Cisco Integration with BT Turrets: Solutions for Trading Floors

What You Will Learn

Cisco® supports integration with BT turrets in several ways, including support for the new Cisco Universal Power Over Ethernet (UPOE) to power turrets directly from the network. The Cisco Catalyst® 4500E switch platform is the first in the industry to deliver Cisco UPOE - a technology that can source up to 60 watts of inline power per port as required by typical trading turrets. Cisco Catalyst 4500E platform switches are also the most widely modular access platform in the industry. This document explains Cisco UPOE powering alternatives, and integration between BT Turrets and Cisco Unified Communications Manager (UCM) to provide enhanced telephony across the financial trading enterprise.

Challenge One

Backroom power for turrets has always been a feature of some trading floors. However, the cost of providing dedicated infrastructure generally makes it prohibitive, leaving turrets dependent on local mains power, which may or may not be provided with uninterruptible power supply (UPS). Power over Ethernet (PoE) has offered a cost-effective solution in providing resilient power, but has historically delivered insufficient power to the turret to drive speakers at full volume. Turrets typically take between 30-60 watts of power.

Business Benefits

The Cisco Catalyst 4500E is Cisco's leading modular enterprise-class switch platform for trading floor access deployments. This platform not only provides line-rate switching to all user access ports, but also delivers borderless network services critical for trading floor deployments. Some of these services include high availability with full hardware redundancy, software features such as In-Service Software Upgrade (ISSU), application visibility with Cisco Flexible Netflow (FnF), and hosted applications, including WireShark. The buffering and multicast architecture on these switches are unique in the industry and cater specifically to the requirements of this environment.

PoE has long been considered the most critical innovation to revolutionize and expedite the adoption of IP telephony in the enterprise market segment. The Cisco Catalyst 4500E switch platform was the first platform to deliver PoE-plus compliant switches, two years prior to the introduction of the IEEE 802.3 PoE-plus standard. The PoE-plus standard defines the mechanism to source up to 30 watts of power from switches. With Cisco UPOE, the Cisco Catalyst 4500E dramatically increases the power sourced by the switch to 60 watts. Cisco UPOE helps extends the benefits of power resiliency, management, and efficiency to a wider range of devices.

Cisco's UPOE solution meets the higher power requirement, providing a cost-effective solution for delivering resilient power to trading turrets. BT has worked with Cisco to develop a power supply that derives this power from the Ethernet cable. This power supply is compatible with all BT Netrix turrets and can be easily retrofitted to existing installations, including those making use of the dual network interface cards (NICs) on the turrets.

Cisco UPOE BT Turret Solution

Cisco's development of the UPOE increases the available power from the Ethernet cable to 60 watts, sufficient to power a BT Netrix turret with up to 40 line keys and eight speaker channels. The power supply derives this power from the single Ethernet cable that provides the network connection. Power is only delivered to recognized devices that support Cisco UPOE.

As the BT Netrix turret has two Ethernet ports for network resilience, the power supply provides connections for four Ethernet ports, two in (data and power) and two out (data only). Power can be provided from either port and is designed to continue without interruption should a port fail.

The power supply is 85 percent efficient at full load. The dimensions of the unit are 6.46 inches long by 3.35 inches wide by 1.42 inches high. Figure 1 below displays an image of the unit.

Figure 1: BT ITS. Netrix Turret with 20-key expansion and eight-channel speaker modules with handset, microphone and busy light

Challenge Two

In today's pressured trading environment communication is more critical than ever before between traders, sales people, management, and support functions. The ability to rapidly and easily handle queries, and offload time-consuming administrative tasks is essential to optimize the skills and time of trading representatives. To help enable effective teamwork, office-based telephone users - whether in sales, research, management, or the back office - must be able to access and interact with turret-based communications. This will lead to increased productivity, more cost effective teamwork, and improved customer service.

Business Benefits

Historically PBX telephone users have not had access to the lines terminated on the turret systems, where all key client and counterparty communication takes place. BT and Cisco have solved this problem through a new collaborative application which enables access to the comprehensive capabilities of the ITS voice trading platform from Cisco IP Phones.

BT Turrets integration with Cisco IP Telephony offers Cisco IP hone users access to calls to and from the trading room. They can make and receive calls on a private wire or discard digits instruction (DDI) and conference into calls in progress at the touch of a button. And crucially, for compliance purposes, all calls whether on the ITS turret or the Cisco IP phone can be voice-recorded.

With this integration a company's Cisco IP phones work as virtual off-trading-floor extensions to trading turrets. This allows Cisco IP phone users to handle incoming calls when traders are away from their desks, and to be directly involved in client contact with the traders. Furthermore, team operations - within and between departments - can now be more easily achieved when teams are on different telephone systems. This integration supports the drive for flexible business continuity options, and can be extended to the use of Cisco IP phones in remote or even home locations.

Typical Business Scenarios include:

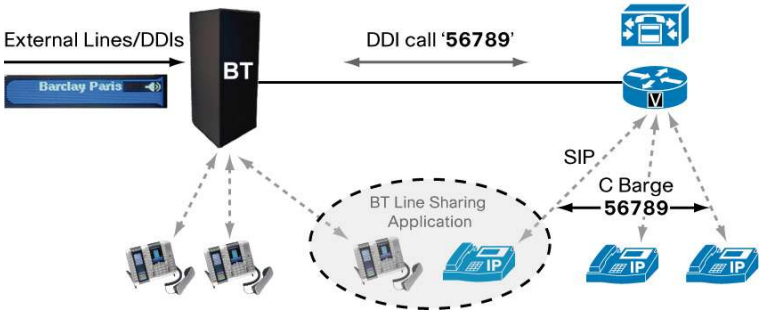
- **Manager to secretary interworking**: Using their Cisco IP phones, secretaries or support staff can answer calls incoming on their manager's trading turrets, and can place calls on behalf of the manager.
- **Management overview:** Using a Cisco IP phone, managers in offices off the trading floor can monitor the status of their teams' private wires and conference in as necessary.
- **Business continuity and remote access**: Cisco IP phones, when provided to remote or home-based staff, can form an intrinsic part of a business continuity plan, as well as allow new forms of flexible working.

BT Turret Line-Sharing Solution

The BT and Cisco integration helps enable BT turret lines to appear as native lines on the Cisco IP phone, complete with line status information and user barge capability. This has been made possible by using facilities in Session Initiation Protocol (SIP) - a popular industry standard. The phone can be any model supported on the Cisco UCM provided it supports the C-barge feature.

The integration architecture is shown in figure 2.

Figure 2: BT Turret Integration Architecture



The BT Line Sharing Application is hosted on a Linux appliance server and connects to the Cisco UCM as a SIP phone. SIP is used only for passing the line status between the Cisco UCM and ITS. Audio is passed across a regular DDI call, made over the main SIP trunk connection between the BT system and the Cisco UCM.

The application performs the following functions:

- It recognizes incoming calls to BT turret lines and generates a DDI call to the Cisco UCM, bridging the two calls when answered by a Cisco phone
- It recognizes an off-hook and dial on the Cisco phones and generates a corresponding outgoing call from the BT turret system, bridging the two calls
- It bridges the two signalling environments to produce common 'lamping' across the user base of phones and turrets

This integration is available for Cisco UCM 7.0 systems and higher, and for BT trader voice R17.3 and higher. It registers with the Cisco UCM as an extended SIP device using a special BT license, which consumes six device license units (DLUs) for each block of 10 lines shared. The instances of this application can be repeated to support more lines as required. Lines shared include static lines (private wires, hoots, etc.) and DDI lines terminated on the BT system. When a DDI line is shared, the number on which the Cisco UCM is called (56789 in the figure 2) is different for each phantom in the BT turret hunt group. Consequently, each DDI phantom will require a license.

Challenge Three

In the event that they lose connectivity over the WAN, traders who are operating their turret remotely from the main trading floor still need to access telephony. Provision of dedicated trader voice for these users is costly and puts further pressure on the support teams. A more cost-effective solution is to allow the turrets to access the office telephony in this event, utilizing another advantage of this application solution.

Business Benefits

BT has worked with Cisco to allow a BT Netrix Turret to register with the Cisco UCM as a SIP device. While this registration does not provide full turret capability, it does provide access to dial-tone and external lines and can help the user to continue making calls from the turret in the event of a WAN failure, thus providing an adequate, local, survivable solution for remote traders.

Product Specification: Cisco Catalyst 4500E switch platform and Cisco UPOE

Cisco UPOE is supported on Cisco Catalyst 4500 Supervisor Engine 7-E (or later) based Catalyst 4500E switch platforms with Cisco UPOE-capable line cards. Figure 3 below displays the switches.

Figure 3: Catalyst 4500E Switch Platform

Table 1 below shows Cisco UPOE compatibility on the Cisco Catalyst 4500E platform.

Table 1: Cisco UPOE Compatibility on the Cisco Catalyst 4500E Platform

Chassis	Supervisor	Line Card	Power Supply
WS-C4503-E	WS-X45-SUP7-E	WS-X4748-UPOE+E	PWR-C45-1300ACV
WS-C4506-E	and later		PWR-C45-2800ACV
WS-C4507R+E			PWR-C45-4200ACV
WS-C4510R+E			PWR-C45-6000ACV

Product Specification: BT SIP Turret Solution

In addition to registering and working with BT's trader voice systems, BT's Netrix turret includes the capability to register to the Cisco UCM as a SIP device. In the event of loss of connection, Netrix will first attempt to connect over alternate network paths and to alternate trader voice systems. If these attempts are unsuccessful the device will then register to the local Cisco UCM as a SIP device.

BT SIP Turrets are compatible with Cisco UCM 7.0 or later, and with BT trader voice R19.3 and later. The turret can also register to Cisco Unified Communications Manager Express (CME) and to Cisco Survivable Remote Site Telephony (SRST). The turrets register with the Cisco UCM as an extended SIP device using a special BT license, which consumes six DLUs.

For More Information

For more information, please review the following resources:

- Cisco UPOE white paper
  http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_white_papers_list.html
- Next-Generation Trading Floor Architecture AAG
  http://www.cisco.com/en/US/products/hw/switches/ps4324/product_at_a_glance_list.html
- Cisco Catalyst 4500E switches platform data sheets
  http://www.cisco.com/en/US/products/hw/switches/ps4324/products_data_sheets_list.html
- BT IP Turrets
  globalservices.bt.com/LeafAction.do?Record=financial_services_its_netrix_products_us_en

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