

What You Make Possible



Hosted Collaboration Solution - Demystifying the UC Cloud

BRKCOL - 2315

Agenda

- Introduction to HCS
 - What is HCS?
- HCS for Partners
 - HCS Data Centre
 - HCS Redundancy, Security, and Aggregation
 - HCS Management
- HCS for Customers
 - Site Deployment Models
 - Integrations and Others
 - Design and SLA Considerations
- Summary – Q&A

Introduction to HCS



What is HCS?

HCS offers Cisco Customers a new Consumption Model

- Cisco UC applications delivered in a per user per month cost model
- Rapid and flexible deployments
- Focused at average customer size of 100 users and above (<100 coming)

HCS is delivered only through Cisco Certified Partners

- Over 35+ Cisco HCS Partners Worldwide



Delivery of private cloud solutions for large enterprises



Build cloud platform to take cloud collaboration to market



Sell another cloud provider's offers



Cisco Collaboration Portfolio



HCS Major Elements

Unified Communication
Collaboration Applications



HCS Management

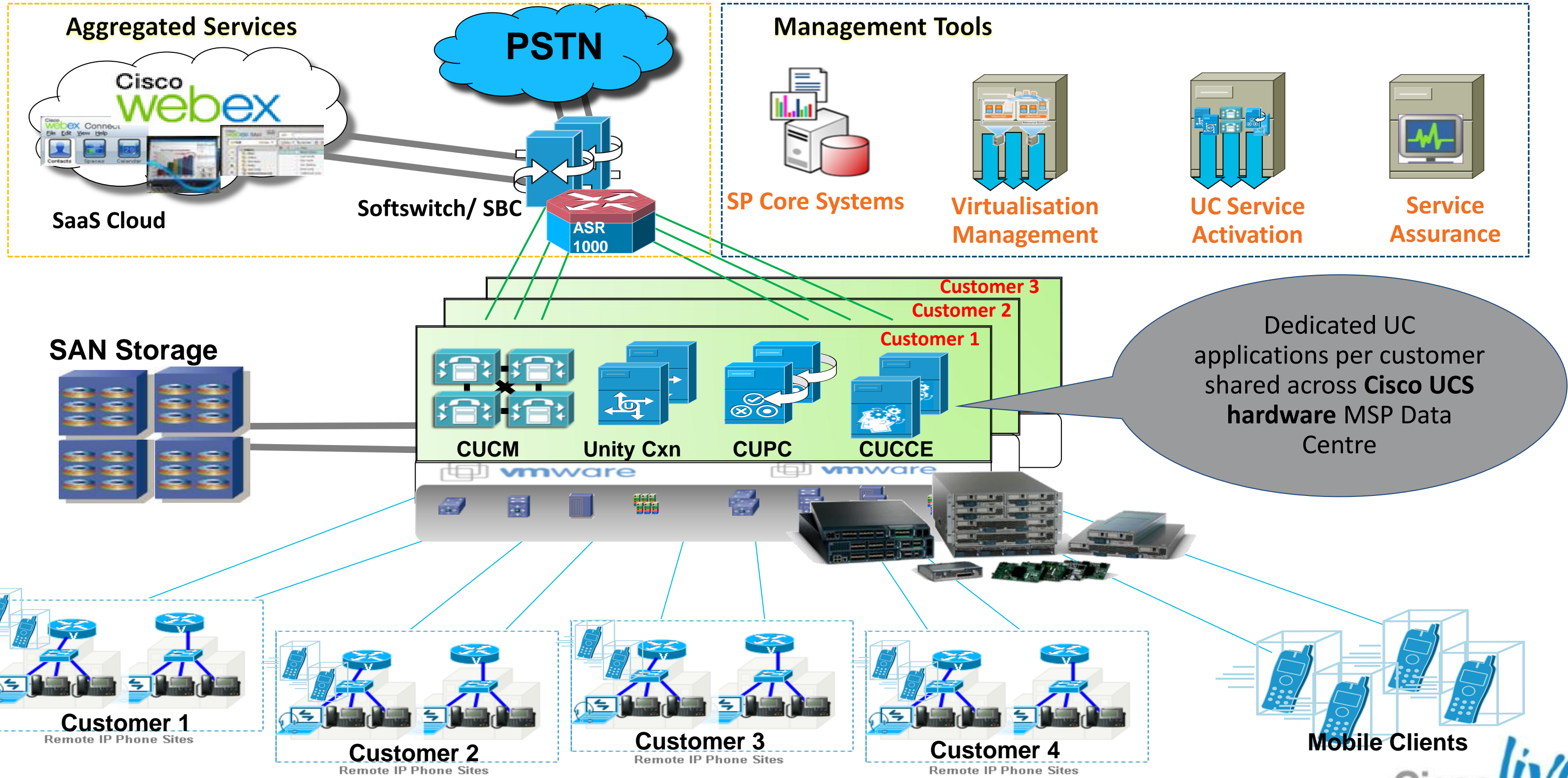


Cloud Ready Virtualisation Platform







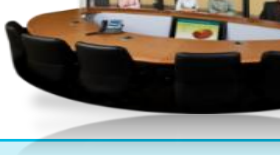



Scalable, Resilient Network

Cisco's Hosted Collaboration Solution



Cisco HCS Applications

Services	Product	Support
Voice & Video 	Unified Communications Manager, Unified IP Phones, Jabber	Full
Voice Mail & Integrated Messaging 	Unity Connection	Full
Presence & Instant Messaging 	Unified Presence, Jabber	Full
Mobility Services 	Unified Mobility, Mobile Clients	Full
Web Collaboration 	WebEx Meeting Centre	Full
Attendant Console 	Cisco Unified Enterprise Attendant Console	Full
Video Conference 	Cisco TelePresence	Phased
Contact Centre 	UCCE and CVP	Phased

HCS License Bundles

HCS Applications Bundles

Functionality	Collaboration Apps	Essential*	Basic	Foundation	Standard
Basic Call Control	3905, 6901, or Analog	✓	✓	✓	✓
Full Voice/Call Control	Enhanced UCL		✓	✓	✓
# of Devices		1	1	1	10
Mobility (SNR)	Cisco Unified Mobility		✓	✓	✓
Native Video	Video Endpoint(s)			✓	✓
Messaging	Unity Connection		○	○	✓
IM & Presence	Cisco Jabber IM		✓	✓	✓
Desktop Softphone	Cisco Jabber (Full UC)			✓	✓
Smartphone Client	Cisco Jabber (Full UC)			✓	✓
Immersive Video	Cisco TelePresence rooms			○	○
Web Conferencing	Cisco WebEx Meetings		○	○	○
Contact Centre Agent	Cisco Unified CC Enterprise		○	○	○

* HCS Essential License does not count toward the cumulative volume tiers

✓ = Included

○ = Optional Add-ons

HCS Device Support

HCS Foundation & Standard

HCS Basic

HCS Essential



Fax



3905



Analog



6901



6911



6921



99xx



89xx



79xx



7937



Jabber Desktop



694x/696x



Third Party
SIP



IMS Integration



Jabber Mobile



EX60 / EX90

TelePresence Room



CTS-3000/3200



CTS-500/1000/1100



CTS-1300



Profile Series



Solution
Platforms

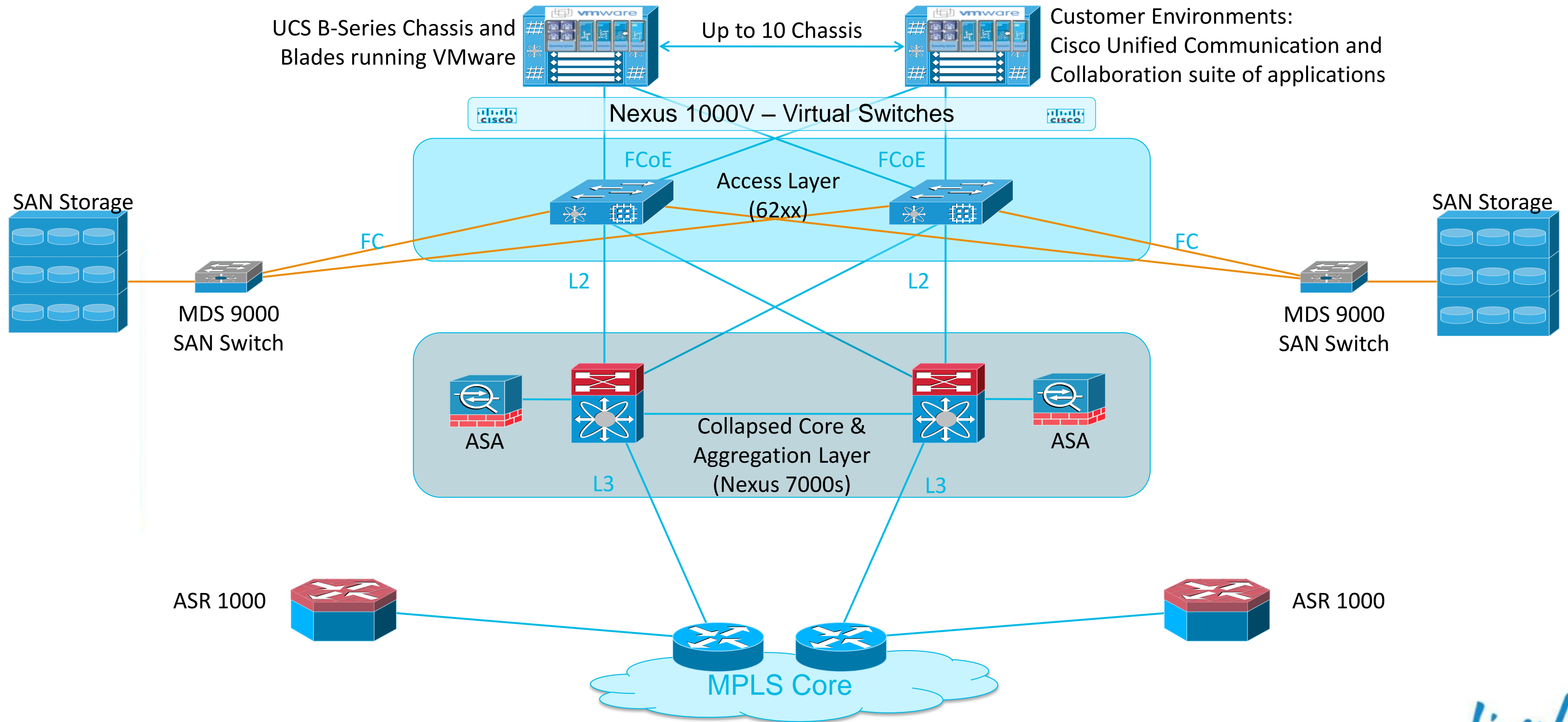
HCS for Partners



HCS for Data Centre

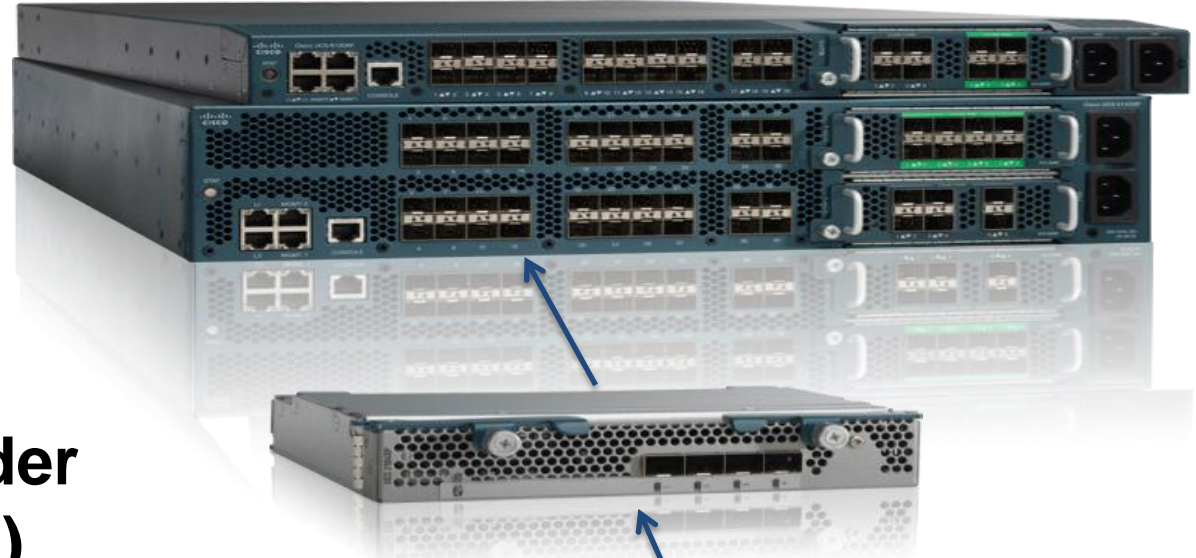


HCS Datacentre Architecture



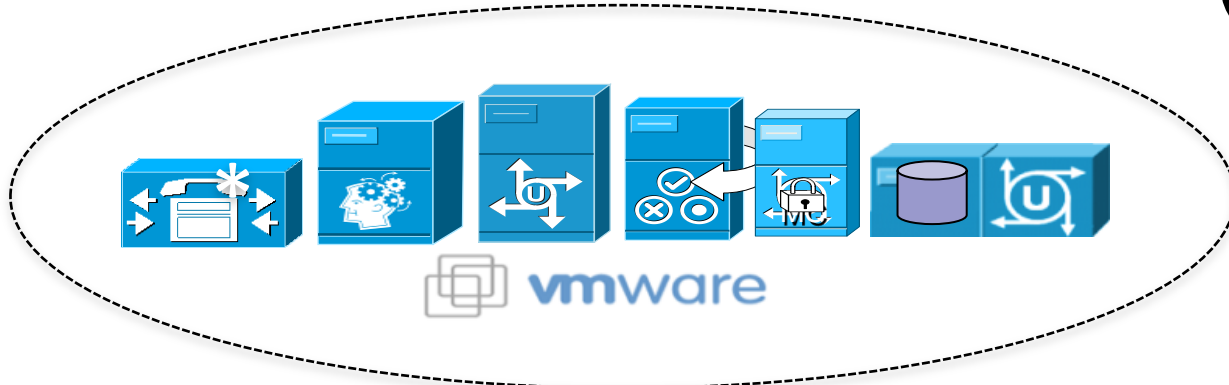
UCS B-Series in HCS

Fabric Interconnect with Embedded UCS Manager (Redundant)



**ESXi Enterprise Plus 5
Nexus 1000V**

Fabric Extender (Redundant)

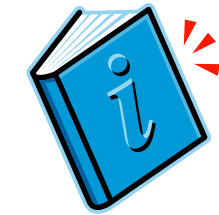


B-Series Blades



**UCS 5108 B-Series Chassis
8x Half-Width Blades**

Compute and Storage Requirements



For Your Reference

- UCS B-series blades
 - Multiple UCS B-Series blades now supported
 - B200M2, B230M2, B200M3
 - Intel 5600, 7500, and E7 series
 - 1066MHz DDR3 ECC RAM or better
 - SAN Boot supported with ESXi 4.1+ (2x SAS)
- vSphere 5 Supported
- SAN storage
 - SAN must be on VMware's hardware compatibility list
 - Fibre Channel (FC/FCoE) only (NAS and iSCSI are not supported)
 - FC Drives HDDs @ 10k or 15k rpm (Tier 1 Storage)
 - Standard HCS EMC SAN model BOM available



Sizing HCS

- Number and Size of Customers
- Mix of Applications Applied to those Customers
- Redundancy Model (1:1 vs. 1:N)
- Coverage of Applications (Do I supply hardware for CUPS?) (For All?)
- Based upon the above
 - Pick OVA from table (see next slides)
 - Which & how many do I need to build each customer?
 - Add in management applications
 - Add-up resources for all and figure out required blade/storage
- **Netformx HCS Advisor contains this logic**

UC Application Resource Requirements



Application	CPU	RAM (GB)	HD(GB)
UC Manager – 2,500 Users (Limited)	800 MHz	3	60
UC Manager – 2,500 Users	800 MHz	4	80
UC Manager – 7,500 Users	2 Cores	6	2 x 80
UC Manager – 10,000 Users	4 Cores	6	2 x 80
Unity Connection – 1000 Users	1 Core	4	160
Unity Connection – 5,000 Users	2 Cores	6	200
Unity Connection – 10,000 Users	4 Cores	6	2 x 146
Unity Connection – 20,000 Users	7 Cores	8	2 x 300
Unified Presence – 1,000 Users	800 MHz	2	80
Unified Presence – 2,000 Users	1500 MHz	4	80
Unified Presence – 5,000 Users	2 Cores	4	2 x 80
Unified Presence – 15,000 Users	4 Cores	6	2 x 80
CER – 20,000 Users	800 MHz	4	80
CER – 30,000 Users	2 Cores	6	2 x 80
Session Manager – 40 CPS	2 Cores	6	2 x 80
Session Manager – 50 CPS	4 Cores	6	2 x 80
Cisco UEAC – 25 Consoles	1 Core	4	40

Management App Resource Requirements



For Your Reference

Application	CPU	RAM (GB)	HD(GB)
UC Domain Manager (VOSS)	7 Cores	32	255
HCM-F	2 Cores	8	80
Prime Central Admin	4 Cores	16	128
PC – Event Collector	4 Cores	4	128
PC – Service Visualiser	4 Cores	8	128
PC – Infrastructure Monitor	4 Cores	4	128
PC – Correlation Engine	2 Cores	4	128
DCNM (LAN and SAN co-located)	2 Cores	6	80
OM/SM – 1,000 Users	1 Cores	3	50
OM/SM – 10,000 Users	4 Cores	8	100
OM/SM – 45,000 Users	8 Cores	16	150
vCenter App – 300 Hosts	4 Cores	8	10
vCenter DB – 300 Hosts	2 Cores	4	10

Application Distribution Example (B230 M2)

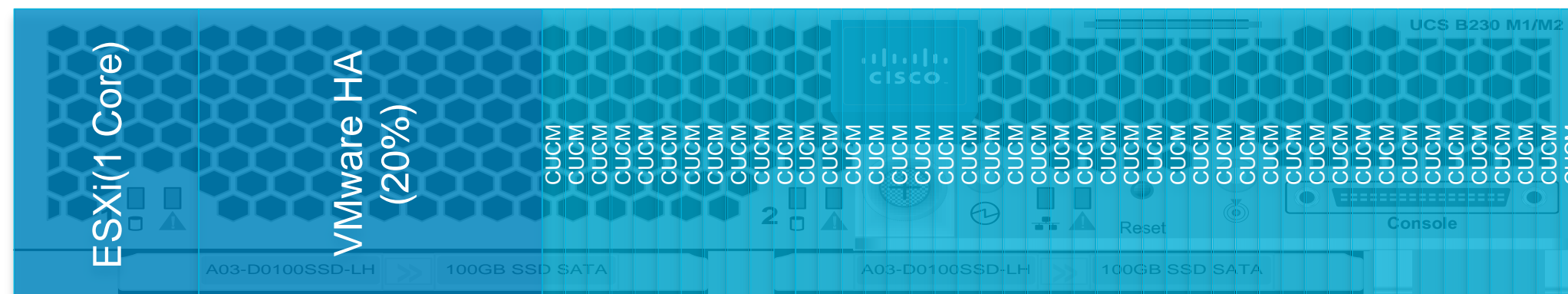
B230 M2 Blade

- 2 x 2.4GHz 10-Core Intel Xeon E7-2870 CPUs
- 20 cores x 2400 MHz = 48000 MHz
- 256GB of RAM

CUCM 2500 User OVA

- 1x vCPU with 800MHz Reservation
- 4GB of Memory

45 CUCM Instances
using 180GB RAM



Application Distribution Example (B200 M3)

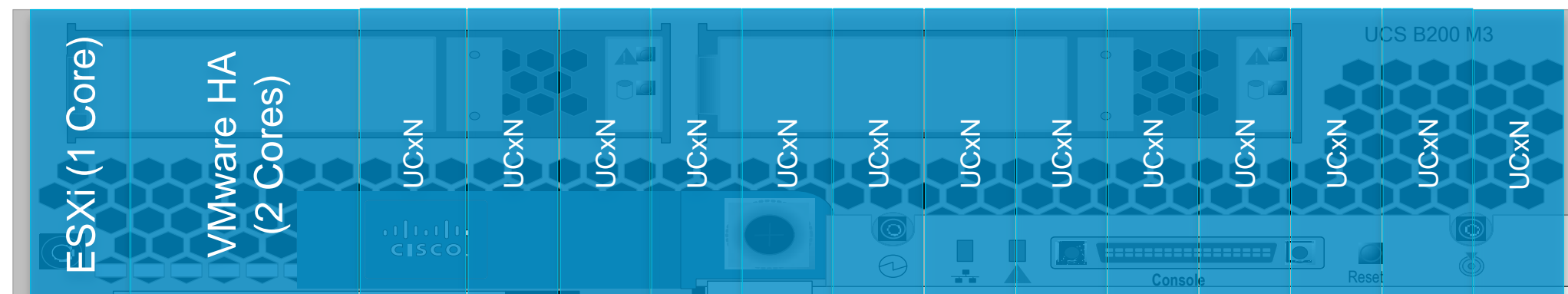
B200 M3 Blade

- 2 x 2.6 GHz 8-Core Intel E5 2670 CPUs
- 16 cores x 2600 MHz = 41600 MHz
- 96 GB of RAM

UCxN 1000 User OVA

- 1x vCPU mapped to 1x physical CPU core
- 4GB of Memory

13 UCxN Instances
using 52 GB RAM



User-VM Sizing Example (9.0.1)

- 100,000 total users
- Assume 20% Basic/ 20% Foundation/ 60% Standard
- 2 endpoints per user
- Includes resources for management applications and 20% HA

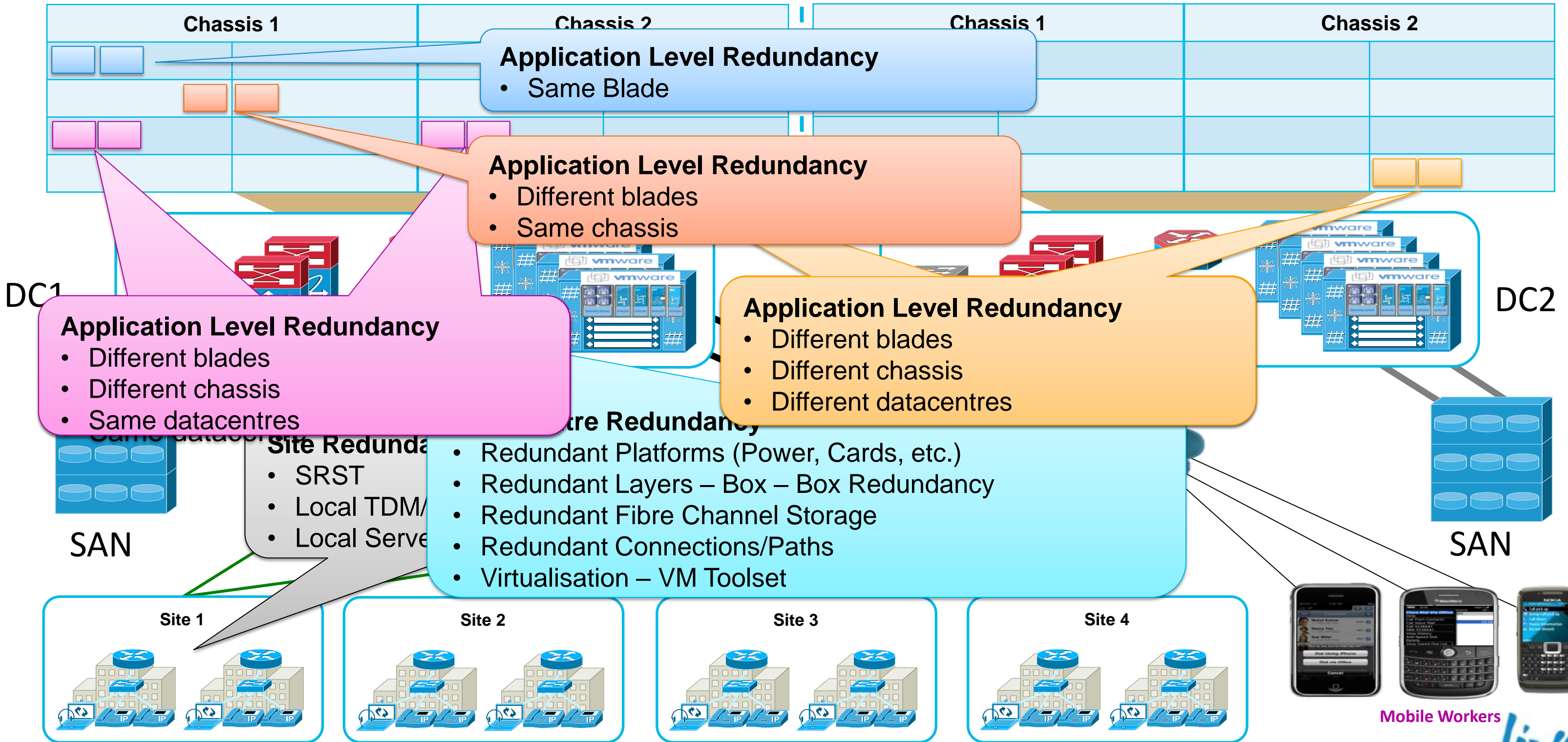
Based on using the B200 M3 blades

Number of Customers	Number of Chassis	Number of Blades
200 (500 user customers)	11	83
100 (1000 user customers)	8	60
20 (5000 user customers)	9	67
10 (10000 user customers)	7	49

HCS Redundancy, Security, and Aggregation



HCS – Redundancy Throughout



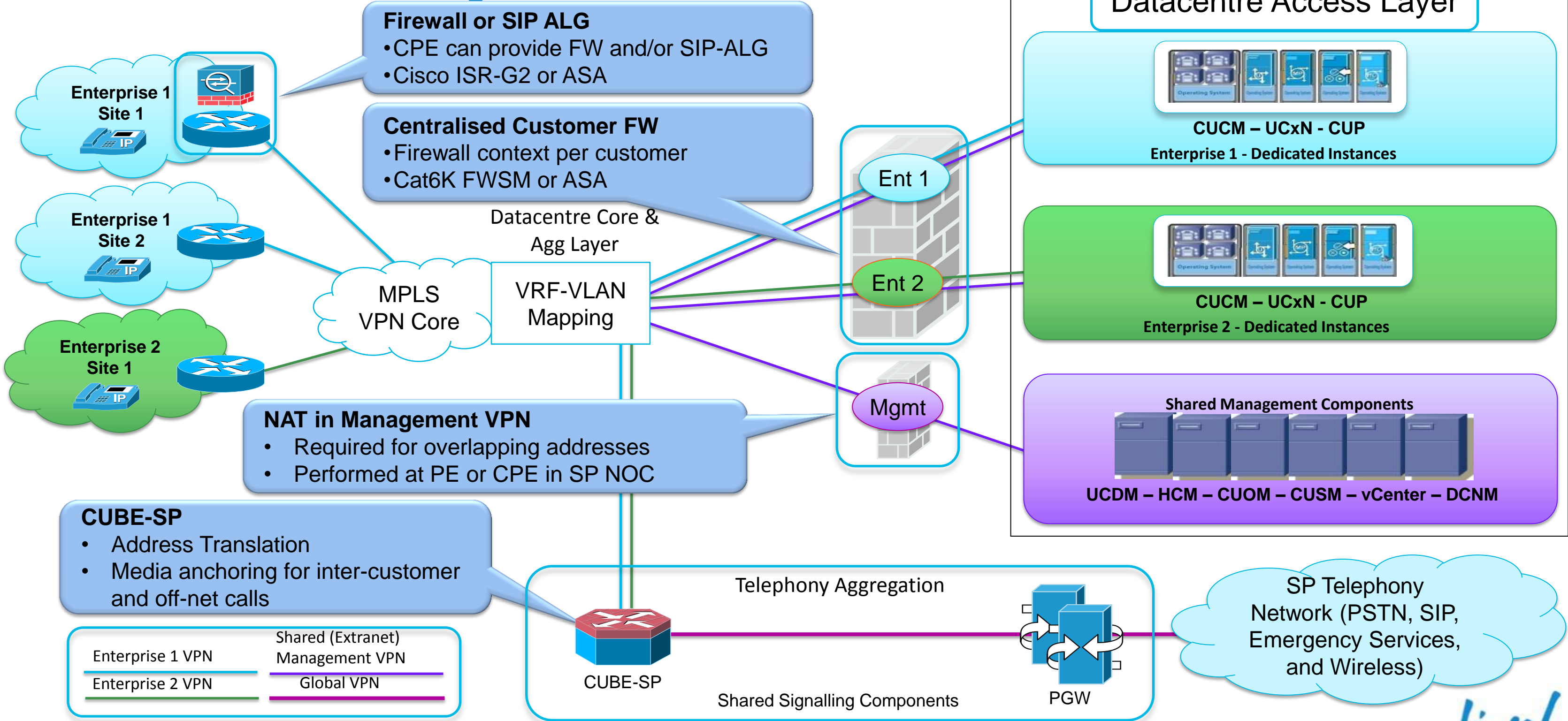
Leveraging VMware High Availability

UCS B-Series Chassis

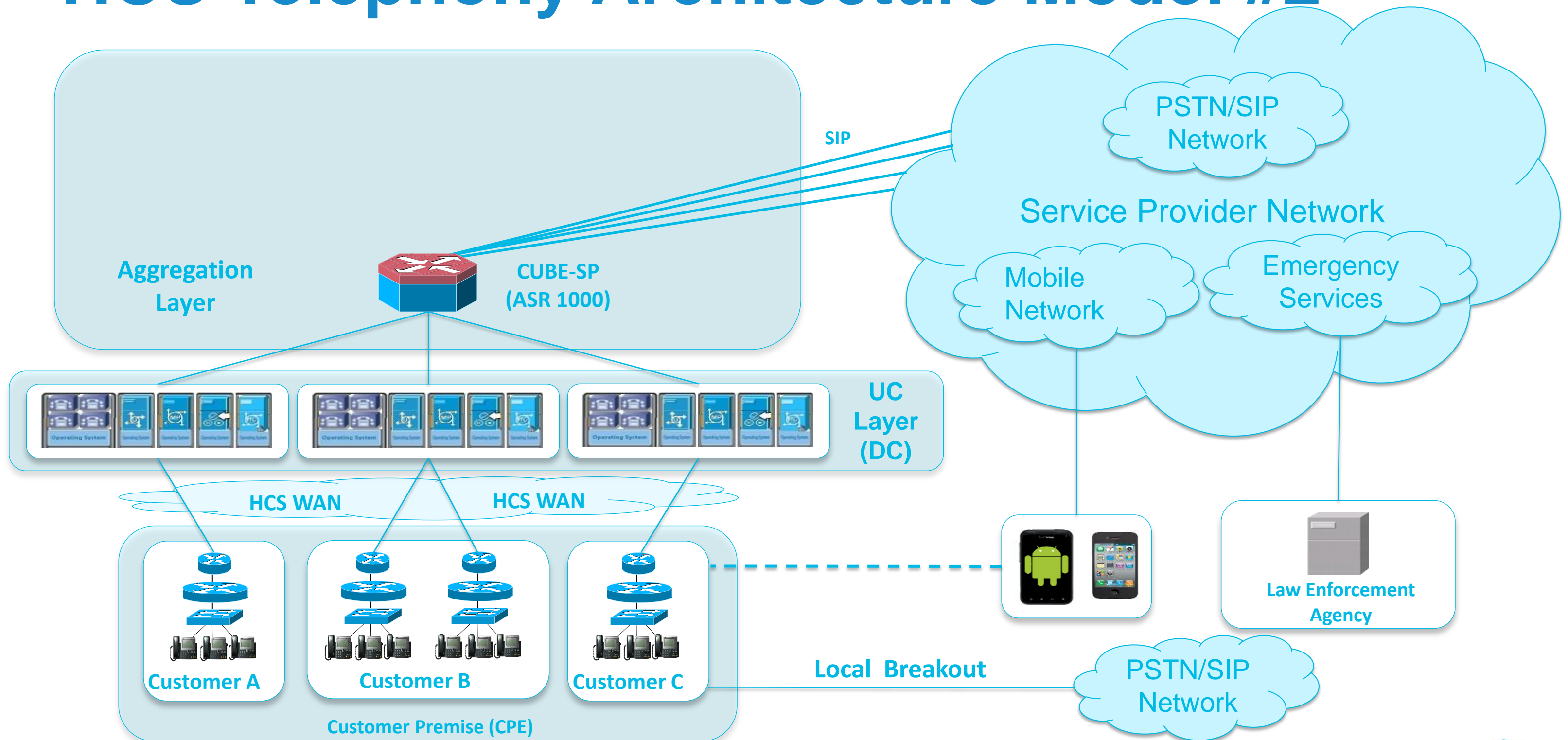
1	CUCM	CUCM	CUCM	CUCM	CUCM	Blade Failure	High Availability Reservation	2	CUCM	CUCM	CUCM	CUCM	CUCM	High Availability Reservation
	CUCM	CUCM	CUCM	CUCM	CUCM				CUCM	CUCM	CUCM	CUCM	CUCM	
	CUCM	CUCM	CUCM	CUCM	CUCM				CUCM	CUCM	CUCM	CUCM	CUCM	
	CUCM	CUCM	CUCM	CUCM	CUCM				CUCM	CUCM	CUCM	CUCM	CUCM	
3	CUCM	CUCM	CUCM	CUCM	CUCM	High Availability Reservation	4	CUCM	CUCM	CUCM	CUCM	CUCM	High Availability Reservation	
	CUCM	CUCM	CUCM	CUCM	CUCM			CUCM	CUCM	CUCM	CUCM	CUCM		
	CUCM	CUCM	CUCM	CUCM	CUCM			CUCM	CUCM	CUCM	CUCM	CUCM		
	CUCM	CUCM	CUCM	CUCM	CUCM			CUCM	CUCM	CUCM	CUCM	CUCM		
5	CUCM	CUCM	CUCM	CUCM	CUCM	High Availability Reservation	6	CUCM	CUCM	CUCM	CUCM	CUCM	High Availability Reservation	
	CUCM	CUCM	CUCM	CUCM	CUCM			CUCM	CUCM	CUCM	CUCM	CUCM		
	CUCM	CUCM	CUCM	CUCM	CUCM			CUCM	CUCM	CUCM	CUCM	CUCM		
	CUCM	CUCM	CUCM	CUCM	CUCM			CUCM	CUCM	CUCM	CUCM	CUCM		
7	Other Applications / Spare Blade						8	Other Applications / Spare Blade						

- Each blade (1-6) belongs to the same VMware HA Cluster
- Each blade has a HA reservation setup to absorb application relocations
- Each blade in the HA cluster has similar performance profiles
- Upon blade failure, applications are reassigned compute resources
 - Manually or Automatically
 - Applications must boot after compute resource assignment

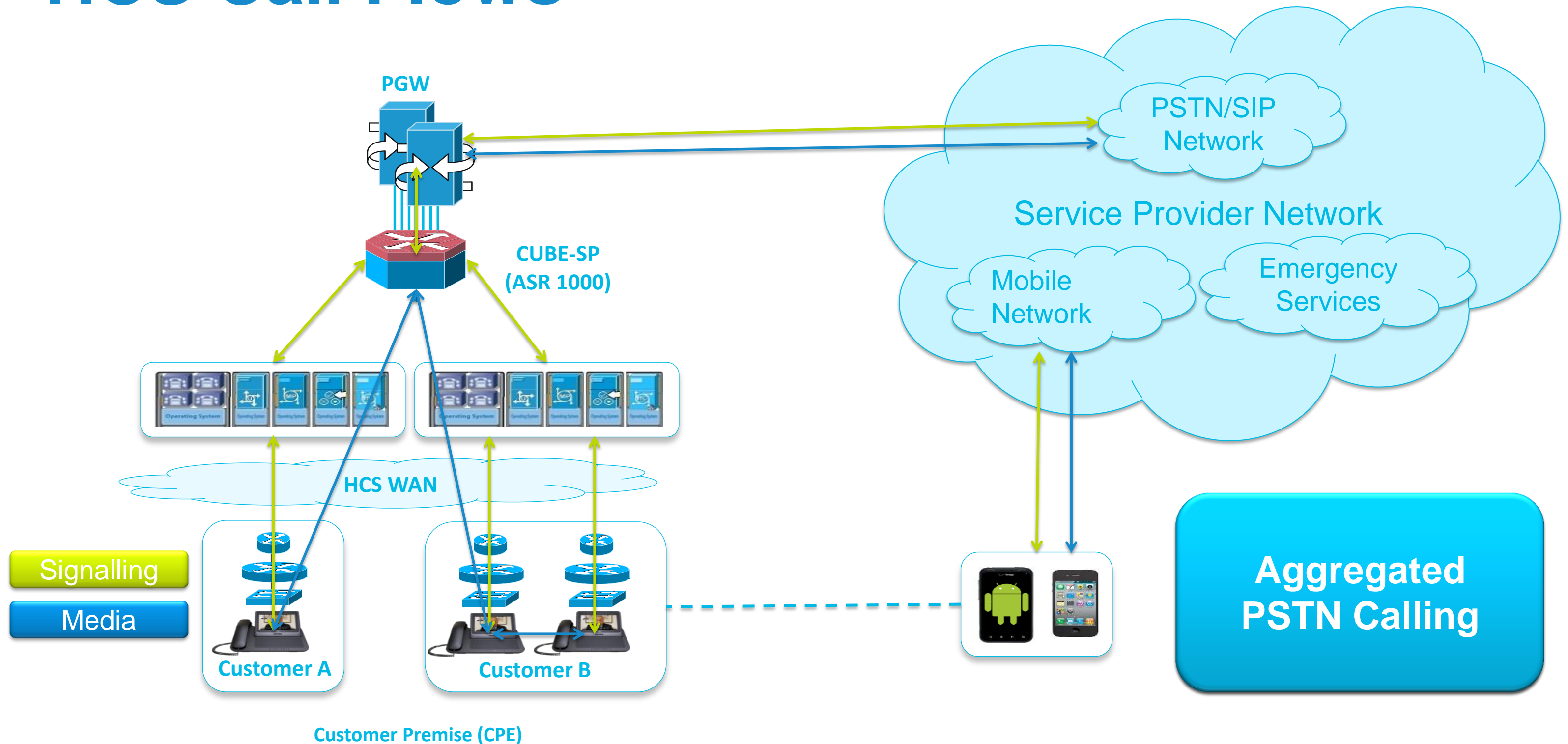
HCS Security Model



HCS Telephony Architecture Model #2



HCS Call Flows



HCS Management Framework

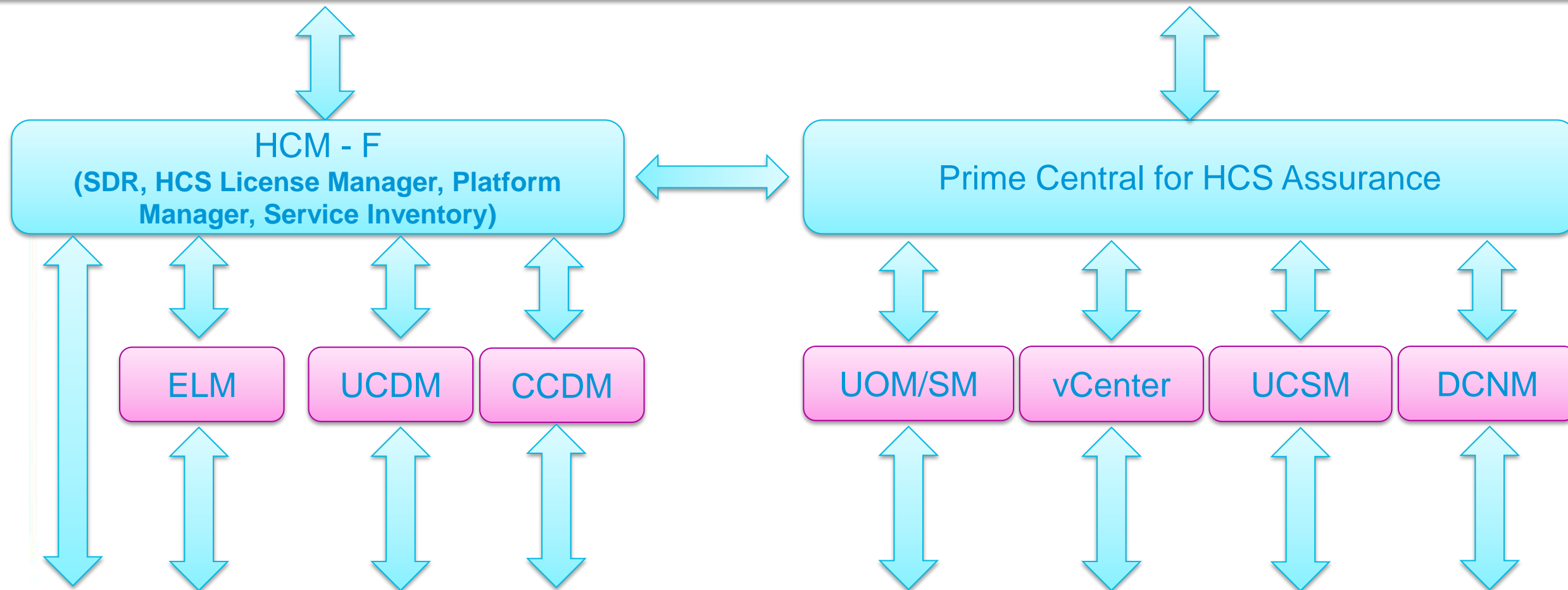


HCS Management Architecture

HCS Component
HCS Domain Manager
SP/Partner Supplied

Service Fulfillment, Service Assurance, and Billing

Existing OSS/BSS



The bottom section shows various infrastructure components within a blue-bordered box. From left to right: 'Cisco webex' (with a cloud icon), 'Cisco Unified Communications' (with icons of phones and servers), 'CPE' (with a server and phone icon), 'Datacentre' (with server rack icons), 'UCS' (with server rack icons), and 'SAN' (with storage icons).

HCS Management Acronym Decoder Ring

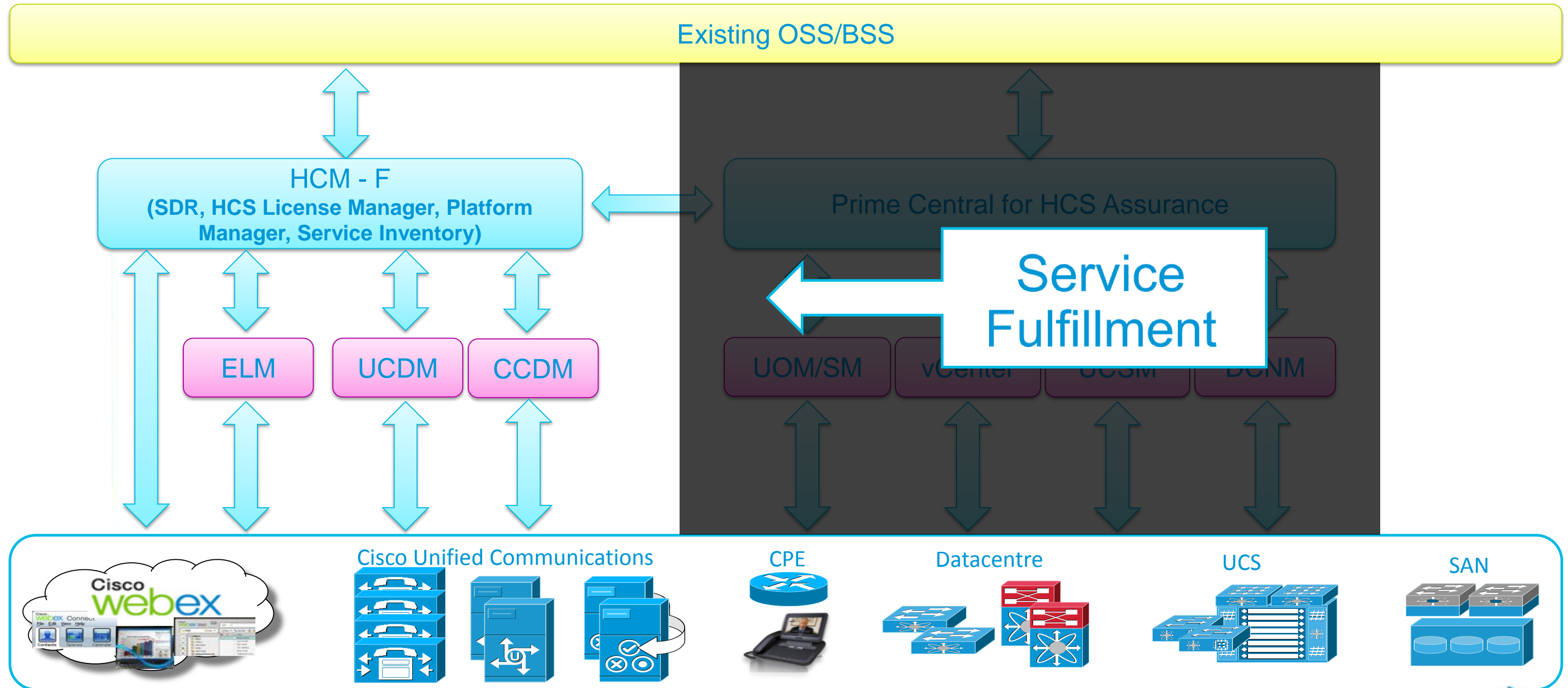


- HCM-F – Hosted Collaboration Mediation – Fulfillment
 - PM – Platform Manager (used for upgrading UC applications)
 - SI – Service Inventory (file used for bundle-based billing)
 - SDR – Shared Data Repository (which customer in which virtual machine)
 - LM – License Manager (tracks license usage in HCS)
 - IPA – Infrastructure Provisioning Assistant (interacts with DC orchestration)
- CCDM – Contact Centre Domain Manager (CC Apps provisioning)
- CUCDM – Cisco UC Domain Manager (UC Apps provisioning)
- ISI – Third Party for metered billing using CUCM CDR feeds
- Prime Central for HCS – Root Cause and Service Impact Engine
 - CUOM/SM – Cisco Unified Operations Manager / Service Monitor (UC assurance)
 - DCNM – Data Centre Network Manager (Nexus/MDS assurance)
 - UCSM – UCS Manager (UCS Blade Server assurance)
- InfoVista – longer-term SLA trending and reporting

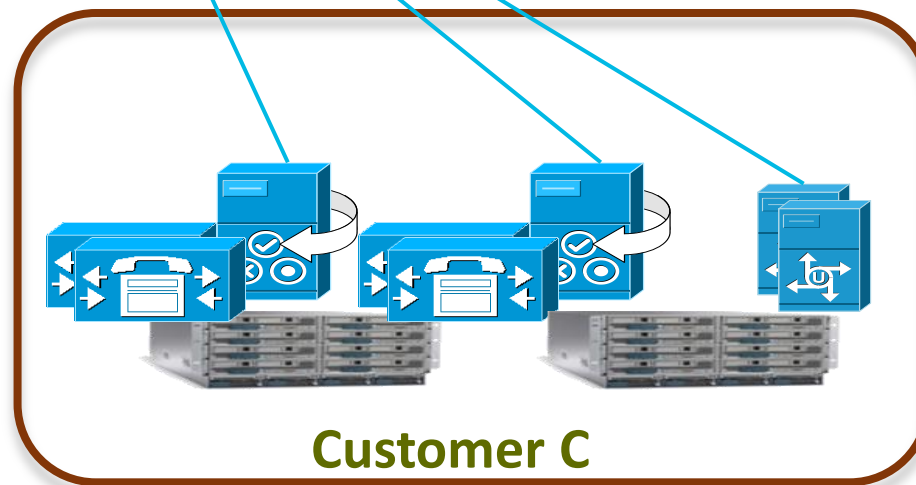
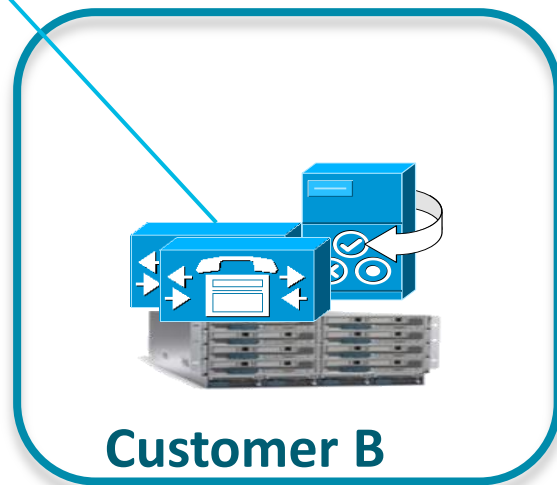
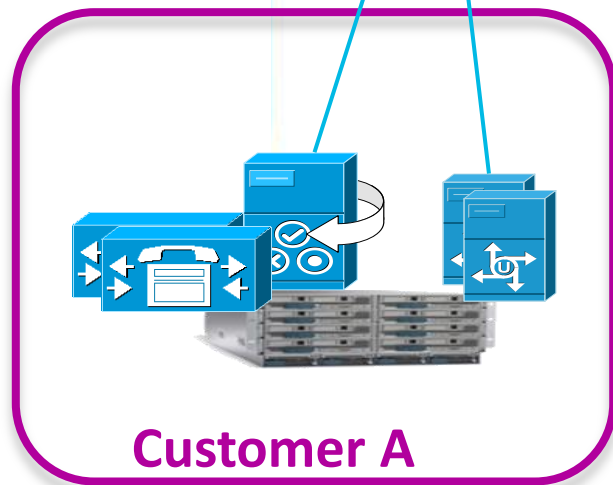
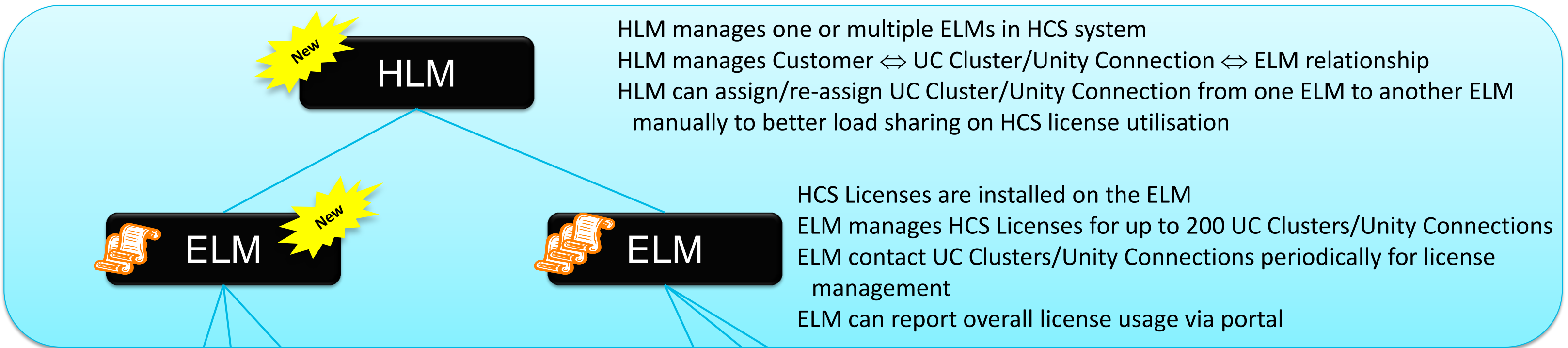
HCS Management Architecture

HCS Component
HCS Domain Manager
SP/Partner Supplied

Service Fulfillment, Service Assurance, and Billing



HCS Fulfillment – License Management



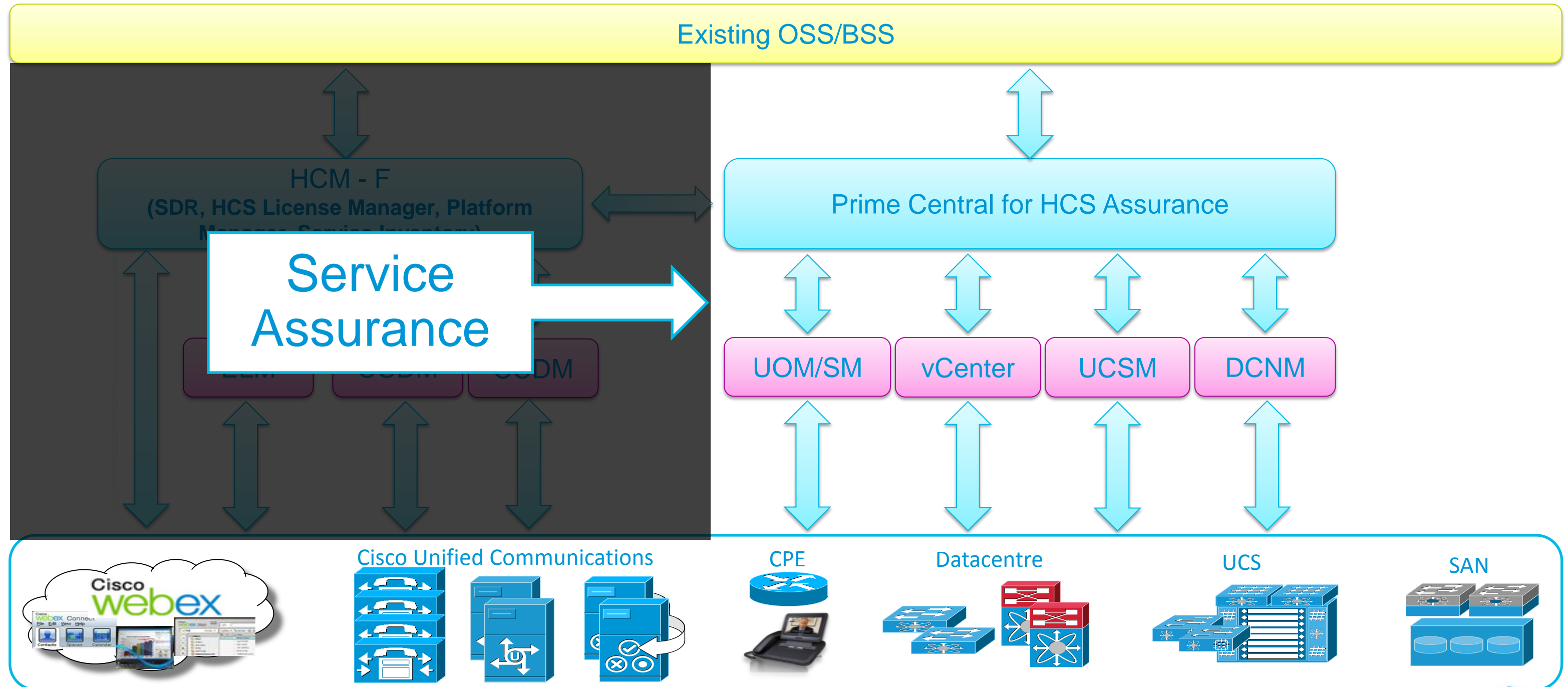
Application request HCS licenses from ELM based on basic HCS License definition. ELM will grant approval if enough licenses are available. Application triggers alarm if insufficient licenses are granted. Application continue to operate as normal during grace period. Additional licenses should be obtained or installed before grace period expiry.

In case of connection failure between UC applications and ELM, application continue to function and subscriber services are not impacted during grace period.

HCS Management Architecture

Service Fulfillment, Service Assurance, and Billing

HCS Component
HCS Domain Manager
SP/Partner Supplied



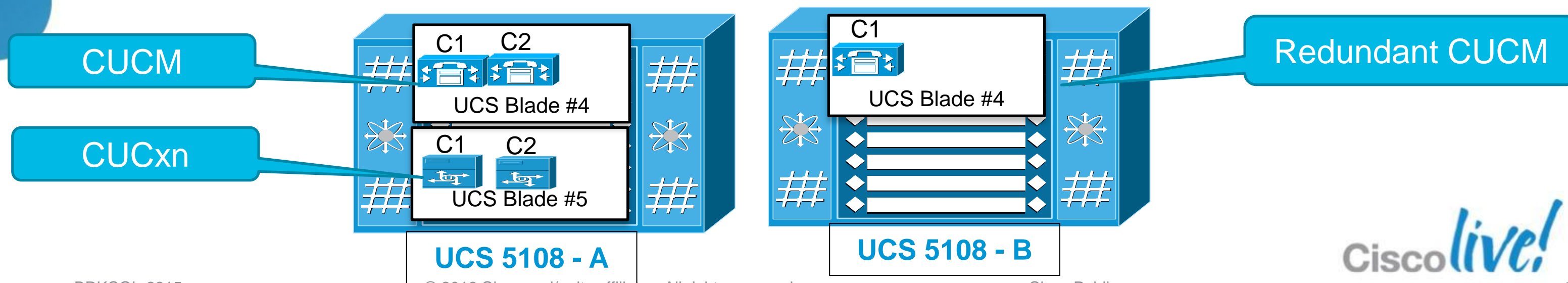
UCS Blade Failure – Use Case (1)

Putting It All Together
UCS Blade Failure

Putting It All Together – Setup Description

- Use Case Illustrates:
 - Shared resource hard failure impacting multiple customers/tenants
 - Dependencies between multiple customer services (Voice, Voicemail)
 - Dealing with resource mobility (VMware HA)
 - Addressing segmented operations (DC vs. UC)

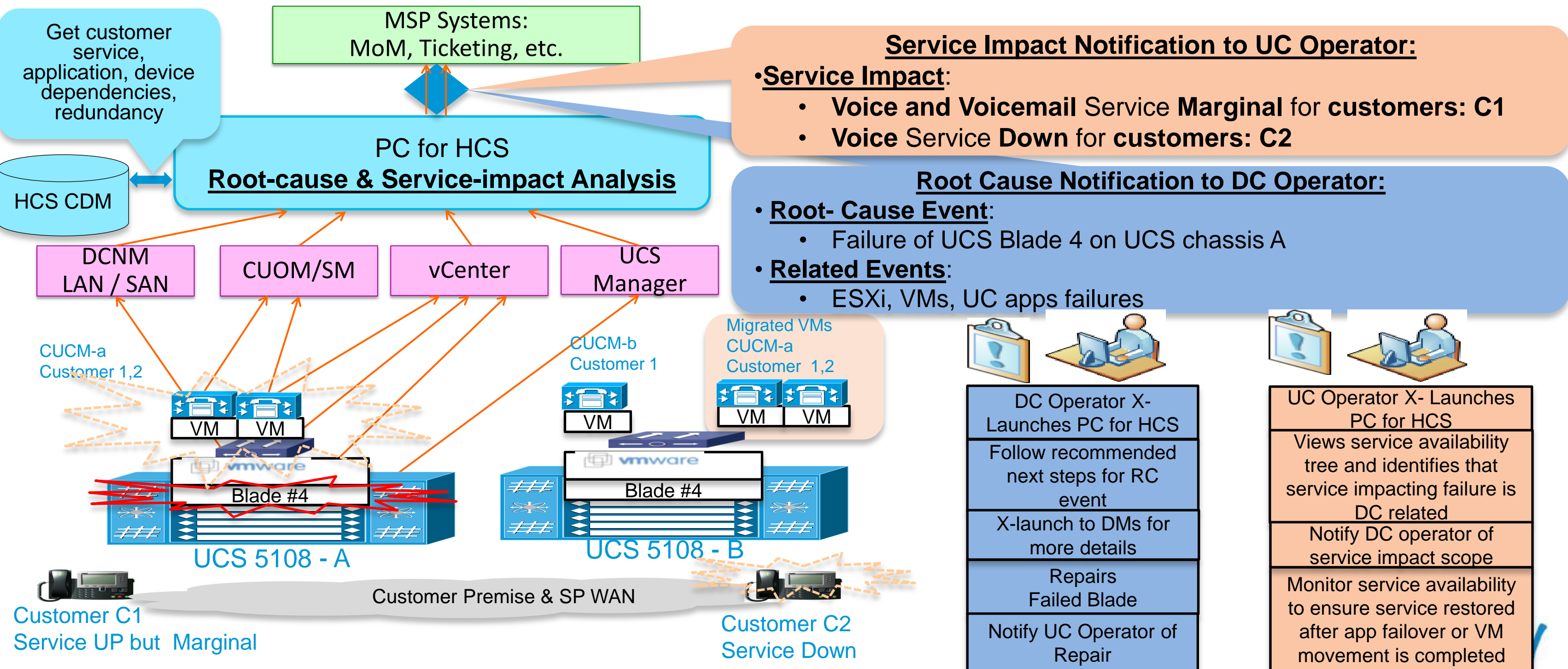
Customer	Services	Applications	Redundancy
C1	Voice, Voicemail	CUCM, CUCxn	CUCM Application
C2	Voice, Voicemail	CUCM, CUCxn	VMware HA



UCS Blade Failure – Use Case (2)

Putting It All Together
UCS Blade Failure

Putting It All Together – Workflow Summary



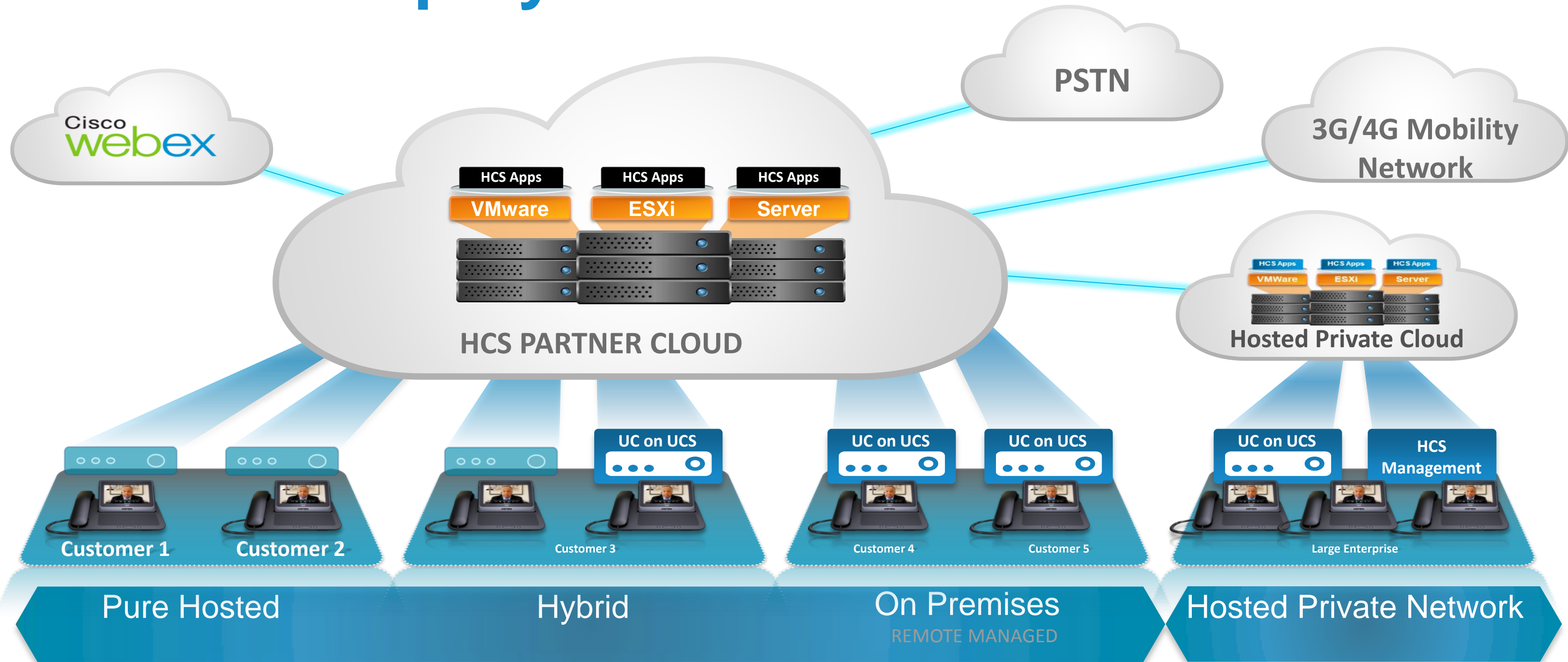
HCS for Customers



Deployment Models



Flexible Deployment Models

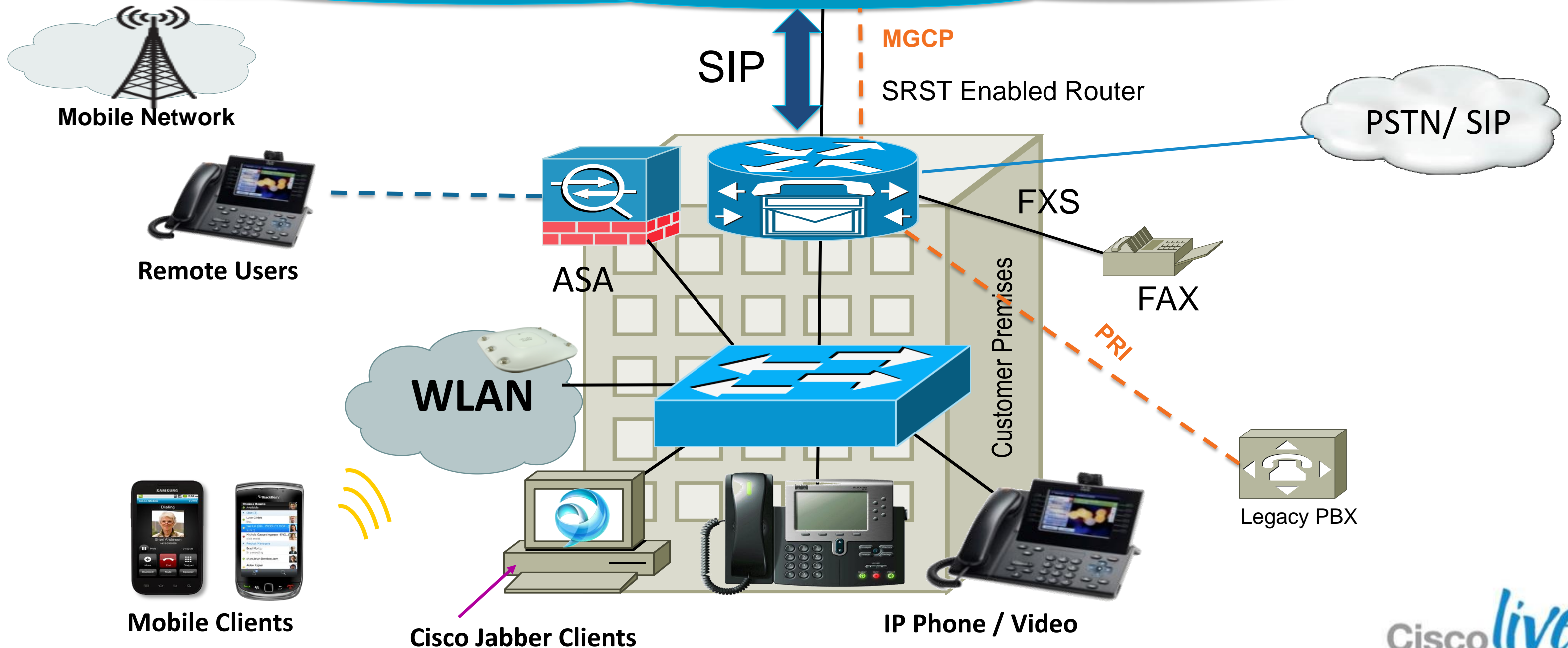


Customer Premise – Pure Hosted

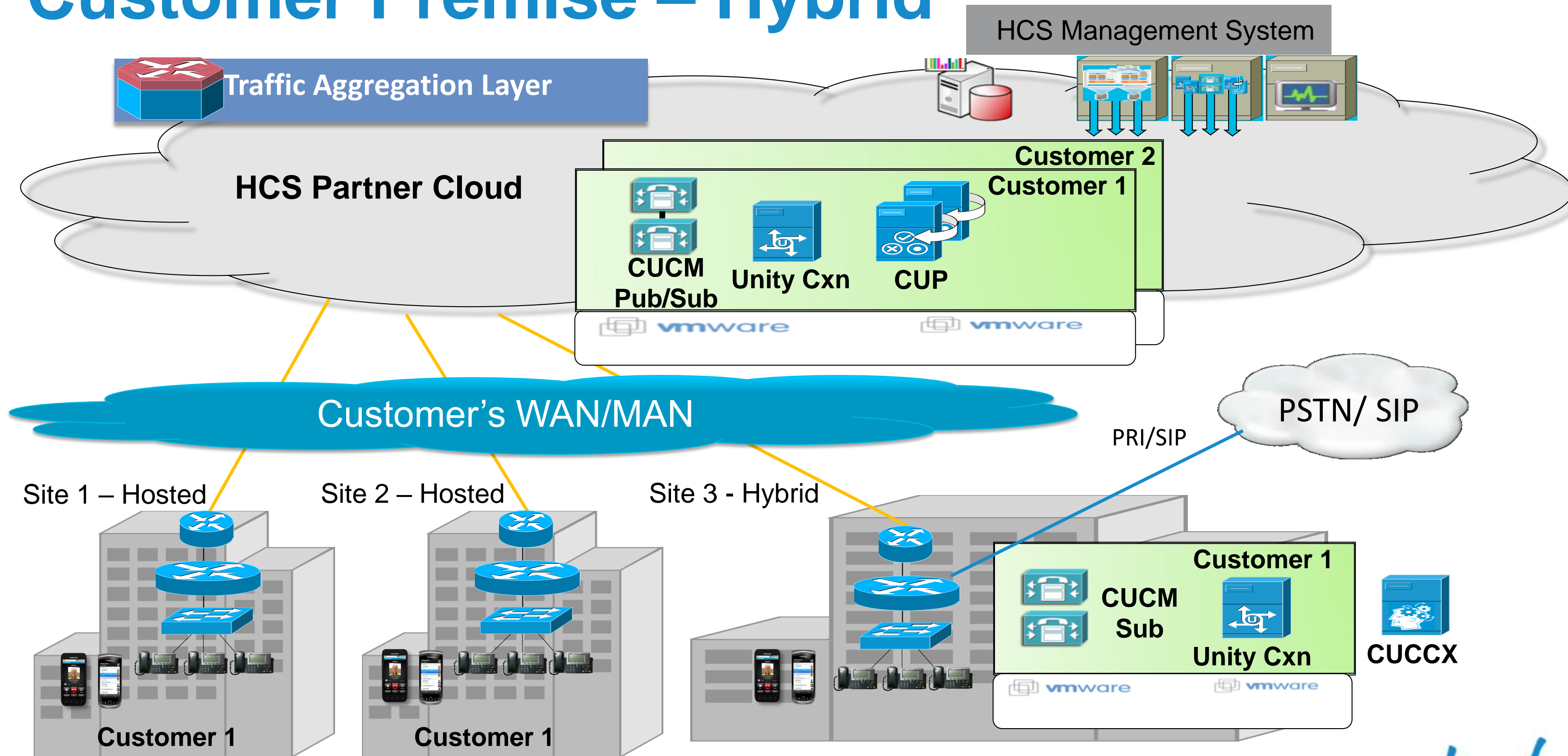
CPE Consistent with Cisco's Smart Business Architecture

http://www.cisco.com/en/US/solutions/ns340/ns414/ns742/ns982/landing_sBus_archit.html

HCS Partner's WAN CLOUD



Customer Premise – Hybrid

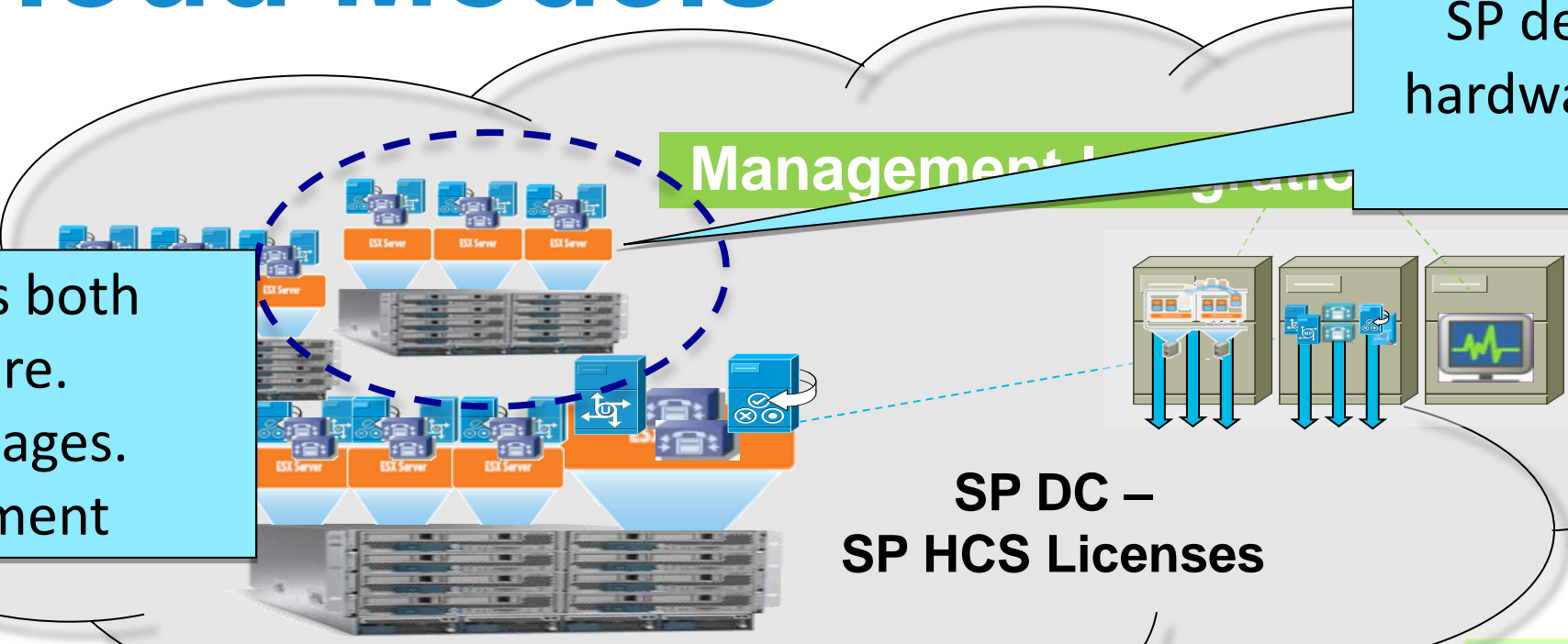


Private Cloud Models

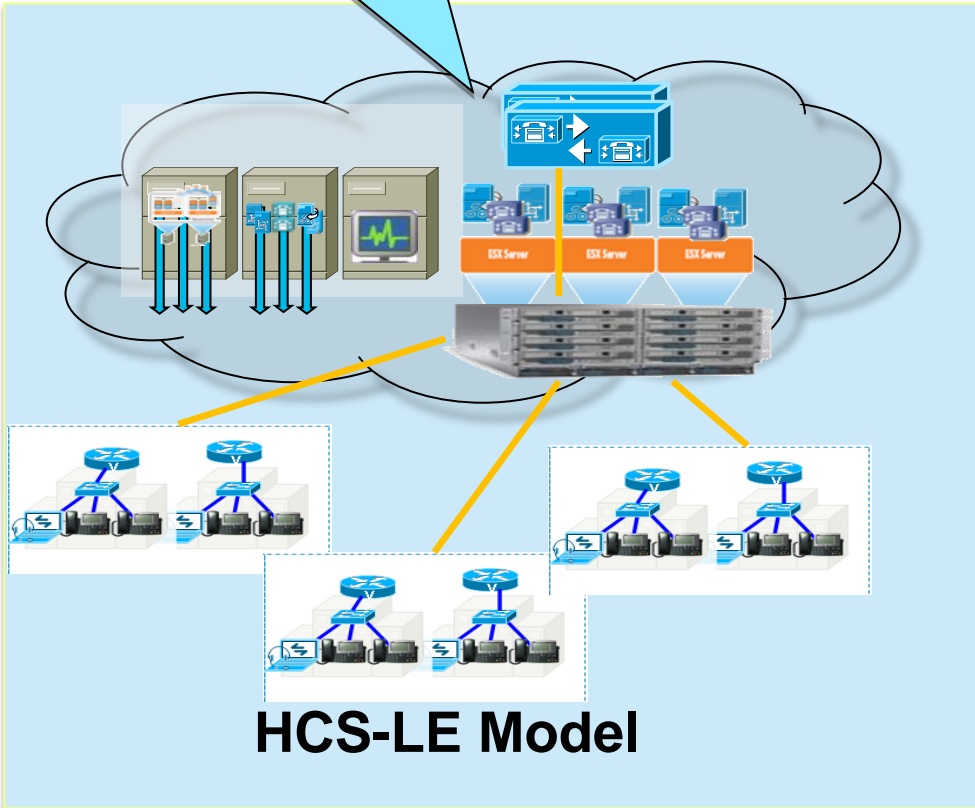
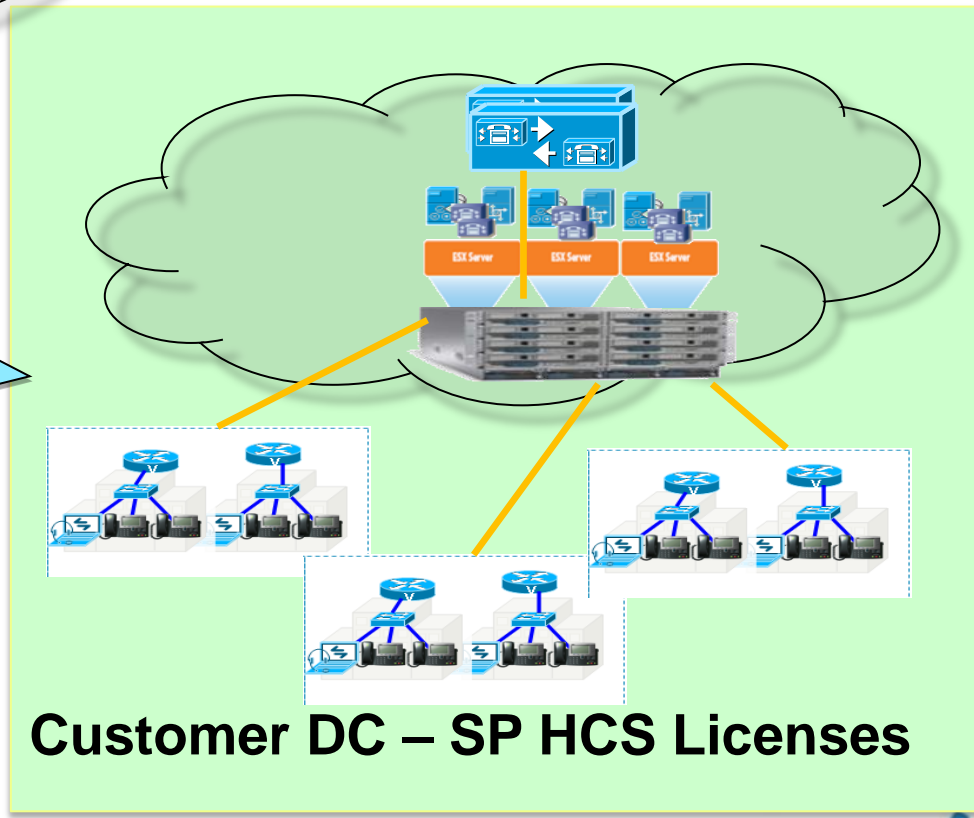
SP dedicates both software and hardware for specific customer. SP hosts and manages

Management & Operations

Customer typically owns both hardware and software. Customer typically manages. Options for SP involvement



SP owns software. SP or Customer own Hardware. Leverage customer DC. SP Manages. Need Clear SLAs and Services Packages to Support.



HCS-LE Model



HCS Target Customer – Large Enterprise

- Fortune 1000, multi-nationals, government, healthcare and large finance organisations
- Business Characteristics
 - Generally greater than 25,000 phones/devices
 - Distributed business operations with many locations
 - Highly dynamic environments, either through organic growth or acquisition
- Technology Characteristics
 - Multi-Vendor, Multi-Technology, Legacy PBX(s) (At capacity and still depreciating)
 - Geographically diverse call control
- Pain Points
 - Complex management and operations due to separate divisions
 - Difficult to upgrade software
 - Multi-Cluster Complexity, High PSTN Costs, Inventory Management



Integrations, Clients, Mobility, Contact Centre and Video



Integration of Third Party Applications

- Great opportunity for HCS partners to differentiate their services and focus on specific verticals
- Below types are approved for integration testing performed and managed by partners
 - Other types subject to HCS product management approval
- Focus on applications that have proven interoperability with Cisco UC; e.g. CDN
- Partner to assure application's requirements for bandwidth, latency, etc. are met and integrations are documented
- In the future, we may introduce a CDN-like program for HCS and/or integrate with the HCS management framework

FTP

- Typically billing & inventory applications pulling CDRs from CUCM
- Low risk

SIP Trunk, CTI, and AXL/SOAP

- Generic SIP trunk and CTI Configuration via UCDM or Manually

SIP Phones

- “Basic” and “Advanced” profiles available

HCS Supports the Jabber Suite of Clients



All-in-one UC Application

- Presence and IM
- Voice, video, voice messaging
- Desktop sharing, conferencing

Collaborate from Any Workspace

- PC, Mac, tablet, smart phone
- On-premises and Cloud
- Integration with Microsoft Office

HCS Unified Mobility Features

- Single Number Reach
 - Simultaneous ring on multiple devices
- Single Business Voicemail
 - Single Voice Mailbox across multiple numbers
- Desk Phone and Mobile Pick-Up
 - Seamless transition of calls between desk phone and mobile devices
- Mobile Voice Access
 - Place calls through HCS Unified Communications Manager
- Cisco Mobile Clients
 - Direct Connect (HCS Solution)
 - RIM Mobile Voice System (Interworking)
 - Mobile Communicator (Interworking)

HCS and Mobile Integration

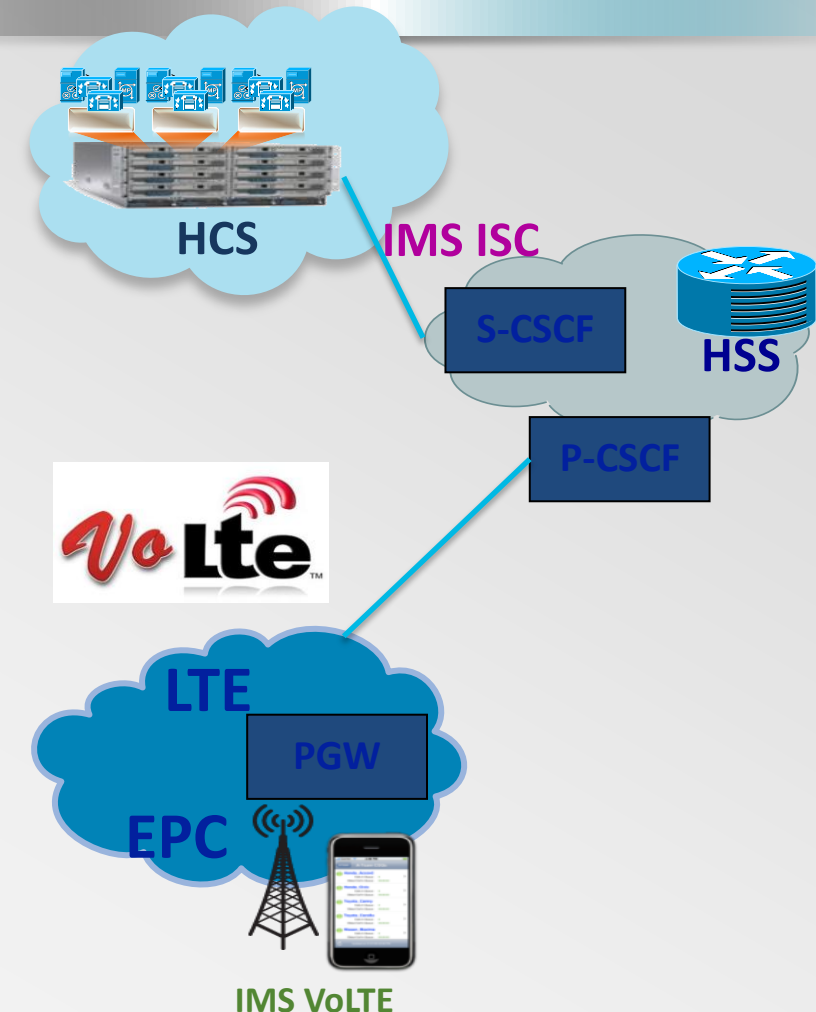
Existing Jabber & WebEx clients & UCM Unified Mobility (SNR)



Client-less office extension to ANY 3G Mobile device (requires advanced mobile VPN)

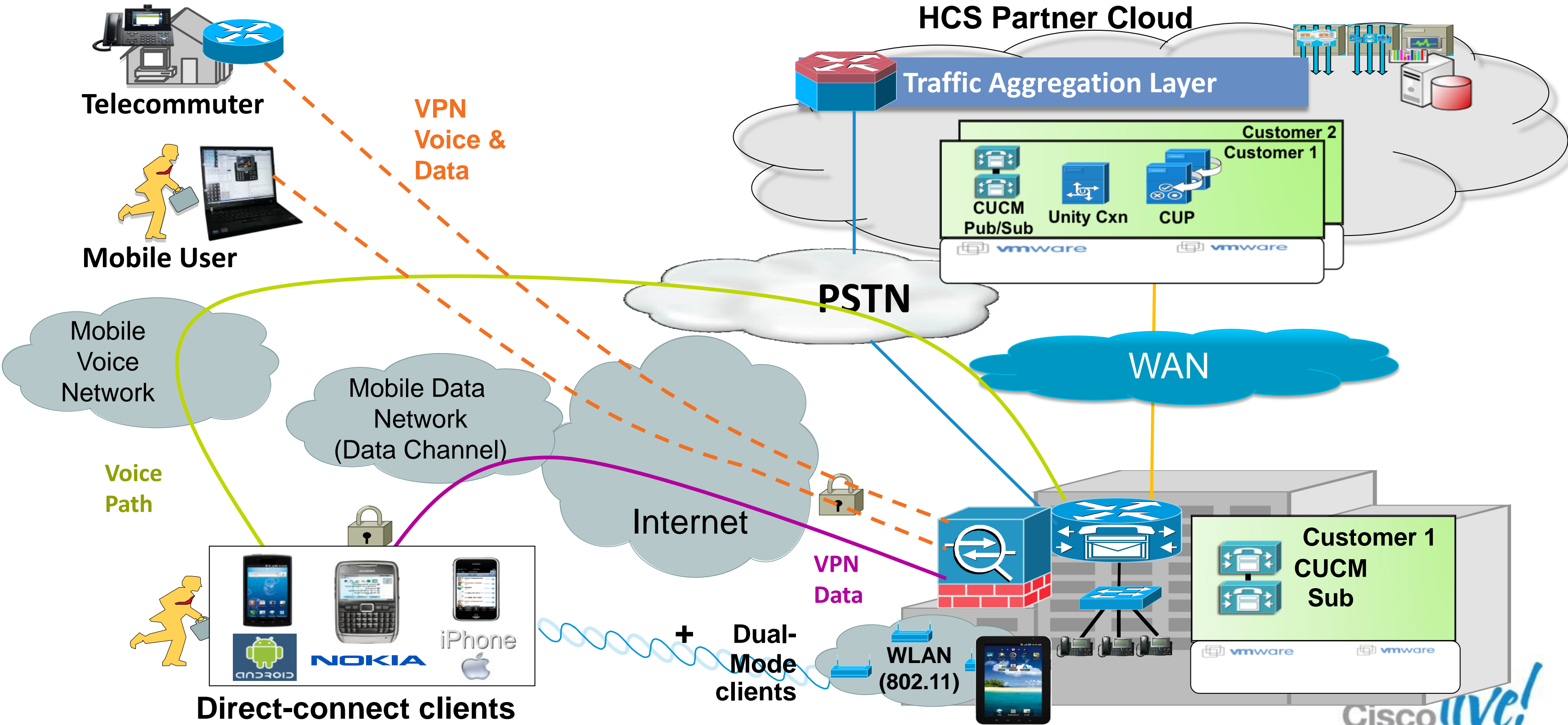


Client-less office extension & Mid-call features on VoLTE



- ✓ Leverage network intelligence to extend UCM call control to ANY mobile device
 - ✓ Larger addressable market
 - ✓ Enable SP to have more “stickiness” with enterprise

HCS Remote Access – Typical Design



HCS 9.0 Key Contact Centre Features

Agent and Supervisor Capabilities

- CTIOS or Finesse desktop
- Outbound
- Agent Greeting
- Whisper Announcement
- CUCM-based Silent Monitoring
- CUIC Premium Reporting
- Mobile Agent



Third-Party Integration

- Recording
- Wallboards
- Workforce Management
- Database Integration
- CRM Integration



IVR / Carrier Integration

- Queuing
- Self-Service
- ASR/TTS
- Report Server
- DTMF
- Carrier integration
 - G.711 ulaw
 - G.711 alaw (native)
 - G.729a Codec



Multi-Customer Collaboration Platform

Each Customer Gets a Private Virtualised Application Suite

Each UCS 5108 chassis supports eight 1000-agent customers or sixteen 500-agent customers

Partner Cloud



B230 Blade Recommended
500 agents ↔ Two customers per blade pair*
1000 agents ↔ One customer per blade pair*

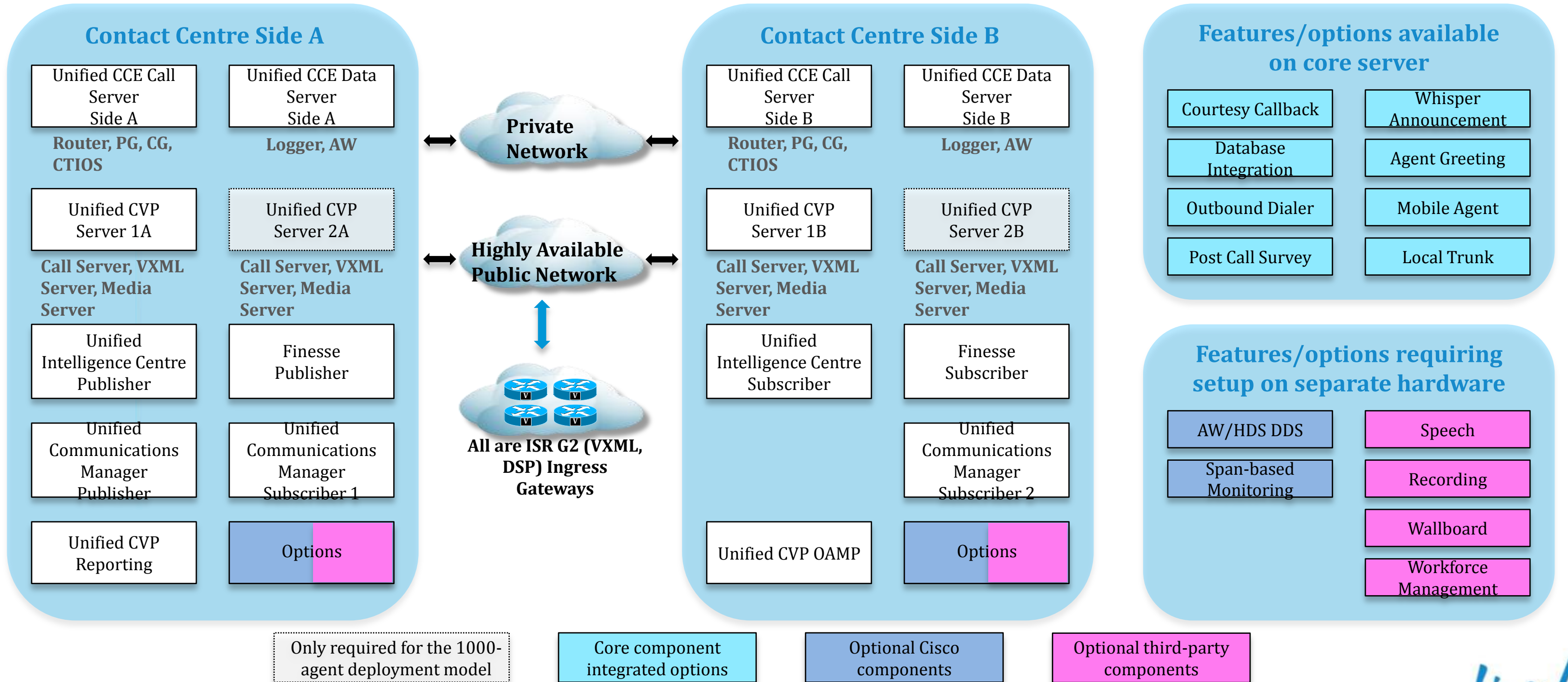
User experience is the same on premises or in the cloud

Supports Tested Reference Configuration (TRC) and spec based hardware

* This configuration still leaves space for installing additional options; Second blade required for redundancy

500 and 1000 Seat High Level Topology*

HCS for Contact Centre 9.0



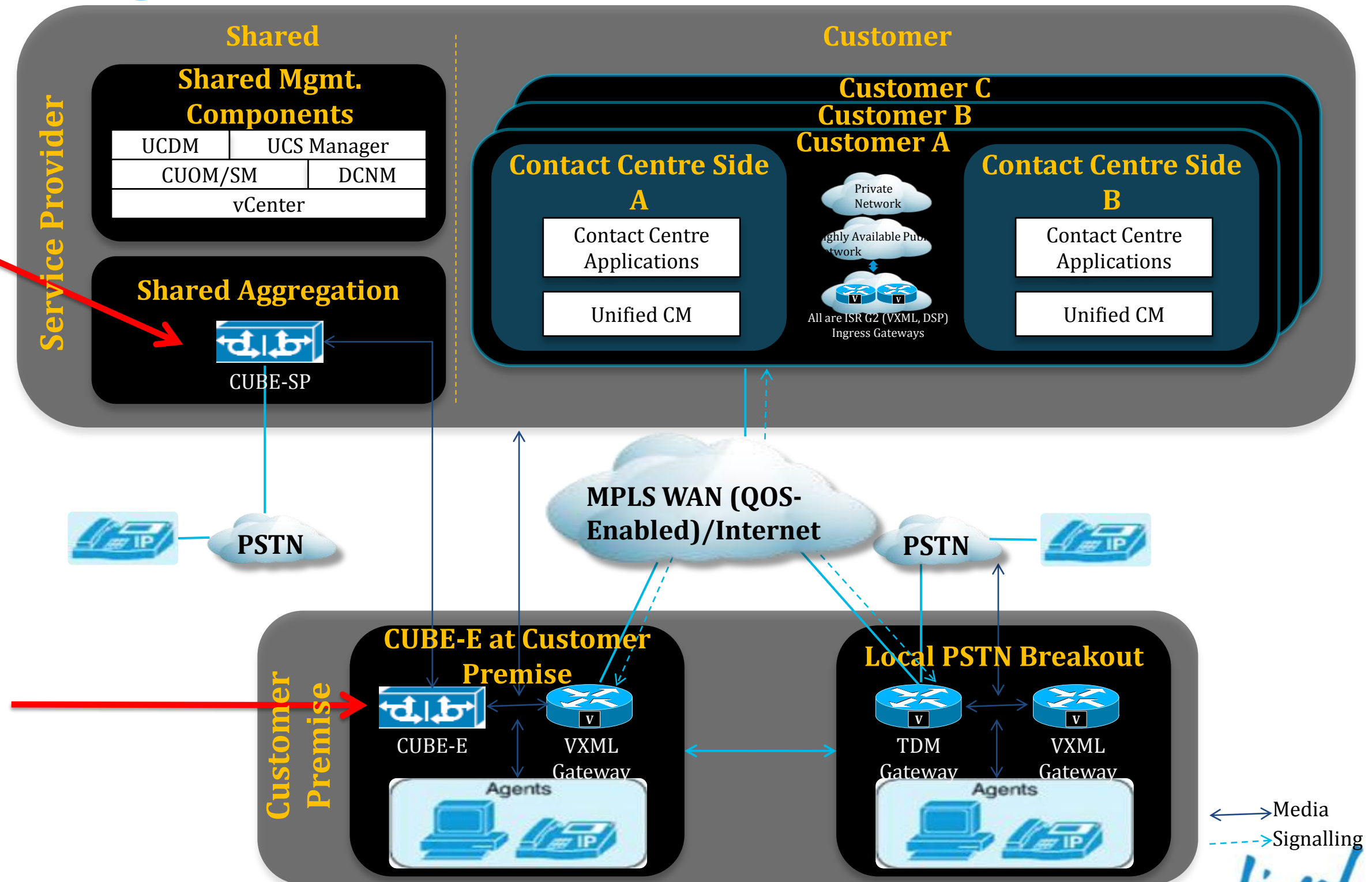
Inbound Calling Options

Centralised
(aggregated) calls for
all customers

And / Or

Option to terminate
call at customer
location

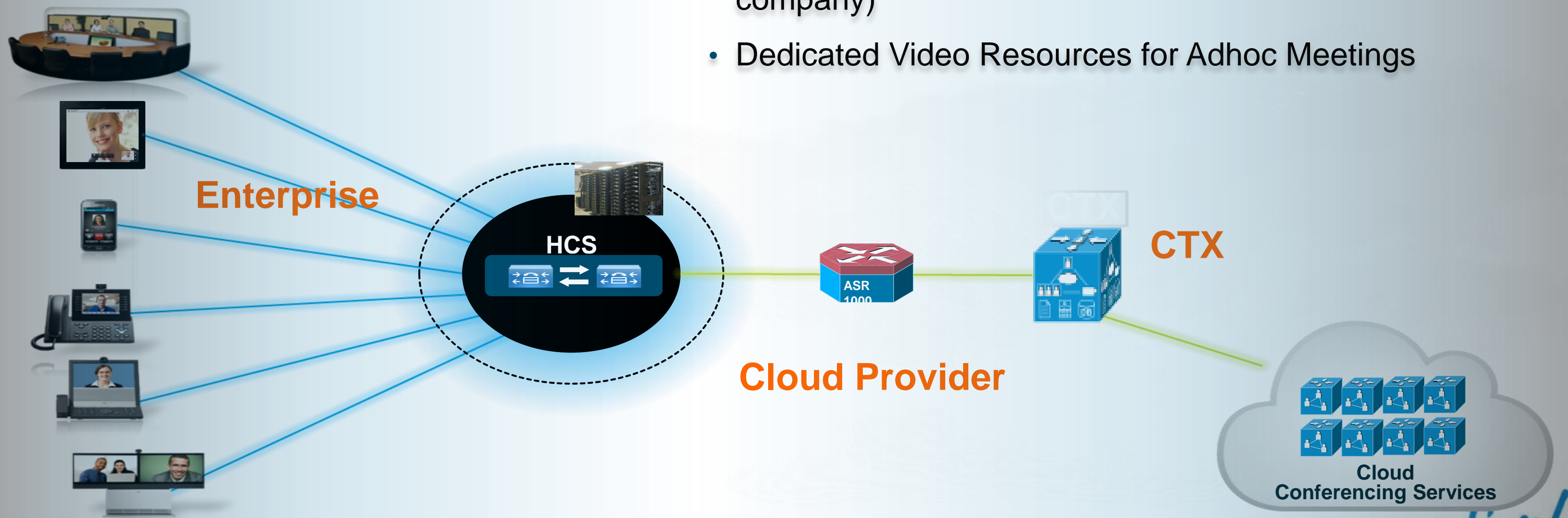
with queuing /call
treatment at
customer site



TelePresence

- Pervasive and Immersive Endpoints
- Point to Point TelePresence calls
- Support for CTX 1.1

- Support for CUCM 9.0 Video specific features
- Shared Video Resources from the Cloud
- Support for Rendezvous TP meetings (Inter and Intra company)
- Dedicated Video Resources for Adhoc Meetings



Design and SLA Considerations



HCS SLA Considerations

- Upgrades
 - Notification/Communication of available upgrades
 - Currency of upgrades (must be within one release of latest available software version within a specified time window)
 - Any windows where upgrades not allowed (Holiday's or Specific Business Events that need to be protected)
 - Any 3rd-Party Integrations that need coordinated upgrade
- Security
 - Voice Signalling and/or RTP Encryption & Type Required
 - Security Updates/Patches – Methods and Procedures
 - Messaging and/or IM Retention & Security Requirements
 - Firewall and IPS/IDS Architecture and Requirements

HCS SLA Considerations

- Integrations Required
 - Existing PBX and/or Legacy Systems (Paging, etc.)
 - Business Applications (Click to call, CTI integrations, etc.)
 - Video Integration (TelePresence, Tandberg, other?)
 - Directory Integrations
- IP/VPN Connectivity
 - WAN/LAN Readiness Assessments
 - NAT Scheme and Architecture
 - Remote User Access Requirements
 - Maximising VPN for Intra-Company Calling and Hop-off
 - DNS/DHCP/TFTP location, ownership and responsibilities

HCS SLA Considerations

- SIP/TDM Connectivity
 - Local Voice Breakout – SIP Trunks or TDM
 - Centralised Voice – HQ and/or Partner Data Centre
 - Dial Plan – Design, Roll-out, Updates, etc.
 - Emergency Call (911, E911) Handling and Requirements
- Portals
 - Administrator and User Provisioning Portal Requirements
 - Visibility of Assurance and Performance Reporting & Metrics
 - Billing

Summary



Summary

- HCS allows certified partners to deliver a full Cisco collaboration portfolio in an “as-a-service” model, targeted at 100+ seat customers
- Fully redundant & scalable architecture validated in Cisco BU labs, with end-to-end system testing
- Feature parity with on-premise Cisco UC solution
- Management Framework for service fulfillment and service assurance
- Unique application instances for every customer (multi-customer, not multi-tenant)
- Flexible deployment models for different customer sizes and requirements

Q & A



Complete Your Online Session Evaluation

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