

**[FTA(CPTPP)] TENDER PEROLEHAN INTERNET BROADCASTING SYSTEM (RTMKLIK 3.0) FOR THE
DEPARTMENT OF BROADCASTING MALAYSIA FOR THREE (3) YEARS**



NO TENDER : QT250000000030528

CLAUSE	TECHNICAL SPECIFICATIONS	COMPLIED	NOT COMPLIED	REMARKS
1.0	INTRODUCTION			
1.1	<p>The Department of Broadcasting Malaysia (RTM) invites qualified and experienced tenderers to participate in the provision, integration and commissioning of a next-generation Internet Broadcasting System for RTMKlik 3.0</p> <p>This system is a strategic modernization initiative designed to strengthen RTM's role as the national public service broadcaster and to ensure that RTM remains competitive in the evolving media landscape. The upgraded platform will enable seamless, cloud-optimized delivery of live, on-demand, podcast and FAST channel services, reaching both local and international audiences with the highest standards of quality, security and reliability.</p> <p>Tenderers are expected to propose solutions that:</p> <ol style="list-style-type: none"> Comply with international broadcast and OTT industry standards. Provide cloud-native architectures that support scalability and OPEX optimization. Ensure robust security, DRM protection, and regulatory compliance (PDPA, Content Code, EBU/ITU standards). Deliver a comprehensive, end-to-end workflow covering managed internet services, CMS, streaming services, 			

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	<p>CDN, hosting, encoders, playout, monitoring and full integration with RTM's Media City Broadcast System.</p> <p>This tender emphasizes future-proof design, encouraging solutions that are modular, expandable and able to accommodate new formats such as UHD, HDR (Dolby Vision) and emerging audio/video standards.</p> <p>Tenderers must provide a complete solution, including hardware, software, services, migration, documentation, training and knowledge transfer. Partial or incomplete proposals will not be accepted.</p>			
2.0	SCOPE OF WORK			
2.1	The tenderer is required to comply with the following scope of works:-			
2.1.1	PART A - Preliminary Works i. Preliminary Works			
2.1.2	PART B - ICT Services			
2.1.2.1	Managed Services i. Managed Internet Services			

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	ii. Managed Internet Security Services			
2.1.2.2	Website & Application Services <ul style="list-style-type: none"> i. Content Management System (CMS) ii. Website Services iii. Application Services 			
2.1.2.3	Video & Audio Services <ul style="list-style-type: none"> i. Live Streaming Services ii. Video & Audio On-Demand (AVOD) Services 			
2.1.2.4	Support Services <ul style="list-style-type: none"> i. Support Services 			
2.1.2.5	Hardware Rental <ul style="list-style-type: none"> i. Encoders and Playout ii. KVM Switch iii. Digital Audio Distribution Amplifier iv. Monitoring Equipment Rental v. Miscellaneous, Accessories, Installation, and Configuration 			
2.1.3	PART C - Cloud Computing Services			
2.1.3.1	Infrastructure as a Service (IaaS)			

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	<ul style="list-style-type: none"> i. Standard Storage ii. Serverless Computing Services iii. Cloud Virtual Machine or Cloud Instance iv. Virtual Private Network (VPN) or Virtual Network Service v. Threat Detection or Cloud Security Monitoring Service vi. Content Delivery Network (CDN) 			
2.1.3.2	Platform as a Service (PaaS) <ul style="list-style-type: none"> i. Cloud-based Video Transcoding or Media Transcoding ii. Server-Side Ad Insertion (SSAI) or Dynamic Ad Insertion (DAI) Service iii. Message Notification or Pub/Sub (Publish-Subscribe) Messaging Service iv. Monitoring and Observability Service v. Live Video Encoding or Live Video Processing Service vi. Video Packaging and Delivery or Adaptive Bitrate (ABR) Streaming Service vii. Speech-to-Text or Automated Transcription Service viii. Real-time Data Streaming or Data Ingestion and Processing Service ix. Data Delivery and Streaming ETL (Extract, Transform, Load) Service x. Managed Search and Analytics or Managed Elastic Search Service xi. Personalization and Recommendation Service xii. API Management or API Gateway Service xiii. Virtual Private Server (5TB Storage Capacity) 			

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	xiv. Web Hosting Manager xv. Transcoding Server xvi. Online Audio Video Transcoding			
2.1.4	PART D - Professional Services			
2.1.4.1	Cloud Setup, Integration, and Testing for: i. Live Linear Channel Service ii. Real-time Captioning Service iii. Client-side Media Control (Common Media Client Data) iv. Personalization and Recommendation Service			
2.1.4.2	Overall Project Scope To supply, deliver, install, configure, migrate, integrate, test, and commission all necessary equipment and services for RTM's Internet Broadcasting System.			
2.2	Preliminary Works as below:-			

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2.2.1	<p>The tenderer shall ensure the integration and migration works shall finish within 3 month from the date of Acceptance Letter and can be full operated after the date of handover the system to RTM. Preliminary works for RTMKlik during migration and integration period as below: -</p> <ul style="list-style-type: none"> i. Content and Data migration with existing system <ul style="list-style-type: none"> a) Local & Cloud storage b) Cloud Web Hosting c) Video on Demand ii. Integration with new RTMKlik system with Media City <ul style="list-style-type: none"> a) Media Asset Management (MAM) System, RTMKlik CMS, Playout Automation Systems and all relevant OTT and broadcast platforms iii. Configuration with existing RTM Network iv. All the equipment related to the integration shall be provided by Media City Development and should be borne by the tenderer. 			
2.2.2	<p>Tenderer must be responsible to maintain the existing services if the preliminary works are not completed and the system is not accepted by RTM to be fully operational.</p>			

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2.2.3	RTM reserves the right to impose Liquidated Ascertained Damages (LAD) if the preliminary works are not completed during the period.			
2.2.4	The existing system must remain fully operational onward if the new system is not completed. All the cost incurred to continue the existing system must be wholly borne by the tenderer.			
2.2.5	Tenderer must ensure smooth (no interruption) transition from the services of the current tenderer to the new services (this tender).			
2.2.6	The payment of this preliminary scope must be made by RTM after the new services if fully operational and accepted by RTM.			
2.2.7	The tenderer must ensure the integration and migration works must finish within 3 months from the date of Acceptance Letter and can be full operated after the date of handover the system to RTM.			Preliminary Works : _____ (months)
3.0	GENERAL REQUIREMENTS			
3.0.1	The tender proposal must fully satisfy the following general requirements:			

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3.1	Statement of Compliance			
3.1.1	All tenderers are required to tick (✓) either in the 'COMPLIED' or 'NOT COMPLIED' column for every clause in Schedule Of Compliance (SOC) of the tender document. Remarks should be given, where required, in the appropriate column. Failure in doing so must be deemed as non-compliance and will be disqualified.			
3.1.2	The tenderer must fill in the columns in the tender documents. For example, if the tenderer complies with the specifications, the tenderer has to tick (✓) in the 'COMPLIED' column and vice versa.			
3.1.3	The equipment's compliance statement must be supported by relevant, endorsed technical literature (such as brochures, block diagram, schematic diagram and performance data). A statement of 'NOT COMPLIED' must be accompanied by actual figures and deviation.			
3.1.4	Only complete proposals furnished with complete Statement of Compliance and technical details will be considered for evaluation.			

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3.1.5	The tenderer must not use terms such as "NOTED", "UNDERSTOOD" or "AGREED" for clauses involving technical requirements and specifications.			
3.2	Accessories			
3.2.1	All proposed equipment must be supplied complete with the necessary mating parts of all connectors used for inputs and outputs of video, audio, power, data, control, etc. Each must also be supplied with proper interfacing boards, necessary cables, termination, extender boards, physical support, containers and other supplementary parts for proper operation, maintenance and storage.			
3.2.2	All essential items and accessories are required to meet the specifications, requirements and design, must be itemised in the Schedule of Equipment (SOE) and supplied together with each piece of equipment.			
3.2.3	Equipment or parts thereof, which form the main system or equipment spelt out in the technical specifications, must not be listed as Optional items. Persistence on the part of the tenderer to do so will be deemed as non-compliance and will be disqualified.			

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3.2.4	Full technical information on all available accessories must be submitted to enable RTM to determine which of the offered accessories are necessary.			
3.3	Manuals			
3.3.1	Two (2) sets of operational and system manuals written completely in English or Bahasa Malaysia must be supplied as hardcopy and softcopy. The manual must contain theoretical explanations, workflow, setting up, operational procedures, performance characteristics and all relevant drawings.			
3.4	Technical Evaluation			
3.4.1	The tenderer is required to furnish full technical information on the characteristics, performance and operation of each of the equipment proposed. This is essential for an effective technical evaluation and complete assessment of the proposal.			
3.4.2	The following supporting documents must be submitted in the proposal:			

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	a) Technical brochures for all major equipment b) Drawings for all main system proposed c) Proposal User Interface (UI/UX) for RTMKlik (Website, Smart TV apps and Mobile apps) d) Agreement for integration and migration letter by Media City Development Sdn. Bhd. with their system for this tender.			
3.4.3	Major equipment in Clause 3.4.2 (a) must refer to the following: a) Network Router b) Load Balancer c) Managed Internet Security Services (Firewall) d) Audio, Video and Portable Encoders e) Network Switches f) Video Playout System g) Servers (Streaming Media System & Audio Video Transcoding) h) Podcast Terminal Workstation i) Media Asset Management (MAM) Terminal j) KVM Switch			

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	k) Digital Audio Monitor l) Devices Monitoring: i) Smart TV (Android TV, Vidaa, LG TV, Samsung TV) ii) Mobile (iOS, Android and HarmonyOS) iii) Portable (Windows and MAC OS) Smart TV (with built-in Android TV, Android Application TV receiver) m) Content Delivery Network (CDN) Services			
3.4.4	The tenderer must submit the proposed workflow diagram for the Content Management System consist of all elements as in Clause 2.1 (i) (c) .			
3.5	Completeness of Equipment Offered			
3.5.1	Tenderer's special attention is drawn to the requirement of this tender for the completeness of the equipment offered with respect to a complete integral and migration working system, covering all necessary components, items and materials, irrespective of whether or not these are clearly itemised or spelt out in this specification.			

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3.5.2	All these items, if any, must be itemised and priced in the E-Perolehan System . Any of these items, but subsequently found to be necessary for the completeness and full functionality of the system, must be supplied and borne by the successful tenderer.			
3.6	Letter of Undertaking			
3.6.1	Tenderer must obtain Letter of Undertaking from Project Developer (Media City Development Sdn. Bhd.) of the existing Broadcast System at Angkasapuri for the integration work.			
3.7	Supplier Authorisation			
3.7.1	Tenderer must submit the original Letter of Authorization from the manufacturer or from the authorized agent in the tender proposal. In the case where the supplier sources the items/equipment from an authorized agent, a copy of the letter of			

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	the appointment as Authorized Agent from the manufacturer must be submitted together.			
3.7.2	The provider must submit Letter of Authorization (LOA) of Network Service Provider (NSP) and Internet Services Provider (ISP) for internet leased line in Malaysia. A copy of the letter/certificate must be submitted with the proposal.			
3.8	Experience Record			
3.8.1	Tenderers are required to furnish a list giving the names of broadcast organisations to which the tenderer/principal has supplied a similar system of equivalent size now offered to RTM in this tender. The quantity and the date supplied, contact person and contact numbers must also be listed.			
3.9	Site Visit and Tender Briefing			
3.9.1	Tenderer must visit the site, before submission of tender proposal, and obtain all the relevant information with regard to this tender.			

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3.9.2	The tender briefing and site visit will be conducted within seven (7) days after the advertisement of the tender in the daily major newspapers.			
3.9.3	Visiting tenderers must bring along their company's stamp for the site visit.			
3.9.4	The contact personnel for site visit is: Timbalan Pengarah, Seksyen Kewangan dan Pentadbiran, Bahagian Khidmat Pengurusan, Tingkat 15, Menara Angkasapuri, Kota Media 50614 Kuala Lumpur Tel : 03- 2636 4179			
3.10	Letter of Attendance			
3.10.1	A certified Letter of Attendance duly signed by RTM's representative will be issued to the tenderer after the site visit. This letter must be submitted together with the tender proposal.			
3.10.2	Failure to submit the certified Letter of Attendance with the tender proposal may lead to automatic disqualification of the proposal.			

SULIT

SCHEDULE OF COMPLIANCE

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3.11	Project Schedule			
3.11.1	The successful tenderer must produce a precise implementation schedule within one (1) week after signing of Letter of Acceptance or during the kick off meeting whichever earlier.			
3.12	Delivery and Completion Period			
3.12.1	The delivery and completion period must not be more than sixteen (16) weeks effective from the date of acceptance by the tenderer.			Completion period: _____ (Weeks)
3.12.2	The tenderer must state the Completion period in the 'Remarks' column and in the Schedule Of Compliance (SOC).			
3.13	On-Site Training			

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3.13.1	<p>The tenderer must propose training duration and module at site for 20 pax to cover the following:</p> <ul style="list-style-type: none"> a) Internet Security, Load Balancer Appliance & Cloud Web Hosting b) Live Streaming & Content Filtering c) Content Management System (CMS) d) Video on Demand (VOD) e) TV, Radio and Portable Encoders f) Audio on Demand System (Podcast) g) Login Registration h) Platform User Interface (UI) Design i) Mobile Application j) OTT Integration Apps k) Electronic Programme Guide (EPG) l) Video Playout System m) Media Asset Management (MAM) User Interface 			
3.13.2	All costs shall be borne by the tenderer including refreshments for trainers and participants.			

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3.13.3	Training must cover all aspects including workflow and operation.			
3.13.4	The trainer must be a qualified person and certified by the manufacturer.			
3.13.5	The trainer must be fluent in both spoken and written Bahasa Malaysia and English.			
3.13.6	The tenderer must propose a training program for RTM's consideration.			
3.13.7	The training should be done by Training of Trainer (ToT) concept			
3.13.8	The training must be separate between Technical and User module			
3.14	Green procurement			
3.14.1	Based on the Government Green Procurement (GGP 3.0) (Source: www.mgtc.gov.my or www.myhijau.my)			
3.14.2	Tenderers are encouraged to supply equipment in schedule of equipment at least meets the standards and compliance of energy			

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	star 5.2 Electronic Product Environmental Assessment Tool (EPEAT) and ISO 14000 series			
3.14.3	Some of the features of GGP compliant equipment are as follows; i. Equipment meets energy efficiency specifications ii. Equipment is produced with a limited number of hazardous			
3.14.4	Policy: Packaging equipment using eco-friendly packages Secure disposal of final products (recycling, reuse) Environmentally friendly software tools including desktop and notebook computers.			
3.14.5	The Tenderer MUST furnish such evidence of the standardization equipment and compliance of the energy star from the manufacturer as follows: i. European Eco-label, ii. Blaue Engel (German Ecolabel), iii. Nordic Swan, iv. Eco Mark Japan, v. Chlorin Free Product Association (CFPA)			

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	vi. Green Seal eco vii. Acknowledgment of MyHIJAU Mark or SIRIM Eco-label Certification (Malaysia) viii. Technical dossier			
3.15	Professional Training and Education for Growing Entrepreneurs (PROTÉGÉ)			
3.15.1	Based on Malaysian Treasury Circular PK 1.2. The government has decided on the PROTÉGÉ programme is made as one of the conditions for a government procurement contract including contract extensions.			
3.15.2	Company / tenderer / consultant (company) has obtained Government procurement contracts (supplies, service and work) from Government agencies including Federal Statutory Bodies, Company Ministers Finance Incorporated (MKD) and Related Companies. The government (GLC) is required to implement the programme PROTÉGÉ with threshold value setting, by sector (refer to Malaysia Treasury Circular PK 1.2)			

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3.15.3	The company must allocate at least 1% of the contract value, to implement the program PROTÉGÉ. (refer to Malaysian Treasury Circular PK 1.2)			
3.16	Commencement date			
3.16.1	The above services must commence after the end of the current contract and a date to be decided by RTM.			
3.16.2	The services period must be 36 months commencing from the Commencement Date agreed in the Contract.			
3.17	Rebate and Penalty			
3.17.1	If the tenderer is late or fails to complete this procurement according to the agreed period or fails to complete this procurement, the tenderer may be subject to penalties/ fines and required to pay damages/ compensation or other actions prescribed in the Government procurement and;			

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3.17.2	Any services that had to be delayed due to reasons beyond the control of the tenderer such as riots, civil unrest, strikes, fires, force majeure, marine hazards or the like. The government in good faith at its discretion may allow an extension of the period of service provided that the tenderer must submit notice of the reasons for the delayed work and the time require.															
3.17.3	The government is entitled for rebate in the event of any service failure at any site that is below the guaranteed level specified in Clause 3.17.5 *and based on unsatisfactory downtime in *Clause 3.17.4															
3.17.4	<div>The government deserve to rebate based on deduction value penalty table as below:</div> <table><tr><th colspan="3">Overall Deduction Value Penalty (RM)</th><th></th></tr><tr><th>KPI No</th><th>Service Description (KPI's Operating Parameters)</th><th>Weigh tage (W)</th><th>Deduction Amount, (RM)</th></tr><tr><td>1.</td><td>Content Delivery Network and Cloud Services (CMS, CDN, Storage & Hosting)</td><td>50%</td><td>Based on tenderer value contract offer</td></tr></table>	Overall Deduction Value Penalty (RM)				KPI No	Service Description (KPI's Operating Parameters)	Weigh tage (W)	Deduction Amount, (RM)	1.	Content Delivery Network and Cloud Services (CMS, CDN, Storage & Hosting)	50%	Based on tenderer value contract offer			
Overall Deduction Value Penalty (RM)																
KPI No	Service Description (KPI's Operating Parameters)	Weigh tage (W)	Deduction Amount, (RM)													
1.	Content Delivery Network and Cloud Services (CMS, CDN, Storage & Hosting)	50%	Based on tenderer value contract offer													

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	2.	Content Management System (CMS)	40%	Based on tenderer value contract offer			
	3.	Equipment (Router, Firewall, Encoders, Servers, Storage, Switches)	7%	Based on tenderer value contract offer			
	4.	Internet Leased Line	3%	Based on tenderer value contract offer			
	Total Weightage =		100%				
3.17.5	The tenderer must provide Service Level Guarantee (SLG) 99.95% .						
3.18	Payment Term and Schedule						
3.18.1	Payment Term : All price offers by the Tenderer shall be submitted by stating the offer price excluding Service Tax. If the service is included in the list subject to Service Tax and the successful Tenderer is registered with CJCP under the Royal Malaysian Customs Department (JKDM), then the Department will award the procurement value inclusive of Service Tax.						

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3.18.2	Payment Schedule : The schedule of payment is in ringgit Malaysia (RM) and the schedule as below; i. One (1) off payment ii. Quarterly year basis within 36 months			
3.18.3	The Tenderer is required to enter all price offers for the service items into the Sistem ePerolehan as outlined below: One-Off Basis a) Preliminary Works b) Integration with Media City Development c) On-Site Training and Professional Development d) Documentation Quarterly Basis for a Period of Three (3) Years a) Managed Internet Services b) Integrated Services Router c) Managed WAN Load Balancer d) Managed Internet Security e) Network Switch			

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	f) Content Delivery Network (CDN) g) Content Management System h) Live Streaming Services i) Audio Video On Demand (AVOD) Services j) Audio Video On Demand (AVOD) Server k) Transcoding Server l) Audio Video Transcoder m) Media Server n) PodCast Terminal o) MAM Terminal p) Cloud Web Hosting q) TV Encoders r) Radio Encoders s) Portable Audio Video Encoders t) Video Playout System u) KVM Switch v) Audio Distribution Amplifier (ADA) MultiFrame w) Digital Audio Distribution Amplifier (ADA) Card			

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	x) Digital Audio Monitor y) Monitoring Devices			
3.19	Tenderers must comply with all general requirements including provision of documentation, manuals, certifications, manufacturer authorizations, prior project experience, site visit obligations, rebates/penalties, training delivery, compliance with PROTÉGÉ program and Green Procurement (GGP).			
4.0	GENERAL TECHNICAL REQUIREMENTS			
4.0.1	The proposed systems, layouts and equipment must fully satisfy the following general technical requirements:			
4.1	Power Requirement			
4.1.1	All proposed equipment must be able to work off AC supply of 230Volts +10% -6%, 50 Hz. They must be protected from transients and surges on the main supply line.			
4.1.2	The power connection to individual equipment must comprise a 3-conductor flexible cable. The third conductor must be securely			

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	connected electrically to metal fittings of the equipment to provide a means of earthing the fittings as a safety measure.					
4.2	Environmental Conditions					
4.2.1	All equipment must be fully tropicalised and must have a high degree of electrical and mechanical reliability and must be capable of maintaining its specified performance when operated continuously or intermittently for 24 hours daily under any natural combination of the following environmental conditions:					
	i.	Temperature	1°C to 45°C			
	ii.	Relative humidity	Up to 95 %			
4.2.2	The equipment must be designed with adequate ventilation so that there is no build-up of excessive temperature.					
4.3	Solid State Design					
4.3.1	The proposed equipment must be fully solid state and of plug-in modular design with adequate ventilation and heat dispersing					

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	technique so that there is no harmful build-up of excessive temperature.			
4.4	Latest Model			
4.4.1	All equipment offered in this tender must be of the latest model and of proven design. The year of manufacture must be stated.			
4.5	Free To Air (FTA) Colour Television System			
4.5.1	All digital equipment must conform to C.C.I.R 601 (Serial Digital Component Format). All equipment must be designed for use with C.C.I.R System B, 625 lines 50 Hz PAL Colour Television System as defined by C.C.I.R Report 624, XIII the Plenary Assembly, Geneva 1974. All HD signals must conform to ITU-R Recommendation BT.709 part 2.			
4.5.2	All HD signals must conform to ITU-R Recommendation BT.709 part 5. The overall HD signal based on 1080i 50 format, video performance along a typical video route to the output must			

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	conform to SMPTE 274M 1920x1080 and SMPTE 292M bit serial digital interface.			
4.6	Mandatory Legal and Regulatory Compliance			
4.6.1	The proposed system must demonstrate full compliance with all relevant Malaysian laws and regulations governing the communications and multimedia sector.			
4.6.2	MCMC Licensing: The bidder must hold or be eligible to obtain an Applications Service Provider Class Licence (ASP(C) Licence) from the MCMC if required by the service's operational scale.			
4.6.3	Content Regulation: The system must comply with the Malaysian Content Code, including provisions for content classification, parental controls, and the prohibition of offensive or illegal material. The solution must support MCMC-mandated content ratings (e.g., U, P13, 16, 18).			
4.6.4	Data Protection: The system must adhere to the Personal Data Protection Act 2010 (PDPA), ensuring secure handling, storage, and processing of all user data.			

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4.7	Audio Standard Requirements			
4.7.1	The Tenderer must ensure that the system's audio conforms to all relevant Malaysian and international standards to guarantee high-quality and consistent sound across all platforms			
4.7.2	Loudness Management: All audio must be processed and delivered in accordance with EBU R 128 loudness standards, targeting a consistent loudness of -23 LUFS a tolerance of ± 1.0 LU is permitted. This applies to both live and on-demand content.			
4.7.3	Audio Codecs: The system must support the primary audio codecs used in Malaysia, including MPEG-1 Layer II, Dolby Digital (AC-3), and Dolby Digital Plus (E-AC-3) for DVB-T2 broadcasting.			
4.7.4	For the OTT platform, the system must also support Advanced Audio Coding (AAC) and High-Efficiency Advanced Audio Coding (HE-AAC) to ensure broad device compatibility and quality.			
4.8	IPV6 Compliance			

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4.8.1	The proposed system must be fully compliant with IPv6 protocols and standards to ensure future-readiness and broad network compatibility.			
4.8.2	Dual-Stack Capability: The entire system architecture, including all servers, network devices, and software components, must be natively dual-stack, supporting simultaneous operation over both IPv4 and IPv6 networks without the use of translation mechanisms or tunnels.			
4.8.3	Performance Parity: The system must deliver a user experience and performance over IPv6 that is equal to or better than its performance over IPv4. This includes, but is not limited to, streaming latency, throughput, and connection stability.			
4.8.4	Network and Security Operations: All network management and security functions, including firewalls, access control lists (ACLs), and monitoring tools, must be fully operational and effective for both IPv4 and IPv6 traffic. The solution must be resilient to IPv6-specific threats.			
4.8.5	Content Delivery Network (CDN): The proposed CDN solution must be fully IPv6-enabled, with points of presence (PoPs) that support native IPv6 to ensure efficient content delivery to IPv6-only users.			

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4.8.6	Interoperability: The system must seamlessly interoperate with external services, APIs, and end-user devices in both dual-stack and IPv6-only environments.			
4.9	Information and Network Security Requirement			
4.9.1	Compliance: The Tenderer must comply with the latest Malaysian Communications and Multimedia Commission (MCMC) and Malaysian Technical Standards Forum Bhd (MTSFB) Technical Codes related to information and network security. This includes, but is not limited to, MCMC MTSFB TC G021:2019, MCMC MTSFB TC G042:2023, and MCMC MTSFB TC G015:2024.			
4.9.2	Certification: The Tenderer must be certified with or have a plan to be certified with MS ISO/IEC 27001:2022 (Information Security Management Systems) to demonstrate a commitment to best-practice security management.			
4.9.3	Data Protection: The system must protect all user data in line with the Personal Data Protection Act 2010 (PDPA). All data must be encrypted both during transmission and while stored.			

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4.9.4	Content Protection: A robust Digital Rights Management (DRM) system must be implemented to prevent content piracy and unauthorized access.			
4.9.5	Security Plan: The Tenderer must provide a detailed Incident Management Plan outlining how they will respond to security incidents, including procedures for notifying us and MCMC of any breaches.			
4.10	Earthing and Grounding Requirements			
4.10.1	The Tenderer must ensure that all equipment earthing and grounding are sufficient to prevent any form of electrical interference, including hum and radio frequency (RF) noise.			
4.10.2	Design: The system's grounding must be designed and implemented to provide a clean electrical reference. All equipment racks, chassis, and individual components must be bonded to a common ground point.			
4.10.3	Standards: The grounding system must adhere to the Malaysian Standard (MS) 2420:2018 - Code of Practice for Earthing and Lightning Protection or its latest revision.			

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4.10.4	Performance: The grounding resistance must be 5 Ohms or less, as verified by a test report provided by the Tenderer. Any hum or interference present in the system must be promptly rectified at no additional cost.			
4.11	Systematic Cabling, Wiring, and Labeling			
4.11.1	The Tenderer must ensure that all cabling, wiring, and equipment are installed in a systematic, organized, and properly labelled manner to facilitate efficient installation, maintenance, and troubleshooting.			
4.11.2	Cable Management: The Tenderer must supply and install suitable trunking, conduits, and cable trays to provide a dedicated and protected passage for all cabling and wiring.			
4.11.3	Cable Separation: Network and power cables must be laid and routed in separate passages to prevent electromagnetic interference (EMI) and signal distortion.			
4.11.4	Cabling and Wiring Codes: All cabling and wiring must be installed using a proper and consistent color-ring coding system to ensure a logical and systematic layout.			

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4.11.5	Equipment and Cabling Labels: Each piece of equipment, including racks, routers, firewalls, monitors, servers, switches, and storage, must be properly and visibly labelled. Similarly, all cabling terminals and termination points must be clearly identified with ring-type labels.			
4.12	Software Requirement			
4.12.1	The Tenderer must ensure that all software provided is legally licensed, functional, and customized to meet RTM's specific system requirements. The Tenderer is fully responsible for the integrity and maintenance of all software.			
4.12.2	The tenderer is also responsible to customize the software to suit RTM's system requirements.			
4.12.3	Software Licensing: The Tenderer must provide legally licensed copies of all software used in the system, and a legally binding copy of all software licenses must be submitted to RTM.			
4.12.4	System Customization: The Tenderer is responsible for customizing the software to align with RTM's specific system requirements and operational workflows.			

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4.12.5	Software Integrity and Maintenance: In the event of any software damage, the Tenderer must be responsible for repairing or replacing the damaged software at no additional cost.			
4.12.6	Upgrades and Modifications: The Tenderer must notify RTM in writing of any system or software upgrades or modifications. Any copies of the updated software or documentation must be provided to RTM at no additional cost.			
4.13	Content Delivery Network Requirement			
4.13.1	The Tenderer must provide a robust and secure CDN solution from a recognized industry leader to ensure the consistent and high-quality delivery of RTM's live and on-demand content.			
4.13.2	Provider Selection: The CDN provider must be a recognized "Leader" in the Gartner Magic Quadrant for Content Delivery Networks or a similar, globally acknowledged analyst report. The Tenderer must specify the chosen provider and their position in the latest available report. The tenderer must name an internationally established and well-known CDN provider such as Microsoft, Google, TM, and AWS.			

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4.13.3	Service Availability and Security: The CDN services must be readily available for RTM's live streaming, on-demand, and podcast services. The service must include robust security features to prevent unauthorized use of RTM's URLs.			
4.13.4	Pricing and Volume: The Tenderer must specify the cost in Ringgit Malaysia (RM) for the CDN services. The total volume for the contractual period will be calculated as Monthly Volume (TB) x Contractual Period (Months). Unused quotas for live streaming and video-on-demand must be interchangeable.			
4.13.5	Usage Notification and Top-up: The Tenderer must provide a written notification to RTM when the CDN volume usage reaches 75% of the total volume. The Tenderer must also specify the costs for both bundled and burstable CDN top-up options. RTM reserves the right to order the continuation of services and the Tenderer must comply.			
4.13.6	Please specify the CDN cost in Ringgit Malaysia (RM) for: i. 1GB ii. 133.2PB			i. 1GB = RM _____ ii. 133.2PB = RM _____
4.13.7	Please specify the CDN top-up cost in Ringgit Malaysia (RM) for: i. 1GB			i. 1GB = RM _____

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	ii. 1TB			ii. 1TB = RM_____
4.14	Content Management System (CMS)			
4.14.1	The Tenderer must provide a comprehensive Content Management System (CMS) that enables RTM to manage all content and services across its platforms efficiently.			
4.14.2	CMS Functionality: The CMS must be a single application to manage web content for all of RTM's platforms, including Linear and Non-Linear Services e.g Live TV, Radio, VOD and Podcast services.			
4.14.3	It must allow multiple contributors to create, edit, and publish content, which is to be stored in a database and displayed via templates.			
4.15	Maintenance and Contingency			

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4.15.1	The Tenderer is fully responsible for all equipment and software and must establish a clear plan for routine maintenance and contingencies.			
4.15.2	Routine Maintenance: The Tenderer must provide a routine, scheduled maintenance plan to ensure that all systems function at optimum performance with no significant deterioration or constant interruptions.			
4.15.3	Contingency Procedures: The Tenderer's maintenance plan must include procedures for handling software damage, ensuring any damaged software is replaced or repaired at no additional cost to RTM.			
4.16	Project Management and Execution			
4.16.1	The Tenderer must manage all aspects of the project, including installation and commissioning, with strict adherence to all legal, safety, and technical standards.			
4.16.2	Approvals and Compliance: All materials and equipment must be approved by the relevant authorities, including RTM, SIRIM Berhad, Suruhanjaya Tenaga and MCMC.			

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4.16.3	Supervision and Substitution: All installation work must be carried out under the direct supervision of RTM's designated representative. No substitutions of equipment, materials, or methods are permitted without RTM's prior written approval.			
4.16.4	Non-Disruption and Site Management: The Tenderer must ensure that the current services remain uninterrupted during installation. The Tenderer is also responsible for the disposal of all waste materials and for maintaining a clean worksite.			
4.17	Data Migration and Integration			
	The Tenderer must implement a comprehensive data migration plan to transfer RTM's existing data to the new system with minimal disruption to services.			
4.17.1	Migration Scope: a) RTM Web Hosting b) Cloud Storage c) Local Storage d) RTMKlik e) Podcast System			

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	f) Any other data that is related to the RTMKlik System.			
4.17.2	Execution and Timeline: The migration work must be carried out with minimum disruption and must be completed within sixteen (16) weeks from the Letter of Acceptance date. The Tenderer is responsible for ensuring the systems are fully operational after migration.			
4.18	Safety and Risk Management			
4.18.1	The Tenderer must assume full responsibility for the safety of all personnel, the protection of equipment, and liability for any damages incurred during the project.			
4.18.2	Personnel and Public Safety: The Tenderer is responsible for the safety of personnel from all hazards, including high voltage and RF radiation. All dangerous equipment or parts must be guarded or isolated to prevent harm			
4.18.3	Liability and Insurance: The Tenderer must secure and submit valid copies of insurance policies, including Workmen Compensation, Tenderers All Risk, and a Comprehensive			

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	General Liability Policy, to cover all on-site personnel and potential damages to RTM's property.			
4.18.4	Equipment Protection: All supplied equipment must incorporate safety devices for protection against operational conditions, lightning strikes, and power transients. An appropriate fault indication system must be included to facilitate troubleshooting.			
4.19	Testing and Commissioning			
4.19.1	The Tenderer must perform comprehensive testing to ensure the system's full functionality and performance before final acceptance.			
4.19.2	User Acceptance Test (UAT): The Tenderer must conduct a User Acceptance Test (UAT) on-site in the presence of RTM staff, covering the entire system, including Network Systems, OTT, Mobile Apps, and Podcast Systems.			
4.19.3	Final Acceptance Test (FAT): The Tenderer's Commissioning Engineers must conduct a Final Acceptance Test (FAT) on-site with RTM technical personnel. The Tenderer must submit a detailed FAT script and methodology for RTM's approval at least two weeks before the proposed FAT date.			

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4.19.4	Test Reporting: Upon completion of all testing, the Tenderer must furnish two sets of comprehensive test reports, including the UAT Report, FAT Report, and a detailed Stress Test Report for the overall system			
4.20	Documentation and Handover			
4.20.1	The Tenderer must provide all necessary documentation to ensure RTM can effectively operate, maintain, and troubleshoot the system after handover.			
4.20.2	As-Built Drawings: The tenderer must submit a complete end-to-end schematic workflow from ISP to RTM up to the encoder audio/video source, including both main and redundant components such as servers, switches, gigabit Ethernet, SDI, and related networks. The diagrams shall be clearly labelled with cables, patch panels, and other relevant information for ease of troubleshooting and operation. Upon project completion, the schematic diagram shall be submitted in softcopy (PDF and AutoCAD formats in thumbdrive or portable hard disk) and hardcopy (A0, A1, and A3 framed prints, four sets each). All schematic diagrams must be approved by RTM prior to printing and framing.			

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4.20.3	System and Migration Documentation: The Tenderer must provide complete system documentation, including server and portal administration manuals, content manager manuals, and a detailed CMS workflow. A full inventory list with serial numbers must also be submitted.			
4.20.4	Source Code Ownership: The Tenderer must deliver the complete, readable, and compilable source code for all software, including backend services and mobile applications, along with comprehensive technical documentation such as installation guides and API documentation.			
4.20.5	The Technical Documentation shall be submitted in two (2) sets, comprising both soft copies and hard copies, within one (1) month from the date of the Final Acceptance Test.			
4.20.6	The schematic diagram shall be approved by RTM's personnel prior to printing framing			
4.21	Technical Personnel Competency and Knowledge Transfer			
4.21.1	The Tenderer must implement a comprehensive knowledge transfer program to ensure RTM's technical staff achieves full			

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	self-sufficiency in operating, maintaining, and troubleshooting the proposed system.			
4.21.2	Formal Training and Certification: The Tenderer must provide RTM's technical personnel with formal training leading to vendor-specific certifications where applicable. This training must cover the system's core technologies, including its architecture, software, hardware, and maintenance procedures.			
4.21.3	On-the-Job Training: Knowledge transfer must be an ongoing process throughout the project's installation and commissioning phases. The Tenderer's engineers will provide hands-on, on-the-job training to RTM's technical staff to build practical skills.			
4.21.4	<p>Professional Development: The Tenderer must facilitate the professional development of RTM's technical personnel by sponsoring their attendance at relevant international broadcasting exhibitions to stay updated on emerging technologies. The cost for nine (9) RTM technical participants must be covered by the Tenderer, with a maximum of three participants per year.</p> <ul style="list-style-type: none"> a) CloudFest 2026 : The World's #1 Cloud Industry Conference b) Japan: Inter BEE (International Broadcast Equipment Exhibition) c) Korea: KOBA (Korea International Broadcasting, Audio & Lighting Equipment Show) 			

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	d) InfoComm Asia			
4.21.5	The tenderer must provide a minimum of 3 days per year of Professional Development within 36 months of the contract, focusing on IT Broadcast, New Media, and OTT.			
4.22	Content and Program Personnel Training			
4.22.1	The Tenderer must provide comprehensive training to RTM's content and program personnel to ensure they can effectively utilize the system for content creation, management, and publishing.			
4.22.2	Workflow Training: The training must focus on the day-to-day operational workflows, including using the Content Management System (CMS), uploading and managing video and audio content, scheduling broadcasts, and using the user interface.			
4.22.3	Operational Proficiency: The Tenderer must train content personnel on the features and functionality of the system's content editing and publishing tools, ensuring they can independently create, edit, and publish content without technical assistance.			

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4.23.4	<p>The proposed system must comply with broadcast and ICT industry standards, including but not limited to:</p> <ul style="list-style-type: none"> i. Power and environmental specifications suitable for data centers. ii. IPv6 readiness. iii. Security compliance (firewalls, encryption, monitoring). iv. DRM implementation (CENC, SAMPLE-AES). v. PDPA and Content Code compliance. vi. Audio loudness compliance with EBU R128 / ITU-R BS.1770. vii. Structured cabling standards. viii. Valid perpetual or subscription software licensing. 			
5.0	SYSTEM REQUIREMENT			
5.0.1	The system requirements are detailed within Section 2.0 Scope of Work and must be adhered to in full. Each subsystem must integrate seamlessly into a unified Internet Broadcasting System, ensuring operational efficiency, security, scalability, and compliance with international OTT and broadcast standards.			

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5.1	Managed Internet Services			
5.1.1	The services must comprise the following requirement: -			
5.1.1.1	a) Service Level Guarantee 99.95% .			
5.1.1.2	b) 2 x 300Mbps secure dedicated link between RTM to the ISP with flexibility to exceed the subscribed. <ul style="list-style-type: none"> • Must be able to perform instant provisioning. • Boost bandwidth to meet unexpected demands in near real-time. • Optical Cable must be self-owned and not leased from a 3rd party. 			
5.1.1.3	c) Load Balanced with effective bandwidth of 600Mbps .			
5.1.1.4	d) Link Bandwidth: Dedicated 1Gbps-Fullduplex applies to both upload and download			
5.1.1.5	e) Dedicated Connectivity with 24/7 unlimited connections			
5.1.1.6	f) Configured as Active-Active .			
5.1.1.7	g) Automatically operate at 600Mbps if one of the lines fails.			

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5.1.1.8	h) Online Monitoring System and accessible by RTM.			
5.1.1.9	i) High Availability Load Balance configuration.			
5.1.1.10	j) Redundant provided to achieve the required service level, must have equivalent bandwidth capacity for both upload and download with Dual Geographical path with Dual Exchange termination. Separation between two (2) exchanges must be with a minimum of > 10KM.			
5.1.1.11	k) Tenderer must provide monthly reporting with available active portal web-based monitoring portal for ad-hoc viewing of monitoring reports on Managed Internet Services.			
5.1.1.12	l) Tenderer must provide 128 IP addresses IPv4 for each line.			
5.1.1.13	m) Tenderer must provide two (2) different ISP provider.			
5.1.1.14	n) Must support DDoS protection feature on ISP level			
5.1.2	Managed Integrated Services Router			

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5.1.2.1	The router must comprise the following requirement: -			
5.1.2.2	a) Two (2) units of Integrated Services Router.			
5.1.2.3	b) High throughput and high-speed connectivity.			
5.1.2.4	c) Application optimization and acceleration features are a MUST.			
5.1.2.5	d) Support Gigabit Ethernet, SONET and others.			
5.1.3	Managed WAN Load Balancer			
5.1.3.1	Supply install and configure load balancer with the following requirement:-			
5.1.3.2	a) Two (2) units of WAN Load balancer comes with device/subscription Licences			
5.1.3.3	b) MUST have at least 1.5 Gbps stateful firewall throughput			
5.1.3.4	c) MUST support 5x GE Ethernet WAN and 3x GE Ethernet LAN Wired port			

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5.1.3.5	d) MUST have the ability to support High Availability Configuration			
5.1.3.6	e) MUST have Central Management platform to configure, monitoring and manage multi WAN Load Balancer.			
5.1.3.7	f) MUST have features bandwidth usage monitor and user group bandwidth control.			
5.2	Managed Internet Security Services			
5.2.1	The services must comprise the following requirements: -			
5.2.1.1	a) Two (2) units of Firewall (Next Generation Firewall) for 2 x 300Mbps Internet Connections			
5.2.1.2	b) Combination of features and functionalities of Firewall, Antivirus, Intrusion Prevention System (IPS) Web Filtering, Application Control, SSL Deep Packet Inspection and Content Filtering in a single appliance.			
5.2.1.3	c) Unrestricted to any number of users or clients.			
5.2.1.4	d) Capable of detecting and blocking viruses, worms,			

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	trojans, malware, ransomware, spam, and zero-day attacks through AI/ML threat intelligence.			
5.2.1.5	e) Able to filter internet traffic based on application and TCP port.			
5.2.1.6	f) Highly available and reliable .			
5.2.1.7	g) Integrated with RTM's existing network.			
5.2.1.8	h) The tenderer must manage the Firewall based on RTM's requirements			
5.3	Network Switch			
5.3.1	The supplier is required to supply, install, configure, test and commission Layer-3 48 x 1/10 Gbe Base-T Network Switch with support 6 x 40/100 Gbe QSFP/QSFP28 ports			
5.3.2	Proposed network switch MUST be ensured all layer 3 features supported. Any necessary licenses and accessories (SFP/QSFP/Optical cable) MUST be provided.			
5.3.3	The network switch must comprise with the following requirement:			

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	a) 1 lot must be configured as Active unit b) 1 lot must be configured as Backup c) Redundant, hot-swappable power supplies and preferably comes with 1RU size			
5.3.4	The network switch must support Virtual Output Queuing (VOQ) to remove Head of Line blocking and hot-spots on the fabric.			
5.3.5	The network switch must support deep buffers for absorption of incast traffic and microbursts.			
5.3.6	Must support a single GUI for analysing real time telemetry streaming information and providing: historical and real-time information of monitored parameters.			
5.4	Integration with Media City System			
5.4.1	The tenderer must provide complete integration between Media Asset Management (MAM), RTMKlik CMS, Playout Automation Systems and all relevant OTT and broadcast platforms.			

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5.4.2	The integration must enable real-time, bi-directional metadata exchange, automated content workflows, and resilient operations across all production, archiving, and delivery chains.			
5.4.3	All integration must work on RTMKlik Content Management System (CMS).			
5.4.4	Tenderer must provide two (2) MAM terminals for accessing the system and comes with a license.			
5.4.5	Tenderer must provide : a) All the integration and professional services (deployment, configuration and migration) Tenderer recommended to fulfil all requirements, specification and advice from Media City Development to complete the integration works.			
5.4.6	Specification list of integration as follows:			
5.4.6.1	The MAM integration must include : a) Transcoding media from MAM at Transmission Operation Center (TOC) to MTA local storage in format .mov 10Mbps.			

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	<ul style="list-style-type: none"> b) Interface 'selection function' at MAM sent to MTA local storage. Users will search at MAM and select media, media will automatically transcode and send to MTA local storage. c) The integration works must integrate with the current MAM system and RTMKlik system. d) All integration necessarily needs to be provided to complement the current RTMKlik working environment. 			
5.4.6.2	<p>Playout integration must include :</p> <ul style="list-style-type: none"> a) Real-time SCTE-35 data extraction from the playout automation system at the Transmission Operation Center (TOC), using supported export formats such as XML, JSON, or BXF 5.x via TCP/IP. b) As-run log synchronization with updates applied to RTMKlik CMS and OTT platforms within ≤ 30 seconds for late changes, overruns, or live event extensions. c) SCTE-35 cue detection to capture programme boundaries, commercial breaks, blackout periods, and content substitution markers. 			

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	<p>d) Automated metadata mapping — programme title, synopsis, genre, ratings, start/end times, duration, episode numbers, unique IDs — to CMS content records.</p> <p>e) Auto-triggered catch-up content creation in CMS immediately after playout completion, using exact on-air timecodes, with optional pre-roll and post-roll padding.</p> <p>f) Artwork and promo material association from MAM or playout-provided assets, with fallbacks to manual upload.</p> <p>g) EPG Overwrite for OTT Exclusives — The CMS must allow authorized RTM personnel to manually overwrite or replace playout-derived EPG entries for specific time slots or programmes, in order to schedule exclusive OTT-only content that may differ from the linear broadcast schedule. This overwrite must:</p> <ul style="list-style-type: none"> • Apply only to OTT platforms (web, mobile, smart TV). • Preserve original playout EPG data for archival and compliance purposes. • Support reversion to playout-derived data on demand. <p>h) Error handling and fallback: If the playout feed is unavailable, the system must revert to the last known schedule while issuing alerts to the NOC.</p>			

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	i) All integration and additional equipment must be completed within the Media City area, Bangunan IBC.			
5.4.7	Tenderer must submit and propose detailed integration drawings. Please refer details drawing Appendix 6 at E-Perolehan System.			
5.4.8	The tenderer must borne the cost of the integration from all services including the principle support to complete the system.			
5.5	Content Management System			
5.5.1	CMS Centralize Single Sign On (SSO)			
5.5.1.1	<p>The CMS must act as RTM's central orchestration platform for ingesting, managing, scheduling, publishing, and monetizing live, on-demand, and radio content across RTMKlik OTT platforms, websites, mobile apps, smart TVs, and third-party distribution outlets. It must integrate natively with:</p> <ul style="list-style-type: none"> i. MAM for TV/VOD assets ii. Playout Automation System for TV EPG & Catch-Up workflows 			

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5.5.1.2	Content Management System is an application for uploading, creation, modification, managing and monitoring content in Single Sign On (SSO) for the following services: <ul style="list-style-type: none"> i. RTMKlik Website ii. RTMKlik Mobile (Android, iOS, Huawei) iii. OTT (Android TV Apps, Smart TV Apps) iv. Podcasts (Spotify, Apple Podcast etc.) v. Special Event Page (by request E.g.: RTM Parlimen, Sport Event etc.) vi. Advertisement Platform vii. Social Media Platform management 			
5.5.2	CMS Features			
5.5.2.1	The Content Management System (CMS) must have the module above: <ul style="list-style-type: none"> a) CMS Security <ul style="list-style-type: none"> • Multilevel security for different tasks • Unlimited user accounts b) Portal Management 			

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	<ul style="list-style-type: none"> • RTMKlik • Podcast for Spotify and Apple Podcast • Special Event Website <p>c) Single Sign-On</p> <ul style="list-style-type: none"> • To manage all the items in CMS <p>d) User Management System</p> <ul style="list-style-type: none"> • RTM's Subscriber Management System (SMS) • GDPR & PDPA compliant data storage <p>e) Uploading Media</p> <ul style="list-style-type: none"> • Integrated with RTM's MAM • Web-based upload • Min upload 5 media simultaneously per session • Record from live streaming <p>f) Thumbnail Generator</p> <ul style="list-style-type: none"> • Generated from media • Grab every 5 minutes from media • Create at least 5 images per media <p>g) Online Audio & Video Editing for content distribution</p>			

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	<ul style="list-style-type: none"> • Browser-based, non-linear audio/video editing module h) Media Management & Cataloguing i) Search Engines j) Free Ads Supported TV (FAST) Management <ul style="list-style-type: none"> • DRM-ready encryption during packaging • Digital watermarking functionality k) AI Personalized Content Recommendation <ul style="list-style-type: none"> • Recommendation Types • Placement and Delivery • Data Sources for AI Model l) AI Subtitle Generation for Live Streaming <ul style="list-style-type: none"> • Scope & Channels • Multi-Language Support • Integration & Delivery • Editing & Quality Control m) Assets Publishing <ul style="list-style-type: none"> • CMS to all RTMKlik and Social Media platforms n) Live Streaming Application Management 			

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	<ul style="list-style-type: none"> • Simultaneous Restreaming to multiple social media simultaneously <p>o) Digital Audio Video Recorder</p> <ul style="list-style-type: none"> • Record minimum for 8 tv channel and radio station each • 48 hours First in First Out for video • 336 hours First in First Out for audio <p>p) Live Streaming Multiview Monitoring</p> <p>q) Content Filtering/Geo Blocking</p> <ul style="list-style-type: none"> • Restrict the distribution of content to certain parts • Filtered by programme <p>r) Electronic Programme Guide</p> <p>s) Advertisements Module</p> <p>t) Push Notification</p> <p>u) Reporting & Common Media Client Data (CMCD)</p>			
5.5.2.1.1	CMS Security			
5.5.2.1.1.1	CMS Security must have secured access with: <ul style="list-style-type: none"> i. Multilevel security for different tasks. 			

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	<ul style="list-style-type: none"> ii. Control access to data, based on user roles (by ID) defining which information users or user groups can view, edit, publish, etc. iii. Allow simultaneous access by users with different security clearances. iv. Password - should be 12 alphanumeric and follow the standard by JDN. v. Unlimited user accounts vi. Users must be able to access the system via the public internet. 			
5.5.2.1.2	Portal Management			
5.5.2.1.2.1	CMS must manage all the items below: - <ul style="list-style-type: none"> i. RTMKlik including website and applications ii. Podcast including Spotify and Apple Podcast iii. Special Event Website for five (5) websites per year 			
5.5.2.1.3	Single Sign-On			
5.5.2.1.3.1	Single Sign-On must have: <ul style="list-style-type: none"> i. To manage all the items above ii. Based on user role iii. Manage user for CMS iv. Define by category and workgroup v. User Role based on scope of tasks 			

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	vi. Log listing filtered visibility by users, date and others vii. Account Creation & Authentication <ul style="list-style-type: none"> Geographic and device-based content restrictions. Entitlement APIs for integration with DRM token issuance. viii. Customer Support & Customer Relationship Management Integration <ul style="list-style-type: none"> User history and support ticket tracking. API integration with customer service tools. Automated refunds and proration for partial usage. viii. Analytics & Reporting (User-Focused) <ul style="list-style-type: none"> Real-time dashboards for user's segmentation by type, geography, device usage ix. Must user account from Google Workspace			
5.5.2.1.4	User Management System			
5.5.2.1.4.1	User Management System must have: <ol style="list-style-type: none"> RTM's Subscriber Management System (SMS) for monetization and access control. Compliance & Security <ul style="list-style-type: none"> GDPR & PDPA compliant data storage. 			

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5.5.2.1.5	Uploading Media			
5.5.2.1.5.1	<p>The system must be able to provide:</p> <ul style="list-style-type: none"> i. Upload mechanism from Media Assets Management (MAM) System. ii. Web-based upload. iii. Upload at least five (5) media simultaneously per session. iv. Record from live streaming captured via Digital Video Recorder. v. Watch folder. vi. Progress bar indicator. vii. Custom images, video and audio. viii. Direct API-driven asset transfer with full metadata mapping (title, synopsis, EPG ID, genre, rights info, thumbnails). ix. Performance & Reliability Acceptance Criteria <ul style="list-style-type: none"> • Sustained Ingest Speed – Must support continuous 100 Mbps+ sustained ingest per user without throttling for internal RTM connections. • Metadata Population SLA – Uploaded media must appear in the CMS media library with all associated metadata populated within 60 seconds of transfer completion. 			

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	<ul style="list-style-type: none"> Resumable Transfers – Must recover from mid-transfer interruptions and resume without any data loss. Large File Handling – Must handle files ≥ 150 GB in size without requiring manual splitting. <p>x. High-Performance File Transfer Acceleration</p> <ul style="list-style-type: none"> The ingest subsystem must support UDP-based accelerated file transfer protocols to achieve the above performance guarantees over both LAN and WAN connections. Automatic resume from point-of-failure with byte-range validation. Configurable bandwidth allocation per user/session to ensure QoS. Post-transfer API hooks to trigger CMS metadata ingestion and processing workflows immediately upon file arrival. 			
5.5.2.1.6	Thumbnail Generator			
5.5.2.1.6.1	<p>The system must be able to generate:</p> <p>i. Generated from media</p>			

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	<ul style="list-style-type: none"> ii. Grab every 5 minutes from media iii. Create at least 5 images per media iv. Automatic extraction of thumbnails preview images at configurable intervals (default: every 5 min). 			
5.5.2.1.7	Online Audio & Video Editing for Content Distribution			
5.5.2.1.7.1	CMS must include a browser-based, non-linear audio/video editing module for rapid preparation of OTT, social media, podcast, and broadcast assets.			
5.5.2.1.7.2	The system must be able to edit Basic Online Audio Editing without requiring a separate desktop NLE.			
5.5.2.1.7.3	Editing tools must be integrated into the workflow, allowing users to modify, brand, and export content. <ul style="list-style-type: none"> i. Trim and split audio tracks with frame/sample accuracy. ii. Insert & remove sections using cut/paste. iii. Add multiple audio layers (music bed, sound effects, voiceover). iv. Volume envelope & fade in/out controls. v. Noise reduction and normalization filters. 			
5.5.2.1.7.4	Ingest & Source Management <ul style="list-style-type: none"> i. Recording content from Digital Audio Video Recorder 			

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	<ul style="list-style-type: none"> ii. Upload external video and audio (MP4, MOV, WAV, MP3). iii. Automatic waveform generation for visual editing. 			
5.5.2.1.7.5	Metadata & Chaptering <ul style="list-style-type: none"> i. Add episode metadata (title, synopsis, duration, tags). ii. Support for podcast chapter markers with images/links for enhanced players. 			
5.5.2.1.7.6	Output & Publishing <ul style="list-style-type: none"> i. Export in MP4, MP3, or AAC. ii. Direct publishing to RTMKlik, official RTM Media Social Account and third-party platforms (Spotify & Apple Podcasts). 			
5.5.2.1.7.7	Collaboration & Security <ul style="list-style-type: none"> i. Multiple editors can collaborate in real time. ii. Role-based permissions for audio editing and publishing. iii. Edit history retained for compliance. 			
5.5.2.1.8	Media Management & Cataloguing			
5.5.2.1.8.1	The system must be able to manage and catalogue: <ul style="list-style-type: none"> i. Media downloadable to PC. ii. The media must be able to preview the system. iii. Category creation defined by the user. 			

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	iv. Prevent title duplication. v. Flexible automated on-premise hosting solutions for CMS. (This is to manage content metadata into the system.) vi. Automated sorting based on name id.			
5.5.2.1.9	Search Engine			
5.5.2.1.9.1	The search engine must have: <ul style="list-style-type: none"> i. Search by user, title, date, name id, and others - User ID, Username, Email, Programme Title (current or historical), Date/Time (air date, ingest date, publish date), Unique IDs (Asset ID, EPG ID, RAS log ID, DRM License ID), Content type (Video, Audio, Podcast, Graphic, Playlist), Tags, Categories, Genre, Rights Information. ii. Predictive text features Typeahead Predictions – Search box offers live suggestions after typing ≥ 3 characters. Spelling Tolerance – Handles typos, partial matches, and alternate spellings. Synonym Matching – Recognizes equivalent terms (e.g., “soccer” = “football”). Natural Language Queries – Users can search with conversational phrases (e.g., “Radio shows from last Sunday with DJ Rahim”) iii. Search results appear with suggestions of popular programmes or related programmes. Result Ranking & Recommendations. Ranking Factors – Popularity, recency, 			

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	<p>match accuracy, relevance to user profile. Related Content Suggestions display similar or related programmes based on:</p> <ul style="list-style-type: none"> • Metadata similarity • Watch/listen history (for logged-in users) • Popularity trends • Popular Programme Highlights – Spotlight trending TV shows, radio programmes, or podcasts in the results panel. 			
5.5.2.1.10	Free Ads Supported TV (FAST) Management			
5.5.2.1.10.1	Proposed bitrate for audio streaming in 1 profile (96 - 128Kbps) based on codec.			
5.5.2.1.10.2	Proposed multi bitrate live streaming in 5 profiles - 240p (558Kbps), 360p (944Kbps), 480p (1.2Mbps), 720p (2.4Mbps) and 1080p (4.5Mbps). RTM's have the right to change the profile anytime according RTM's requirement.			
5.5.2.1.10.3	Must have auto-detect features for multi bitrate and able to select the best profile based on viewer's internet quality.			
5.5.2.1.10.4	Must be robust, scalable, multi-platform (Smart TV, Mobile and Desktop) and multi-screen *(Please specify the proposed protocol).			

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5.5.2.1.10.5	Must be able to integrate with the advertising module from RTMKlik CMS.			
5.5.2.1.10.6	The system will create a unique URL for the livestreaming which is valid for the UTC time-based day and will have expiration every midnight. Able to capture logs, the users IP and location for easy monitoring and if users blocking is needed.			
5.5.2.1.10.7	Support DRM-ready encryption during packaging using industry standard DRM signalling protocols (e.g., Common Encryption - CENC for DASH and SAMPLE-AES for HLS), allowing integration with DRM license servers			
5.5.2.1.10.8	The live streaming service must support digital watermarking functionality, allowing embedding of client-specific brand logos into live content with customizable position and opacity settings, to visually deter unauthorized copying or distribution of the live stream.			
5.5.2.1.11	AI-Personalized Content Recommendation			
5.5.2.1.11.1	The CMS must include an AI-powered recommendation engine to deliver personalized content suggestions across RTM OTT platforms, websites, Mobile Apps, Smart TVs and podcasts, leveraging subscriber data, viewing/listening habits, and contextual factors.			

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	<p>a) Recommendation Types</p> <ul style="list-style-type: none"> i. Content-Based Recommendations ii. Suggest content similar to what the user has previously consumed, based on metadata (genre, actors, themes, tags). iii. Collaborative Filtering iv. Suggest content based on viewing patterns of users with similar tastes. v. Combine content-based and collaborative filtering to maximize accuracy. vi. Adjust recommendations based on time of day, day of week, device type, and user's location. vii. Trending & Popular Content viii. Promote high-performing content based on platform-wide engagement. <p>b) Placement and Delivery</p> <ul style="list-style-type: none"> i. Recommendations must be API-driven so they can be displayed across: ii. Home page carousels iii. End-of-play screens iv. Episode detail pages v. Radio/podcast sections vi. Support for personalized playlists automatically generated for each user. 			

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	c) Data Sources for AI Model <ul style="list-style-type: none"> i. User Behaviour Data — Watch/listen history, searches, likes/favourites, ratings, completed percentage. ii. Engagement Data — Click-through rates, session length, repeat visits. iii. Override AI recommendations for editorial or promotional priorities. iv. Set rules for specific slots v. Provide explainability for each recommendation 			
5.5.2.1.12	AI Subtitle Generation for Live Streaming			
5.5.2.1.12.1	The system must provide real-time, AI-powered subtitle generation and translation for three (3) concurrent live broadcast channels, leveraging advanced features. for multilingual OTT streaming and accessibility. <ul style="list-style-type: none"> i. Scope & Channels <ul style="list-style-type: none"> • AI subtitle generation for three (3) live TV channels concurrently. • Channels dynamically assignable via CMS for live events or scheduled broadcasts. ii. Multi-Language Support <ul style="list-style-type: none"> • Primary: Bahasa Malaysia (BM), English, Tamil and Mandarin. 			

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	<ul style="list-style-type: none"> • Special Program: Multi-regional languages if licensed models. • Real-Time Translation — AI must auto-translate source captions into multiple target languages simultaneously. • Support for viewers to select preferred subtitle language on OTT players. <p>iii. Accuracy & Latency</p> <ul style="list-style-type: none"> • Minimum 90% transcription accuracy for BM/English, ≥ 85% for additional languages. • Maximum latency ≤ 5 seconds from spoken word to subtitle display. • Continuous speech recognition optimized for broadcast audio. <p>iv. Integration & Delivery</p> <ul style="list-style-type: none"> • Direct audio feed ingestion from Playout Automation or SDI/IP encoders. • Subtitle formats: WebVTT, SRT, IMSC, TTML for OTT, and broadcast playout. • Subtitles embedded into: <ul style="list-style-type: none"> - RTMKlik web, mobile, Smart AI Subtitle Generation for Live Channels <p>v. Interactive & Player Features</p>			

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	<ul style="list-style-type: none"> Multi-Language Toggle — Viewers can switch subtitle languages in real time. Custom Subtitle Styling — Font, color, and background opacity options. Live Auto-Positioning — Avoids overlapping with on-screen graphics or lower-thirds. Viewer-Controlled Size — Accessibility compliance with adjustable font size. 			
vi.	Editing & Quality Control <ul style="list-style-type: none"> Live Editing Dashboard — Human operators can monitor and correct AI-generated captions in real time. Post-Event Editing — Subtitles stored with timeline sync for catch-up content. Searchable Captions — AI-indexed transcripts for content discovery inside OTT platforms. 			
vii.	AI / ML Model Customization <ul style="list-style-type: none"> Pre-loaded with RTM-specific vocabulary (programme names, presenters, local phrases). Continuous improvement via machine learning using operator corrections. Context-aware punctuation and casing. 			
viii.	Scalable to 10+ simultaneous live channels for future expansion. <ul style="list-style-type: none"> API and CDN delivery for scalable subtitle distribution. 			

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5.5.2.1.13	Asset Publishing			
5.5.2.1.13.1	<p>Assets Publishing User must publish :</p> <ul style="list-style-type: none"> i. All media from CMS to all RTMKlik platforms. ii. All media for Podcasts. iii. Media from CMS to social media such as Facebook, Twitter, Instagram, Youtube, TikTok etc. iv. Based on preschedule events set by RTM for published and unpublished media. v. Publishing Modes as below: <ul style="list-style-type: none"> • Instant Publish, Publish content immediately upon approval, with confirmation of successful delivery. • Scheduled Publish, Predefine publish date/time per platform, with support for multiple time zones. • Scheduled Unpublish / Expiry, Rights-based expiry automatically removes content from public platforms at end of license window. • Embargo Release, Hold content until specific release date/time; auto-release without manual intervention. 			
5.5.2.1.14	Live Streaming Application Management			
5.5.2.1.14.1	User must be able to:			

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	i. Manage live streaming application for RTMKlik ii. Different type for live <ul style="list-style-type: none"> • FAST Channel • Live Linear Channel • Live Event Channel • Live External Channel iii. Simultaneous Restreaming to multiple social media simultaneously on Facebook, TikTok, Youtube and must be managed seamlessly through a centralized dashboard iv. Include robust, documented API integrations with all target social media platforms to ensure stable and reliable restreaming. v. Handle platform-specific requirements, such as unique streaming keys, content formatting, and live stream metadata			
5.5.2.1.15	Digital Audio Video Recorder			
5.5.2.1.15.1	Must to record for 8 live video channels <ul style="list-style-type: none"> i. 48 hours First In First Out (FIFO) of recording for live streaming. ii. Recorded video must be stored at RTMKlik cloud storage and after 48 hours the media will overwrite. iii. Reuse media for Video on Demand (VOD) and Social Media. 			

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	iv. Recorded media must be extracted and edited at clause 5.5.2.1.7 v. Recording must be scheduled in advance by the user. Must record 8 live audio channels i. 336 hours First In First Out (FIFO) of recording for live streaming. ii. Recorded video must be stored at RTMKlik cloud storage and after 336 hours the media will overwrite. iii. Recording format in AAC @ 96 - 128Kbps stereo iv. Reuse media for Podcast and Social Media v. Recorded media must be extracted and edited at clause 5.5.2.1.7			
5.5.2.1.16	Live Streaming Multiview Monitoring			
5.5.2.1.16.1	Live Streaming Multiview Monitoring i. Cloud base monitoring ii. To monitor 24x7 iii. To monitor encoder input (SDI) and encoder output (RTMP or HLS). iv. Provides simultaneous visual and instrumental control of 15 of TV channels and 35 Radio channels.			
5.5.2.1.17	Content Filtering/Geo-blocking			
5.5.2.1.17.1	Content Filtering/Geo-blocking must have:			

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	<ul style="list-style-type: none"> i. Live Streaming platforms must feature Geo-blocking capabilities to restrict the distribution of content to certain parts of the world. ii. The filtering and geo-blocking must be applied to all platforms including website, Android, iOS, Huawei OS, Smart TV, Android TV and others. iii. Must allow for restriction of access from certain parts of the world. iv. Allow for replacement of Live TV content with pre-scheduled playlist from external contents in the CMS. v. Replacement of live streaming content must be affecting either international or local viewers or both. vi. Pre-scheduled content must trigger automatically based on schedule. vii. Filtered on syndicated and sports programmes. viii. Programme filtering search by ID Number as registered in Electronic Program Guide (EPG) ix. Allow for restriction of access from certain parts of the world. x. The system will create a unique URL for the live streaming which is valid for the UTC time-based day and will have expiration every midnight. Able to capture logs, the users IP and location for easy monitoring and if users blocking is needed. 			

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5.5.2.1.18	Electronic Programme Guide			
5.5.2.1.18.1	<p>The CMS must provide a multi-platform, real-time, metadata-rich Electronic Programme Guide (EPG) for RTM's OTT, web, and broadcast-linked platforms. Must be able to display on multiple platform data (Mobile, Tablet, iOS, Android, Windows, OSX, web, MyFreeview) and any devices.</p> <ul style="list-style-type: none"> i. Must list out the scheduled programs for: <ul style="list-style-type: none"> a) Up to the next seven (7) days for website interface b) Up to three (3) days for mobile application interface. c) Must provide RTM's online audience with continuously updated menus for current and upcoming programming. ii. The EPG must consist of new UX/UI interface for the following requirement: - <ul style="list-style-type: none"> a) Title - Program title for current and future program. b) Synopsis – Display full synopsis for current and upcoming programming. (255 character). Separated for synopsis and image. 			

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	<p>c) Date – Display the start date and time for the program.</p> <p>d) Category/genre – Categories according to programme genre with predefined dropdown menu.</p> <p>e) Ratings - Categories according to Lembaga Penapisan Filem (LPF) rating. (U, PG13, 18)</p> <p>f) Time – Start/end time when the program is on air. (24 hour- 00:00) (2200-0200) some programmes start at 2200 and end at 0200.</p> <p>g) Duration –The total running time for the described program. Duration values for programs must use numerals, which indicate the total duration in minutes. The duration format is preferred in time slider and automatic generated.</p> <p>h) Image/graphic – Display banner/posters/ for current and future programs. 2 or 3 more spaces. Captioned images from the show. Image size 640 x 320.</p> <p>i) Video – Video promo/trailer for the current and future program grab from RTMKlik video storage system.</p>			

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	<ul style="list-style-type: none"> iii. The tenderer must consult with RTM Users for main meta data iv. The system must have features to add, edit, delete and search for specific content. v. The system must be capable of directly jumping to a specific date. vi. The system must have features for schedule reminders for the next program. vii. The EPG content must link to live and on demand content. viii. EPG's images must have multiple sizes to suit various types for thumbnails, posters, banners, background logos and others. ix. EPG items must allow the operation team to link corresponding Catch-Up or On-Demand content in RTMKlik. x. Bulk Upload via .JSON, .XML, .CSV or any working format required. 			
5.5.2.1.19	Advertisement Module			
5.5.2.1.19.1	The CMS must include a multi-format, cross-platform advertisement module for managing, scheduling, delivering, and			

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	<p>reporting on video, audio, and display ads across all RTMKlik properties. The system must integrate with a dedicated Digital Advertisement Server to manage creative assets and optimize ad delivery through AI-driven targeting.</p> <ul style="list-style-type: none"> i. Must has an advertisement module ii. Pre-roll video must play before the Live, VOD and podcast assets play iii. Mid-roll video must play in the middle of VOD and podcast assets play. iv. Viewers have an option to either skip or continue the advertisement video. v. Propose two (2) advertisements played in a session. vi. Advertisement images must pop up while video is being played. vii. Advertisement must be placed on live channels, Video On Demand (VOD) and podcast player. viii. Advertisement images must be linked directly to the client page. ix. Advertisement media must be placed based on category, title, popular content, target viewer and others. x. Must be placed on all RTMKlik platforms (Mobile Application, Website, Podcast, Smart TV Apps & Android TV Apps). xi. Must publish the advertisement based on duration, date and others. xii. Must monitor advertisement dashboards in real-time. 			

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	xiii. Must ready for integration Server Side Ads Insertion (SSAI)			
5.5.2.1.20	Push Notification			
5.5.2.1.20.1	<p>The notification module must be a comprehensive solution that includes a robust backend for managing notifications and a client-side implementation for receiving and displaying them. The solution should be scalable, reliable, and secure.</p> <ul style="list-style-type: none"> i. Platform Support (Android, iOS, Website) ii. Notification Type <ul style="list-style-type: none"> • Text (Up to 256 Characters) • Image • Action Button (Open, Launch, Close) iii. Scheduled notification iv. Recurring notification v. Audience and Segmentation <ul style="list-style-type: none"> • User Demographic • User Behaviour • Device Information • Custom tag vi. Backend Management Analytic <ul style="list-style-type: none"> • Campaign Management • Reporting Analytic vii. Technical and Security Specifications <ul style="list-style-type: none"> • RESTful API for integration with the RTMKlik backend. 			

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	<ul style="list-style-type: none"> • All notification service and the client devices must be encrypted • Compliance with data privacy regulations • Must handle a large volume of notifications concurrently • Must provide comprehensive SDKs for Android and iOS. 			
5.5.2.1.21	Reporting and Common Media Client Data (CMCD)			
5.5.2.1.21.1	The tenderer must provide the reporting system .			
5.5.2.1.21.2	<p>The reporting and analytics must be able to generate: -</p> <ol style="list-style-type: none"> Business Analytics and Reporting User Activities Logging Must provide performance reports and real time statistics for <ol style="list-style-type: none"> Number of hits, page views, visits, length of stay and audience distribution of RTM's Live Streaming, Video on Demand and Podcast Services Bandwidth utilization reports Audience demographics Live Channel Volume transfer Geographical access Concurrent viewers 			

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	<p>h) Type of devices</p> <p>i) For live streaming, Podcast and Video On Demand (VOD) report, the system should be able to generate report based on user input (filter), for example:</p> <ul style="list-style-type: none"> • based on range of date / time • by specific channel <p>The reporting system should be able to generate detail reports on Video on Demand usage on metric to generate hit/view reports based on VOD specific Title/Report.</p>			
5.5.2.1.21.3	<p>The tenderer must provide an on-line web-based performance reports and real time statistics for the following to be accessed by RTM's personnel:</p> <ul style="list-style-type: none"> i. Content Delivery Network (CDN) usage ii. AVOD storage usage iii. Bandwidth utilization reports iv. Speed of leased lines v. Traffic Load on Network Over Time (in graphical form) vi. Audience demographic vii. Live Streaming Reporting based on time period and date by channel viii. Advertisement analytics with IAB compliance 			

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	All reports must be available as real-time and historical data in the analytics dashboard accessible anytime and audit compliance			
5.5.2.1.21.4	<p>The tenderer must provide Monthly Reports (hardcopy and softcopy) of:</p> <ul style="list-style-type: none"> i. Internet bandwidth utilization ii. Firewall Rules and Policies iii. Live Streaming utilization iv. AVOD Service utilization v. AVOD Cloud & Local Storage utilization vi. Cloud Web Hosting analytics vii. Content Delivery Network (CDN) usage. Itemised by platform. viii. Advertisement analytics with IAB compliance 			
5.5.2.1.21.5	Ability to provide data on stream for all services measurement - users location, users device, users time spend on real-time and historical.			
5.5.2.1.21.6	Provide reports that track viewing & listening session starts, active sessions, total hours, average active sessions, average quarter			

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	hour sessions, average time spent, and cumulative unique viewing & listening during a specified time period.			
5.5.2.1.21.7	In the case of downtime and system failure, the tenderer must provide a comprehensive report on the nature of fault , downtime of equipment or services, duration and action taken to rectify such fault or downtime.			
5.5.2.1.21.8	The tenderer must be ready to provide any report or comprehensive upon request by RTM if necessary.			
5.5.2.1.21.9	A Checklist of Reporting and maintenance must be provided to RTM together with the Maintenance Report. The Checklist is essential for payment processing.			
5.5.2.1.21.10	The CMS must provide a Common Media Client Data (CMCD) compliant reporting and analytics platform for RTMKlik that collects, stores, and visualizes playback, network, and user experience data in real time and historically, with integration, security, and alerting features including: <ul style="list-style-type: none"> i. User experience monitoring (session and identification/device info) ii. Stream performance insight (playback monitoring, bitrate and buffer decision) iii. Session and content-level analytics 			

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5.6	TV Live Streaming Services			
5.6.1	The proposed solution must be a robust, scalable, and high-quality cloud-native live TV streaming platform capable of delivering a premium user experience to at least 50,000 concurrent viewers while ensuring optimal operational costs.			
5.6.2	Cost-Optimized Scalability: The platform must utilize a pay-as-you-go cloud infrastructure. The Tenderer must detail how the system will dynamically auto-scale resources to handle peak viewing events, such as special broadcasts or breaking news, without incurring unnecessary costs from over-provisioning.			
5.6.3	Global Accessibility and Performance: Services must be accessible by local and international viewers. The solution must leverage a Content Delivery Network (CDN) with a global network of Points of Presence (PoPs) to minimize latency and ensure consistent, high-quality delivery.			
5.6.4	The Tenderer must specify the proposed CDN provider and their geographic footprint.			CDN Provider: _____

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				Geographic Footprint: _____
5.6.5	Flexible Channel Capacity: The system must provide thirty (30) streaming channels and be designed for flexible, cost-effective expansion, allowing RTM to add new channels on demand without significant hardware investment.			
5.6.6	Efficient Transcoding & ABR: The system must use cloud-based, real-time transcoding to convert live streams into multi-bitrate ABR formats (HLS & MPEG-DASH).			
5.6.7	The transcoding workflow must be optimized for cost and efficiency by supporting modern codecs like HEVC/H.265 in addition to H.264.			
5.6.8	Monetization & Security: The system must support Server-Side Ad Insertion (SSAI) with SCTE-35 markers for seamless, cloud-based ad playback. Security features like DRM-ready encryption (using protocols such as Common Encryption - CENC) and digital watermarking (both visible and forensic) must be offered as managed cloud services to minimize OpEx. The platform must capture user logs (IP and location) for monitoring and blocking.			

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5.6.9	Premium Quality: The solution must be Dolby Vision-ready for premium content. The Tenderer must propose a multi-bitrate profile set that aligns with current industry standards for premium experiences, including a 4K (2160p) profile.			
5.6.10	FAST Channel Service The proposed Free Ad-supported Streaming TV (FAST) channel service must align with the cloud-native approach and all technical and security specifications outlined for the TV Live Streaming Services (clause 5.6.1 – 5.6.9).			
5.7	Radio Live Streaming Services			
5.7.1	The system must provide a scalable, cloud-based platform for delivering a high-quality audio streaming service for 36 radio channels, with provisions for future expansion.			
5.7.2	Audio Quality: The service must support multiple audio codecs (MP3, AAC-LC, HE-AACv1/v2) to ensure broad compatibility while providing a premium listening experience.			
5.7.3	AI-Powered Features: The audio player should support the display of a thumbnail and poster image, as well as real-time			

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	"Now Playing" information (Song Title, Artist) generated by an AI module.			
5.8	Audio Video on Demand Services			
5.8.1	The proposed AVOD service must be a robust, cloud-native platform with a cost-efficient operational model, designed to handle a maximum of 1,000,000 concurrent viewers.			
5.8.2	Optimized Storage and Workflow: The Tenderer must provide 100TB of local storage and 25TB of cloud storage for active content. The solution must include a detailed Content Lifecycle Management Workflow to automatically move, expire, or purge content from cloud storage, minimizing long-term costs.			
5.8.3	Automated Content Ingest: The service must automate content ingest from RTM's Media Asset Management (MAM) system and automatically transcode and package assets into multi-bitrate HLS and DASH formats before uploading to the cloud.			
5.8.4	Data and Analytics: The system must provide comprehensive, cloud-based statistical reporting on usage and performance in a graphical format, with data that can be downloaded for further analysis.			

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5.9	Audio Video on Demand (AVOD) Server			
5.9.1	Seamless Integration: The server must integrate with RTM's existing VOD editing workstations, local AVOD storage, and the Media City Development			
5.9.2	MAM system: It must also have a dedicated watch folder for automated file ingestion.			
5.10	Audio Video Player (Software)			
5.10.1	The Audio Video Player must support all devices using a single player at multiple platforms (Website, Mobile Apps, Smart TV Apps, Android TV Apps) and must come with the required playback license.			
5.10.2	The player must have auto-detect features for multi bitrate and be able to select the best profile based on viewer's Internet quality.			
5.10.3	Must have screen mirroring, casting and airplay function for multiple platforms.			

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5.10.4	Must include player watermark that set by Content Management System (CMS) and can be able and disable by RTM.			
5.10.5	Must provide and generate player embedded code for each live streaming channel, Video on Demand and Podcast manage by RTMKlik Content Management System (CMS).			
5.10.6	The Player must have unique security features to protect the content being used from other parties. The security must be locked by domain restrictions or IP address.			
5.10.7	Audio Video Player must not be restricted to specific domain name set by Content Management System (CMS).			
5.10.8	The player must be ready for VR 360 video and deliver seamless playback of high-resolution, pre-stitched 360-degree videos, ensuring an immersive and fluid virtual reality experience.			
5.10.9	Now-Playing and What's Next Metadata — Provide real-time now-playing metadata including current programme/song title, artist, and announcer/DJ name, along with "What's Next" track or programme information for user display on RTMKlik apps and website.			

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5.11	Audio Video Transcoder			
5.11.1	<p>The tenderer is required to provide the Audio Video Transcoder (online conversion mechanism) to:</p> <p>a) Automatically transcode audio video content from multiple codec/formats such as .mxf, .mov, .mp4 (H.264), .mp4 (H.265 HEVC), .mpd (MPEG-DASH), .m4a (AAC, HE-AAC, HE-AAC V2)</p> <p>b) Generate thumbnails, titles, description, scheduling etc.</p>			
5.11.2	Must automatically transcode video format upon uploading of edited video from RTM's existing VOD editing workstations to AVOD Server.			
5.11.3	Must automatically transcode audio format upon uploading of edited audio from RTM's existing audio editing workstations to AVOD Server.			
5.11.4	Must be able to transcode video within specific time codes.			
5.11.5	The multi-bitrate (MBR) transcoding for VOD must be done at the RTM's Data Centre in 5 profiles - 240p, 360p, 480p, 720p & 1080p.			
5.11.6	Must be installed either on RTM premise or cloud depends on			

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	tenderer design proposal			
5.11.7	RTM has right to access and manage encoder via web UI using integrated multi system management authentication.			
5.12	Streaming Media System			
5.12.1	Must ingest any live streams from: <ul style="list-style-type: none"> • Real Time Messaging Protocol (RTMP) • Secure Reliable Transport Protocol (SRT) encoder (software/appliance based). • ICY (SHOUTcast/Icecast) • MPEG-TS • RTSP/RTP • WebRTC 			
5.12.2	Must deliver video and audio streams to any player and any device, over any protocol, from a single streaming server.			
5.12.3	Must stream live video feed, linear and on-demand content for live events, news, monitoring, and video libraries.			

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5.12.4	Must record an entire live webcast into a single file, segment it into multiple files for chapter replay, or start and stop recording at predetermined points for partial archiving.			
5.12.5	Must transcode streams for optimal viewer experiences.			
5.13	Content Delivery Network (CDN) Services			
5.13.1	The services must comprise the following requirements: -			
5.13.2	Must provide CDN services with total volume transfer of CDN 133.2 PB for 36 months contract and estimated average usage 3.7 PB monthly volume transfer for Live Streaming, VOD access and Podcast.			
5.14	Cloud Web Hosting Services			
5.14.1	Must be provided with five (5) TB dedicated storage capacity .			
5.14.2	Must be consistently responsive to deliver fast loading of RTM's Live Streaming and Video on Demand Services to the viewers.			

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5.14.3	Must support a wide range of Web Languages and applications.			
5.14.4	Must support a wide range of web management system such as Wordpress, Joomla and etc.			
5.14.5	Must optimize the performance and accessibility of web applications, database and contents.			
5.14.6	Must feature an Automatic Web Recovery System (AWRS) to protect and restore RTM's web content from web defacement.			
5.14.7	Cloud Web Hosting service must be managed with High Availability and Disaster Recovery features.			
5.14.8	Must be integrated with existing RTM's application and data.			
5.14.9	Must have a web hosting manager to manage multiple websites.			
5.15	TV Encoders			
5.15.1	Must be single or multiple (maximum 8 channel per box) of professional appliance-type video encoder with redundancy capabilities or equivalent			

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5.15.2	Must support both SD/HD-SDI/SRT/SMPTE/NDI inputs with capabilities to rescale the live video output.			
5.15.3	Must feature built-in Graphic Processing Unit (GPU) .			
5.15.4	Must allow for simultaneous transcoding of a live source into multiple streams of different resolutions and bitrates .			
5.15.5	Must playback video file from internal or Local Storage .			
5.15.6	RTM has right to access and manage encoder via web UI using integrated multi system management authentication.			
5.15.7	TV Encoders to comply with general features below : <ul style="list-style-type: none"> i. Protocols: UDP, RTP, Zixi, SRT, RIST, HLS, RTMP, DASH, CMAF, MBTS ii. SMPTE 2110 Control with AMWA NMOS iii. Mobile to UHD resolutions iv. HEVC, SHVC, H.264, MPEG-2, JPEG 2000, JPEG XS v. Supports AV1 video codec or commit to a future support roadmap vi. HDR10, HLG, Dolby Vision, SL-HDR1/2, HDR10+, ST2094 with Custom LUT support vii. Support Dolby Vision profile 8.1 and 8.4 viii. AAC LC/HE/HEv2, DD/DD+/DD+JOC, AC-4, MPEG-H, MPEG-1 LII 			

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	ix. Low-latency mode x. Optimized statistical multiplexing xi. Rate Control CBR/VBR xii. Frame rate conversion xiii. Support Fixed/variable GOP size xiv. Forensic watermarking with 3rd party partners xv. Flexible redundancy scheme 1+1, N+1, N+M xvi. Resizing and A/R conversion xvii. Frame rate conversion xviii. Deinterlacing and denoising xix. Brightness & colors xx. HDR signalling & conversion xxi. Logo & Scrolling text insert			
5.15.8	TV Encoders to comply with specification below : Input/Output Protocols & Interfaces i. Inputs: Supports a wide range of input protocols for full IP transition, including: - TS/IP (UDP, RTP) - SDI (up to 12G, SMPTE-424M and 425) with minimum 8 ports - ST 2022-6, ST 2110 - NDI, Zixi, SRT, RIST, RTMP ii. Outputs:			

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	<ul style="list-style-type: none"> - TSolP - MBTSolP - CMAF ingest - OTT push (HLS, DASH, MSS, CMAF, RTMP) with DRM support. - Can also output to file and targeted file servers (on-premise or cloud). - Physical Interfaces: 10GbE ports and SDI inputs. <p>iii. Video Processing</p> <ul style="list-style-type: none"> - Resolutions: Wide range of resolutions from mobile to UHD (up to UHDp60, 3840 x 2160). - Video Codecs: <ul style="list-style-type: none"> • Encoding: HEVC, SHVC, H.264, MPEG-2, JPEG 2000. • Decoding: MPEG-2, H.264, HEVC. - Video Quality: Utilizes compression engine to deliver high video quality at low bitrates. -HDR Support: Comprehensive support for HDR standards including HDR10, HLG, Dolby Vision, SL-HDR1/2, HDR10+, and ST2094, with a custom LUT converter. 			

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	<ul style="list-style-type: none"> - Frame Rates: Supports various progressive and interlaced frame rates, and can perform frame rate conversion. - Video Processing Functions: Includes resizing, high-quality de-interlacing, denoising, brightness and color correction, logo and scrolling text insertion, and 3:2 pulldown/inverse telecine. - Rate Control: Supports CBR (Constant Bit Rate), VBR (Variable Bit Rate), and Capped VBR. Also includes an optimized statistical multiplexing feature. - Latency: Supports low-latency and ultra-low-latency modes. <p>iv. Audio Processing</p> <ul style="list-style-type: none"> - Audio Codecs: <ul style="list-style-type: none"> • Encoding: MPEG-1 Layer II, AAC-LC, AAC-HEv1/v2, Dolby Digital, Dolby Digital Plus, and AC-4. • Decoding: Supports pass-through for Dolby Digital, Dolby Digital Plus, and Dolby E. - Functions: Supports audio pre-processing and editing, including mixing (downmix/upmix), shuffling, remapping, and loudness control (EBU R128, ATSC A/85). 			

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	<ul style="list-style-type: none"> - Sampling Frequency: 32, 44.1, 48 KHz. <p>v. Data & Metadata</p> <ul style="list-style-type: none"> - Subtitles: Supports various subtitle formats including Teletext, CC, DVB-Sub, SCTE-27, and TTML. - Metadata: Processes AFD, WSS, Dolby Meta Data, VITC, VPS, and SMPTE2038. - Ad Insertion: Supports SCTE-35 for digital program insertion (filtering, passthrough, and event triggering). <p>vi. Management</p> <ul style="list-style-type: none"> - Control Interface: Secured Web UI for system and channel management. - APIs: Supports SNMP (MIB v2c) and a Northbound REST API for control and monitoring. - Monitoring: Provides status checks for hardware (CPU load, memory) and software (encoding processes, alarms). Also offers a dedicated monitoring Web UI. 			
5.16	Radio Encoders			
5.16.1	Must be a single or multiple channels per box of professional appliance-type audio encoder with redundancy capabilities or equivalent.			

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5.16.2	Must have digital audio input with standard professional XLR connections for stereo audio source.			
5.16.3	Must features a built-in headphone amp with ¼" jack and volume control for monitoring of audio input or output.			
5.16.4	Must integrate with the proposed CDN.			
5.16.5	Must support simultaneous multiple streams to different streaming platforms.			
5.16.6	RTM has right to access and manage encoder via web UI using integrated multi system management authentication.			
5.17	Portable Audio Video Switchers & Encoders			
5.17.1	Portable encoders are needed for live streaming from remote locations, supporting various protocols and network aggregation for reliability.			
5.17.2	Must stream to any online video platform, such as Facebook, Youtube, TikTok Live and more.			

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5.17.3	Must support comprehensive protocols such as MPEG-TS, RTSP, RTMP, HLS, SRT, and NDI.			
5.17.4	Must stream online over 2.4/5GHz 802.11ac WiFi, Ethernet or 3G/4G/5G networks using a mobile hotspot, USB modem or smartphone's data connection.			
5.17.5	Must stream over aggregated bandwidth from Ethernet, WiFi, and cellular sources for a more reliable and robust broadcast			
5.17.6	Must protect against jitter, packet loss and bandwidth fluctuation.			
5.17.7	Must deliver low latency videos.			
5.17.8	Must have end-to-end 128/256-bit AES encryption to make sure the content is protected from contribution to distribution.			
5.17.9	Must record live broadcast directly to encoder.			
5.17.10	Must has minimum four (4) SDI input and output.			
5.17.11	Must come with two (2) latch-on monitors, three (3) headphones, mouse, and keyboards.			
5.17.12	Must have comprehensive built-in controllers i.e. control surface, PTZ joystick, and touchscreen audio mixer			

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5.17.13	Pre-installed with vMix Pro.			
5.17.14	<p>Must come together USB External Connectors with</p> <ul style="list-style-type: none"> i. Standard USB type A for connection with computer ii. 2 Neutrik™ XLR-3 female for Analog line inputs (mono): 2 balanced mic/line iii. 2 Neutrik™ XLR-3 male for Analog line outputs (mono): 2 servo-balanced iv. Locking ¼" Neutrik™ female cable jack for stereo headphones output with dedicated output stage and level adjustment knob <p>Maximum input output level / impedance: +10 dBu / <100 Ohms</p>			
5.17.15	<p>Portable Audio Video Encoders to comply with specification below:</p> <ul style="list-style-type: none"> i) Hardware <ul style="list-style-type: none"> a) Intel® LGA1700 socket for 14th Gen Intel® Core™, Intel Core i9-14900K b) 2 x PCIe 5.0 x16 SafeSlots (x16 single or x8/x8 dual), 4x DDR5 DIMM slots, 2x DisplayPort™ input port for Thunderbolt™ 4, 8x SATA 6 Gb/s, 1x HDMI c) RAM - 32GB minimum d) Power Supply Unit - 750W or higher efficiency 			

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	<ul style="list-style-type: none"> e) Built-in controllers i.e. Mix/Fade/Wipe Effects. T-Bar, Auto, Cut Transitions. ii) Video Input <ul style="list-style-type: none"> a) Min 8 x bidirectional SD/HD-SDI (75 Ohm BNC) 3G-SDI, SMPTE-259/292/296/424, 8-bit, 10-bit and 12-bit* b) 4 additional camera inputs over network NDI & SRT iii) Video Recording Format <ul style="list-style-type: none"> a) Video: HEVC (H.265) and AVC (H.254) b) Audio: AAC-LC, MPEG Layer 2 iv) Video Output <ul style="list-style-type: none"> a) 3G-SDI, SMPTE-259/292/296/424, 8-bit, 10-bit and 12-bit* b) 4K/UltraHD 4:2:2 and 4:4:4 up to 50/60 fps c) Dual Link HD 4:4:4, (2x BNC) d) Single Link 4:2:2 or 4:4:4 (1x BNC) e) HDMI v1.4b v) Audio Output <ul style="list-style-type: none"> a) 2 x XLR Output b) 16 and 24-bit AES/EBU audio, 48 kHz sample rate c) Realtek 7.1 Surround Sound High Definition Audio CODEC vi) Display <ul style="list-style-type: none"> a) 1 x 15" Full HD Display Panel (1080p60Hz) b) 2 x 15" Full HD Portable Display with protective sleeve, built in stand, USB-C input c) 1 x HDMI Port 			

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	<p>vii) Operating system : Windows OS 64-bit Windows (Latest version)</p> <p>viii) Interface/Network</p> <p>a) 10 Gb & 2.5 Gb Ethernet,</p> <p>b) WiFi: 2.4/5GHz 802.11 ac/a/b/g/n MiMo or WiFi 6E,</p> <p>c) USB Interfaces</p> <p>ix) Resolutions : 1080p, 720p, 576p, 480p</p> <p>x) Recording media : 500GB NVMe Solid State Drive (SSD)</p> <p>xi) Network Protocol : TCP/IP, UDP, HTTP, DHCP, NTP, SSL, IGMP</p> <p>xii) Video Transport Protocols : RTMP, RTP, RTSP, RTSP over HTTP, NDI & SRT</p> <p>xiii) Software - vMix Pro latest version with license for 3 years</p> <p>Accessories</p> <p>a) 1x Mouse, 1x Keyboard, 1x Professional Headsets</p> <p>b) 8x Mini BNC To BNC Male Connector</p> <p>c) Flight Case - all-in-one precise fit and optimal protection for all equipment, shock resistance and environmental protection</p> <p>d) Intercom system all-in-one wireless intercom system with talkback function & base station, 3x single-sided speaker, 5x dual-sided speaker</p> <p>e) External USB audio capture with XLR input</p>			

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5.18	Video Playout System			
5.18.1	Must operate 24 hours/day and 7 days/week with low latency and without interruption.			
5.18.2	Must have separate processing between video decoding and playout application.			
5.18.3	Must support reverse and variable speed playback.			
5.18.4	Must allow for live streams to be added as playlist items.			
5.18.6	Must support on-air playlist editing.			
5.18.7	Must have tables to display real-time statistics/data.			
5.18.8	Must have multiple MPEG interfaces/input (SDI, IP, RTMP, ASI, SRT and NDI).			
5.18.9	Must manage minimum three (3) channels.			
5.18.10	Must playback video file from internal or RTM's Local Storage .			
5.18.11	Must have web-based User Interface (UI) for remote access and management.			

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5.19	Website And Platform Development			
5.19.1	<p>Tenderers designing and developing the RTMKlik application must fulfill several key requirements based on the UX audit to ensure the product's success across all platforms as follow :</p> <ul style="list-style-type: none"> a. iOS b. Android c. Harmony OS d. Android TV e. webOS f. Tizen g. Vida 			
5.19.1.1	<p>User Insights & Core Functionality</p> <p>Prioritize Fundamentals: The new application must focus on getting the fundamentals right, including quick and easy search functionality and high-quality video streams.</p>			
5.19.1.2	<p>Address Performance Issues: A primary focus must be on resolving the key user pain points identified in the audit. This includes ensuring a stable connection, fast loading times, and a seamless experience without frequent disconnections or app shutdowns.</p>			

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5.19.1.3	Seamless Login & Registration: The new design must have a robust and frictionless process for user registration and login, as this was a significant pain point for existing users.			
5.19.1.4	Enhance Content Discovery: The app should provide a personalized experience and guide users to content through features like "kick start" recommendations during profile setup and a variety of rail and card types on the homepage.			
5.19.1.5	Showcase All Content: The home screen should be utilized effectively to showcase all available content, including dedicated sections for radio and podcasts, as reviews indicate a high level of user interaction with these features.			
5.19.1.6	Utilize Data for Personalization: The application should be designed to gather user data to enable targeted recommendations. The audit notes that recommendations are a significant driver of content viewership and revenue for major streaming services.			
5.19.1.7	Accessibility & Usability User-Centric Design: The design should prioritize the needs and preferences of users to ensure the highest standard of usability and reach a broader audience. It should follow established			

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	usability principles such as simplicity, consistency and error prevention.			
5.19.1.8	Intuitive Navigation: The app's information architecture should be simple, consistent and predictable. This includes clear menu labeling, content groupings, and an intuitive search function to improve content discovery and retention.			
5.19.1.9	Visual Feedback: The user interface must always inform the user and provide a guide for interaction. This includes clearly indicating where users are navigating to and where they currently are.			
5.19.1.10	Brand Consistency: The UI should reflect and align with the RTM brand, with a specific color palette to maintain a consistent and familiar design throughout the app.			
5.19.1.11	Branding & Design System Implement a Design System: Tenderers must propose and build a comprehensive design system. This system will serve as a single source of truth for all UI and UX elements, ensuring consistency across all platforms and devices.			
5.19.1.12	Efficiency and Adaptability: A well-built design system will allow for efficient development and the ability to quickly iterate new components and features with speed and accuracy. It reduces the risk of inconsistent design and poor user experience.			

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5.19.1.13	Brand Identity: The design should further enhance brand identity and awareness across all digital products to increase user loyalty and emotional connection.			
5.19.1.14	A/B Testing: The development process should incorporate A/B testing as an essential activity to make informed product improvements based on robust data rather than assumptions.			
5.19.1.15	Core Components and Features : a. Content Delivery: Video On Demand (VOD), Live TV Streaming, Live Radio Streaming and Podcast. b. User Information: Electronic Program Guide (EPG). c. User Management: User Registration and User Account Profile d. Discovery: Advanced Search Engine and Search Engine Optimization (SEO) e. Engagement: Interactive Features and Keyword Ranking Management.			
5.19.2	System Requirements			
5.19.2.1	Support a wide range of data types (character, binary, large objects)			

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5.19.2.2	Be fully responsive across all screen sizes, devices, operating systems, and orientations			
5.19.2.3	Propose and implement a new, modern UI design template annually, subject to RTM's approval			
5.19.2.4	Ensure full migration of existing content and databases.			
5.19.2.5	Provide a CMS that enables RTM administrators to update and manage new content independently.			
5.19.2.6	Guarantee successful migration of all existing portal content.			
5.19.2.7	Design and develop up to 20 Special Event Websites over the three-year contract, fully integrated with the RTMKlik CMS.			
5.19.2.8	Implement multi-language support (Malay and English) with centralized translation management.			
5.19.2.9	Provide performance optimization strategies (lazy loading, image compression, caching, mobile-first optimization).			
5.19.3	Advanced Features and User Experience			
5.19.3.1	Advanced Search Engine			

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5.19.3.2	Predictive text functionality.			
5.19.3.3	Search results with suggestions (popular or related programs).			
5.19.3.4	Metadata search (title, actor, director, genre, release date, etc.).			
5.19.3.5	Clickable hyperlinks for cast, directors, and genres.			
5.19.4	User Features			
5.19.4.1	Continuous playback history.			
5.19.4.2	Personalized recommendation engine based on user interaction metrics.			
5.19.4.3	QR code login for user authentication.			
5.19.4.4	Social media sharing (Facebook, X, Instagram, WhatsApp).			
5.19.4.5	Programme reminders.			
5.19.4.6	Integrated support/contact form.			
5.19.5	Notifications			
5.19.5.1	Pop-up messages.			

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5.19.5.2	On-screen crawler text.			
5.19.5.3	Push notifications.			
5.19.6	UI/UX and Cross-Device Applications			
5.19.6.1	UI/UX Enhancements The tenderer must propose and implement at least three major UI/UX enhancements for the RTMKlik website and applications during the three-year contract period.			
5.19.6.2	Cross-Device Applications The tenderer must deliver applications for desktop, mobile, and tablet, including:			
5.19.6.3	Responsive web design across all major browsers and devices.			
5.19.6.4	Native mobile & tablet apps for iOS, Android, and Huawei.			
5.19.6.5	Google Chromecast support.			
5.19.6.6	Smart TV and Android TV applications.			
5.19.17	Distribution & Syndication			

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5.19.7.1	The system must generate unique URLs/RSS feeds compatible with third-party players and support multiple codecs and formats for publishing to: <ul style="list-style-type: none"> • Spotify • Apple Podcasts 			
5.19.8	Multi-Device Audio Playback			
5.19.8.1	AirPlay, Chromecast, Screen mirroring, Bluetooth devices, and Smart speakers.			
5.19.9	Search Engine Optimization (SEO)			
5.19.9.1	Implement schema.org metadata for SEO. Implement robust structured data using JSON-LD and the schema.org vocabulary to enable rich snippets and improve discoverability of content across major search engines.			
5.19.9.2	Implement sitemap metadata for SEO. Develop, implement, and maintain multiple sitemaps, including sitemap.xml, video-sitemap.xml, and podcast-sitemap.xml, for comprehensive and efficient content discovery by search engines. The sitemaps shall be dynamically updated and automatically submitted to search			

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	consoles to ensure real-time indexing of all new and updated RTMKlik content.			
5.19.9.3	Execute and manage comprehensive Search Engine Optimization (SEO) strategies to secure and maintain first-page ranking for a minimum of 200 high-value malay and english, targeted keywords. The strategy shall focus on improving organic traffic and maximizing content discoverability.			
5.19.9.4	Provide performance optimization strategies (lazy loading, image compression, caching, mobile-first optimization).			
5.19.9.5	URL shortening/permalink optimization must be implemented for all RTMKlik links.			
5.19.9.6	Provide quarterly reports on keyword performance, traffic growth, and ranking improvements.			
5.20	User Login & Registration System			
5.20.1	Seamless Login & Registration			

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5.20.1.2	The new design must have a robust and frictionless process for user registration and login, as this was a significant pain point for existing users.			
5.20.2	User Registration			
5.20.2.1	The tenderer shall deliver a modern, secure, and scalable user authentication and management system, designed to provide a seamless Single Sign-On (SSO) experience across all RTMKlik platforms.			
5.20.3	Authentication & Identity Management. The system shall be built on industry best practices to ensure security and cross-platform compatibility. <ul style="list-style-type: none"> a. Centralized Identity Management: The tenderer shall propose and implement a centralized Identity Management System (IdMS) to serve as a unified source for user authentication across all platforms, including web, mobile apps, Smart TV apps, Android TV apps, and IVIS. b. Protocol Adherence: The authentication flow shall strictly adhere to OAuth 2.0 for authorization and OpenID Connect (OIDC) for user identity verification. This shall be the 			

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	<p>foundation for the Google API implementation.</p> <p>c. Web-based Registration: Provide secure web-based registration forms that support both Email/Password and Google account logins via OIDC.</p> <p>d. QR Code Authentication: Implement a QR code-based authentication feature for seamless user login on large-screen devices (Smart TVs, Android TVs) and in-vehicle systems (IVIS). This will eliminate the need for manual credential entry on these platforms.</p>			
<p>5.20.4</p> <p>5.20.4.1</p>	<p>API & Session Management</p> <p>The system shall utilize a robust, token-based approach for secure session handling and content access control.</p> <p>a. Token-Based Authentication: The system shall implement JSON Web Tokens (JWTs) for all API-level authentication and session management. JWTs shall be issued by the IdMS upon successful user login.</p> <p>b. Secure Token Storage: JWTs must be stored securely on all client platforms:</p> <p>-Web: Use HttpOnly cookies and secure browser storage.</p>			

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	<p>-Mobile/Tablet: Utilize platform-specific secure storage (e.g., iOS Keychain, Android Keystore).</p> <p>c. Content Access Control: The backend API shall be configured to read permissions from JWT claims to enforce content access policies. This will programmatically restrict access based on user groups (e.g., Guest vs. Registered User).</p> <p>d. Session Management: The system must provide robust session handling, including an auto-logout feature after 2 hours of inactivity, and secure change/reset password options.</p>			
5.20.4.2	<p>Unified User Experience</p> <p>The implementation shall result in a unified and secure user experience that adheres to all specified requirements, from registration and profile management to content access and data privacy compliance. The proposed architecture will ensure that RTMKlik provides a modern, secure, and frictionless experience for its users on any device.</p>			
5.20.5	<p>User Account Management</p>			

SULIT

SCHEDULE OF COMPLIANCE

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CLAUSE	TECHNICAL SPECIFICATIONS	COMPLIED	NOT COMPLIED	REMARKS
5.20.5.1	Member registration and verification.			
5.20.5.2	Multi-Profile Support for family sharing.			
5.20.5.3	Promo code support.			
5.20.5.4	Secure login with credentials.			
5.20.5.5	Auto logout after 2 hours of inactivity.			
5.20.5.6	Change/Reset password options.			
5.20.5.7	Editable profiles with profile image upload.			
5.20.5.8	Content access restrictions by user group.			
5.20.5.9	Account deletion option.			
5.20.5.10	Data Privacy Compliance with Malaysia's PDPA and GDPR readiness.			
5.20.7	Access Rights			
5.20.7.1	Guest (Not Logged-in User): Limited access to Live TV and Radio streams only. No VOD or Podcast.			

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5.20.7.2	Registered User (Logged-in): Full access to all services.			
5.21	Contingency and Disaster Recovery			
5.21.1	The tenderer is required to provide backup services for the live streaming, VOD, Podcast and web content.			
5.21.2	The tenderer must be responsible for the contingency and disaster recovery of the network and equipment supplied.			
5.21.3	The tenderer must ensure that there is no interruption to RTM's services.			
5.21.4	The tenderer must provide the disaster recovery solutions that comply with MS ISO/IEC 27001:2013 ISMS.			
5.22	Support and Services			
5.22.1	The tenderer is responsible to replace or make good any defect of the supplied products or services at no cost and with no interruption to the system's operation.			

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5.22.2	On-site support and services for all systems, inclusive of system support configuration must be provided throughout the contract period.			
5.22.3	<p>Must have a dedicated 24/7 Network Monitoring Centre and Customer Call Centre to provide proactive monitoring and round-the-clock technical support to RTM for following details :-</p> <ul style="list-style-type: none"> a) Network Monitoring for Routers, Switches and Firewalls b) Current Network Discovery c) Network Alert and Reporting d) Network Traffic Analysis e) Application Monitoring f) Configuration Management <p>Server Monitoring</p>			
5.22.4	Must provide a high level 24/7 maintenance and support services for the connectivity and availability of equipment supplied.			
5.22.5	<p>Must provide full details of support services as follows:</p> <ul style="list-style-type: none"> a) All service centre's postal address, telephone numbers, email address and social media. 			

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	b) Contact person's name, hand phone number and email address. c) Nationwide support presence and capabilities. d) Availability of support operation (call centres, flow of fault reporting and management) to provide consultation or repair. e) Profile of tenderer's experience in providing 24/7 support and services.			
5.22.7	Support Service Helpdesk must be available for 24/7 with the following features/accessibility: a) Ticket Management b) Chat Features with Support c) Satisfaction Rating d) Handling Report Accessible via Mobile and Web Browser			
5.22.8	Response time for critical calls/critical occasions must be immediate and technical personnel must be made available at site within one (1) hour to rectify the problem. The response time must be from the time of report lodged.			

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5.22.9	The critical occasions must be any of the following events: a) Internet Services failure b) Equipment failure c) Total outage of Live Streaming services d) Total outage of Video On Demand Services e) Total outage of Web Hosting services			
5.22.10	The tenderer must provide in writing in the case that technical support personnel are not available at site as required in Clause 5.22.8.			
5.22.11	The tenderer must provide one (1) on-site personnel in RTM premise during RTM's normal working hour and on-call when needed.			
5.23	Alert and Monitoring			
5.23.1	Must provide a proactive alert mechanism when local or international service is disrupted by providing Real Time Email or WhatsApp Notification for major equipment failure to the assigned RTM's personnel.			

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5.23.2	Must provide an online monitoring system to monitor the traffic load on network links by providing live visual representation of the traffic for the Internet Leased Lines.			
5.23.3	Must provide digital audio monitoring tools to monitor incoming digital AES audio sources .			
5.23.4	Must provide Online Multiview for TV and Radio Live Streaming .			
5.23.5	Must provide VPN account to monitor live streaming on geo-blocked country.			
5.24	Maintenance			
5.24.1	The tenderer must conduct maintenance including Service Availability and Performance Test of the equipment and must provide reports on 1st day of the second week of the following month.			
5.24.2	The Tenderer must conduct Backup Services for the following on quarterly year basis : a) Web – application & database			

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	b) CMS – application & database c) Integrated Services Router – Routing & Configuration files d) Firewall – Rules, Policies & Configuration files e) Cloud Web hosting – Image server			
5.24.3	The Tenderer must modify policies, routing tables, rules and configurations as requested by RTM.			
5.25	Service Level Guarantee			
5.25.1	The tenderer must provide Service Level Guarantee (SLG) 99.95% for the following: a) Content Delivery Network and Cloud Services (CMS, CDN, Storage & Hosting) b) Content Management System (CMS) c) Equipment (Router, Firewall, Encoders, Servers, Storage, Switches) d) Internet Leased Line			
5.25.2	The SLG for Internet Leased Line must comply the following parameters:			

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CLAUSE	TECHNICAL SPECIFICATIONS			COMPLIED	NOT COMPLIED	REMARKS										
	a)	Service availability/month	≥ 99.95%													
	b)	Latency/month	≤ 120ms													
	c)	Packet Loss/month	≤ 3%													
5.25.3	The SLG for Internet Leased Line penalty rates are: <table><tr><th>Service Level (A= service availability)</th><th>% of payment per month</th></tr><tr><td>99.0% ≤ A < 99.95%</td><td>5%</td></tr><tr><td>95.0% ≤ A < 99.0%</td><td>10%</td></tr><tr><td>85.0% ≤ A < 95%</td><td>20%</td></tr><tr><td>< 85.0</td><td>30%</td></tr></table>			Service Level (A= service availability)	% of payment per month	99.0% ≤ A < 99.95%	5%	95.0% ≤ A < 99.0%	10%	85.0% ≤ A < 95%	20%	< 85.0	30%			
Service Level (A= service availability)	% of payment per month															
99.0% ≤ A < 99.95%	5%															
95.0% ≤ A < 99.0%	10%															
85.0% ≤ A < 95%	20%															
< 85.0	30%															
5.25.4	The formula of financial rebate for non-compliance of the above parameters on a monthly basis are as stated below: Service Level Guarantee (SLG) is 99.95% for a period of one (1) month. The calculation for SLG is:															

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	$A\% = \left(1 - \frac{\text{Outage Time in Hours}}{\text{Days in a Month} \times 24 \text{ Hours}}\right) \times 100\%$ <p>Note: <i>Outage Time in Hour = Breakdown Hours</i></p>			
5.26	Digital Right Management (DRM)			
5.26.1	Content Acquisition & Ingestion			
5.26.1.1	Support secure acquisition of content from live, in-house production, and licensed content aggregators.			
5.26.1.2	Comply with IMF, MXF, MPEG-DASH, HLS standards for content ingest.			
5.26.1.3	Automated metadata ingestion including rights windows, geo-blocking, and license terms.			
5.26.1.4	Secure API integration with external content aggregators.			
5.26.1.5	Support encrypted transfer protocols (SFTP, Aspera, HTTPS).			
5.26.2	Digital Rights Management (DRM) System			

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5.26.2.1	Multi-DRM support (Widevine, PlayReady, FairPlay).			
5.26.2.2	Compliance with MovieLabs and Hollywood studio DRM standards.			
5.26.2.3	Hardware-based DRM (TEE / Widevine L1) for UHD/HDR.			
5.26.2.4	Dynamic license generation (per device/session).			
5.26.2.5	Persistent license options (offline viewing) with configurable expiration and revocation.			
5.26.2.6	Forensic watermarking integrated with DRM.			
5.26.2.7	Secure key lifecycle management (generation, rotation, revocation).			
5.26.2.8	Compliance with GDPR and PDPA Malaysia.			
5.26.2.9	The DRM system must be built on a scalable, cloud-native architecture.			
5.26.2.10	The system must include a secure Key Management Service (KMS) for encryption key generation, storage, and retrieval.			
5.26.3	Content Processing & Packaging			

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5.26.3.1	Support ABR packaging with DRM encryption (HLS, DASH, CMAF).			
5.26.3.2	Support dual-layer encryption for UHD/HDR content.			
5.26.3.3	Automated QC validation of encryption and playback.			
5.26.3.4	CDN integration for encrypted delivery.			
5.26.3.5	The system must support Just-in-Time (JIT) packaging and encryption for efficient content delivery.			
5.26.4	Distribution & Playback Security			
5.26.4.1	End-to-end encrypted streaming.			
5.26.4.2	DRM-enforced playback restrictions (time, geo, device).			
5.26.4.3	Studio-mandated playback restrictions (HDCP, no screen recording).			
5.26.4.4	Compliance with Hollywood audit standards (security audit, penetration testing).			
5.26.4.5	Player SDK with DRM playback support for Web, iOS, Android, Smart TV, STB.			

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5.26.4.6	The DRM license server must be highly available and scalable, supporting integration with RTMKlik's authentication, entitlement, and billing systems.			
5.26.5	Monitoring, Reporting and Compliance			
5.26.5.1	Real-time license server reporting.			
5.26.5.2	Content usage reporting for licensing/royalty compliance.			
5.26.5.3	Alerts for piracy attempts or unusual license behavior.			
5.26.5.4	Integration with anti-piracy watermark detection services.			
5.26.5.5	The DRM solution must provide robust security auditing and analytics for license requests.			
5.26.6	Industry Standards and Compliance			
5.26.6.1	Compliance with MovieLabs Enhanced Content Protection (ECP).			
5.26.6.2	Compliance with Motion Picture Association (MPA) best practices.			
5.26.6.3	Compliance with Digital Entertainment Content Ecosystem (DECE) guidelines.			

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5.26.6.4	Compliance with Sony Pictures Entertainment Security Standards.			
5.26.6.5	Compliance with ISO/IEC 23009, Apple HLS, and CMAF.			
5.26.6.6	Compliance with GDPR and Malaysia PDPA.			
5.26.6.7	The DRM provider must be certified by major DRM technology owners (Google, Microsoft, Apple) and undergo regular third-party security audits.			
5.26.7	Implementation and Support			
5.26.7.1	The system must provide a well-documented API for integration with RTMKlik backend systems (CMS, user authentication, billing).			
5.26.7.2	The vendor must provide a comprehensive Service Level Agreement (SLA) with guaranteed uptime and support response times.			