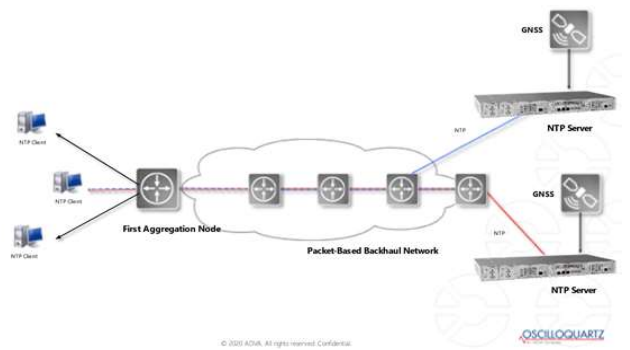


	Questions	Responses
1		TX RX
1.1	Please confirm that ATA is a “Main Site” as indicated on table 3, page 146 of the Volume 2 specification and not a “Remote Site” as indicated in table 2, page 19 of same specification.	ATA is unique site actually and is more of a main site without the redundancy part as per Table-3. The same equipment for a 'main site' is still required.
1.2	Figure 2 on page 27 of Volume 2 is not as clear as Figure 3 (pg. 28) and Figure 4 (pg. 29). The labels and equipment descriptions (naming) are unreadable. Please provide a readable diagram on a single substitution page.	See attached diagram for a readable figure.
1.3	Will ATNS allow for site surveys of a few selected sites to record more detail of the installation environment as no such information is recorded in the Volume 2 specification and thus makes costing of the installations at each site virtually impossible. Alternatively, can ATNS make available specific photographs of the installation environment.	There will be no site visits allowed or photographs shared.
2		Oscilloquartz
2.1	<p>Old system depends on multiple stratum levels to serve far end NTP clients (at the end of stratum chain NTP Clients are served directly from THM server), in our opinion this architecture is quite old and will degrade the new NTP performance for no reason because of:</p> <ul style="list-style-type: none"> a. Each stratum level added put more processing delay which effect the overall latency b. THM contain low end oscillator which will not provide long holdover <p>In modern NTP application the main NTP server accuracy can be enhanced if all clients are directly communicating to Stratum 1 NTP Server, please confirm if such architecture would be accepted from vendor.</p>	<p>There can and shall be no software or hardware configurational changes to be made, nor any computational or processing impact introduced, on any of our existing equipment and systems which use NTP protocols. All our operational systems currently use NTP protocols. To combine PTP and NTP, it will require different software packages on Linux and probably on other operating systems’ servers as well to cater for PTP protocols. This cannot and shall not be allowed on existing systems and equipment – the software support contracts with vendors will be void if additional software is loaded and there will be no guarantee that the systems will behave appropriately with PTP if introduced – especially with redundancy switchovers. Also, vendors will put a disclaimer to their support and the behaviour of their software on systems with changes and additional software loaded or activated if existing. Since our operational environment relies on real-time operations for data processing and computations, any disruption on any other jeopardising operational changes will have serious and severe risks to safety of aircraft in the sky, and accuracy of data being received from external sources and computed in real-time.</p>
2.1		
2.2	With regards to protocols are ATNS open to other protocols such as PTP? PTP can used to deliver more accurate backup to Main & remote sites	See response to question 2.1.

2.3	For their TOPSKY system we asked if only NTP protocols are accepted or will other protocols also be accepted?	See response to question 2.1.
2.4	For the TMH we clarified that this is used as the management of the NTP server (master) but also for the monitor and control of the remote sites.	The TMH servers' functions will be to act as the main synchronisation source of NTP time synchronisation for all other equipment and systems' servers within the scope of MAJOR and MAIN sites, as well as handle the local and remote- control, monitoring, management, security, statuses, configurations, etc. for all local and remote sites depended on the MAJOR or MAIN sites. It shall use the existing ISP links where we have ATNS-IT WAN/LAN networks concerning remote sites. The TMH servers will become the central hub of time synchronisation for all relevant systems at all the TMH associated sites.
2.5	We asked on the accepted accuracy of the NTP client and if enhancement will be appreciated through PTP/NTP translation	Milliseconds accuracy is not a concern for our operational environment and suffices for all our systems which only uses up to milliseconds in all their computations and algorithms.
3	Nec Xon	
3.1	Confirmation / guidance on whether the switch and routers specified highlight Cisco models , please can we ask if we MUST propose Cisco models or can we propose a more cost-effective solution that meets all the technical requirements specified.	Any brand that meets the technical requirements will be considered.
4	K3M Engineering	
4.1	Mandatory Requirement: Fibre Cable between antenna and Receiver This requirement is ambiguous when read together with volume 1 C_G3 General, Antenna Qty 24 and Fibre Optic Converters qty 48. May ATNS provide clarity on the following; 1. Will the combination of coax and fibre be sufficient, meaning at the antenna we convert from coax to fibre and on the receiver side we convert from fibre to coax, and you will have converters on both the antenna and receiver ends. Hence the antenna and 2X converter. Or this requirement calls for a full GPS over fibre elimination the 2 converters.	Bidders may propose solutions that uses fibre directly from the antenna to the receiver which will not require Fibre optic converters at the antenna or none at all. Bidders shall adjust the quantity of the Fibre optic converters required accordingly for this type of solution. In addition, if a full fibre solution is proposed and no fibre optic converters are required then maximum points will be awarded for section 7.4 (FIBRE OPTIC CONVERTER (FOC) GENERAL TECHNICAL FUNCTIONS) and section 8.7 (FIBRE OPTIC CONVERTER (FOC) TECHNICAL SPECIFICATIONS) of Volume 2. Important: It must be noted that for a solution using fibre optic converters, only a short piece (up to 20cm maximum) of coax cable may be used between the antenna and the fibre optic converter. The one fibre optic converter must be installed at the location of the antenna and the other at the receiver. The whole reason for the mandatory fibre requirement is to avoid lightning damage and frequency interferences completely.
4.2	Cable run provisions between antenna and receiver. What provisions should be made for cable run in meters between antenna and receiver.	Tenderers shall make provision for 100m of cabling between the antenna and the receiver at each site.