BURNED OUT WITH GREEN

VALERIE SAINT JOHN: Welcome to TechWiseTV. I'm Valerie Saint John, along with Cisco Solutions experts Robb Boyd and Jimmy Ray Purser. Hey, guys!

JIMMY RAY PURSER: Hey, Valerie!

VALERIE SAINT JOHN: Our focus today, network energy efficiency, the new frontier. The topic of green means many things to many different people. Two things we can agree on. First, since we hear a lot about green, we need to separate what's real from what's hype. And second, the reality of the costs and potential consequences are all too real, and has to be faced across the entire network. Do you agree?

ROBB BOYD: Absolutely, I agree, and I would add a couple of other things as well. In fact there's a couple of additional pressure points that companies are weighing in quite heavily now. Number one, the pressure to be smarter about energy usage and then plan accordingly. The financial aspects, those certainly don't go away. And then pressure from customers and board members to exhibit social responsibility by replacing emissions and waste, and proving how we've done those things, the question then becomes how can we as techies, as networking folks ask our audience, what have you, how can we contribute towards helping that happen? What is the right role we can play?

VALERIE SAINT JOHN: Right, so let's start there. Where do we find the quickest gains?

ROBB BOYD: Well, the datacenter has been the place where we look to first. In fact it was from a 2006 study done by the Department of Energy where we showed energy usage was -- I think energy usage for the US was up to 1.5%, which was double from what they'd seen from 2000. Datacenters consuming all of that, obviously going to keep growing.

VALERIE SAINT JOHN: Well, we talked a lot about energy efficiency TechWiseTV episode 36.

ROBB BOYD: True.

VALERIE SAINT JOHN: What are we doing differently today?

ROBB BOYD: Well, today it's about expanding the conversation beyond datacenter and really looking at some new technology that you can actually work with, and we're going to play with today. Funny thing is many in the industry have been doing just the opposite. They seem to attach some green-wash to their name through entertaining guerilla marketing tactics that have so narrowed their focus that they're emphasizing things that don't matter that much in isolation and really run the risk of losing sight of the forest by staring too hard at just simply one or two of the trees.

VALERIE SAINT JOHN: Right, and speaking of trees, we're going to welcome next our own resident tree -- forgive the reference; I couldn't help it -- our own Cisco's Mister Green, Rob Aldrich.

ROB ALDRICH: How you doing?

VALERIE SAINT JOHN: Welcome.

ROB ALDRICH: Thank you for having me.

VALERIE SAINT JOHN: So what's happening on the green marketing landscape today? How's that...

ROB ALDRICH: Yes, it's a good discussion you're having here. There is quite bit of green-wash in the industry. Semantic overloading of a political and social term is an easy thing to do. And it is a very fashionable topic right now. I personally take some offense to it as someone who studied environmentalism in college because this is a very serious topic. Global climate change is a serious issue. So to just sort of cherry-pick convenient topics is in my opinion not the right way to go.

ROBB BOYD: Well, that's part of what I want to...

JIMMY RAY PURSER: I hear the angels singing. That is the way to put that.

ROBB BOYD: Well, and that's the thing. So I want to get that -- I think it'd be good. I'm glad you brought that up because it's a good thing to get out of the way right here at the top, is that, yes, we can be accused of jumping on any kind of marketing bandwagon like anybody else. But at the same time Jimmy Ray and I worried about this quite a bit. It's like let's focus on making sure that we've got the right technologies to present here. But we really wanted you back on the show because we've enjoyed speaking with you in the past and really want to understand what are the things that we need focus on, and by virtue of that, the opposite, what is the stuff we're allowed to not pay attention to? Can you help us put that frame of reference around this?

ROB ALDRICH: Sure, I think the first thing you need to do is sort of define what green means to you. We talked a little bit about that in the last episode. Here we are on a technology show. It's about energy efficiency primarily. We could talk about e-waste and

a lot of that stuff, too. But really when you talk about reducing CO2 emissions, there are certain strategies that you can employ. We typically refer to them as active and passive. And if you take the example of your home, doing something passive would be like changing your light bulbs, caulking your windows. And they're real basic stuff. And those are things people absolutely should do and focus on. But I think really what we're going to be talking about more today is taking a more active approach to actually managing energy and how it's used.

ROBB BOYD: Well, and is that why this has been hard to -- has it been hard to broaden the story and talk about it more? Because we talked kind of in the open about the fact that it's easy for us to focus on, I have the most efficient power supplies. And we can wrap math around that. At the same time, does that make a big difference? We've determined that virtualization in the datacenter can make a huge difference. But a lot of people have done those things or they're on the path for doing those things. But there's still more that can be done. But it's how, how do you go about doing that?

ROB ALDRICH: And then how do you do it in a simple way, too. So there's a lot of ways you can approach energy and how to manage it. But in IT we really look at scale and automation, things that are easy to implement and can be balanced with all the other operative considerations. When you think about energy efficiency as a consideration in IT, we've never really thought about it. But now that it's becoming much easier to be able to manage how you use power, both in the case of electrical efficiency -- To your point about power supplies, targeting the right loading on the power supplies and some of the power calculators that we looked at in our last visit help you to do that. That's a great thing to do. You can look at thermal management, the hot aisle/cold aisle stuff, Jimmy, that we talked about, putting air dams up, all great things to do. Virtualization, that gets up our asset, utilization. These are all great. But we haven't to date had a really simple and easy way for IT to start taking control of energy.

JIMMY RAY PURSER: Well, see, that's a problem. I really dislike talking about this topic for a lot of reasons. Robb, when you told me how to do this, man...

ROBB BOYD: Tell us how you really feel, Jim.

JIMMY RAY PURSER: Well, I had to start drinking really early that day because I went, Not another green show, Robb, please. But you look at the average network engineer who has an incredible amount of stuff to do in his day. And now we're adding on top of it power management, facilities-type stuff. And this is real shift in the way we're thinking because for folks like me, we like handling data. And I can understand when my LSA updates are not getting through and updating my routing table. Now I understand that stuff. But now we're talking about power that there are so many var -- where do you even start to get your arms around this monster? How do I set the benchmarks? How do I even know? I mean, where's the bill at? I mean, there's so much. It's so hard to figure out for me.

ROB ALDRICH: Yes, and I think later in the show we're going to talk about some of the processes to adopt it. But leading up to that, when you start looking at power supply efficiency and virtualization, some of the passive stuff you can do, you're actually learning a lot about power and you don't really know it. And this is really setting the foundation to start looking at how you can add in energy as just another business consideration like need, cost, and time. And it's okay. You don't have to worry about managing it because Facilities is still going to be the one throat to choke if the power does down. But what you can do is start taking control of how your stuff is used. Simple as on/off -- turn stuff on; turn stuff off. And that's what we're going to focusing on talking about today, is how do you start taking control of taking thing off when they're not in use? It seems so simple. And one of the products we're going to be looking at in the next segment is going to talk you through exactly how we do that.

JIMMY RAY PURSER: Before you even get there, so one of the things that kind of concerns me here is that if we're shifting off -- This is what bothered me about voice over IP. What we started hearing about voice was that it was just voice and then we were just talking about dial tones. And that was cool. It's like dial tone, easy.

ROB ALDRICH: Easy to do, yes.

JIMMY RAY PURSER: And then when we started adding all those carburetion stuff on top, it was like Jiminy Christmas, man, this got out of control fast.

ROB ALDRICH: Snowballs.

JIMMY RAY PURSER: Absolutely, now it's a specialized area of study. And now we're looking at -- it started out with Power over Ethernet. And that's kind of cool. That makes a lot of sense. And now all of a sudden it's going into this. It's like holy smoke! And so to me when I look at this, I'm wondering a couple of things. From a networking, from an engineering standpoint, it's like if I'm starting to put this power management and really becoming a power management engineer, if I'm looking at this as another field of study, if you will, another responsibility, how does that really change our network design in not only like the virtualization of datacenter stuff. But also if I'm providing power managing this stuff, this really changes how I'm looking at everything because I'm not only looking at network devices. Now I'm actually looking at HVAC stuff. And I'm looking at alarm systems. And I'm looking at door controls. I mean, there's a lot of other pieces that are involved because power -- I mean, these lights, cameras, I mean, it's all this stuff.

ROB ALDRICH: Jimmy, don't worry, don't worry. Robb and I were talking earlier about the old Ockham's razor idea, that all things being equal, sometimes the simplest answer is the right one. So good news for you, and I might be doing myself a professional disservice here. This energy stuff's a lot easier than you think. We're talking simple watts. And when you look at where energy is

deployed, it follows Ethernet. Wherever Ethernet is, power typically is.

JIMMY RAY PURSER: Yes, okay, I'm with you there.

ROB ALDRICH: And if you look PoE, it's power and data on the same cable. Could it be any simpler?

JIMMY RAY PURSER: No, no.

ROB ALDRICH: So if you consider that, RJ45 is the world's first universal power plug in that model so...

JIMMY RAY PURSER: Yes, it is.

ROB ALDRICH: It is. So hopping over to the energy camp's a really easy sidestep. It's not learning a whole new set of things. You don't need to go into all the thermal design. And you don't need an electrical efficiency or electrical engineering degree to figure this stuff out. It's very simple. Just think of it -- just to give you an example of your home, turn stuff on, turn stuff off, but be able to do that all from your laptop, all with the push of a button. Now we're going to talk through how we set all that up to be automated for you.

JIMMY RAY PURSER: This not like that whole X10 camera thing, is it, where you're going to pop up on the show or anything?

ROB ALDRICH: No, no.

ROB ALDRICH: I can't believe you'd even bring up that reference.

ROBB BOYD: Well, no, and this is the challenge because I remember the big breakthrough I had the last time you were on our show and we talked about energy efficiency in the datacenter. It was about this need to tie in facilities and the fact that IT guys weren't seeing the power bill that they were consuming. And we're seeing a massive change on that one because they were burning up so much energy that now they are having to see that power bill. And their ability to use the expertise that you got from a networking perspective makes some natural alignments. So that's our challenge throughout the rest of the show. You're going to stay with us to help answer that challenge. I want to know, how do we now look at this as potentially being that next new frontier? Why should I not be scared as a networking guy to be able to tackle that?

ROB ALDRICH: That's at the heart of I think both your questions...

JIMMY RAY PURSER: Yes, definitely.

ROB ALDRICH: is I don't another thing on my plate. Security and voice is enough. So here's the good news. When you start considering managing energy and how the volatility energy markets has been going over the last few years, unless you live under a rock, energy is a big deal. It's a fundamental cornerstone of the elections we had in America very recently. And it's going to be potentially a new growth area for our economy.

VALERIE SAINT JOHN: Rob, we're going to have to ask you to hold that thought for time. Next we talk about them and encourage them, server consolidation and server virtualization, the top two cost containment strategies, but is that all? Next steps such as looking only at power supplies suddenly seem too shortsighted. But the rest is overly complex and hard to measure. What guidance do we have for taking that next step? Coming up.

POUND WISE BUT PENNY FOOLISH?

VALERIE SAINT JOHN: Okay, Robb, you say optimizing the network will have a significant impact on greenhouse gas emissions. It's your mantra; I hear you saying it all the time. You want to play a little game with me?

ROBB BOYD: You look like you're building up a little something, alright.

VALERIE SAINT JOHN: Yes, I'm building up something. I've got some numbers here. I'm going to give you a number. You give us the significance of that number.

ROBB BOYD: Okay, let's try it.

VALERIE SAINT JOHN: You want to play?

ROBB BOYD: Bring it on.

VALERIE SAINT JOHN: Okay, okay, 4-500 watts.

ROBB BOYD: That is the energy a switch draws from the power outlet, like on the wall.

VALERIE SAINT JOHN: Okay, okay, good.

ROBB BOYD: Not that it's always on the wall, but yes.

VALERIE SAINT JOHN: So far, so good; 30%.

ROBB BOYD: That's the actual energy it takes to do the switching process itself within a switch.

VALERIE SAINT JOHN: Nice; 70%.

ROBB BOYD: Energy used for Power over Ethernet.

VALERIE SAINT JOHN: Okay, good one; let's see if you can get this next one, 3,392 watts.

ROBB BOYD: Total amount of energy consumed by all the devices on average attached to the switch.

VALERIE SAINT JOHN: Wow, okay, you're not going to get the next one.

ROBB BOYD: This is easy because it's all around a switch.

VALERIE SAINT JOHN: 70 watts.

ROBB BOYD: 70 watts, the energy used on average by all the devices connected to the switch.

VALERIE SAINT JOHN: Whoa, 5 billion.

ROBB BOYD: That's a trick question, isn't it? That is the amount of hamburgers Jimmy Ray consumed over the summer. No, that is a forecast number, total amount of ports forecasted by 2012.

VALERIE SAINT JOHN: Wow, very good. You're earning your keep here. Sounds like Cisco's got some skin in this game too, right? No, you deserve the applause.

ROBB BOYD: I heard it in my head. I don't if that was heavier than my other inside voice. Yes, Cisco does have some skin in the game. In fact there's an innovation that sometimes goes unnoticed. And in fact I was talking to the guys over in the Catalyst group. And talking about the amount of energy improvements that they have made, power per point has actually increased efficiency in the 6500 platform by over 60% in the last five years. That's significant. That means innovation that we're doing in the manufacturing side is making its way to customers whether they realize it or not; good stuff. And then another one from another angle, we've talked about the Cisco Embedded Event Manager, EEM, and some of the scripting and powerful things you can do from a scripting perspective now. The studies that are being done are showing that energy savings simply by using EEM to automate the turning off unused devices and connected devices throughout the network, rather simplistic process, but big results. Over $360,000 or so, right around there, can be saved through an average office with a number of branch offices using IP phones and access points and things like that. That's significant; that's bottom-line numbers.

VALERIE SAINT JOHN: Jimmy Ray, so it sounds like power is the new frontier for IT to make a significant benefit. Robb's example bears this out. Why aren't we seeing that?

JIMMY RAY PURSER: Well, because where do you start? A lot of times we plug all this stuff in, and we have no idea the power it takes to run it and to get it going. I'll talk to Facility guys who I design the datacenter, and then after that you all go off over there. It's hard to find good tools to manage it. It's hard to find ways to correlate all the numbers. And it's even harder to understand that data. I could present numbers, but I want to understand the importance behind them because it's not in megabits. It's not in bytes. It's not in typical data terminology. So it's really hard to get a grasp around it. And honestly there just aren't any good tools to do it.

ROBB BOYD: It's hard to grasp the invisible. I think it comes down to, how do you connect this notion of an expense and a benefit where these things have been historically so disconnected? And that's where the key -- that's the magic sauce I believe. When we can tie those things together, make that more visible, then we're able to do some magical things. We're able to actually make a difference because we can prove it and we go, I spent this, got this result. It was that much bottom-line benefit. So if we continue to invest in this direction, then that's something can be supporting.

VALERIE SAINT JOHN: So the answer is at least in part a matter of bridging that gulf?

ROBB BOYD: Absolutely.

VALERIE SAINT JOHN: Sounds like a good spot then to introduce our next guest. Let's welcome John Parello, technical leader and architect of EnergyWise, to bring us some new solutions to these problems. First of all, what's EnergyWise, John? It sounds like a

new show on the Cisco Interaction Network. I'm guessing that's not it...

JOHN PARELLO: No, we're not a...

VALERIE SAINT JOHN: because you wouldn't dare to compete with us, right?

JOHN PARELLO: No, we're not competing with you, no, no.

VALERIE SAINT JOHN: But it's a new toolbox, right?

JOHN PARELLO: Yes, EnergyWise is a technology that we're delivering on our Catalyst line of switches at Cisco. And it's going to allow us to take the power that's attached to the switches and aggregate it up to the switch. And then once the power's aggregated to the switch, we can then start to use network management to manage the power amongst different switches and amongst the enterprise.

ROBB BOYD: I can see this coming on. So Jimmy Ray was very skeptical. But you used the word technology, and we don't use that term lightly around here. So it's not just marketing. You thought we were going to have to go talk to John because he's got another PowerPoint presentation about why Cisco is...

JIMMY RAY PURSER: Yes, that's exactly my thought.

ROBB BOYD: becoming green or something like that. But there's more to that story?

JIMMY RAY PURSER: There really is, Robb. One of the things that I was really impressed about -- First off when I heard about this product, I thought, number one, that we're talking about another piece of software that we're just going to look at some ports and query them. And I thought, I can already do that with EEM. I don't really understand why I need to label this and do this stuff. But this is completely different. When I was introduced to the product and found out this is part of IOS, this is off code that's designed -- This is brand new module that's out of IOS. Look at this.

JOHN PARELLO: This is coming out on new IOS release. If you like the EEM code, you're going to love this because we're putting this across the line of switches.

JIMMY RAY PURSER: Man, I love EEM so much, I got a tattoo right on my arm here. In a short sleeve shirt you can see it.

ROBB BOYD: That sounds like a good tagline. If you liked EEM, you'll love EnergyWise.

JOHN PARELLO: Yes, because EnergyWise is going to run on our full line of switches on the 2Ks, as well as the 3Ks and up to the 4 and 6Ks.

ROBB BOYD: And you're not just the marketing person on this. You've actually been hands-on. To be fair with the team, what kind of stuff have you got? You got something to show us?

JOHN PARELLO: So EnergyWise is, as I said, it's technology where we're trying to aggregate the power onto the switch. So just like we manage PoE and you could look on a switch and see what's drawing power from the switch, you want to be able to see what's drawing power when it's attached to the switch. So the PCs, the access points, and things, something that might not be PoE, we still want to show that information on the switch even though it's not drawing the power from it. So once we do that, then we can say, Okay, I know how much this switch is doing. I think the numbers you were bringing up, 3,392...

ROBB BOYD: Oh, you were listening.

JOHN PARELLO: that number is the average amount of power that's drawn by things attached to the switch, not the switch itself.

JIMMY RAY PURSER: Yes, how do you plan on doing that though? If they're not attached to the switch and you're going to show, how do you...

ROBB BOYD: Well, they're attached to it. So you saying we're drawing from them, but we never used to even consider that. We'd look at the switch itself and it would end there.

JOHN PARELLO: So what we're doing is we have a protocol where we can take all of our switches, put them together as a cloud network. And then if we have an agent running inside a PC or an agent running inside our phones or inside a non-Cisco device even, then we'll be able to get the power readings over a distributed cloud computer model. So if I'm on the switch, I can do a query and I could see what's on it. So the first it's doing here is I'm looking at a switch, and I could just say, Show EnergyWise. And when we do that...

ROBB BOYD: What happens when you do Show TechWise?

JOHN PARELLO: Show TechWise, well, I'll show you. We're seeing 130 watts right now is being drawn by the switch just to do

switching. That's not from the wall; that's the amount that's attributed doing the switching. But if I say, Show EnergyWise children, I could then see the amount of power that's being drawn by the switch and then all of the things that are attached to it. And right now I'm only showing the peewee devices because this is new and we're just now trying to get all the different protocols for the attached devices. And you can see I'm doing things like we're labeling the devices that are attached by their role. What's the business role of this port? What's the business role of this device? And I'm also giving it a name. So I might have the role of this interface here is a lobby. And then I have another one here that's says, Well, that's the north phone in the lobby. And I could see right now it's currently drawing 12 watts.

ROBB BOYD: Do you have to manually set all that stuff in there though? How are you getting that information?

JOHN PARELLO: Well, these names that I put in here, Lobby and Phone North, is something that I put in here. But by default we just know here's the interface and here's the name of the port it's on.

JIMMY RAY PURSER: You just get that off (inaudible) MIB?

JOHN PARELLO: Yes, we get that off the basic entity MIBs and stuff. And plus when something's attached, we can see what's the host name. Like right here for the switch itself, we just picked up the role as a model number and the name is the host name. So we can go through and see all the different ones. And I have a bunch of phones here also labeled as Desktop Phones, and they're not power right now.

JIMMY RAY PURSER: Are we going to about the levels over here in a little bit and the ports?

JOHN PARELLO: Yes, so one of the things that we also had to do was to normalize the way that devices turn on and off. So if I told you to put your device to sleep, most people know what that is from the PC. But that could mean something very different to a Cat 6K. It could mean something very different to a phone. So we had to come up with a common terminology that says, Everybody understands that sleep is a certain level. So if I type in a command here just for reference -- I could say, Show EnergyWise categories. We've come up with 11 levels, 0 to 10, that tell us what the exact levels that we're going to do.

JIMMY RAY PURSER: Check that out!

JOHN PARELLO: So we know that Shut is 0 and then Full is 10. And all that's Cisco devices, and we want non-Cisco devices also to adhere to these levels so that we all have a common language to know what to listen for.

ROBB BOYD: So basically we're setting up a standard here. We're kind of creating a standard to be able to do that. But how do you know what you need to apply to a certain device? Is there...

JOHN PARELLO: Well, we're leaving that up to each device manufacturer and each group, and to Cisco. They know their devices better. So if I tell an access point to go into a green or standby mode, the people who develop the access point, they're going to know best how to do that. So people that work on the different products, they know best what to do it. If you're a PC manufacturer, you know what's best to put in low or frugal mode. But we'll use the network as a control plane for sending the information to say, Go to level green, go to level orange, and say what level you can go to. And then your device --.

JIMMY RAY PURSER: Everybody knows what that color level is, and then so the vendor just interprets whatever you send down to whatever they say is important. We're not dictating what's important; they are.

JOHN PARELLO: We're dictating the level. And, yes, we'll let the device manufacturer dictate how they do it because --.

JIMMY RAY PURSER: Don't you guys have a MIB or something like that, because how do you that? How do make this interoperability work?

JOHN PARELLO: Well, so for all the information that we're doing, since we've implemented this for the Catalyst line of switches, we have a MIB. For all the information that we have here, it's all accessible via SNMP MIBs. And that means traditional network management, we can use that in order to manage the power in the network through different network management tools. But one of the things that we wanted to do was since everything is coming into the network, everything that's IP is coming onto -- everything that has power is coming onto the network, we want to make sure that we can advance network management a bit, not just use the same old tools, but to try to move it a little bit forward. So one of the things that we've done in here is we've taken the concept of search and tagging so that we can go through. And if you kind of look at what we did before, I have the different names of the phones. I gave them a name. If I want to, I can set out a query. I could say, EnergyWise. I could say, Query. And then I'm sending this query off at a very high priority, and would say, For everything with name Phone*, everything that has something Phone in the name, collect for me your usage. So what that's going to do, it's going to go out on the network and my entire...

JIMMY RAY PURSER: Oh, that is awesome!

JOHN PARELLO: my entire group of switches then are going to reply back, so not just the switch here, but any of the switches that are in the domain, in the cloud of devices that I --.

JIMMY RAY PURSER: Oh, that's queried from everything in the hierarchy then. You're not just talking about anything that's on the

local switch. This is actually everything that's in that...

JOHN PARELLO: That's right. So what we do is when we take a switch and we make EnergyWise-capable, we put all the switches into a domain. And as many switches as you put into a domain, we consider that one peer cloud. So once I send this message off into the cloud, all that information comes from the cloud back to this device. There's no hierarchy. There's no central management. There's no one point of failure on the network. We just put this together as a cloud computing model. So when I sent this query out, all of the devices on there did it. This could have been 5, 10, 15, 100 different switches, and we use the power of the network in order to do the queries and bring it back.

JIMMY RAY PURSER: So when I'm designing this out and I'm setting up my power domain here, if I've got a very simplistic network, this would be Domain 1. What is the boundary line? How am I keeping Domain 1 traffic off of Domain 2?

JOHN PARELLO: Well, what we do is we set up a domain name. So if I say, Show EnergyWise, I could show you the domain name that this one is in, show EnergyWise domain. And you could see that right now I put this TechWiseTV domain, and I have two switches right now in the domain.

JIMMY RAY PURSER: Hey, look at that; I like that.

JOHN PARELLO: And when you configure this, you set up a secret. You set up a shared secret amongst all the devices in the domain. And we make sure that the traffic that passes through between the packets are /1sh1digest so that we know that the traffic is --.

JIMMY RAY PURSER: It's like VTF for energy.

JOHN PARELLO: Yes, exactly.

JIMMY RAY PURSER: John, so here's one of the things I'm wondering, is how we scale this across. This is cool on one switch. But let's say I've got another building. This is Building #1 and this is Building 2. And I've got a bunch more switches over here. And now I'm wanting to check the power usage...

ROBB BOYD: Because you're talking about cross-domain.

JIMMY RAY PURSER: Yes, exactly, if I want to check the power usage here, here, and here, let's say on 8 of 50 switches.

JOHN PARELLO: Okay, so the first thing we do is we set up a cloud. And the way we set up a cloud is we could use the neighbor information. We can use CDP or we have our own way of doing it through UDP, or we could set up a static neighbor between the two clouds. So the switches over here could discover themselves by neighbors, the switches here by neighbors. And then we would connect the static route between two of them. And that would give us one big domain cloud. Once we had that domain cloud, then it's a task of going through and tagging -- so you know how you tag like photographs or you tag like links or something in it?

JIMMY RAY PURSER: Oh, yes.

JOHN PARELLO: Well, we can take over -- if you take a look over here, right on one of the interfaces I have this interface labeled as keyword Lobby. So I put a keyword of Lobby; I could put a keyword of Engineering or something on there. And if I wanted to, I could then run a query on that thing. And I could say, EnergyWise, and I run this off at a very high priority so that -- EnergyWise query, run that off at a high priority.

JIMMY RAY PURSER: Does a priority show how quick it's going to process? Or the priority's you're looking for them here?

JOHN PARELLO: That priority is going to go over the importance of one of the devices. So if this port was of a lower importance, then this is saying, Okay, I'm sending this query out. Everybody lower than me, do this. Everybody higher me would ignore this. So we could speak to the --.

JIMMY RAY PURSER: Okay, okay, okay, I know we're talking CPU/timers.

JOHN PARELLO: Right, so EnergyWise query priority, and then what we could do is we could say, Anybody who has the keyword Lobby in it, we could say, Set you level. And if I say, Set level 0 and I do that now, it's going to run through. And all of the devices that I saw before -- and you see them ports going up and down right now -- they're being turned off on this switch. All the other switches, any other building, anything in the domain, not just the ones that are connected, anything that's in the cloud, and it could jump over across the different domains.

JIMMY RAY PURSER: Oh, even tagged with the word Lobby?

JOHN PARELLO: Yes, so any port or any interface that I've tagged in this switch, this switch, or this switch that was tagged with the keyword Lobby, I just now turned them off all across the different domains.

JIMMY RAY PURSER: That's kind of cool.

JOHN PARELLO: And I can also then if wanted to -- and I could see what the power usage on that is, which we did before -- is I could say, For all the ones that had a keyword of Lobby, I could see the usage. And you're going to see that it's now going to be off.

ROBB BOYD: So here's the thing. So this is a lot of information to digest. And I want us to be able to incorporate this. I want you to hang on with this through the show because as much as you've revealed a lot of technology under the covers here, this also starts to raise some questions about what do we do to take that to the next level. So I'm looking forward to Segment 3. Let's take this a little bit further.

JOHN PARELLO: Great.

VALERIE SAINT JOHN: Excellent information. Thank you, gentlemen. Well, set your beanie propellers to energy generation mode. We're getting energy-wise in Segment 3.

THE BIG PICTURE WITH ENERGY WISE

VALERIE SAINT JOHN: Online, on demand, and on the go, this is TechWiseTV, technology you can use from geeks you can trust. Today we're looking at network energy efficiency, the new frontier, and looking for new ways to be energy-wise while maintaining fiscal responsibility. Robb, before we get to those demos with Jimmy Ray and John, let's talk big picture. What is network-wide visibility? What are we talking about here?

ROBB BOYD: Well, that's actually where I want to get with the demos. What I mean by network-wide visibility is this notion of really seeing the bigger picture because I think it's obvious from what you've been talking about here, John, that we've got the data. We've got ways to get the data that we never had before. But what I'm still struggling with is kind of turning that next corner for me, which is executing on the data. How do I do something with it? It's like it's good; it's neat. It's certainly innovative. Now what? Is that fair?

JOHN PARELLO: Yes, so I think one of the things we did is we built a prototype user interface. We had a really good intern who came in and took some of the specifications we did and cranked this out very quickly for us. So one of things is you can look at the CLI. I'm saying, Show the different levels, and you can see the names and stuff. On the CLI it's kind of boring. But if you flip it over and we show you like what an application might look like, you can actually see, okay, these are the different levels of this stuff.

JIMMY RAY PURSER: Power trip.

JOHN PARELLO: Yes, it's a power -- no, we had to come up with a cool name for the instruments. So you can see the different levels here. And that gives you a visual feed into like, okay, what are the different levels. So shutdown is black, and the frugal and green levels are green, and full is high. And so when I ran the query over here -- I'm going to flip back over to the CLI -- it's kind of interesting if you say like, Okay, I'm running a query across all the different devices and showing what the different power usage is. But right now you can only see what's the PoE power, not the things that are connected to it. And it's a very plain format. But if I ran that same query and brought that into the user interface, then what I'm looking at is what we were talking about before, an entire cloud of devices that are set up as an EnergyWise network. So this is an EnergyWise cloud that is set up of selected switches into one domain. So we're looking at the whole domain and we're collecting the different information. We could see right from the visual queue that this phone over here is at a green level, but this phone over here would be at a full high level. And this lighting controller would be at a green level.

ROBB BOYD: It's very dashboard-like. You can tell at a glance. Okay, so what am I going to do with that information?

JOHN PARELLO: Well, one of the things that you could see is like before, and we were talking about that in other segments where you you're seeing that a lot of people concentrating on what's on the switch. But if you want to see the difference see that, okay, this switch, this lighting controller over here is at green and this switch is at medium, this phone is at full, you really don't see the contrast between what the different values are. So if we flip over here and instead of showing the device icons, I show you size by the power usage, now you could see the relative size of the different power. Just because this lighting isn't green doesn't mean that it's consuming more power than a phone that is at full power.

JIMMY RAY PURSER: Oh, that's cool!

JOHN PARELLO: So right away I can pinpoint in my network what are the things that are consuming the biggest amount of energy. And I could right-mouse-click on this thing. And I could adjust the power level and say, Go to one of the predefined levels that we've described and what's appropriate for it. I could say, Well, if I want you to turn off or go to sleep, I could say, Sleep and then hit it and it would go to sleep.

JIMMY RAY PURSER: What's this emergency shutoff control? What does that mean? Well, we do have a way over here if we're

saying that I could set it off. So we just wanted to put a little flip of switch in there. Because interns and stuff were working on this, we didn't want to accidentally turn off a switch over here by saying, Hey, turn it off.

JIMMY RAY PURSER: Oh, that's kind of cool.

JOHN PARELLO: So we just added -- it's kind of a dead man switch that we put on there. But one of the things that we can do, if I go back to the other view, is where I size it by the current icons that are in the network.

ROBB BOYD: I love the say that comes out.

JIMMY RAY PURSER: That is pretty cool, how the icon folds.

JOHN PARELLO: So the thing is for this cloud, one of the things in traditional network management is you'd have to go through the network. You'd have to go to each and every device, collect the information, bring it into a database, and have your network management application go against that. We're not doing that. We're sending this query out to all the switches, and the entire switch cloud is acting as one database. This is just simply a user interface connected to one of the switches in that domain that is running the queries through the whole distributing cloud.

JIMMY RAY PURSER: That is awesome!

JOHN PARELLO: So essentially we have one big giant distributed database that we've turned all the switches into a giant distributed database.

JIMMY RAY PURSER: Well, it's a cloud computer model, is what it is.

JOHN PARELLO: And we feel for power that that's the right way to do it.

JIMMY RAY PURSER: That's amazing!

ROBB BOYD: Well, here's what this also brings in for me. Obviously you have all that individual information. So now we've got a much more visual look at controlling it. It sets up obviously the possibility of running kind of programmed routines. Like people have the thermostats at their house that can say, Hey, we're not home during the day. Drop to this, come up to this at this time and this kind of -- I assume the same type of thing can happen in the network now, right?

JOHN PARELLO: Yes, so we were talking before about EEM scripts. EEM lets you put the time of day. But we've changed it so that when you're configuring an interface -- I won't put it in there now-- but when you are configuring an interface, you can actually put recurrences in there and say, Go to Level 2 at a certain time of day. And we put in a cron stream, like a Unix cron stream string that says you can change an individual port to go from green to red maybe at 8 am or at 8 pm. Now if that's a PoE port, we'll turn the PoE on and off. But if that's a connected PC, we'll send an event out to the PC and then tell the PC to go off. So the switch is now acting as the controller of the clock, if you will, for turning the things off that's connected to it, and not just for itself.

ROBB BOYD: The switch is going to be there anyway, right? Now we're not adding on another appliance, an EnergyWise appliance or something...

JOHN PARELLO: Right.

ROBB BOYD: which wouldn't make any sense; we're leveraging the network.

JOHN PARELLO: Right, so we're using the network as the platform for the energy management. So one of the things that we could do is just -- say if your power utility company is saying, Hey, you better shed a lot of power, you could turn around and we can issue a global command over here. I'm saying, Anything that is not important -- This is my priority level. Anything in the network that has an importance of 40 or less, right now I'm going to set it to hibernate mode. So if you look at the different power levels over here, if I set it to hibernate, only some of them are going to go to brown. Like that Linux client went to brown, the lighting controller went to brown, and these two phones went to brown. But my important things like this phone didn't. But as the situation got worse and we say, Hey, I want to turn off more important things, I could say, Okay, I want the rest of those to go to sleep. And you'll see different parts of the network are going to sleep at different times. So we're allowing the network to figure out what it's supposed to turn off. We just sent out a command that says, Anything with this importance lower, go to sleep. It was sent out to everybody in the network in sort of a broadcast. Anybody who heard that brought themselves down to the separate level.

ROBB BOYD: So logically you'd be saving as much money as you could already now that everyone's being asked to contribute a little bit more. So the idea is you're kind of redefining threshold based on a certain set of conditions externally maybe that change and said, Well, you know what? We could be a little bit more strict if we really had to. It's not ideal, but we could do it for the next week because it's part of being a good community neighbor.

JOHN PARELLO: Well, even still the utilities will tell you at certain points that you cannot consume more power than a certain amount. And if there is a certain brownout or any kind of a thing going on, they're going to find you, and they're going to say, That's it. You cannot consumer more power. Either shed it or we'll shut you off. So this is a point where we're saying, Hey, start to

shed the things that are not important before you get turned off.

ROBB BOYD: You had a question?

JIMMY RAY PURSER: Well, one of the things that -- and this is cool. I mean, I think this is pretty neat. But we have a hard enough time in networking with just managing network devices out there today, switches, printers, routers, all that, access points because it's pretty hard to find a homogeneous network. Most of them are just a little bit of everything. When it comes to power, they're going to certainly be a little bit of everything. Do we got anybody biting on this idea yet? Do we have any other vendors saying, Hey, this is a pretty good idea? Or is this kind of like one of those things where we think it's pretty a good idea for our stuff?

JOHN PARELLO: Well, we know it's a good idea for our stuff right away. That's just simple part of it. And we're working with third-party vendors, some PC vendors and all the other partners and stuff. So we're looking at making this a program where we can take partners in for lighting controllers, for building controllers, HVAC. So you're bringing out statistics before. But in a commercial building, most people think all the computers and all those devices, they're consuming so much power. But in reality over 50% of the energy that's used in a commercial building is the lighting, the HVAC, and the cooling.

JIMMY RAY PURSER: No kidding!

JOHN PARELLO: And so the heating, cooling, and the lighting. So if we can get the lighting controllers hooked in and all those other ones hooked in, aggregate them to switch, then we can truly use the network as a platform.

ROBB BOYD: Which people are doing already anyway. There's so much convergence going on. Cisco's got the -- I'm forgetting the right marketing nomenclature, but it's the smart buildings and things like this where...

JIMMY RAY PURSER: Unified something.

ROBB BOYD: It's probably Unified something. But the idea is that we're tying in a lot of those things that aren't traditional network devices, whether it be either from security to HVAC to the lighting and things like that because it makes sense. And now we've got another reason to do so as well.

JOHN PARELLO: Right, for network managers it's coming anyway. All of those things, all of those devices will be on the network. So network managers are going to be asked to manage it anyway. So what we want to do is get a jump on it. We already know how to do network management. Let's advance network management to start to use the keyword tagging, search across a cloud so that we can do things. One of the points that we always bring up is just for changing a switch port, a lot of times it's hard just to find that one switch port in the enterprise. So we say, How can I find that one? Well, if you would have tagged it or it was tagged automatically when you logged in, you can go to any one of the switches and say, Turn off Jimmy's switch port or turn it on at a certain time, and it will let the network figure it out. We just blast that information out to the network. It'll get sent from device to device as sort of a multicast. It's not true multicast; it's pseudo multicast. And it'll get sent out to the entire cloud. And then that device will say, Oh, that's me, and he'll do it. The other ones will ignore it.

ROBB BOYD: I'm reminded of something. When we first met you and we were going through the research, you said something. It was based on a question, something I had never thought of because we talk about, as Rob Aldrich has said, the Ockham's razor simplicity of turning things off and on can have such dramatic effects especially when you can draw so many things into it like this. But when it comes to the network, we're talking about some shades of gray in here with the ability to power things at less power, which has an effect on processing ability. And it seems like one of the things here is the ability to understand, so you don't do something stupid realizing it, that this kind of makes for a nice failsafe because you're presetting some thresholds for the different device types and working with the manufacturers' specs to do that. But you had mentioned something like you start powering down an access point, and other access points begin using more power to kind of balance things out as a simple example.

JIMMY RAY PURSER: Yes, that is definitely one of my concerns. And we've talked about this, that there are some devices that are self-healing. And so we do have that hysteresis effect when we start to do that. Are we accounting for any of that?

JOHN PARELLO: Yes, and that's one of the things. Our Wireless Group is coming out with ways to intelligently turn down the networks. If you turn down something on wireless, you may actually wind up turning the power up for different things. So that's why for this we're saying that we'll tell you what the levels are, and we'll give you that command and control interaction. But each individual product has to know how to intelligently turn it down.

JIMMY RAY PURSER: I guess it comes back to that, doesn't it?

JOHN PARELLO: Yes, and we're trying to make an ecology where all the different devices can say, Yes, we'll be EnergyWise-compatible; we'll know your levels. And then you can intelligently do it. And once we have that summation factor where we could say, Hey, I can start to ask questions. What if you went to level green? What if you went to a different level? So one of the queries that I can run is I could say, EnergyWise query, and I run this at a high priority so I get all the devices. I'm going to say, For all of -- I'm just going to do it for everybody, name*. Name*, I'm going to get the sum of what we call deltas, the sum of the change from your level to another level. So if you're a device and you're currently running at 100 watts, if I asked you, What would be the value if you went to a lower one, you might say, Oh, I lose 5 watts by going down other level. I'll another 10 watts by going down another one. What if I summed that across the entire cloud? I can in one shot here run a query. And I could find out for my entire

network that for a savings for right now, since I don't have a lot on, if I switch to another level, I would actually increase if I went to another level...

JIMMY RAY PURSER: How about that!

JOHN PARELLO: or I would decrease. So once we get different devices adhering to these to levels and telling us what the different levels are, we're going to get the power of the network, the network effect, so that we can actually put these numbers together.

JIMMY RAY PURSER: That is unreal!

ROBB BOYD: Do you feel like that gives you a good feel? Because here's what I want to do next. I'm blown away at what you can do here. I like the fact we'll often talk about benchmarking and the ability to say, How I document and show improvement over time so that we can justify investments. And I think what you've given us here -- Let's be fair by the way because when this show airs, since we're not specifically live today, some interface things may have changed. Please check show notes, we recommend to our audience, to make sure what's the latest way to get this product, what's the latest look of it, and things like that. So we'll keep that updated. But what I'm exciting about is the ability to set the benchmark. And then what does this allow us to do? What kind of new power do we now have from the IT perspective to make fundamentally large, important changes for the business that we've never had before? That's exciting, very good stuff.

JIMMY RAY PURSER: Man, you guys really thought this out pretty strongly.

JOHN PARELLO: Oh, great, thanks.

JIMMY RAY PURSER: I'm really amazed at how this -- because I was like I said before, I don't need to rehash it and stuff. But I'm amazed at how much we've done here in IOS and how we've updated this, that it's unbelievable.

JOHN PARELLO: Thanks.

JIMMY RAY PURSER: Absolutely amazing!

JOHN PARELLO: And we wanted it to go out in the IOS release because once it goes out in the IOS release, it's sort of free for customers --.

JIMMY RAY PURSER: Well, that's another good point. Everybody gets it right?

JOHN PARELLO: Yes, we want the customers to get --.

VALERIE SAINT JOHN: Robb and Jimmy Ray, thank you. Thanks, guys. A special thanks to John Parello, architect with EnergyWise. Thanks for joining us. And what are the realities of energy management for networkers? Well, Rob Aldrich comes back in Segment 4 to help us find the answer.

DESIGN FOR EFFICIENCY

VALERIE SAINT JOHN: And we welcome back Rob Aldrich, now joining Robb, Jimmy Ray, and John in the lab. I must warn everybody we're now at two Robs operating here on the set. So we are at full Rob capacity today. Let's talk a little bit about this. We've talked about the fact that the IT professional has now got something new on his plate, right, energy efficiency. On the other hand, you're offering cool new tools to help manage this. As an IT professional, should I be concerned, overwhelmed? Should I be happy that there are cool new tools? How should I feel about this?

ROBB BOYD: Good question.

ROB ALDRICH: It's a great question, yes, and this is one of the reasons why -- Jimmy you were touching on it before, that we haven't seen energy management by the IT department more prevalent, right?

JIMMY RAY PURSER: Right, very true. It's been sort of a classical mess of all kinds of different ways to do it. And it's been hard to pull it together. So it's important to sort look at how you can manage energy today via IP. I can be done, but it's not often done. And I noticed you've got an IP-addressable power rail here.

JIMMY RAY PURSER: WTI, man.

ROB ALDRICH: That's it, that's it.

JIMMY RAY PURSER: Absolutely.

ROB ALDRICH: So that's one of the ways you've been able to do it for a long time. You can go, you can IP address that power rail. You can go and now turn off power, on and off through any of those outlets. That's certainly great in some situations, but might not be ideal for others.

JIMMY RAY PURSER: Right, very true.

ROB ALDRICH: And then in the other case you can go right in through the operating system, right? A lot of the server manufacturers in particular have put power management into their server platforms. But you're constrained or siloed, right?

ROBB BOYD: But this is the new world. We've gotten past that. And that's why I like what John has shared with us here. We've eliminated the silos. We're bringing it together. Now what?

JIMMY RAY PURSER: I don't think we've got past it. I think we're getting past it.

ROBB BOYD: You're so negative.

ROB ALDRICH: It's a toe in the pool, but it's...

JOHN PARELLO: Well, one of the things we can do with EnergyWise is we're saying that we can look at something at WTI controller and say, Well, we used to just look at that as one point. What if we have had a network of those that are in a cloud where I can query all the plugs and all the ports and I can get the usage from all of them aggregated up to the switch?

JIMMY RAY PURSER: Oh, then we're talking about something.

JOHN PARELLO: Now we're talking, and that's exactly where we're going with EnergyWise. We're set up to do that today once we do the releases. And so that's how we're going to do it.

JIMMY RAY PURSER: Yes, that's true.

ROB ALDRICH: And we discussed a little bit over in the show as to -- I'm a network admin; I'm a network engineer. It's one more thing on my plate. Why do I want to deal with this, right? And we talked about the relevance of energy today and where it's going. It's pretty clear where this is going. And to take control of this as an IT professional, to me it's about two words, professional differentiation. You're going to establish a lot more relevance and control in your organization by being the Mister Green at wherever because now you have the ability to command and control via one single platform anything that sits on the network.

JIMMY RAY PURSER: Yes, that is a really good call because even when you look at a bunch of different career paths we've all been taking. It started out with data. And then it went from data to data and voice. And then people started specializing. And for me, I resisted voice like I resist going over to my mother-in-law's. I mean, I fought it hard.

ROB ALDRICH: Not you, Jimmy!

JIMMY RAY PURSER: Oh, yes, it's true; it's true. But now it's embraced. I mean, the technology, everything, it's just fantastic. And then you look at other tech, like Web 2.0, it's like no, no, no, no, no, I'm not listening. But then everybody starts using it and it's great. I mean, we use it all the time, heck, all this twittering, some people watching the show. And so now we're talking about power. And we're starting out the new frontier, it's been kind of said in this show. And we're making progress. And we're using products like EnergyWise. And some great features are rolled into ISO. It really does give us a new way to look at the network. And you know what? I think it's also going to be a career path.

ROB ALDRICH: Absolutely, absolutely. And the fact that John and his team have done such a good job to make it easy...

JIMMY RAY PURSER: Man, that is the stuff!

ROBB BOYD: It's made it really easy, and in fact even improved upon the way you do network management today, right, John?

JOHN PARELLO: Right, and I think it's a good thing you sort of brought up the Web 2.0 and everybody thinks about, oh, some of those fluffier things. But there are certain things that are core internet technologies, to be able to search, to be able to put tags and keywords on things. To be able to turn something into a distributed cloud and then be able to go find it, it's a different way of doing network management than network management use to. But it's an easier way of doing it. So we wanted to make sure with EnergyWise that we advanced network management, knowing that all these devices are coming and they're all going to be on the network so that we can pull that off.

ROB ALDRICH: Yes, and to your point earlier, a lot of this is human habit. We don't like change. And the old saying, we want to control the wheel, therefore we reinvent it.

JIMMY RAY PURSER: Oh, that's pretty good!

ROB ALDRICH: That's half of reason we're in such this mess. We have all these mismatching architectures from applications all the way down to facilities. It's just a mess. So being able to simplify it and take control of something as important as energy, it's one of those situations -- this is the last time we'll say green. But it truly is a...

JIMMY RAY PURSER: Just like before, thank goodness.

ROB ALDRICH: There you go. But it really is a case where you can do well by doing good. And that is I think something anybody could be proud to be able to do.

ROBB BOYD: Okay, let's talk about something here because you mentioned career opportunity as being a way -- I always like -- any time there's an inflection like this and you've got the ability to recognize that you can be the one person who took -- the way John set this up for us, I can take my IT knowledge and then now add in some differentiating knowledge to help my company, my organization grasp something that has been difficult to do historically. So I can begin executing and differentiating like that. So I change the career. What about from a funding perspective? Because a lot of people are always like, as vendors we're classic about saying, You are going to save so much money if you'll buy this product.

ROB ALDRICH: Here's the box, good luck, right?

ROBB BOYD: But you mentioned some stuff when we were talking earlier about this notion of the creation of a slush fund. And I thought that was an interesting model.

ROB ALDRICH: A green slush fund, yes.

ROBB BOYD: And this is a model -- you work with a lot of different customer and such as well, so...

ROB ALDRICH: I do.

ROBB BOYD: And this wasn't something you necessarily are just making up. This is stuff people are actually doing. Can you share that?

ROB ALDRICH: Sure, sure, yes, it's a great question. And part of our job in the Technical Marketing Groups is to make a transition like this easier. Any change can be difficult. But adopting this can be easy. And one of the ways you can do that is -- John showed us in the last segment how you can roll up the figures. With this you can now measure, monitor, and ultimately manage energy. So as you roll those figures up, what you can do in essence -- and the savings here are huge. We estimate here at Cisco -- and we may not be typical of all customers because about 80-90% of our energy goes to labs and datacenters. So we've got a big impact potentially by using this. We estimated a 20-30% savings. Based on what we paid for energy last year, that's about 37 million, 37 million operating expense saved just on energy. Wouldn't you like to be the network guy who brings that to the CFO?

ROBB BOYD: Right, it turns out you may get a few more projects you're wanting to do off your plate when actually...

JIMMY RAY PURSER: Yes, that's exactly right.

ROBB BOYD: when you can show numbers like that.

ROB ALDRICH: There's a big but, though. We've talk before about Facilities and IT. So you've got two departments; you've got Facilities and IT. Facilities typically pay the budget. So in order to roll these figures up and get funding, sort of a green slush fund, what you're going to need to do most likely is work out some sort of split with the Facilities guys. So the way we've been able to do this for some of the customers and some of the infrastructural changes we've been recommending in the datacenter side of the fence is you go, you figure out and estimate -- and we can help you do that -- what your savings will be. And we've got online calculators that we showed on our last show on the program that'll help you do that. Then you approach your Facilities guy, and let's just use a rough number, say, We'll save you 200K in power next year. And you, Mister Facility, don't have to do anything. He likes that. That's 200 off his bottom line. But you say, Ah, but we're going to need to split that. And you guys both approach the person -- in many cases that's the Chief Financial Officer -- and say, Let's split that. I'll take 100 to my top line; you take 100 to your bottom line, forget about it, you're in business. So that's a great way to sort of develop a green slush fund to fund any new energy-efficient projects that you want to do.

ROBB BOYD: Well, now I want to make sure we don't miss this before we run out of time. But you had some tools and such that you didn't get a chance to cover, some new stuff we've been doing since we last had you on the show. Can you at least give us a brief intro to what we can do?

ROB ALDRICH: A lot of tools, so let's say that you've rolled up your energy figures. What do you do with those? John showed use before how we can query those and roll them up.

JOHN PARELLO: Well, one of the ways you have to do is you have to look at how you're going to get that information that's going to feed into this. So once you have EnergyWise, network managers can turn around and say, Okay, I know how to manage the network. I can tag my different devices. I can say what's important, what's not important. And then you could do queries across the network to get that information. And once you have that from the different queries, you can dice and slice the network the way you

way. You could take that and put that into calculators that Cisco is providing for you.

JIMMY RAY PURSER: Sure, you can build your models and stuff.

ROBB BOYD: But what are these calculators? Have you got one here?

ROB ALDRICH: Yes, so what we've got here is the environmental data tool. So again because EnergyWise doesn't just touch the network -- it touches anything that's touched the network, service, storage, everything. So you're going to want to classify that and roll that up into different categories. So in our internal Workplace Resources Group, we've got a Director of Sustainability, Bob Rolfson, who's responsible for managing our own carbon footprint reduction initiative. And this is a tool they've been using as part of our EPA climate leaders. And what we do with this tool is we allow you to basically dump in these figures that you're going to save and customize this database. And you can use this for reporting and tracking. So we're giving this away for free on cisco.com/go/efficiency, the Efficiency Assurance Program that we looked at last time. This will be available as a free download. And basically you can pop in all of your electrical data, roll in the cost savings. And you can also tie in the CO2 emissions. There you go.

JIMMY RAY PURSER: And you're giving that away for free, huh?

ROB ALDRICH: Yes, just like EnergyWise. If it's going to be green, truly it should be open and free we believe.

JIMMY RAY PURSER: Yes, no, that's true. That's a very good call. No, that is absolutely, positively...

JOHN PARELLO: The network's already there. So if we can change the network to be the command and control plane, we can take the information, pump that into the calculators, and give you the information that you're getting while you're connnecting all the things onto the network. That's inevitable. All these things are coming on the network; it's inevitable.

JIMMY RAY PURSER: Very cool.

ROB ALDRICH: And the last point I want to make on this -- and I love coming on the show, guys; thanks for having me -- is EnergyWise is probably the biggest thing to happen to energy in a very, very long time.

JIMMY RAY PURSER: Yes, no, I definitely believe that.

ROB ALDRICH: You've got the network, which is the most ubiquitous IT platform. It touches everything, not just IT, but the buildings. Now that you can take control of that and spin things up and down, turn them on and off -- we saw the different profiles of energy that you can put in there -- it completely changes the game. This is something I'm very excited about.

JIMMY RAY PURSER: Yes, no, I agree. It's the biggest things since Tesla discovered AC, right? I mean, it's really...

ROB ALDRICH: Maybe, maybe.

JOHN PARELLO: Well, our engineering team's going to love it, so we're happy to bring it to you.

JIMMY RAY PURSER: Man, all I can say, it's fantastic. That's one of the things that I had to actually call Robb because he was the one who wanted to do the green show and stuff. And then I thought and argued and screamed and stuff. After when we talked to you and John and got all the stuff, I had to call you up and apologize. I'm like, you know what? That will be a fantastic show.

ROB ALDRICH: One more show and we'll have you hugging trees, Jimmy.

JIMMY RAY PURSER: It might be a couple more shows.

VALERIE SAINT JOHN: Good information. Thank you, gentlemen. And we're happy now to welcome Dave Major from Learning at Cisco. Hi, Dave!

DAVE MAJOR: Hi, Valerie, how are you doing?

VALERIE SAINT JOHN: Good, so you've got a new game for us today, and we here at TechWiseTV love games.

DAVE MAJOR: We do; actually we have a special one. It's called the Mind Share Game.

VALERIE SAINT JOHN: Well, what's the Cisco Mind Share Game?

DAVE MAJOR: The Cisco Mind Share Game, it's intended for customers that are taking their CCENT or their CCNA. Although it would probably be of interest to anybody that is interesting in certifying for Cisco and looking for information, a self-guided learning option for more enjoyable and in a fun format.

VALERIE SAINT JOHN: And I understand Jimmy Ray, always endeavoring to keep up, is playing it right now, playing games on the job. What makes the Mind Share Game so unique?

DAVE MAJOR: It's a learning game that covers about 40% of the CCENT curriculum, which is again your intro level certification with Cisco. And then I think the thing that is really different about Mind Share than other games that you've seen that are for networking and skills or quizzes is this really plays like a real game, like something you'd have on PlayStation or on Xbox.

VALERIE SAINT JOHN: So Jimmy Ray, how does the game stack up?

JIMMY RAY PURSER: Man, this game is really a hoot. It's a lot of fun. It's very lightweight. It's about 50 meg. It runs really light on the PC. And I love it. It's very addictive. It's got three levels to it. And you get medals if you go up, for every level that you pass. And it's really pretty fun. I've been actually doing the OSI level, and I'm having a really good time with it. This is well-coded; good job.

VALERIE SAINT JOHN: It sounds like it's worth picking up. But I can't just get this at Best Buy I'm guessing, right?

DAVE MAJOR: You cannot buy it at Best Buy, at least not yet. But you can get it at the Cisco Learning Network. We actually have store on the Cisco Learning Network now, and this is the first product available. So folks familiar with the Cisco Learning Network can go to www.cisco.com/go/learnnetspace.

VALERIE SAINT JOHN: Wow, exciting to hear that a new store is rolling out.

DAVE MAJOR: Yes, we're very excited about it. We're excited about the Mind Share Game, as well as the store.

VALERIE SAINT JOHN: Excellent. Dave Major, Learning at Cisco, thanks for joining us.

DAVE MAJOR: Thanks Valerie.

VALERIE SAINT JOHN: Okay, Robb, sum it up for us.

ROBB BOYD: Will do. A lot of neat new ideas today, and new ways to hopefully simplify a topic that can often suffer from a lot of misinformation or fear, uncertainty, and doubt. Jimmy Ray had mentioned benchmarking, for one. Cisco offers services to help you establish energy efficiency benchmarks, helping you utilize resources more efficiently, reduce cooling and energy consumption, know where you've been so you know where you're going. The service includes five different activities, inspect physical infrastructure, benchmark energy efficiency, project efficiency effects of changes, model airflow and temperature distribution, assess electrical efficiency. And this may be just what someone needs to get a project going quickly in the right direction. So for more information on this and just a ton of other ideas, check out cisco.com/go/green.

VALERIE SAINT JOHN: Excellent, and for Robb Boyd, Jimmy Ray Purser, I'm Valerie Saint John. Thanks for joining us on TechWiseTV. To find out about future episodes or to check out a complete archive of previous shows, be sure to visit the Cisco Interaction Network at cisco.com/go/interact.