Computer science project proposal

Computer Science Project Proposal1. Principal InvestigatorBrendan Marlborough. Currently doing joint Computer Science and Information Systems Honours at Rhodes University. Address: 6 Leicester Street Grahamstown 6139. Email: Objective of ResearchThe main aim of this project is to enhance the features of the current IP telephone used in the department. This will involve fixing certain features of the phone which are not suitable for our purposes such as improving the display. Encryption may also be added to the phone in conjunction with a master?? ™s student. Another feature the phone lacks is the ability to connect over a PPPoE network and this may also be rectified.

The following needs to be researched in order to accomplish these objectives: What changes will have to be made to the interface (keypad and display) in order to make the phone more user friendly, should encryption be added what changes if any will have to be made to the existing network and will the phone be able to support encryption. 5. Background/History of the StudyThe Computer Science department at Rhodes University currently uses a telephone service known as iLanga. iLanga uses Asterisk, an open source component, which is used to connect different voice networks, including networks based on SIP and H. 232 (both VoIP protocols) and also the PSTN (public switched telephone network). The telephone being upgraded is one type of end device used in iLanga.

The phone is manufactured and programmed in China and comes with an API which can be used to re-program it. These telephones will soon be offered to a limited number of students in residences at Rhodes University. For this reason the phone should be as user friendly as possible. It would also be

preferable that the phone has encryption if it is to be used for private conversations, and if the phone is to be used via a wireless network then it would need to support PPPoE. 6. Approach to the StudyReading will have to be done on how the voice network in the Computer Science department works, how the phone connects and makes calls via the VoIP gateways and also how the protocols the phone uses work. Reading will also have to be done about embedded systems and how to update the flash memory in the phone.

Should encryption be added reading will be have to be done on that subject. 7. Information to be Derived/DeliverablesThe project aims to improve some features of the phone which are lacking. The phone is a very cheap option for our purposes despite some of its bad and lacking features. Ways to improve the phones interface should therefore be found and implemented in order to make the phone more suitable for our use and the use in residences. 8.

Equipment RequirementsA VoIP telephone with all the tools that will be used to compile the new C programs and update the phones flash memory. A connection to the Rhodes voice network in order to test the phone is also required. 9. Initial timeline for implementation| 1 Week | Learn how the various VoIP protocols work.

|| 3 Weeks | Learn more about embedded programming and || | understand the code provided with the phone. || 1 Week | Find ways to improve the interface. || 3 Weeks | Implement changes to the interface. || 1 Week | Investigate the viability of adding encryption to the phone || 2 Weeks | Possibly add encryption to the phone || 3 Weeks | Investigate adding PPPoE

and possibly implementing it. | This is just an initial time line and not enough detail is known to provide a better time estimate. These steps may not be carried out in the same order as they appear above either and a more iterative approach is likely to be used.

10. ReferencesCentrality Communications, PA1688 IP Phone Development guide, Centrality Communications, 2004Penton, J., Terzoli, A., Asterisk: A Converged TDM and Packet-basedCommunications System, Computer Science Department, Rhodes University, 2003Penton, J., Terzoli, A.,? iLanga: A Next Generation VoIP-based, TDM-enabled PBX, South African Telecommunications Networks and Appliances Conference, September 2004, Spiers