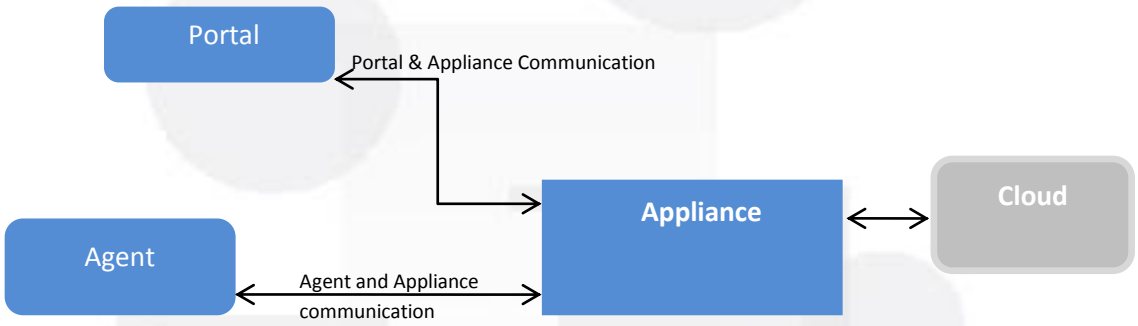
Hybrid Cloud Storage

Hybrid cloud storage is a managed "Hybrid-Cloud" storage and application platform for very small businesses (VSBs with less than 20-25 employees). VSBs face several critical challenges with managing their office IT network given their unique situation - beyond just the fact that they have limited IT budgets compared to larger better resourced medium sized or large businesses. This solution was the answer to their need.

The solution was appliance-based data protection system providing cloud-based backup and restore facilities for VSBs comprising of following components:

- **Agent:** Operating system specific agent which will run as daemon or service on the target system along with user interface installed along with the agent for configuration of file sources and policies.
- **Appliance/Cloud Server Gateway:** This will be an appliance located in the customer network acting as gateway as well as data protection server. This will be a thick server consisting of core data protection functionality interfacing with cloud platform.
- **Portal:** Web based interface providing various views/functionality to different users.

The above components can be visualized based on the diagram below:



Solutions, Approach & Challenges

Approach:
IzelTech proposed a systematic approach for the development & test execution of the product.

Planning, estimation and resource allocation:
Considering the time to release to market, the project was planned with deliverables broken down in to multiple milestones. The initial efforts put into planning: time estimation and resource allocation were the key factors that contributed towards successful execution of the project.

Solution:
The below solution was designed to satisfy & address the business requirements set by the client.

- The system had to be cloud centric.
- Optimal utilization of space and network bandwidth.

- Data flowing to and from the cloud had to be secured.
- Backup and restore jobs had be time and resource effective.
- Appliance acting as cache store for faster access of data.
- Thin backup client: Windows desktop/laptop nodes served as backup clients. (hand-held devices can be considered in future).Hence the agent residing on the client had to be very thin, work with minimum resources such that not affecting the node performance.

Implementation:

Entire code was written with manageability, scalability and performance in mind. The modularity of the code made it very easy to change any requirement that came from customer later in the implementation. Proper resource allocation (like presence of shadow resource) & work division ensured timely delivery and completion of task based on the schedule defined.

QA Process & Testing:

QA activity started right from the kick-off stage of the Project. Creation of Test Plan, Use case Scenarios, Test case preparation, Test Summary Report, Defect Report were some of the key documents that were maintained during the test cycle. Testing was planned to be carried out in a iterative manner corresponding to the availability of features. The iterative manner of deliverables ensured that QA had insight into the implemented flow at component level right from early phase such that bugs were uncovered at early stage. The QA team focused on all aspects including Functional testing, Integration between modules, End-to-End testing, Browser Compatibility testing , Usability Testing, & Scalability Testing.

Client Interaction

Clear, precise and transparent communication, informing the client about progress at every stage of the project, ensured that the customer was always aware of the status of the project. Further, bi-weekly status mails and weekly calls were part of the project execution.

Challenges:

One of the major challenge faced during development was to coordinate with the third party vendor who was involved in delivering the web-based UI (Portal).Few of the challenges involved were:

- Elaborating & simplifying the back-end functionality to vendor, so that required UI developed was as per requirement.
- Coordinating across modules so that proper integration points were defined. This further eased the effort required during integration between the UI and backend between both the teams.
- Working together from different geographical location & coordinating to meet the defined deadline set by the client.

Achievements / Value – Additions

- Suggested enhancements in the product from end users perspective.
- Documented step-by-step installation of Vyatta and solution deployment steps.
- Certified and tested on multi-platform setup with diverse file types.

Tools & Technologies

The development & testing environment consisted of VMware Workstations, ESX server , Amazon EC2 instances, OS flavors like Windows, Debian ,Vyatta. Implementation was done using technologies like C ++ , C # , WPF, Drupal 7. QA team further used testing aiding tools like Testlink, Bugzilla, WinMerge & Hashcalc.