

VAM Solution Brief

For MSOs

Multiple System Operators (MSOs) compete with incumbent carriers in residential and business telephony and broadband services as well as with specialized services such as cell site backhaul. The key to success in these markets is to offer a superior service at a lower cost, and that means that MSOs must continually look for ways to reduce operating expenses.

In many cases, MSOs are trying to leverage fiber plant deployed years ago. With the growing uptake in broadband and backhaul services, however, providers are now facing fiber exhaust issues that hinder their ability to compete with higher-bandwidth offerings, or by reaching new customers. By combining multiple wavelengths on single fiber, however, MSOs can gain additional leverage from their existing investments in optical infrastructure, enabling them to deliver more and better services to more customers, and without the cost of trenching new fiber.

One problem is that headend space is limited. In many cases, there simply isn't enough room left in headend cabinets to accommodate traditional VAMs. ADC's portfolio of VAMs, which includes its exclusive MicroVAM products, makes it possible for MSOs to enhance their infrastructure assets despite space-related issues, and with lower overall personnel costs.

Fiber Stretched Thin

The traditional way to increase leverage from an existing fiber is to use CWDM to transport two or more wavelengths. CWDM improves carrier capabilities for addressing several key markets:

Business broadband – With CWDM, MSOs can deliver individual wavelengths to customers in a multi-tenant building or office park without having to lay more fiber to the site. It also allows providers to deliver more bandwidth to each subscriber and to compete more effectively against incumbent telco service offerings.

Residential broadband – CWDM allows operators to increase the number of multi-dwelling units or single-family homes reached with a single legacy fiber, and to increase the bandwidth and range of services delivered to each customer by reducing the number of connections per wavelength. CWDM provides the MSO a migration path to an RFoG (RF over Glass) passive optical topology. RFoG has all the benefits of a passive optical network such as maintenance cost savings and increased bandwidth. Capacity for these new services are what is driving the acceptance of RFoG as a cost-effective migration path towards a 100 percent optical distribution path.

Cell site backhaul – CWDM allows the service provider to deliver discrete wavelengths to each of several carrier base stations deployed at a typical cell site.

APPLICATION NOTE



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In the past, multiplexing wavelengths on a fiber has been a costly and time-consuming exercise. A highly-experienced fiber technician using expensive equipment takes roughly one hour to make just one splice. Pluggable CWDM solutions greatly simplify the operation because they incorporate connectors that enable technicians to add multiple wavelengths to a fiber without splicing. Using pluggable CWDM solutions, wavelengths can be added within minutes, and this can be done by less-experienced (and less expensive) field technicians.

CWDM solutions of this type are typically deployed in frames or racks (in headends or huts), or in weatherproof enclosures at cell sites. A typical pluggable CWDM solution splits a fiber into two wavelengths.

Unfortunately, these locations are already space-



constrained, and deployment of traditional solutions leaves no room for adding additional wavelength multiplexing equipment should subscriber growth or capacity demands require it. In addition, most pluggable CWDM systems deliver only two wavelengths per fiber, which limits expansion capacity.

Service disruption is another challenge when using traditional pluggable systems. Tight spaces may require technicians to work in very close proximity to other fibers or splices, which increases the possibility of inadvertent disconnections of adjoining fibers and the service disruptions that can result.

The ADC MicroVAM Portfolio

ADC's value-added module (VAM) and MicroVAM products were designed to enhance the carrier's ability to deploy new services by overcoming the issues inherent in traditional WDM and CWDM technology. ADC MicroVAMs significantly increase the leverage carriers can gain from fiber splits while further reducing operational costs while reducing the risk of service disruptions.

MicroVAMs can split a fiber into four or eight wavelengths, delivering two or four times the density of competing solutions in the same physical space.

ADC MicroVAMs use a craft-friendly, slide-out



design that not only enables an increase in density, but also allows craftspeople to work on any given fiber without disturbing other fibers nearby.

The ADC MicroVAM portfolio includes space-



efficient 2RU (rack unit) chassis plus ADC's highest density fiber frame technology, that can adapt MicroVAMs to any standard rack or ADC fiber frame and making it possible to deploy them in any application.



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Maximizing the Value of Existing Infrastructure

The competitive need to deliver higher bandwidth and more services to a wider range of customers is forcing carriers to increase the bandwidth available in their existing fiber infrastructure.

ADC MicroVAMs deliver maximum expansion capabilities for existing fiber by offering two to four times the density of competing products in the same physical area. ADC MicroVAMs also reduce time-to-revenue and operating costs by allowing for fast expansion of connections and bandwidth by relatively low-cost personnel. Finally, ADC MicroVAMs reduce the possibility of service disruptions by effectively isolating each fiber from others in a rack.

For MSOs seeking maximum expandability and network flexibility in their fiber networks, ADC MicroVAMs simply deliver more value than any other solution.

APPLICATION NOTE



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