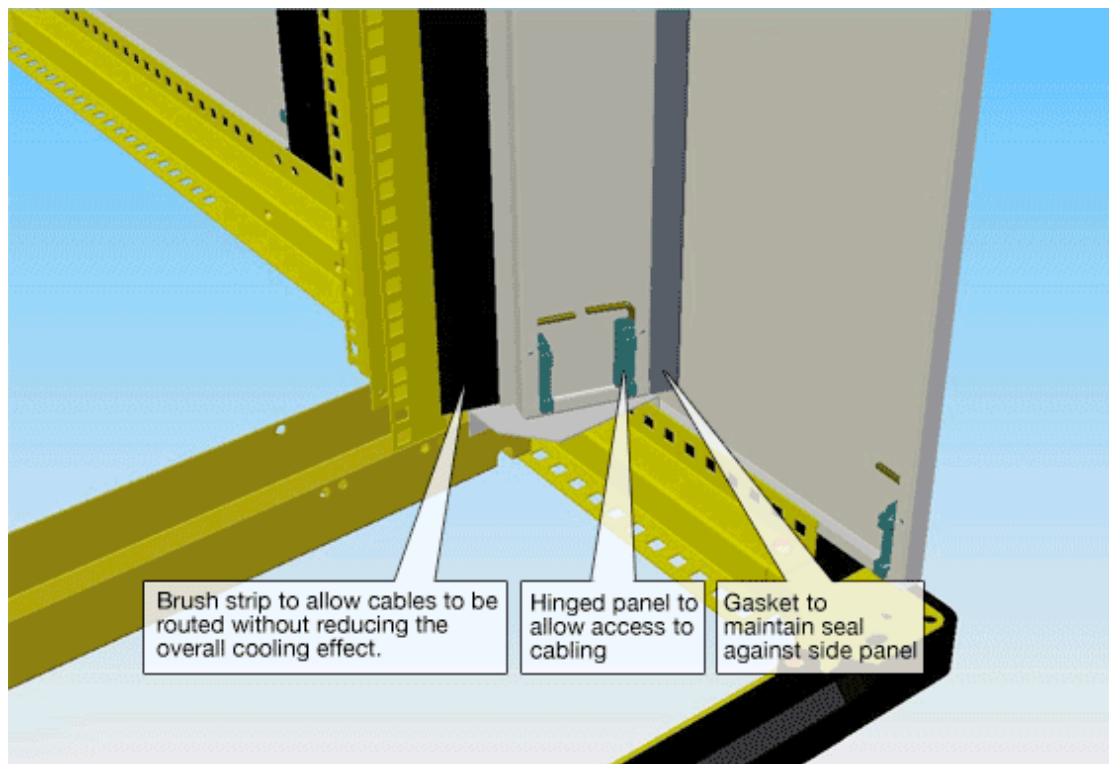
This system ensures that the cooling air for the switch (side to side) is not mixed with the hot exhaust air from the power module. Which, if allowed, would compromise the effectiveness of the expensive and crucial cooled air. The same procedure of hinging or removing the baffle during cable installation/upgrades is adopted.

Further refinements.

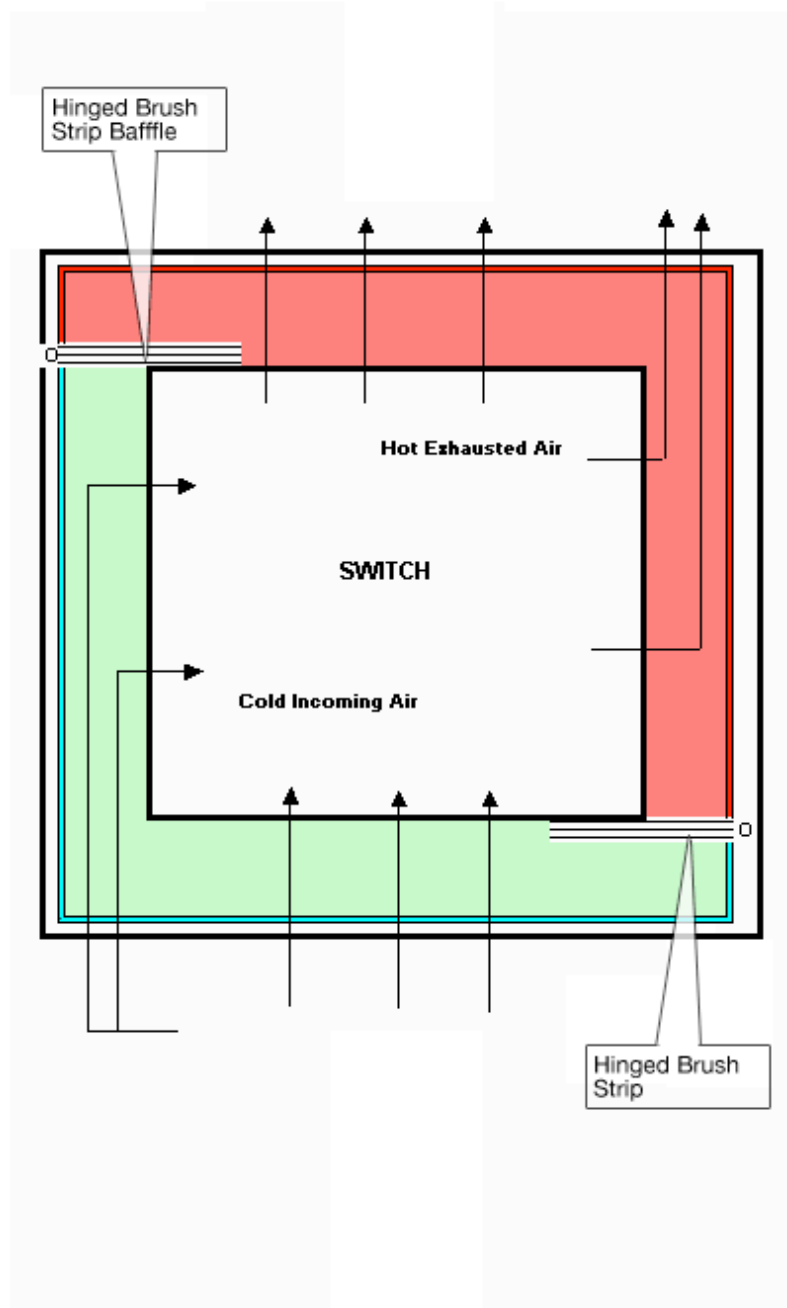
To further increase the efficiency of the air flow through the cabinet CBL can offer a ventilated door with ventilation slots punched into the blank side areas of the door. These extra-ventilated areas are positioned to align with the switches to maximise their effect.

Because of the unique corner-less design of the Cooper B-Line Access cabinet, the ability to create horizontal cable ways/ducts that pass along the front or rear of a patching suit is not compromised.

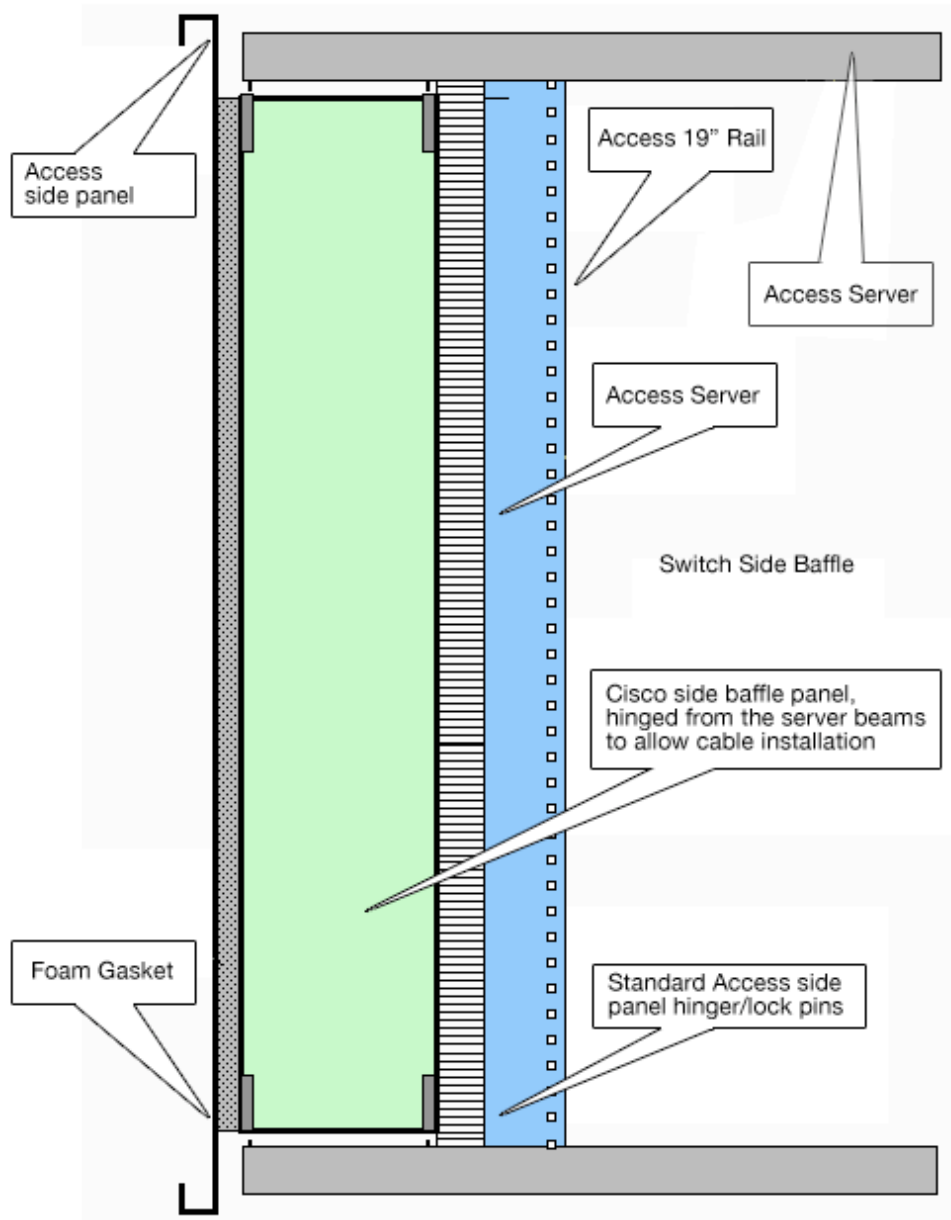
As always Cooper B-Line have made this solution modular and it can therefore be retro-fitted to the Access cabinet at any time.



Plan view from top of Cabinet



View from front of Cabinet



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