



www.layer3.co.uk



Custardware

A Vanilla Solution to Network
Quality Assurance

Layer3 Systems has been developing CustardWare for over 20 years, in its earliest scripted forms, we could probably claim that it is as old as Layer3 Systems itself, some 25 years old. We have also used its extensive power as part of our consultancy and support services, providing a fully managed service to many customers. We have learned a great deal over that time and fed what we have learned back into the design and operation of the software. Our latest version brings new capabilities and extends functionality still further offering head up displays and dashboards.

Implementing SLA's that match your customers requirements can be quite challenging. Whilst it may be easy to gain good results initially, maintaining the required standard is never easy. There are a number of circumstances where changes, small failures or intermittent problems can have a serious effect on the overall operation of the network and supported systems.

Traditional network monitoring tools are focused on individual devices and do not provide a higher level of abstraction nor always provide full integration with other tools. Traditional tools do not scale well into multi-network WAN/LAN environments and there may be niche areas where custom solutions are required. Few tools try to assist in understanding routing for example.

End to end functionality is hard to monitor and can make calling the right support teams hard to do, inevitably multiple teams can become involved and waste time determining the true origin of a problem. CustardWare can reduce this.

Very often a network is judged by its weakest link. Once a service becomes unsatisfactory and confidence is lost it can be very costly, if not impossible to correct the poor perception of that service.

This is why it is critical to ensure that your networks and your customer's systems and networks are run and managed to the intended SLA!

Version 7.0 CustardWare gives you a new set of tools with which you can audit your network or examine configurations looking for mis-configurations or other problems.

The CustardWare Concept

CustardWare is so named because we see it as something that smoothes out the development and operation of software. It helps to simplify design and testing, which in turn allows for rapid development. This concept follows through into the network environment, making it easier to analyse operation and to quickly grasp error conditions. Just like Custard on Apple Pie!

CustardWare represents a wide range of Modular tools and functionality that can be implemented under a standard infrastructure.

We provide high quality consultancy to implement a solution appropriate to your requirements and to help you to understand the challenges of achieving a reliable high performance network and systems within a complex technical or business environment. Once implemented your support teams can use CustardWare's features to gain useful information on the overall network operation. Your management structure can also determine how well measurable aspects of the service are being implemented, with "at a glance" trend and capacity information.

We provide a one stop, continual tuning service to provide the best possible "product" experience allowing your internal or third party staff to concentrate on doing what they do best – working on your SLA.

CustardWare Functional Description

CustardWare is a software framework designed to help autonomous software modules cooperate efficiently. Specifically we in Layer3 have developed a number of modules that provide intelligent support for diagnosing problems and carrying out automated auditing of networks and systems. CustardWare is designed to make the creation of closely collaborating functions easier to design, implement and manage.

CustardWare can be broken down into a number of basic types of component: **Interface, scheduling and event, storage, core, enterprise and custom modules.**

Interface Modules

Scheduling & Event Modules

Storage Modules

Core Modules

Enterprise Modules

Custom Modules

CustardWare is largely composed of modules, each of which in turn provides a standard set of interfaces to each and every other module. This object oriented approach when combined with multi layer/tier software architecture gives a powerful and easy flowing paradigm for the fast creation of reliable and efficient software.

Interface Modules

CustardWare

CustardWare is a high level framework that ties together the operating system and the various modules that make up the application functionality. It is designed to make the creation of closely collaborating software modules easier to implement and automatically manage.

WEB/IF

The Web Interface provides the main access method for users. It supports HTTP(s) and provides role based access for users. From this interface the system may be configured and managed. The role based login ensures that only users with appropriate security authorisation can gain access to sensitive information.

MQTT Message Passing

MQTT Message Passing

The message passing functionality afforded by MQTT provides the ability to go beyond simple database handling of information. It provides a very responsive and scalable way to manage the sharing of timely information between multiple elements of the system and external users.

Scheduling & Event Modules

Normon Scheduling Module

This implements scheduled activity so other modules can reliably and regularly be "woken up" to check the state of some object of interest.

Event and Alarm Module

The 'Event and Alarm Module' creates events and alarms from any of the standard modules. By using MQTT message passing the 'Event and Alarm Module' is also able to send traps to your Master Alarm Manager.

Head Up Display

The 'Head Up Display Module' allows the creation of

Storage Modules

DB

The Database Module provides other Custardware modules with persistent storage, providing a place for them to share and exchange data.

RRD

The Round Robin Database (RRD) is another form of database that is specifically designed for time based statistics. The RRD is optimised to support frequent updates of statistical variables changing over time. This is then be used to generate graphs and other forms of up to the minute summary trend information.

HO Cache

The High Order Cache (HO Cache) is a short term persistent cache used to correlate high level events originating from the enterprise modules

Core Modules

NIO Module

The NIO (Network Instrumentation Object) module determines how remote devices are instrumented. It can determine how to retrieve status information from devices, carry out an initialisation poll and set up other modules to follow on, so they can obtain further information and status updates.

NORA Module

Nora provides the caching functionality by requesting updates from devices, keeping the database up to date with status on devices being audited or monitored.

Syslog Utility Module

The Custardware Syslog utility module enables you to search, report, monitor and analyze streaming and historical data from within Custardware. The module gains even greater power when given access to your IT infrastructure: logs, configurations, messages, traps and alerts, script, code, metrics etc.

NAAM Module

The Network Appliance Audit Module assists other modules with caching information and regularly inspects devices to check that they meet an agreed configuration policy. This module can also provide very simple audit reports providing input (XML, CSV, HTML etc) to other systems.

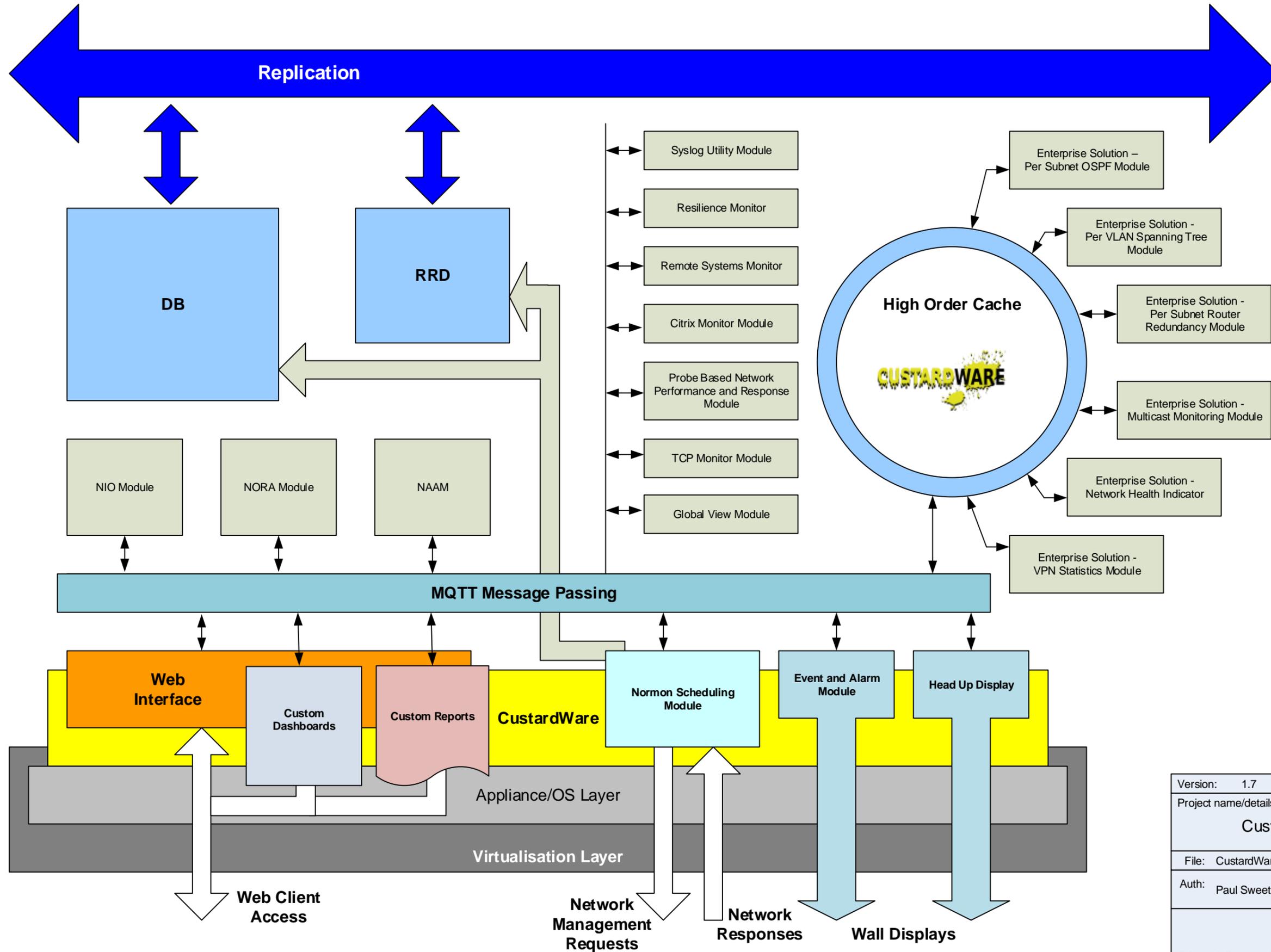
Probe Based Network Performance and Response Module

The Probe based Network Performance and Response Module is designed to Interface with devices at remote sites or on distant parts of the network, that monitor local device and network operation. It can also provide a local support point, giving support staff an operation base for remote testing and diagnostics.



Custardware

CustardWare Internal Functional Blocks



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Project name/details: CustardWare Overview	
File: CustardWare_overview_v1.7.vsd	
Auth: Paul Sweetland, Ted Rule, Phil Packer, Viv Gregory.	
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Core Modules (continued)

Resilience Monitor

The 'Resilience Monitor' monitors for a lack of resilience. This ensures that your engineers can be made aware of the connection being down to its last possible route. This ensures that engineers can understand the impact of failures in multi link network connections.

TCP Monitor Module

This module provides the ability to specify a target IP and TCP port with an additional field for the expected response from that port. The connection response is then graphed, showing the response time of not just the network but of the connection to the application itself.

Remote Systems Monitor

The Remote Systems Monitor Module will monitor remote servers running Windows, Mac, and all Unix like OS. It provides metrics including CPU, memory, network, or disk utilization, response time of network services and occurrence of anomalous messages in system log.

Global View Module

The Global View Module displays data held within Custardware in a easy to understand visual format. It provides the systems administrator with the capability to assign tailored views for each support individual. This customises the view for each individual allowing them to focus on the information they are interested in.

Citrix Monitor Module

The Citrix Monitor Module captures the availability of applications running on Citrix servers, even when located remotely on the other side of a firewall. Able to detect loss of availability, supporting customers in an Enterprise Network who depend on centralised enterprise wide services.

Enterprise Modules

Enterprise Solution - Per Subnet OSPF Module

This module provides effective IP route monitoring. Used in conjunction with the Nommon Scheduling Engine Module and NORA Module it is able to monitor interfaces on a modelled device. It can monitor for designated routers and OSPF operational state and also performs a number of checks on the OSPF subnet so as to complete a sanity check of each OSPF Subnet.

Enterprise Solution - Multicast Monitoring Module

The Enterprise Solution Multicast Module provides analysis of Multicast streams along with the configuration and state of the Multicast Infrastructure (PIM, RP, DR etc).

Enterprise Solution - Per VLAN Spanning Tree Module

This solution completes a sanity check on an enterprises Spanning Tree configuration. It checks that all devices agree on the root spanning tree and it checks for appropriate blocking to ensure loop free connectivity throughout the enterprise network.

Enterprise Solution - Network Health Indicator

The Network Health Indicator Module collates information from other related Custardware modules, providing an indication of your network infrastructures relative health.

Enterprise Solution - Per Subnet Router Redundancy Module

This Enterprise Solution Module is able to identify the router redundancy protocol in use and then collates information regarding all interfaces within the subnet that take part in this protocol. The module then automatically monitors all of these 'member objects' to ensure consistency.

Enterprise Solution - VPN Statistics Module

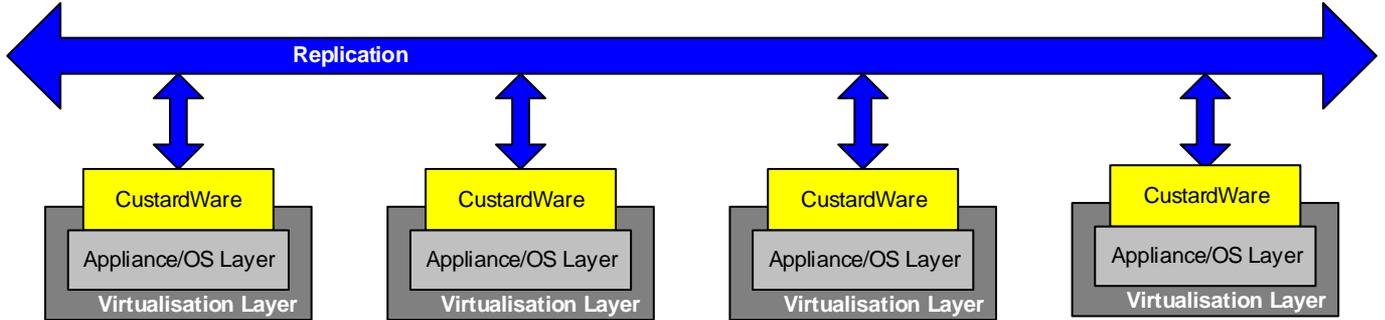
This module captures IPSEC, GRE tunnel configurations and statistics and can report on any detected anomalies. Additionally it may be used with the General Network Health Indicator Module to provide even greater definition to its health checks.

Custom Modules

Enterprise Solution - Custom Modules

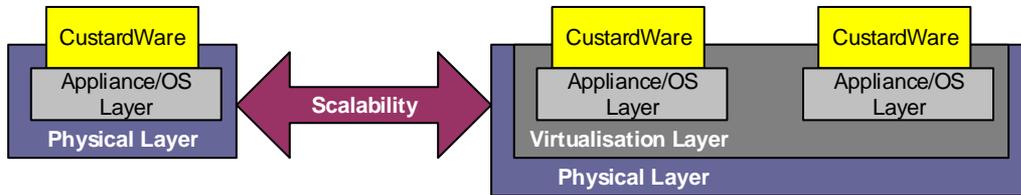
Given the wide range of practical functionality that we hold in our software libraries, it is no surprise that we are well placed to rapidly develop custom solutions. These often solve hard to get at niche problems that many of the larger tool manufacturers cannot reach.

CustardWare is designed to be modular and scalable. This is achieved by ensuring that the design will allow computation intensive or disk intensive operation to be broken out onto separate platforms. Network intensive operation can also be split out onto a number of separate devices. Part of the key to this operation is the ability to replicate data to other systems. Finally to provide ultimate flexibility a virtualisation layer is used to make replication of systems a simple task. All of this adds up to the ability to super scale the system. It will support from 100's of devices to tens of thousands depending on configuration.



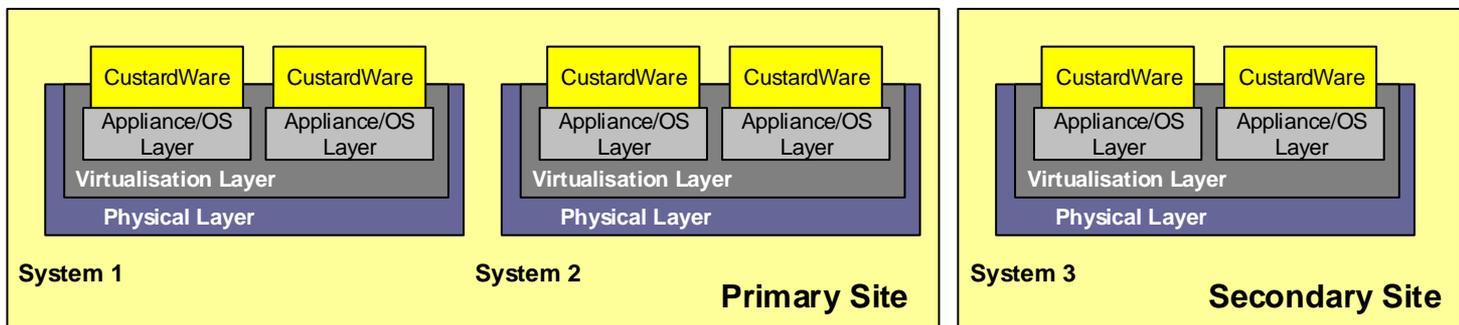
CustardWare Deployment

CustardWare is designed to be deployed either as a single system, multiple virtual systems on a single physical system or multiple physical systems holding a number of virtual systems. Deployment design depends on requirements, but the key features are that the system can be scaled back to a single system to keep costs right down or scaled up to meet performance and capacity needs.



CustardWare Cluster Solution

CustardWare is designed to be resilient as well as scalable. To this end a cluster configuration can be implemented. This ensures that any single hardware failure has no real impact on operation. For the best price resilience combination we usually recommend the 2+1 cluster solution shown below. The major benefit from this design is that part of the cluster can be located distant from the other systems. This gives great tolerance against even site wide failures.



Our Ambition

Our ambition Has always been to deliver a product that takes away much of the pain of managing service levels on our customers distributed networks. We can achieve this by providing an auditing and reporting tool that allows the detection of network or other services impairments often before they become customer affecting. Providing input into your existing monitoring and alerting systems to warn your existing staff. Providing a one stop, standard product that is both flexible and customisable whilst being fully supported to the highest standards.

We can supply new cost effective functionality by creating new modules, often within a few days or a few weeks. These custom solutions can be designed to provide support for new devices or to detect problems that might be unique to your environment.

Layer3 Systems Limited

Layer3 Systems specialises in computer networks and security and has provided network design , implementation and services to support a wide variety of European broadcasting and media companies.

Layer3 Systems have developed innovative solutions for a wide range of business needs. We are well placed to identify changing requirements relating to network delivery of content and can now provide services to best meet your exact needs, be it management of single point monitoring or complete end to end systems.

Layer3 Systems Customers

BBC

BT Sport

Cable and Wireless

Channel 4

Discovery Networks Europe

DMA-Media

Easynet Ltd

Flextech Television

Hewlett Packard

Norwich Union

Sky

Strategy and Technology Ltd

Sure

Teachers TV

Timeline TV

Victoria Real

Vodafone

“CustardWare helped us to discover one faulty packet in 3 Terabytes of network packets!”

“This tool enabled us to identify network congestion and to tune and improve operation saving us thousands on installing a new network!”

“CustardWare allows you to remove everything that is not the problem. Whatever remains, however unlikely, must be the problem!”

“Our network supplier could only offer us a technician in 3 months time, Layer3 wrote a CustardWare module and solved the problem in under three weeks !”

More Information

If you would like more details of this product or would like to discuss arranging a demonstration please contact us on: **020 8769 4484**

Layer3 Systems Limited
43 Pendle Road
Streatham
London
SW16 6RT



Alternatively please see our web site: www.layer3.co.uk