

# The California Community Colocation Project

*Providing a Voice To The Many*

## 1. Mission Statement

The California Community Colocation Project (CCCP) will provide donation-based Internet services to individuals, incorporated non-profit organizations, and other not-for-profit entities (NFPEs), such as Open Source projects and independent researchers. The CCCP will not provide services to for-profit or commercial entities and thus will best be able to focus its efforts uniquely on its target base.

## 2. Vision

Tens of thousands of NFPEs on the Internet are currently limited by bandwidth and storage constraints and are unable to publish key portions of their message via websites, software, videos, or audio broadcasts. Thousands of others are limited by the scope of services provided by their ISP, requiring a dedicated and colocated server, but unable to afford the commercial rates for such hosting. Many thousands more already have sufficient hosting, but would benefit from a “backup” to allow continued access to their website even if their main server goes down.. Such “secondary hosting” also provides increased distribution capacity and allows for better geographical dispersion in bringing information more quickly to viewers. (Akamai’s success is testament to the value of this service in the commercial domain.) There are also NFPEs that require services that are uncommon for commercial entities, such as virtually hosted interactive Geographic Information Systems (GIS) mapping, that cannot find an ISP responsive to their needs, due to the limited revenue that such services would provide.

The effective, affordable, and efficient publication of information from individuals and NFPEs is key in keeping the Internet a democratic medium. The CCCP intends to work as hard as possible to make sure that all have a voice by offering extreme low-cost colocated, virtual, and “virtually colocated” (defined later) hosting to qualified not-for-profit parties.

The CCCP will be organized as a community of volunteers and clients, more like a bandwidth co-op than a non-profit-targeted ISP. No individuals participating in the CCCP will be paid initially. Users will be first directed towards self-help forums where they can help answer each other’s questions. If a question needs further resolution, a pool of specially selected volunteers will be able to address administrative issues (such as checking on a router, etc.).

Our primary goal is to provide a low-cost infrastructure for extremely high-speed, scalable, and reliable Internet colocation. Once we have accomplished this, there are many possibilities for auxiliary services, such as providing backup for colocated boxes, Internet file services, central storage, virtual hosting, mailing list hosting, and “virtually

colocated” hosting. Even as we engage these projects, however, it will remain our core purpose to continue to provide the underlying infrastructure.

The CCCP seeks to give a voice to all as the first non-profit targeted colocation facility in Northern California, with colocated, virtual, and virtually colocated hosting offered for only a small suggested donation.

### **3. Market Penetration**

There are around a thousand NFPEs in the Bay Area interested in colocating a server at a low-cost location. Of those, we hope to serve 100 and are on track to do so within two years. Currently these NFPEs are not well served by commercial colocation facilities, which often charge a minimum of \$200/month. Bandwidth charges for a commercially colocated site can often balloon to hundreds of dollars more a month if the site becomes popular, as often spontaneously happens on the Internet. There are no low-cost colocation facilities equivalent to those that the CCCP will offer.

There are many tens of thousands of NFPEs worldwide who would be interested in engaging either our virtual hosting services or those of our members that have colocated their equipment. There are over 250,000 registered 501(c)3 entities in the United States alone, so we believe it not an unreasonable goal to have over 1000 NFPEs virtually hosted through our facility in the course of three years.

Many small commercial virtual hosting services carry tens of thousands of virtually hosted accounts. While not competing on commercial accounts, as we provide no service-level agreements or guarantees, we can offer non-profits and individuals substantially more compelling access, with more storage, more bandwidth burstability, and more server tools. We also feel that the community-oriented environment of the CCCP and its NFPE-targeted nature will make it a more compelling place to be virtually hosted than that of an impassive commercial ISP.

### **4. Services**

#### **4.1 Current Status**

The CCCP, as per its moniker, will likely provide colocated services initially at 895 Commercial Street, Palo Alto, CA. This location is by the San Antonio exit from 101 and is readily accessible. The CCCP’s members will be able to colocate rackmounted and reasonably sized equipment<sup>1</sup> by January 2002, if not sooner. We are currently in negotiations for use of the space, which is being commercially leased at \$2/square foot. As we will be bringing increased network capacity to the building, Eric Brewer of PicoStar, the current proprietor, has indicated the space might be donated to us or leased for a minimal fee. Negotiations are expected to conclude within the next week.

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<sup>1</sup> Such as can be mounted on a 19” rackmount shelf, occupying less than 4U of space, and drawing less than two amps on average.

Our initial network connection will be via a point-to-point 11mbps 2.4GHz wireless link. We have already obtained two directional 16dBi Yagi antennas and two Cisco Aeronet bridges, by which we will link up with Via.net, a commercial ISP approximately 800 feet away. This should give us a practical maximum capacity of approximately 8mbps. Via.net has agreed to provide us with upstream bandwidth “at cost”, or at approximately \$75 to \$100 per megabit. Via.net has a high-speed OC-48 fiber-optic connection at several hundred megabits per second to an exchange point where it has peering arrangement with over 50 networks.

We have at least one 19” industrial rack to start with, a Cisco router, a 24-port industrial 10/100 switch, a souped-up Netra server, an industrial-strength UPS, and several auxiliary servers. With a second rackmount, the CCCP will be able to nearly immediately serve over 20 colocated boxes.

For backup, we have an ADSL line, which we may choose to upgrade to SDSL at some later point, as we are in range for 1mbps services. The building next door has a fiber-optic drop to Yipes!™, with whom we might be able to negotiate further connectivity options.

The CCCP has already secured a secondary monitoring location at Hurricane Electric’s Fremont colocation site, where we have a powerful rackmount server already in place. This location will be used for secondary DNS, backup MX (mail) services, network connectivity mapping, administrator shell accounts, and sending alerts, notifications, and pages when given servers disappear from the Net. This outside monitoring location is critical to our ability to provide quality services.

Several of our current members intend to immediately begin providing virtual hosting services to their clients. The location may be ready to begin providing these services in as little as two weeks.

## **4.2 Short Term Projects**

We have several projects that we would like to engage right away that would enable us to assist more people more efficiently.

### ***4.2.1 Trouble Ticket System***

First off, we need to set up a “trouble ticket system” whereby infrastructure problems can be doled out to a pool of selected volunteer administrators, one person can take charge of a problem and periodically report back the status of that problem to interested parties. This also would give us a collective knowledge base that we could reference to quickly solve recurring problems.

### ***4.2.2 E-Mail System***

We would also need to immediately set up a robust system for mailing lists for internal and external use. Web archiving, automated subscription and removal, and easy operation are all a must.

Secure, web-based email and IMAP-SSL are also short-term priorities to immediately let users begin to take advantage of our services.

### ***4.2.3. Virtual Hosting***

We would naturally like to provide basic virtual hosting as soon as possible. With the donated Netra server, we should be able to do so in very short order. Additional virtual hosting tools, such as a simple file-upload mechanism and site-building projects like phpnuke, Zope, and slashcode, would all be appealing to support immediately, along with web scripting in Perl, Python, and PHP4.

## **4.3 Long Term Projects**

After having firmly established our colocation and virtual hosting facilities, we have in mind some services that we would like to consider offering our members.

### ***4.3.1 “Virtually Colocated” Servers***

A new, cutting edge concept, virtually colocated servers are virtual machines over which a user has complete control. The virtual machines run as programs on physical servers, or sets of servers. The user could reformat their virtual partitions, install an operating system of their choice and run whatever network services they saw fit on their virtual system while actually sharing a single physical server with 20 other members. This would enable us to cut costs on colocation by a further order of magnitude and is effectively realizable due to the low costs of CPU and RAM and the fact that most Internet servers are idle most of the time; meaning that one could cram many virtual servers onto a single powerful physical server.

Process migration could also let us take a virtual server that was very popular and run it on several computers, letting a virtual server suddenly gain CPU and RAM resources on an as-needed basis. Process migration could also let virtual machines continue to run even when one physical machines shuts down – they simply pack up and move to another physical machine.

The CCCP could be one of the first hosting providers to offer this class of service, which could make hosting cheaper and more reliable than ever before possible.

### ***4.3.2 Central Storage***

The CCCP could provide a single, giant, highly available storage array for all members to use. This would decrease the costs of colocating physical servers with the CCCP, since these servers would not need to have substantially sized or upgradeable hard drives. With IDE-RAID chasses and \$200 120Gb disks, it would be imminently feasible even today to cheaply cobble together terabyte arrays for the community to share. Network Appliances™ might also be willing to donate some filers to the CCCP.

## **5. Management & Advisors**

The CCCP is already hosting a mailing list with several dozen interested and highly technically capable members. Not all are in the Bay Area, but there is need for many forms of help, most of which can be done remotely. David is uniquely responsible for the group's vision and key decisions, but he has several advisors who are key to the CCCP's success. His bio and those of his advisors are below.

### **David E. Weekly, Founder**

David, a Stanford President Scholar and Computer Science graduate, has been programming since the age of 5. He has programmed anti-matter simulations for Harvard's Physics Labs, programs to detect the difference between earthquakes and nuclear bombs for MIT's Lincoln Laboratories, high-speed 3D mesh alignment algorithms for Stanford's Graphics Labs, and has assisted companies such as atWeb (acquired by Netscape), myplay (acquired by Bertelsmann), Casio U.S. Research & Development, and Scout Electromedia. He has spoken on Internet-related issues at several conferences and has moderated conference panels. He has reported on technology for the Korean media and has written paid analyses of the online media economy. He is currently working as a software architect at Legato Systems, designing new techniques for efficiently backing up enterprise networks of servers and desktops. His work with both getting small companies off the ground and with observing the running large-scale companies will help him manage the launching of this non-profit project.

David will be spending the majority of his free time and extra capital on this project, hoping it will prove useful to the world and allow for a testbed of exciting new service techniques, such as virtual colocation.

### **David Ulevitch, Lead Systems Administrator**

David has been working with computers since the third grade when he began hacking out Logo programs on the Mac II. Fast-forward to today and David has become a competent System Administrator with almost four years of experience programming, administering and securing Unix machines. As the founder of EveryDNS.net David has the experience needed to run a server network as well as deal with support requests from users. EveryDNS.net is a free domain name service for the Internet.

David's contribution to the CCCP is more than just vocal support. By donating the first server and offering to setup and administer the CCCP network, David will be able to use his expertise and good judgment to create a stable, secure and efficient service using the CCCP's resources most effectively.

### **Paul Dale, Network Architect**

Paul is currently the Network Operations Lead at Tellme Networks. Paul was most recently CTO for online entertainment studio Media Trip.com, where he managed the systems and programming staff and architected the studio's technology. Previously he was Head of Internet Development at Warner Music Group, where he was an advisor on the WMG IT architecture planning committee and responsible for developing the long-term WMG IT Internet strategy as well as day-to-day internet operations. Paul has also consulted for Warner Brothers Online.

Paul will be responsible for the design of the CCCP's network, including managing its architecture, setup, and expansion. This includes helping design methods to protect the CCCP's servers against hackers, fairly dole out network resources, and allow for the network to grow. Paul has already volunteered the CCCP's second server, a powerful Netra, to serve as our first application server. Paul is willing to put in approximately 20 hours a week on the project.

### **Vanessa E-H Stewart, GIS Consultant**

Vanessa graduated from Stanford with an honors degree in Earth Systems and is the Associate Director of Fiber Futures and a GIS consultant for the Napa Valley Land Trust. She has worked extensively in project development at a number of non-profit organizations, including the Pesticide Action Network and Amigos de las Americas. She has also provided consulting services for the Nevada Division of Wildlife through Stanford's Center for Conservation Biology.

Vanessa will be key in assisting the CCCP with serving the non-profit community at large and specifically in developing Internet mapping services for NFPEs.

### **Crew**

In the dozens of people on our mailing list we have several Cisco-certified engineers, most are Unix administrators, many have done security work, many have been or are programmers, and we even have one member with extensive wireless networking experience. We already have volunteers to help work on the facilities, perform administrative tasks, do research, set up and configure routers, and put together a trouble-ticket system. We have preliminary contacts for corporate donations from many companies, including Cisco, Intel, Network Appliances, Sun, and Apple. We have, in short, a world-class team of volunteers, with over 100 years of collective systems administration experience.

## **6. Finances**

We currently are in possession of all of the equipment and services that we require to scale up to approximately 20 colocated computers on a shared, 8mbps Internet

connection, save a second 19" rackmount. The second rackmount will likely be donated, but in the worst case it could be purchased for \$300.

We will probably start out using about 50 square feet of space for a real estate cost of \$100/month, although this may be waived. Power may end up being a significant expense and is estimated to be approximately \$10/month per computer or piece of infrastructure (e.g., router). We will likely start out with around 2-3mbps of upstream at a cost of \$150-\$300/month, although this may be reduced to our average bandwidth costs, which would be substantially lower. Insurance for our equipment could cost another \$200-\$500/month, depending on the number of computers hosted, the level of insurance desired, and the security of the location. All staff and administrators are offering their services pro bono.

Absolute worst case for twenty computers on a 3mbps link would be \$300 of startup costs for the rack, and \$1100/month in recurring costs. Probable (expected) costs for hosting twenty computers are around \$500/month. A suggested donation of \$50/month/computer to start with would allow us to meet these costs and build out further infrastructure, while significantly lowering the current costs of most parties involved. Those who are virtually hosted by us directly or through our members will be suggested to make a small contribution, if they can, to our cause.

All of our finances will be open-book, which is to say that anybody will be able to peruse how much money we are receiving, how much we have in the bank, and what we're spending it on. This will help give donors and members confidence that the organization is being run well.

We hope to be a self-sustaining entity, capable of operating without strict dependence on grants, gifts, or donations. While we recognize the importance of such philanthropy, requiring it for operation would put us in a tenuous position as a reliable Internet provider – this is why we would prefer a “suggested donation” model whereby those capable of paying can chip in and those who can't don't have to.

More detailed financial projections are available in an adjunct spreadsheet.

## **7. Expansion**

Since we are planning to be a growing community, it's important for us to consider how far we should grow, and how fast. As a community, there will be certain social limits to how large we can effectively be. It is our feeling that a site with 100 physical servers is about as big as we should hope to be. Beyond that, the processes required to maintain our effective existence become too corporatized, and we'd lose the majority of our tight-knit and highly technical capable constituency. It is our goal to reach this limit within the next two years. Once we begin to “fill up” in this regard, we would hope to inspire and assist the founding of other CCCP sites around California and around the world. These sites would not be under the same direction, leadership, or non-profit boards and as such would provide immunity against political takeovers (as we have seen happen with KPFA and the Pacifica board) and would give balance, since different sites would likely have very different policies.

Ultimately, our aim is to cooperate tightly with other CCCP-like nodes around the world, providing secondary services for their sites as they would for us. In this way, we

end up providing a politically, geographically, and technologically robust platform for the creation, storage, and dissemination of information.

## **8. Policy / Decision-making**

The CCCP's goal is to give access to its services to any and all who require it, provided they are not engaged in a for-profit venture. However, being as the CCCP is volunteer-staffed, we may feel that we do not wish to continue volunteering our time, effort, and money to certain organizations that may desire to host with us. As such, we reserve the right to terminate service with any member for any reason, at any time. If a member is providing hosting services to an entity we no longer desire to support, we will require that member to terminate the entity's account. We will also terminate an account if we cannot legally continue to support it.

All virtual hosting accounts start out with small, but reasonable, limits. This should help deter against hackers and pirates taking advantage of our services. We may additionally engage technologies that make it difficult to automate account creation. If a user desires more storage, bandwidth, or CPU than their current limits, they can put in a request, which will be considered on the basis of the expense to the CCCP of the resources to be granted and the perceived value of the member to the Internet at large. This helps ensure that while we may have many small accounts, we are familiar with the activities of those of our users who are using large amounts of our resources.

Our goal is to have the vast majority of our services be useful and helpful for people. We acknowledge that in the course of granting these useful, low-cost services to a wide range of users, a small number may end up using them undesirably or abusing them, but by making proactive policy decisions in this regard, we can deter such behavior, even if we are not capable of preventing it.

While we may not have the resources to monitor all our members and virtually hosted parties for violation of our Terms of Service, such as engaging in commercial activity, if we do find evidence of such a violation, we may terminate the account without warning. We rely on our volunteers to periodically peruse hosted sites for such violations. NFPEs are allowed to engage in sales, such as fundraisers, as long as it is clear that the primary goal of the entity is not capital acquisition.

As a matter of policy, we will not guarantee any levels of service, in terms of physical or data security, uptime, latency, packet delivery rates, power availability, or power quality. All hosting is an "at risk" activity for which the owners of equipment and intellectual property explicitly take sole responsibility. We are not liable for the loss of equipment or intellectual property or damage to equipment. All of this will be in a Terms of Service document.

Our policy is to comply with the laws of the US and California as a common carrier / ISP. If we are asked to take down a website or account in accordance with law, we will. However, there may be a certain small number of cases that our volunteers, and possibly the CCCP as a whole, may wish to take to court. This will be done solely on a case-by-case basis and by no means can every member expect this kind of protection. We hope to find a tight alliance with the Electronic Frontier Foundation (EFF) in order to

secure basic legal counsel as a non-profit ISP and to help defend basic rights in cyberspace.

For the short term, to keep the project moving swiftly and to keep a minimum of bureaucracy, David E. Weekly, the CCCP's founder, will be the CCCP's Director and therefore uniquely responsible for all decisions made by the group. The Director will try to carefully take into account the inputs of all parties involved to a decision, but for the interim, his is the final decision. If the members of the CCCP wish to change this leadership, a vote may be called on CCCP's current mailing list (not run on one of the Director's servers or administrated by him). The vote must not only be to oust the Director, but to replace him with a specific candidate. If 75% of the list or more desires to replace the Director with a given candidate, that candidate will become the new leader of the CCCP. The Director will be endowed with all CCCP powers of governance, including the power to change the CCCP's structure of governance and to separate from the Online Policy Group (OPG), but excepting the power to change the method for replacing a Director as specified above. An individual may only vote once; multiple votes will not be counted. Only parties who were on the CCCP mailing list as of December 2, 2001 will have voting power. The Director may not be ousted without a replacement selected in order to allow the CCCP to at all times have a Director.

The above is only intended as a very short term method of governance, chosen for its simplicity. The CCCP Director will set up a more advanced and democratic control structure for the CCCP as soon as is reasonably possible, and the first such democratic election of the CCCP's leadership will happen by March 1<sup>st</sup>, 2002, using an electoral process that is yet to be determined. At the completion of this election, the above Directorial control structure will be abandoned.

## **9. Incorporation / OPG Merger**

The CCCP must quickly either join a 501(c)3 non-profit or become one in order to guarantee its members that it will not grow into a commercial entity or be acquired by one. Such a move would also grant us some legal shielding from personal liability and would enable us to receive grants and tax-deductible donations from individuals and corporations. Donations of equipment and cash will prove key in enabling the success of the CCCP, and due to the legally tumultuous nature of hosting Internet content, immediate legal protection is a must.

Given the cost, paperwork, skills, and time involved to incorporate on our own, members of the CCCP collectively felt it a better idea to align ourselves underneath an existing organization with similar goals. By becoming part of a larger non-profit, we would not only instantly acquire legal protection and 501(c)3 status, but we could benefit from the wisdom of our parent organization in helping to wisely shape and guide our own development.

We believe the OPG to be an excellent match as a parent organization for the CCCP. Our common goal of enabling disadvantaged and non-commercial entities to publish and share information on the Internet allows for a symbiotic relationship, whereby infrastructure and volunteers can be shared to great mutual benefit. The CCCP's underlying goal of providing a network infrastructure for non-profit publishing nicely

complements the OPG's vision of universal Internet access. We are merging with the OPG and will be coming online as OPG's "colocation" wing. We hope to place a key CCCP member on the OPG board as soon as is reasonably expedient, to ensure our proper representation.

All decisions within the CCCP will be fully compliant with the Bylaws, Articles of Incorporation, and Board decisions of the OPG. The CCCP's finances will be treated as a separate OPG project account, until such a time as is seen fit to either fully merge all of our financial operations with OPG or to depart from under the OPG's wing.

Pursuant to a resolution adopted by the Online Policy Group Board and approved by the California Community Colocation Project's Director, the following signatures indicate that the California Community Colocation Project is an Online Policy Group project, as specified in sections 8 & 9 of this document.

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David E. Weekly

Director and Founder, California Community Colocation Project

Date: December \_\_, 2001

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Will Doherty

Executive Director, Online Policy Group

Date: December 2, 2001