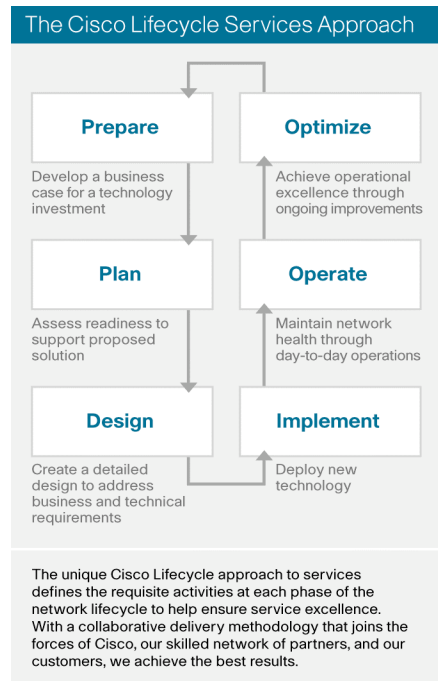


Cisco medianet Readiness Assessment (MRA) Service

The Cisco[®] medianet Readiness Assessment (MRA) Service helps organizations accelerate smooth deployments of media-rich applications and makes sure that customers get the most from their technology investment.



Service Overview

In today's competitive business environment, enterprises that can effectively communicate, collaborate, and respond rapidly to change are most likely to succeed. In order to make sure that customers can deploy media-rich applications smoothly, they must go through a prepare and plan phase that enables them to understand how best to get their network media ready.

Enterprises can face several challenges as they prepare their networks for video adoption. Unlike voice, video is more bursty and bandwidth intensive, and it is more sensitive to delay, jitter, and packet loss. As the benefits of video are realized, the adoption rate of video applications and convergence will accelerate in the coming years, putting more pressure on enterprises to get ready for video.

MRA is a service that should be performed when planning to deploy video (or media-rich) applications over the enterprise IP network. To reap the advantages of the media-rich applications, organizations need to make sure that the network is well prepared to address challenges posed by these applications. MRA is a comprehensive service offering that provides an assessment of all network infrastructure and its ability to transport the media-rich applications that need to be deployed. The service offering helps enterprises prepare, plan, and design their networks for the successful implementation of the media-rich applications. MRA is part of Cisco's lifecycle approach – prepare, plan, design, implement, operate, and optimize (PPDIOO) – to delivering services that help ensure customer satisfaction and return on investment. MRA encompasses the prepare and plan phase and provides input for the design phase of deployment. The service is delivered by the Cisco Advanced Services group, who have a deep understanding of the requirements imposed on the network by not only the new media-rich applications but also considerations such as performance, scalability, security, and high availability.

Challenges in Deploying Media-Rich Applications

Cisco offers several media-rich applications that have a profound effect on an organization's ability to communicate, cooperate, and respond to unforeseen business issues. However, to provide the consistent, high-quality experience enterprise users expect, the organization's network and the media-rich application itself must be optimally designed and implemented. Without careful consideration of an enterprise's specific business and technical requirements, IT and end-user

experience, and effect of the solution on the overall network, organizations might not realize the full potential of these media-rich applications.

Video is a powerful business tool, but new challenges need to be addressed in order to meet user expectations for a flawless experience. As mentioned previously, converging video onto an IP network is much more complex than converging voice over IP (VoIP) because video:

- Is bandwidth intensive
- Is bursty
- Has several different types of video applications, such as
 - Live and on-demand high-definition streaming video
 - High-definition digital signage
 - High-definition video surveillance
 - Standard definition desktop video conferencing
 - High-definition virtual-presence interactive video (Cisco TelePresence™)

Each type of video application has unique requirements and characteristics and requires a networkwide strategy to help ensure a high-quality user experience.

Quality of Service

Like voice, video applications have strict requirements and are generally much more sensitive to packet loss because each packet could represent a tremendously compressed amount of visual information, and even small packet losses can result in visible degradation of the video quality. In contrast, VoIP codecs can conceal small packet losses (up to 1 percent) effectively.

Video traffic has stringent quality-of-service (QoS) requirements for bandwidth, packet loss, jitter, and delay. These are even more stringent for video applications that are real time or interactive and require high-definition resolution. Video traffic is very bursty and bandwidth intensive; a high-definition stream could require more than 20-Mbps bandwidth for delivery over the network. And unlike the constant-rate nature of voice packet transmission, video packets are variable in rate and size. The high compression ratio of video traffic makes it even more sensitive to the packet loss compared to that of VoIP. Normally, video has a more than 99 percent compression ratio, so even a small amount of packet loss or jitter can cause noticeable disruptions in the user experience, and latency must be kept to a minimum so large buffers in the network or at the receiving endpoints are not needed to compensate for high jitter.

To increase the challenges, not all media-rich applications have the same requirements of the network. Table 1 shows that different applications can vary significantly.

Table 1. Video Application Requirements

Metric	Video Collaboration	Digital Media System (DMS) or Digital Signage	Cisco TelePresence	Video Surveillance
Latency	200 ms	200 ms	150 ms	500 ms
Jitter	10 ms	10 ms	10 ms	10 ms
Loss	0.05%	0.05%	0.05%	0.5%

High Availability

Video applications require millisecond-level network service recovery because video traffic cannot accept unpredictable or large network recovery timeouts. Thus convergence targets will be higher, and packet loss due to network outage must be minimal.

Enterprises also need a survival strategy to use localized services in case of link failure; remote branch offices need to be able to function alone.

Security

Numerous security threats affect media-rich communications. A comprehensively designed media-ready network design can provide visibility into threats such as:

- **Eavesdropping:** Unauthorized listening to and recording of video conversations present the risks of privacy loss, reputation loss, and regulatory noncompliance.
- **Denial of service:** The loss of media-rich services can lead to lost productivity and business.
- **Compromised video clients:** Hacker control of video clients, such as cameras, displays, and conferencing units, can result in fraud, data theft, and damaged reputations.
- **Compromised system integrity:** Hacker control of video application servers or the video control infrastructure presents risks similar to those of compromised clients, but on a significantly greater scale, and with the potential to cause major productivity and business loss.

Bandwidth

Media-rich applications contribute to the use of large amounts of bandwidth. Burstiness is another critical bandwidth-related concern. When provisioning bandwidth, enterprises must also consider burst requirements.

Some video applications have a traffic model with a single or a few video sources transmitting to many simultaneous viewers. Deploying bandwidth-optimization techniques to minimize bandwidth requirements is highly advantageous. IP multicast and stream splitting can provide efficient distribution across the network.

Visibility and Monitoring

Successful video delivery requires IT organizations to continuously make sure of the acceptable performance of their video applications by constantly measuring the performance and evaluating the network capacity to verify that service-level agreements (SLAs) on service quality are being met.

MRA Description

MRA is a simplified process, consisting of the various phases shown in Figure 1.

Figure 1. MRA Process Outline



Information Gathering

This phase involves interviewing various enterprise contacts and gathering the information. This information helps evaluate the current and planned network implementation, including hardware,

software, network design, network links, and applications, and help to bring all the business requirements together and understand them as well. Each of these areas is evaluated against Cisco best practices and requirements for a video-ready network.

Network Audit, Data Collection

This phase involves active monitoring of the network and obtaining details of the bandwidth utilization, QoS statistics, and device performance.

Bandwidth/Device Utilization and QoS statistics

The bandwidth, device utilization, and packet loss/jitter/latency statistics can be obtained at regular intervals. This is done while taking various business activities into consideration, in order to capture performance during periods of high network activity interleaved with mission-critical traffic. Network traffic monitoring and SLA measurement tools are used to collect this information. Peak hour utilization of bandwidth and device resources is also calculated and tabulated.

Predeployment SLA Assessment

For proper planning, a network SLA assessment needs to be done to assess the current SLAs that the network provides. Traffic simulation tools are utilized to inject sample video flows into the network and collect SLA stats. The sample video flows simulate various video applications such as Cisco TelePresence, high-definition and standard-definition video collaboration, and live streaming video. Even successful tests with the sample video do not make sure that the scalability and performance can be achieved during the actual deployment. The predeployment sample video flows only help determine the gaps. Based on this assessment, a gap analysis of the current network and a media-ready network SLA are provided.

Data Analysis, Reporting, and Recommendation

The data obtained for various hardware/software features/parameters is tabulated, and an evaluation is made of features that are missing from either the hardware or the software, in order for the network to be a media-ready network. In this case, the analysis takes into consideration the specific requirements and what expectations the enterprise has of its media-ready network (that is, what multimedia applications need to be deployed and what is the required scale).

The captured statistics would help assess if the hardware needs to be upgraded.

The enterprise bandwidth requirement and current bandwidth utilization analysis would help determine if the enterprise network needs to upgrade the network/link bandwidth.

In addition to the above requirements, network high-availability requirements and gaps are taken into consideration to determine what the upgrade recommendations should be.

Postdeployment Monitoring and SLA Assessment

After the enterprise deploys the video solution and addresses the predeployment assessment recommendations, it is strongly recommended that monitoring and SLA assessment be performed for possible issues affecting not only the video traffic, but also existing data and voice traffic. Bandwidth and device resource utilization measurements are obtained in regular intervals over a period of time to make sure that the expected SLA is being met.

At this stage, it would also be beneficial to perform a scalability check for the required number of broadcast video and VoD flows along with existing data and voice applications/traffic. This would help ensure that the video deployment has succeeded.

Modular Assessment

In doing the MRA, a modular approach is recommended and followed, thereby dividing the assessment into different logical modules, with each module covering specific checks. When taking a modular approach, MRA can be divided into two separate assessment packages: baseline assessment and application-specific assessment.

Baseline assessment covers the network infrastructure layer and makes sure the network is video ready at the infrastructure level. The application-specific assessment looks at the application-specific aspects to make sure your network is ready to support this video application.

Enterprises that are still trying to figure out what set of video applications to deploy can request just a baseline assessment. Enterprises that already know what they want deployed into their network or already have one or more video applications deployed and want to enable other types of video applications would need a service that includes both baseline and the appropriate application-specific assessments.

Table 2 shows what is offered by baseline assessment and application-specific assessment.

Table 2. Baseline Assessment and Application-Specific Assessment

Baseline Assessment	Application-Specific Assessment
<ul style="list-style-type: none"> • Campus network assessment <ul style="list-style-type: none"> ◦ Hierarchy and modularity ◦ Campus LAN and VLAN design ◦ IP addressing and IP routing ◦ Hardware platform/line cards/software/ QoS/security • Branch/WAN network assessment <ul style="list-style-type: none"> ◦ Hardware/software/QoS/security/IP routing • Data center network assessment <ul style="list-style-type: none"> ◦ Hardware/software/QoS/security/IP routing • Network capacity assessment <ul style="list-style-type: none"> ◦ Bandwidth/link/CPU utilization • SLA metrics assessment <ul style="list-style-type: none"> ◦ Packet loss/delay/jitter 	<ul style="list-style-type: none"> • Enterprise video collaboration • Cisco TelePresence • DMS/digital signage • Video surveillance • Interop and third party • Application-specific network consideration

Benefits of MRA

MRA offers several advantages. It allows customers to design for all the hurdles presented by media-rich applications such as:

- QOS and SLA requirements of media-rich applications
- Bandwidth considerations
- Coexistence with mission-critical applications
- Security implications
- High availability

In addition, MRA allows enterprises to:

- Make sure of smooth deployment
- Make sure of greater reliability
- Create a stringent security profile
- Reduce cost through network efficiencies
- Derive higher end-user satisfaction

Summary

In order to realize the business benefits of media-rich applications, enterprises must prepare and plan with an MRA service on their network. This assessment allows enterprises to understand what gaps they need to bridge in order to have the best user experience with not only their new media-rich applications but also with their existing mission-critical applications. The Cisco MRA service delivers the preparation and planning expertise enterprises need to design and deploy innovative Cisco media-rich solutions with confidence.

Why Cisco Services

Cisco Services make networks, applications, and the people who use them work better together.

Today, the network is a strategic platform in a world that demands better integration between people, information, and ideas. The network works better when services, together with products, create solutions aligned with business needs and opportunities.

The unique Cisco Lifecycle approach to services defines the requisite activities at each phase of the network lifecycle to help ensure service excellence. With a collaborative delivery methodology that joins the forces of Cisco, our skilled network of partners, and our customers, we achieve the best results.

Availability and Ordering Information

The Cisco MRA is available globally. Details might vary by region.

For More Information

For an MRA quote or more information, contact the Cisco TelePresence and Business Video Practice Business Development team at ctsby-bdm-team@cisco.com or contact your Cisco service account manager.

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