Integra

Bespoke SD-WAN solution

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Integra

Resilient, secure, high bandwidth internet provision to schools

The customer

Integra is the trading arm of South Gloucestershire Council, providing cost effective and forward looking facilities management and specialist support services to education and business sectors.

The need

Responsible for procuring internet connectivity solutions for schools throughout South Gloucestershire, Integra had an existing relationship with iomart group, a provider of datacentre and IT services.

A solution was needed to deliver resilient, reliable and high capacity internet connectivity services to a large number of schools whilst also delivering the hosting of a central firewall within the iomart network to deliver the critical security and filtering services upon which schools rely.

Integra had very clear ideas about their preferred solution design. With in-house firewall expertise a central "BYO" firewall was required, to be housed in an iomart data centre allowing Integra engineers secure access for maintenance and support purposes.

Working in concert with the central firewall, a layer 2 model was preferred, to eliminate the need for complex routing infrastructure and allow for maximum control through the one-to-one mapping of private IP ranges to each school, all safely located behind the central firewall cluster.

integra.
schools

Quick facts

Circa 100+ schools in South Gloucestershire

IT environment

- Geographically distinct sites
- Autonomous and variable IT infrastructures
- Heavy dependence on Internet connectivity to support learning and admin functions

Challenges

- The need to achieve resilient and high capacity connectivity at each school, coupled with central firewalling and filtering to protect students.

The Methodology

Evolving Networks and iomart have an established partnership, with the Evolving Networks Intelligent Network Fabric software seamlessly integrates with the iomart data centre infrastructure.

Through a series of workshops the Evolving Networks engagement methodology was used to map the client requirements to a bespoke SD-WAN backbone design. Once the core requirements had been mapped, a Virtual Topography diagram was used to illustrate data flows via the bespoke SD-WAN backbone, linking iomart datacentres with schools and illustrating the resilience options decided upon by the customer.

With the design of the SD-WAN backbone determined the next step was to confirm and design the required resilience, SLA levels and capacity at each school.

Once bandwidth requirements per site were established, Evolving Networks undertook an audit of each school to determine the tail technologies available to each specific site. A solution design for each school was then designed and agreed.

The high level Network Topography that confirmed the SD-WAN backbone architecture and lower lever "Solution Design" that confirmed the connectivity and hardware mix to be delivered to each school formed the basis of the project and transition plan which delivered the 100+ site network in 6 weeks.

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The Solution

Working together through their well established partnership, iomart and Evolving Networks designed an integrated solution that allowed both parties to deliver on their core strengths.

The iomart datacentre houses a core firewall, procured, installed and managed by Integra. Evolving Networks then delivered a bespoke SD-WAN backbone via the INF software, linking datacentres and enabling the client's chosen security model.
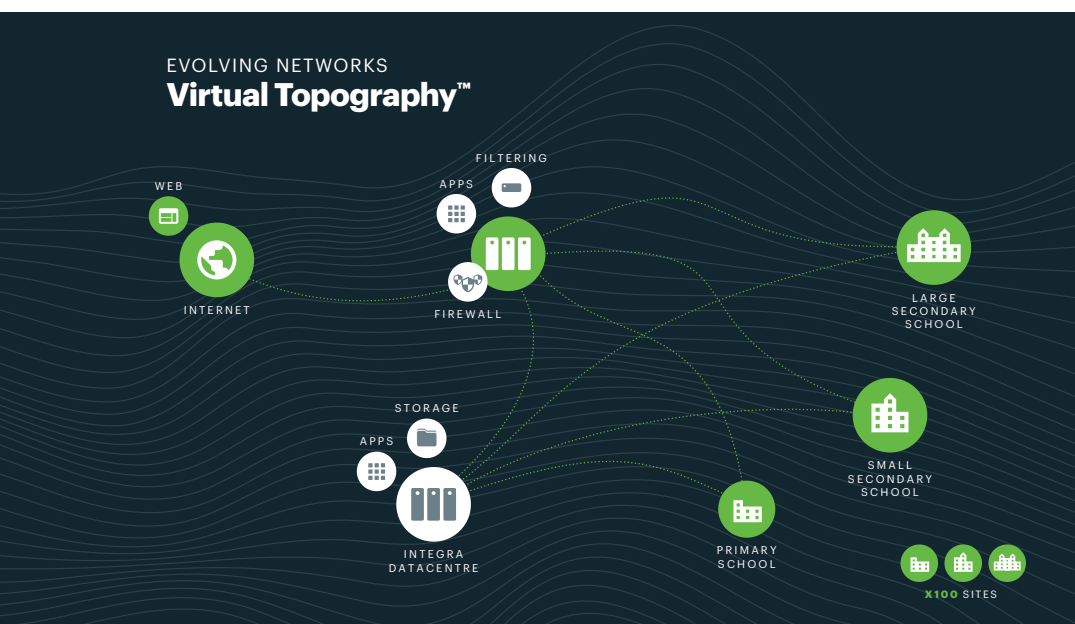
Resilient layer 2 connectivity at each site, with central firewall and access to datacentre

EVOLVING NETWORKS
Virtual Topography™

WEB

FILTERING
APPS

INTERNET

FIREWALL

LARGE SECONDARY SCHOOL

STORAGE
APPS

SMALL SECONDARY SCHOOL

INTEGRA DATACENTRE

PRIMARY SCHOOL

X100 SITES

Resilient multi-line, multi-ISP connectivity was then delivered to each school, linking them to their bespoke SD-WAN backbone, ensuring key objectives around internet capacity and uptime guarantees were achieved.

To support the security and network architecture requirements, Evolving Networks delivered a private/30 IP range for each school via the bespoke SD-WAN backbone.

The local EVX established a layer 2 link through the SD-WAN backbone to deliver the required level of network performance and security, presenting a vLAN to the central firewall.

An EVX at each school aggregates the bandwidth of all constituent circuits and connects them to the SD-WAN backbone, managing data flows at the packet level for optimal performance at all times. Two 75mbps FTTC circuits are therefore presented to the site LAN as a single 150mbps connection, for example.

With the EVX at each site always using all the available bandwidth, should one of those circuits suffer a fault no "failover" is necessary, due to our unique IP Affinity technology. The EVX simply carries on using all of the available bandwidth, even if it has lost one or more circuits entirely.

The net result is no services or users go offline, no lines need to be unplugged or re-plugged, and no IP addresses (or anything else) need reconfiguring.

The intelligence designed into the INF makes implementing additional school to the SD-WAN backbone a quick and painless process.

Finally, the INF delivers bi-directional Quality of Service over the aggregated solution and through the SD-WAN backbone to ensure latency sensitive services always take priority over bulk data transfers, ensuring a high quality user experience for staff and students on site.

The results

Each school now has the benefit of a multi-line, multi-carrier, aggregated internet connection delivering exceptional throughput to support the online learning requirements of students via a bespoke SD-WAN backbone with central firewalling managed by Integra.

Key among the benefits, is exceptional resilience at all sites. In the event of a performance issue or even the total loss of any individual circuit, the affected site remains fully operational, with the INF routing data across the remaining circuits while the fault is rectified.

The INF also manages the flow of data from each site, via layer 2, to the central firewall, allowing Integra the management, security and network control they need to support their users.

Going forward, managing upgrades or changes to the network are now truly seamless as the individual schools needs evolve.

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Why Evolving Networks?

The close working relationship between iomart and Evolving Networks was key among the school's reasons for selecting Evolving Networks for this project.

The fact that the Evolving Networks core EVX infrastructure is built in iomart datacentres made the implementation of the Integra SD-WAN straightforward and risk free, and the robust partnership between the two companies gave the school confidence that any issues arising would be promptly and efficiently resolved.

The network visibility afforded by eView Live was also attractive to Integra, and indeed to iomart, helping them deliver exceptional service to the school.

The school was also impressed by the ease with which temporary connectivity could be brought into play for the two sites at which the leased lines were delayed, allowing the SD-WAN and centralised filtered Internet access and firewall to be implemented despite these two missing circuits. The simplicity with which the temporary circuits could be replaced with the leased lines when they became available was a further attraction.

Integra also liked the solid, proven and utterly reliable nature of the Evolving Networks solution. The company has been delivering high performance, high uptime Multipath Ethernet Connectivity and SD-WAN solutions for ten years, with a customer list including such household names as Audi, the NHS and the Imperial War Museum.

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What Integra say about Evolving Networks

"Evolving Networks have been very proactive and helpful with our implementation this year. We have all had to bear up under unprecedented pressures and circumstances. I was impressed that Evolving took this challenge head-on, understood that it would not be possible to adhere to the exacting project we had initially discussed but pressed ahead to get the project implemented as smoothly and quickly as possible. Having worked with other providers in the past, I can genuinely state that a transition of this size would not have gone as smoothly with any of them!"

Nick Pearce
IT & Infrastructure Services Manager
Integra