



Design

Introduction to Design

Using the project plan that was developed in the Plan phase, the design team develops the detailed design. The detailed design contains the network design, which includes a redundancy and failover plan, a disaster recovery plan, and an implementation plan. When the design is reviewed and accepted, a purchase order is generated for equipment and services.

You can navigate to any topic on this tab by using the tab navigation pane at the left of the content pane. This navigation pane contains the table of contents (TOC) for the active tab.

Before You Begin

Review Solution Reference Network Design (SRND) documents and design tools. Gather requirements and data, which can include:

- Business and system requirements
- Service-level agreements (SLAs)
- Capacity (bandwidth) requirements
- Site survey and proposal from the project plan

When You Are Done

The main deliverable of the Design phase is the detailed design, including:

- Network diagrams (see [Network Topology Resources](#) in the Resource Library for editable Microsoft Visio network drawings)
- Routing strategy
- Redundancy
- Call flows
- Traffic flows
- Equipment list
- Bill of materials

Major Concepts and Tasks in This Process

- [Design Concepts](#)
- [Design Tasks](#)

Design Concepts

Read these conceptual, overview topics for the background knowledge you need to build an intelligent design.

- [Using SRND Documents](#)
- [Using Design Tools and Templates](#)

Using SRND Documents

Solution Reference Network Design (SRND) documents provide guidelines, recommendations, and best practices for implementing enterprise networking solutions.

The following SRNDs are recommended for designing Cisco Unified Communications systems:

- Cisco IP Contact Center Enterprise Edition Release 7.0 Solution Reference Network Design (SRND)
http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guide_book09186a008057a473.html
- Cisco Unified Communications SRND Based on Cisco Unified CallManager 5.0
http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_implementation_design_guide_book09186a00806492bb.html
- Cisco IP Telephony SRND for Cisco CallManager 4.1
http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_implementation_design_guide_book09186a00805fdb7b.html
- Enterprise QoS Solution Reference Network Design, Version 3.3, November 2005
<http://www.cisco.com/univercd/cc/td/doc/solution/esm/qossrnd.pdf> (right-click to download PDF)
- Cisco IPCC Express Edition Release 4.5 SRND
http://www.cisco.com/application/pdf/en/us/partner/products/ps1846/c1609/cdccont_0900aecd804273a4.pdf (right-click to download PDF)
- Cisco Customer Voice Portal (CVP) Release 3.1 SRND
http://www.cisco.com/en/US/products/sw/custcosw/ps1006/products_implementation_design_guide_book09186a0080638488.html

Additional SRND resources are available at this location:

<http://www.cisco.com/go/srnd>

Using Design Tools and Templates

Use these design tools to assist you in sizing your network.

- Cisco Unified CallManager Capacity Tool
<http://www.cisco.com/cgi-bin/CT/CCMCT/ct.cgi> 

The Cisco Unified CallManager Capacity Tool calculates the minimum number of active subscribers that are required to support a given installation. The input consists primarily of quantity and usage information on the various device types that are supported in a Cisco Unified CallManager setup.

- IPC Voice Tools

<http://tools.cisco.com/partner/ipccal/index.htm> 

The IPC Voice Tools, such as the IPC Resource Calculators, are intended to simplify and automate the process of sizing contact center resources that are required for specific contact center business operations. The tools are also useful for verifying and troubleshooting existing installations.

The output from these tools can also be used as input to the IPCC Express Configuration Tool and the Cisco Unified CallManager Capacity Tool.

- Solution Expert Tool

Solution Expert is a web-based tool that assists in the design, configuration, quoting, and ordering of Cisco Unified Communications products. Solution Expert is available for Cisco sales and partner systems engineers who have Unified Communications specializations.

With the Solution Expert tool, users can generate a recommended solution based on their requirements. Users can modify the recommended configuration if desired. Solution Expert validates any changes when it presents the new solution. Solution Expert also generates a bill of materials with list pricing, a Visio diagram, and other design documentation. To access Solution Expert, go to the following URL. For an overview of how to use the tool, see the introductory PDF on the home page.

<http://www.cisco.com/go/sx> 

Design Tasks

The following list is an overview of the design process and is not meant to represent an ordered sequence of tasks.

Overview of Design Tasks

- [Identify the Components That You Need](#)
- [Review Tested Deployment Models](#)
- [Review System Caveats](#)
- [Review System Test Results](#)
- [Develop Traffic Engineering Specifications](#)
- [Define Security Policies](#)
- [Define Failover Behavior](#)



Identify the Components That You Need

The Release Matrix identifies the components that you need. A list of component documentation can also be found in the Resource Library. In addition, the Cisco Interoperability Portal aggregates information on how Cisco voice products integrate with legacy, TDM, and traditional voice systems. Links are provided here for your convenience.

- [Contact Center Overview](#)
- [Review Release Matrix](#)
- [Component Resources](#)

- Cisco Interoperability Portal
http://www.cisco.com/warp/public/779/largeent/avid/inter_operability/

Ordering Tools

- Solution Expert is a web-based tool that assists in the design, configuration, quoting, and ordering of Unified Communications products. Solution Expert is available for Cisco sales and partner systems engineers who have Unified Communications specializations. To access Solution Expert, go to the following URL:
<http://www.cisco.com/go/sx> 
- Cisco Unified Contact Center Express/Cisco Unified IP IVR Ordering tool
http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_how_to_order.html 

Review Tested Deployment Models

The tested deployment models reflect the business requirements that were introduced on the Prepare and Plan tab. Each deployment model was installed, configured, and tested with hardware and software designed to work together seamlessly and to provide a complete and optimized contact center solution. The tested deployment models provide you with guidance for your design and implementation. Compare your design to these models to see if they have similar characteristics. Where your requirements are different, do a risk analysis. See [Using SRND Documents](#) to help you with your design decisions.

Refer to this content map for an overview of the deployment models that are implemented in the contact center environment.

Topic	Description
Test Deployment Models and Sites	Describes the site models and routing models used in the test deployment models: <ul style="list-style-type: none"> • Single site • Multisite centralized • Multisite distributed
Test Bed Software Implementation	Describes how the contact center software, network management, security, Customer Response Solutions (CRS), Unified CVP, and the parent and child model were implemented at the test sites.
Unified IP IVR Test Sites	Provides component lists, topologies, and site definitions for IP IVR sites that are testing Cisco Unified CallManager Post-Routed call flows.
Unified CVP Test Sites	Provides component lists, topologies, and site definitions for CVP sites that are testing Unified CVP Post-Routed call flows.

Review System Caveats

System caveats are system limitations and restrictions. Check the [Limitations and Restrictions](#) section in the latest release notes to make sure that your design has taken all system caveats into consideration.

Review System Test Results

System test results show the scope and extent of the testing conducted for Cisco Unified Communications systems in a test environment that is modeled on real-world deployments.

Depending on the network you are designing and your specific environment, use the system test results as a guide and supplement for your own site test and turn-up plan.

For the results of testing for Cisco Unified Communications Release 5.0, see [System Test Results](#) in the Resource Library.

Develop Traffic Engineering Specifications

For background information on various traffic analysis concepts and features that are applicable to Voice over IP (VoIP), see the following white paper:

- Traffic Analysis for Voice over IP

http://www.cisco.com/en/US/tech/tk652/tk701/technologies_white_paper09186a00800d6b74.shtml

See the following resources and best practices for sizing contact center components based on the amount of traffic:

- Cisco CallManager Capacity Tool

<http://www.cisco.com/cgi-bin/CT/CCMCT/ct.cgi>

Use the Cisco CallManager Capacity Tool to calculate the minimum number of active subscribers that are required to support a given installation. Input consists primarily of quantity and usage information on the various device types that are supported in a Cisco Unified CallManager system.

- Bandwidth calculators for contact center systems

<http://www.cisco.com/univercd/cc/td/doc/product/icm/bandcalc/index.htm>

The output from these tools can also be used as input to the IPCC Express Configuration Tool and the Cisco Unified CallManager Capacity Tool.

In addition, these third-party traffic engineering tools are provided for your reference:

- VoIP Bandwidth Calculator

<http://www.packetizer.com/voip/diagnostics/bandcalc.html>

- Online Erlang traffic calculators

http://www.erlang.com/calculator/voip_calculator.htm

The following SRND also includes information on sizing your contact center components:

- Cisco IP Contact Center Enterprise Edition Release 7.0 Solution Reference Network Design (SRND)

http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guide_book09186a008057a473.html

Define Security Policies

Refer to security policies in these guides:

- Cisco Unified CallManager Security Guide, Release 5.0(2)
http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_administration_guide_book09186a0080624db9.html
- Cisco Unified CallManager Security Guide, Release 4.1(3)
http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/4_1/sec_vir/ae/sec413/index.htm
- Specific component documentation is available in the [Component Resources](#) topic in the Resource Library.


Additional security information is included here for your reference:

- IP Security white papers and design guides
http://www.cisco.com/en/US/netsol/ns340/ns394/ns165/ns391/networking_solutions_package.html
- Integrated network security—SAFE Blueprint
http://www.cisco.com/en/US/netsol/ns340/ns394/ns165/networking_solutions_audience_business_benefit09186a008033a411.html


Define Failover Behavior

Specific test cases were executed as a part of Cisco Unified Communications System Release 5.0 failover testing. See [Failure, Failover, and Recovery](#) for specific information.

Additional Sites and Services

Steps to Success is a Cisco methodology that outlines the tasks required to complete a successful customer engagement. Registered users can visit the [Steps to Success](#)  resource site for Cisco Unified Communications process flows.

Advanced Services is a Cisco service offering that provides engineering expertise and best practices.

- Registered users can visit the [Advanced Services](#)  resource site.
- Nonregistered users can visit the [Advanced Services](#) external site.