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The Evaluation

With all its criteria set, GWDG looked at solutions from BlueCat Networks, Infoblox, IPControl (now BT DiamondIP), Men&Mice, Nixu and VitalQIP.

“IPControl, Men&Mice and VitalQIP were ruled out as their licensing models counted the managed addresses,” said Dr. Beck. “Nixu counted address as well, but we kept it on the list as it allowed an unlimited license start with an attractively low number of addresses,” Dr. Beck continued. “But Nixu’s NameSurfer was eliminated as it wasn’t as mature – which meant some of the features we wanted were on the roadmap but not yet implemented.”

That left BlueCat Networks and Infoblox.

“We wanted a central management database combined with a distributed DNS/DHCP service rather than a single system incorporating distributed databases and distributed DNS/DHCP service,” said Dr. Beck. “A central database coupled with a distributed DNS/DHCP would make it much easier to add additional networks, in the event we decided to add all the Max-Planck-Institutes,” Dr. Beck continued. “BlueCat employs the first scheme, Infoblox the second one, so BlueCat won on that count.”

Tests also found that Infoblox’s GUI did not meet all GWDG’s requirements.

“Although Infoblox’s GUI works for skilled DNS admins, it is far too complicated for many of our users, especially at smaller institutions where somebody with very limited computer or network knowledge may manage IP address usage,” explained Dr. Beck. “Infoblox didn’t allow us to customize the GUI for specific user zones or networks – which would enable us to simplify IPAM for inexperienced administrators by restricting their access to the screens that display only the functionality they need,” Dr. Beck continued. “With BlueCat’s Proteus we can customize the GUI so that inexperienced users can quickly and easily access all the management functionality they need – often just simple lists of names and addresses – on as few as two screens.”

“BlueCat’s support staff helped immensely by importing a large amount of data from our Microsoft SQL database so we could thoroughly test its virtual Proteus IPAM solution,” said Dr. Beck. “Three network experts at GWDG helped me with the testing while five network experts from the University Medical Center’s (UMG) computer center conducted their own tests,” Dr. Beck continued. “Both GWDG and UMG were impressed with the test results – and we decided to acquire the solutions from BlueCat.”

The Decision

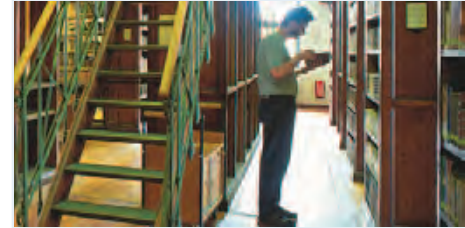
GWDG decided to utilize BlueCat Networks’ virtual IPAM and DNS/DHCP solutions and began installation of the new virtual Proteus IPAM appliance and two virtual Adonis DNS/DHCP appliances together with three physical appliances. GWDG has built a redundant infrastructure of ESX servers to consolidate servers. It currently hosts more than 300 servers and this number is growing quickly as user demand increases.

“We made a strategic decision to utilize virtualization wherever it is suitable, and so were very interested to virtualize the Proteus instance and one of the XHA clusters,” explained Dr. Beck. “Proteus, which delivers the Web-GUI and database service, is not continuously busy, as obviously there are no constant changes to the database, which makes it an ideal candidate for virtualization,” Dr. Beck continued. “So, we kept one XHA cluster with real appliances to avoid the potential, but highly-unlikely, event of deadlock in an ESX startup phase to be absolutely safe, but the second, local DNS/DHCP appliance, and any future appliances, should work absolutely fine as virtual appliances.”

The Solution

Beck outlined the details of GWDG’s old system.

“In our old system we used Microsoft SQL with Microsoft Access as the frontend to keep track of IP addresses, DNS names and all other information connected with the addresses, such as contacts, locations and operating systems,” noted Dr. Beck. “Export scripts created zone files for our BIND servers.”



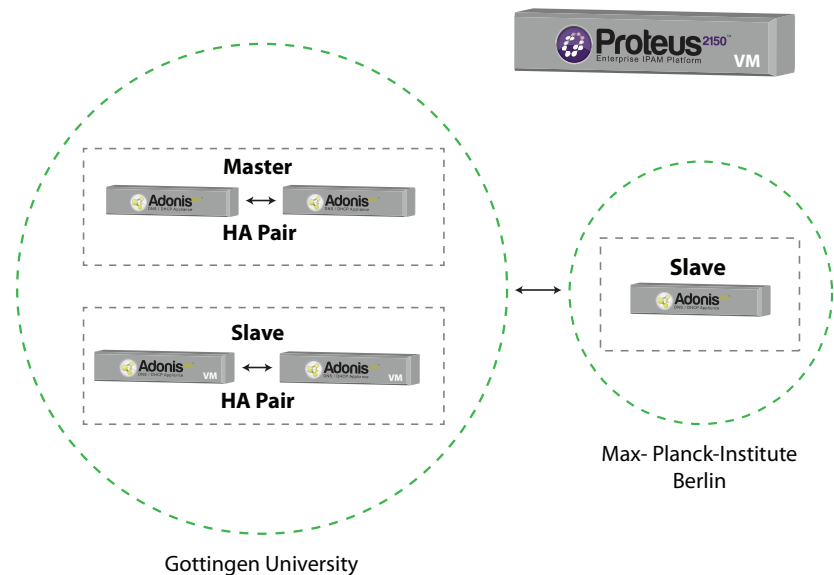
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Then, Beck explained the new system.

“Now we have installed one virtual Proteus 2150, two Adonis 1000s, two virtual Adonis 750s and one Adonis XMB – with the two Adonis 1000s acting as the XHA cluster for our master server and the two additional virtual Adonis 750s clustered to act as the slave server – and the XMB has been transferred to a Max-Planck-Institute in Berlin as an external backup DNS slave server with the two clusters being used as resolvers for all the computers in the local GÖNET network,” said Dr. Beck. “They are the authoritative servers for uni-goettingen.de, gwdg.de and mpg.de and many other domains – mostly hosting only one website for a single project – for the entire Internet,” Dr. Beck continued. “Currently there are no different views and no distributed (external versus internal) roles, as it would be difficult to change the design, which was developed in the early 1990s, during the migration to the BlueCat system as well.”



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“We are really impressed with the flexibility to assign access rights; the user-friendly GUI, which makes it simple for inexperienced users to manage the network; and the inheritance of rights and options in the database,” said Dr. Beck. “Assigning access rights is quite easy if an institute has a whole network, but for those with only 20-50 addresses assigned we’re unable to give them complete networks,” Dr. Beck continued.

“Fortunately, Proteus enables us to assign access rights down to the single IP address level.”

The IPAM solution’s flexibility also enabled GWDG to solve another problem.

“I haven’t counted the number of addresses with assigned access rights yet, but it must number in the thousands,” noted Dr. Beck. “One administrator couldn’t assign all those rights with the GUI, so BlueCat and GWDG used the API to write a small, unique Perl script which can set all these rights,” Dr. Beck continued. “So, now we can delegate responsibility to lots of users within a highly-distributed environment.”

BlueCat Networks’ solutions have enabled GWDG to greatly simplify the complicated task of tracking which devices are connected to the network.

“We regularly gather information about active IP and MAC addresses from our routers and switches in our network management systems, including time stamps and switch ports to which the network devices connect,” explained Dr. Beck. “We now import IP and MAC address information into Proteus through its migration feature and add information about switch ports where network devices are connected and time stamps (stripped down to month and year for privacy reasons) into user-defined fields,” Dr. Beck continued. “With this information administrators quickly get an overview of which devices are still connected to the network and where.”

And this information makes it easy for administrators to ensure IP address information is always up to date.

“The Proteus GUI makes it easy for administrators to correct outdated address information, and many of them are now sorting through their data and making corrections,” said Dr. Beck. “In fact, many couldn’t have done this before as they didn’t have access to a complete list of their institute’s addresses before – as nobody ever had the time to review all the IP address request forms that had accumulated over the years.”



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Looking Ahead

GWDG is so pleased with its IPAM and DNS/DHCP solutions that it is planning to work with BlueCat Networks to install the technology across all Max-Planck-Institutes.

“A few of the institutes already use GWDG’s central Proteus, and we are looking at using it with the distributed Adonis appliances for DNS/DHCP,” noted Dr. Beck. “I learned that Fraunhofer Society is working with BlueCat to implement such a design, and MPG is quite similar to Fraunhofer,” Dr. Beck continued. “We are also considering DNS-SEC in the near future, and that could certainly drive a decentralized organization like MPG to use a more centralized IPAM system, as it significantly eases key management.”

Having been instrumental in the selection and implementation of BlueCat Networks' IPAM and DNS/DHCP solutions, Beck is very pleased with the final result.

“Before, GWDG couldn’t effectively manage IP addresses and DNS in its widely-distributed environment,” concluded Dr. Beck. “Now, with Proteus providing simple and customizable central management of the decentralized and relatively-inexpensive Adonis solutions, we can,” Dr. Beck continued. “An ideal fit for distributed research institutions like the MPG and educational institutions like Göttingen University, where it is impossible to centrally-manage all computers, BlueCat simplifies IP address management and DNS/DHCP services in a highly-distributed network – which is why our administrators like it.”

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